

ELECTRIC RAILWAY JOURNAL

Consider These Facts!

DURING 1925 sales of Gruss Air Springs increased 166% over those of the previous year. 10 manufacturers of trucks and buses have adopted Gruss as standard equipment. 6 others offer them as optional. Nearly 150 distributors and service stations located thruout the country are ready to give you instant service if you should need it.

Gruss Air Springs are manufactured and guaranteed by The Cleveland Pneumatic Tool Company, Cleveland, Ohio.

GRUSS AIR SPRINGS
for Trucks, Buses
Passenger Cars ~ 





Have You Any of the 28,000 Obsolete Cars?

**If You Have—Opportunity is
Knocking at Your Door!**

THE ELECTRIC RAILWAY JOURNAL in the January 2, 1926 issue, page 25, says:

"Purchase of more than 28,000 electric railway passenger cars is necessary in the near future if the industry is to be brought up to the high degree of efficiency necessary under present-day conditions."

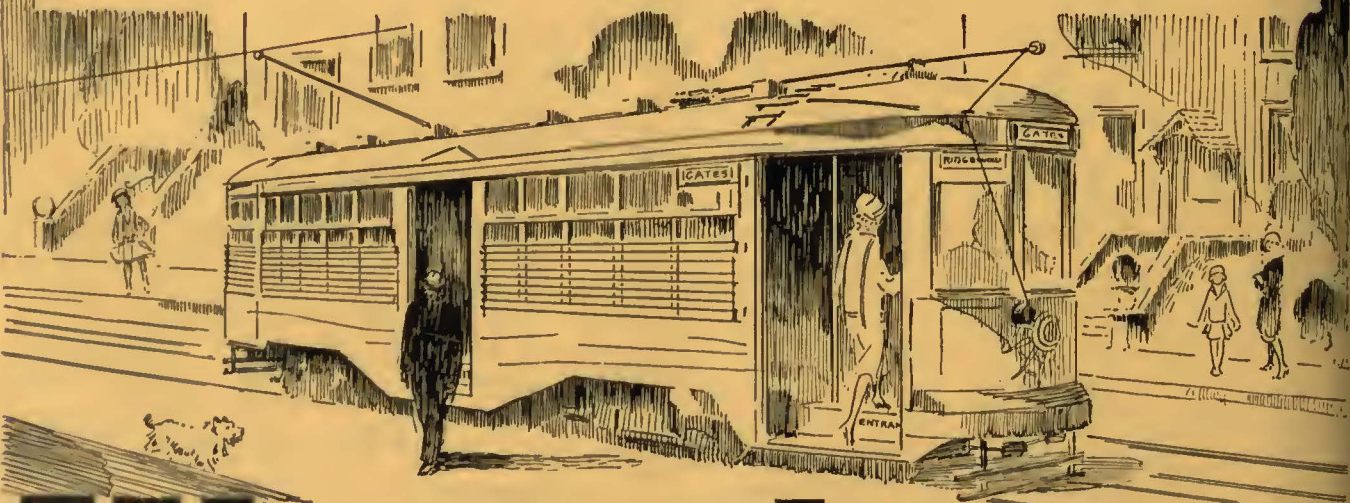
True, it isn't such an easy matter to retire these obsolete cars. There is no fairy godmother to touch them with her wand and make them into beautiful new cars, as the white mice were made into beautiful horses for Cinderella.

But the results are almost as pleasingly startling. The investment is a sound one and when stockholders and bondholders are made to realize that traffic may be increased as much as 28 per cent—an actual accomplishment on one property—at less cost per passenger, it should be possible to obtain the necessary capital.

It is no reflection on our industry that cars must eventually be retired to take advantage of new developments and economies. This has been the history of every progressive industry. (Watch for following advertisements for this story).

How many of the 28,000 obsolete cars have you?

Westinghouse Electric & Manufacturing Company
East Pittsburgh Pennsylvania
Sales Offices in All Principal Cities of
the United States and Foreign Countries



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Vol. 67
No. 6

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Complete Association News

IN THIS ISSUE is published a full report of the Central Electric Railway Association meeting held Jan. 28 and 29 at Indianapolis. The program was of unusually high quality. The papers and discussion strike an inspiring note of optimism. Enthusiasm ran high in a large audience which included executives from many properties outside the C.E.R.A. territory.

Thus, in accordance with its general policy of interpreting the significance of events rather than merely recording their progress, ELECTRIC RAILWAY JOURNAL devotes liberal space to this unusual meeting.

Publishing has some of the characteristics of transportation. It is a comparatively simple matter to render a partial service. But only the agency which assumes the responsibility of rendering a complete service is fulfilling its entire obligation. By giving its readers a full record of the best thinking developed at sectional association meetings the JOURNAL makes its news service complete.

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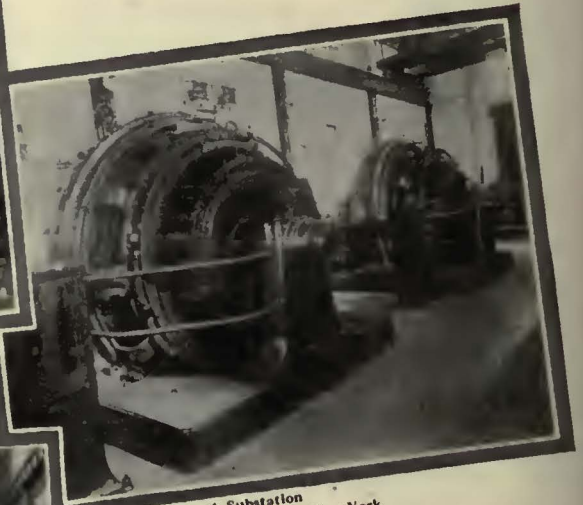
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Change of Address—When change of address is ordered the new and the old address must be given, notice to be received at least ten days before the change takes place.
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Published weekly. Entered as second-class matter, June 23 1908, at the Post Office at New York, N. Y., under the Act of March 3, 1879. Printed in U. S. A.

from coast



Stevenson Street Substation
Market Street Railway, San Francisco
Two 2,000 kw. and one 3,000 kw.
Westinghouse Synchronous Converters



Lynbrook Substation
Long Island Railway, New York
Two 2,000 kw Westinghouse Synchronous
Converters



57th Street Substation
Interborough Rapid Transit Co., New York
Three 4,000 kw Westinghouse Synchronous
Converters



Mt. Vernon Substation
Philadelphia Rapid Transit Co.
Three 2,000 kw. Westinghouse Synchronous
Converters



Westinghouse

X86486

to coast



In practically all large cities, Westinghouse Synchronous Converters will be found serving all classes of railway electrification.

This widespread distribution

of Westinghouse apparatus in electric railway service is a merited recognition of untiring efforts to serve the industry with ever-increasingly efficient equipment.

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY
EAST PITTSBURGH PENNSYLVANIA

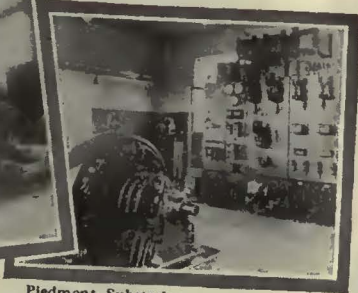
*Sales Offices in All Principal Cities of
the United States and Foreign Countries*



1926



Rosindale Substation
Boston Elevated Railroad
One 2,000 and two 1,500 kw. Synchronous
Converters



Piedmont Substation
Georgia Railway & Power Co., Atlanta
One 500 kw. Westinghouse Synchronous
Converter

Synchronous Converters

X864H7

SAVING THE RAIL SAVES THE RAILWAY

Silence IS Golden

“It is the consensus of opinion, however, that whatever steps are necessary to reduce noise in car equipment, it will call for some initial investment, but ultimately the maintenance costs will be reduced due to the use of higher standards. Secondly, quiet cars have a better sales value, and if car riders are to be won back to the electric lines this becomes a very tangible asset.”

H. S. WILLIAMS

Chairman Noise Reduction Committee A.E.R.E.A.

Quiet cars pay. Quiet and comfortable cars pay better. Quiet, comfortable, safe and speedy cars pay best.

How can you expect to have them unless you keep your track in shape?

For track that keeps cars silent, safe, speedy and comfortable, grind rails and weld joints with the modern equipment here shown.

*Now is the time to
order for early
spring delivery*

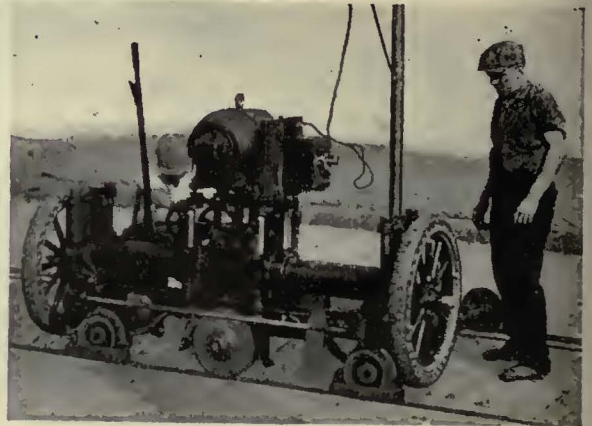
Railway Trackwork Co.

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
H. F. McDermott, 208 S. LaSalle St., Chicago
Equipment & Engineering Co., London

865



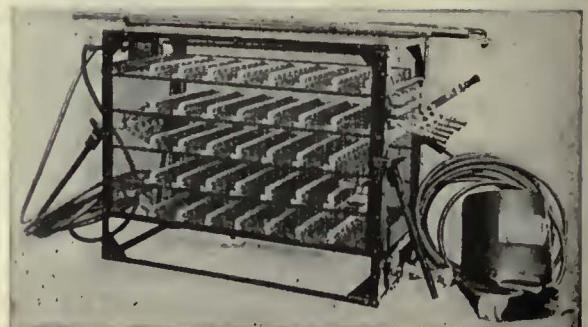
"Imperial" Track Grinder



"Atlas" Rail Grinder

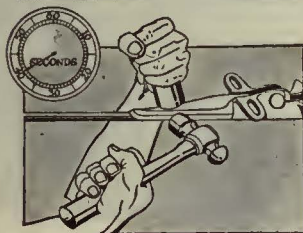
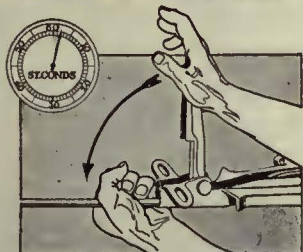
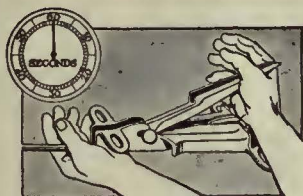


Reciprocating Track Grinder



"Ajax" Electric Arc Welder

SAVING THE RAIL SAVES THE RAILWAY



The Key to Economy

Put on in 40 seconds

O-B Cam Tip

If you would understand the popularity of O-B Frogs, Section Insulators, Cross-overs and Strain Plates, study the O-B Cam Tip.

It is not only renewable, but it is quickly renewable, without the use of any small, hard-to-keep-track-of bolts and nuts. It is a one-piece cam tip. This O-B Cam Tip does not depend upon a driven joint. It never becomes loose and troublesome on the wire.

It is as popular with every line crew as it is in every cost department. You can replace the wearing points without throwing away the whole frog, section insulator, etc.

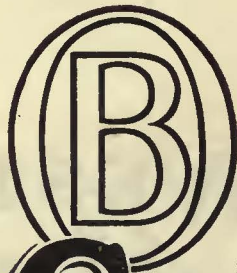
Ohio Brass Company, Mansfield, Ohio
Dominion Insulator & Mfg. Co., Limited,
Niagara Falls, Canada

The O-B one-piece Cam Tip is an exclusive feature of O-B—

- Frogs
- Cross-overs
- Strain Plates
- Section Insulators

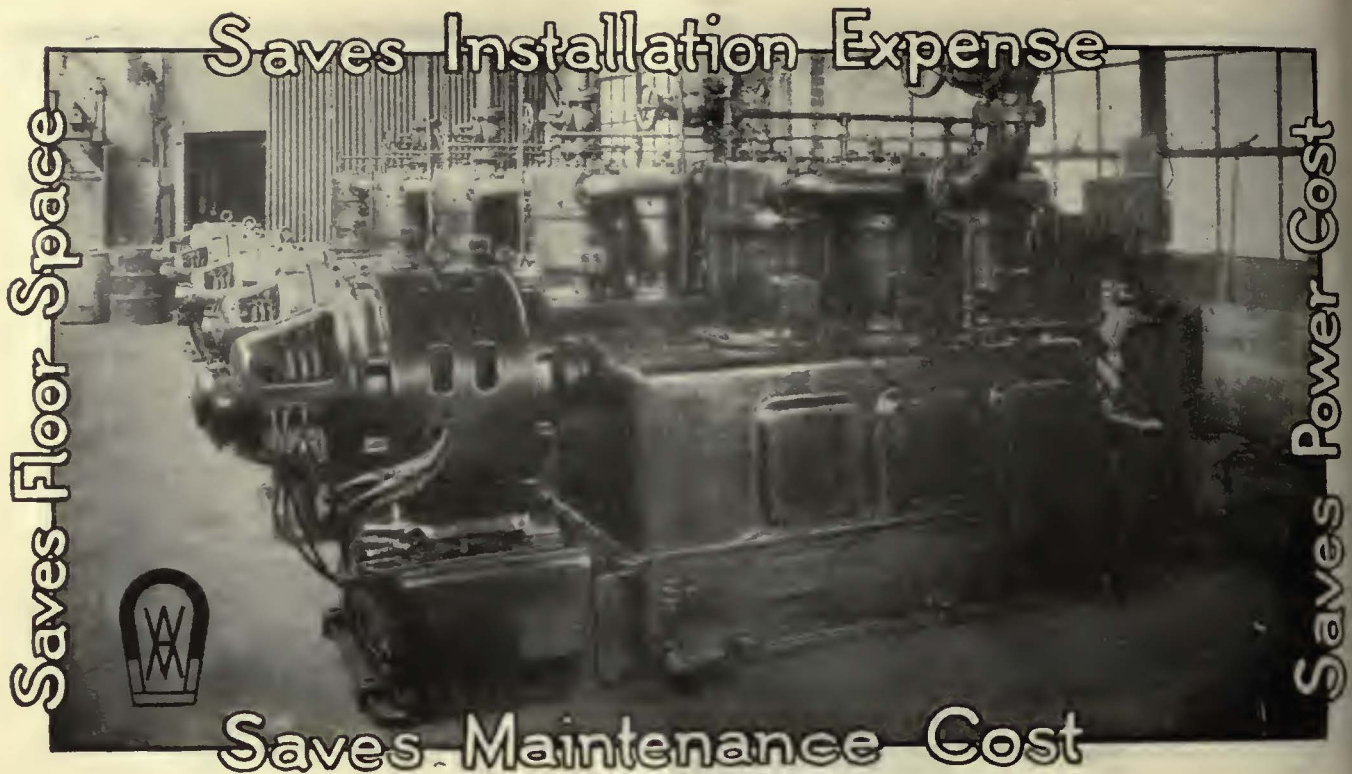
Their long wearing, hot-dip galvanized Flecto Iron body and quickly renewable bronze Cam Tip approaches, are a 12-year demonstrated combination.

Demonstrated in terms of lower costs for maintenance. Practical in terms that line crews understand and appreciate.



11-B

Ohio Brass Co.



Economical Air Compressors for power house, car barn or shop

Compact, direct-connected self-contained unit, consisting of compressor, motor, and control system, made ready for immediate service simply by connecting to power and water mains and pouring in oil—eliminates heavy installation expense and insures minimum floor space for a given air capacity.

Automatic control, which stops the compressor completely at desired air pressure, and does not merely

unload it—insures that power will be used in exact accord with air requirements.

Durable construction and careful workmanship—guarantee long and dependable service, with little attention and up-keep cost.

These are the features of Westinghouse-National Air Compressors which make for all-around economy.

Westinghouse Traction Brake Company
General Office and Works: Wilmerding, Pa.

WESTINGHOUSE-NATIONAL *Air Compressors*

"QUALITY MACHINES FOR QUALITY SERVICE"



Twin Ties Being Installed Under Traffic in Kansas City

Under traffic if you must

Various methods of installing Twin Tie track under traffic have been worked out during the past three years.

They are the subject of a special bulletin which we will be pleased to send to interested engineers and managers.

The International Steel Tie Co.
Cleveland, Ohio

Steel Twin Tie Track

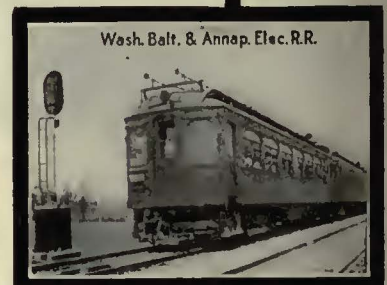
Renewable Track — Permanent Foundation

Signals and their Diversified Applications.

Have you more than scratched the surface to uncover available means of protecting and speeding up your traffic, and are you experiencing delays or perhaps accidents which might be eliminated by the use of one or more of the following means?



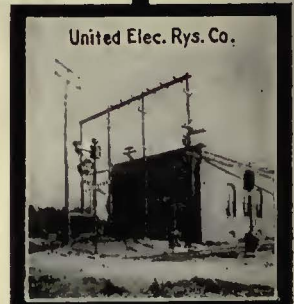
1.—Automatic semaphore or color light block signals, controlled by continuous track circuits.



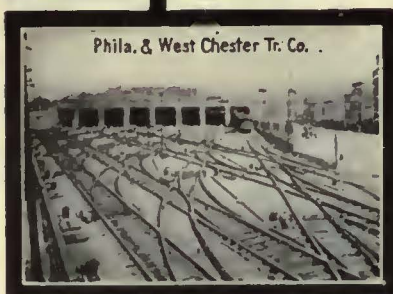
2.—Electro-pneumatic, electric, electro-mechanical, or purely mechanical interlocking systems at terminals or at grade crossings with other railway lines.



3.—Highway crossing protective devices of flashing color light, wig-wag and audible types or combination of same.



4.—Remotely controlled switches at outlying sidings.



A statement of your problem places you under no obligation and if it appears to our engineers that your conditions can be improved by installation of our materials, we shall be glad to furnish complete details.



Electric Railways which are large users of Union automatic signal and interlocking systems are:

Chicago, Lake Shore & South Bend Ry. Co.
Chicago, South Bend & Northern Indiana Ry.
Kansas City, Clay County & St. Joe Ry. Co.
Washington, Baltimore & Annapolis Elec. R. R.

Interstate Public Service Co.
Pacific Electric Ry. Co.
Illinois Traction System
United Elec. Rys. Co.

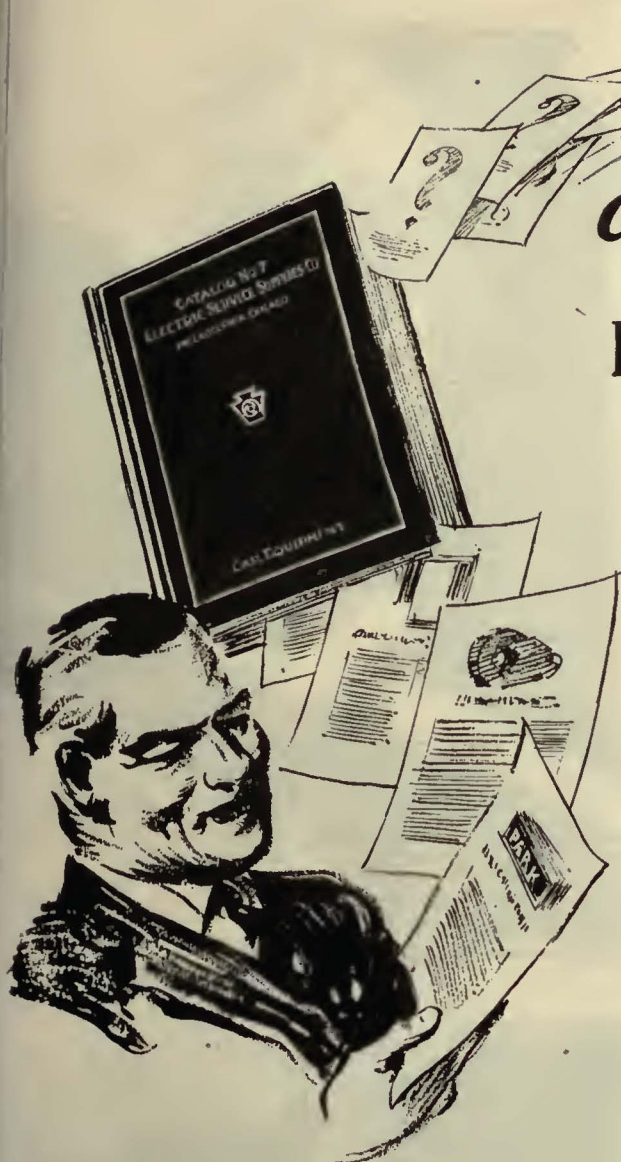
Scranton & Binghamton R. R. Co.
United Railways & Elec. Co.
San Francisco-Sacramento R. R.
Northern Texas Traction Co.



Union Switch & Signal Co.



SWISSVALE, PA.



Answer equipment questions
via
ESSCO Catalog No. 7

What car equipment will best meet your particular requirements?

Route this question through *Essco Catalog No. 7*. Its pages will reveal the answer.

Whether building new cars or modernizing old cars, make Keystone the cornerstone of your equipment specifications. For Keystone Car Equipment includes every up-to-date device for efficient, economical, electric railway service.

ELECTRIC SERVICE SUPPLIES CO.

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PITTSBURGH BOSTON SCRANTON DETROIT
839 Oliver Building 88 Broad St. 316 N. Washington Ave. General Motors Building
Lyman Tube & Supply Co., Ltd., Montreal, Toronto, Vancouver

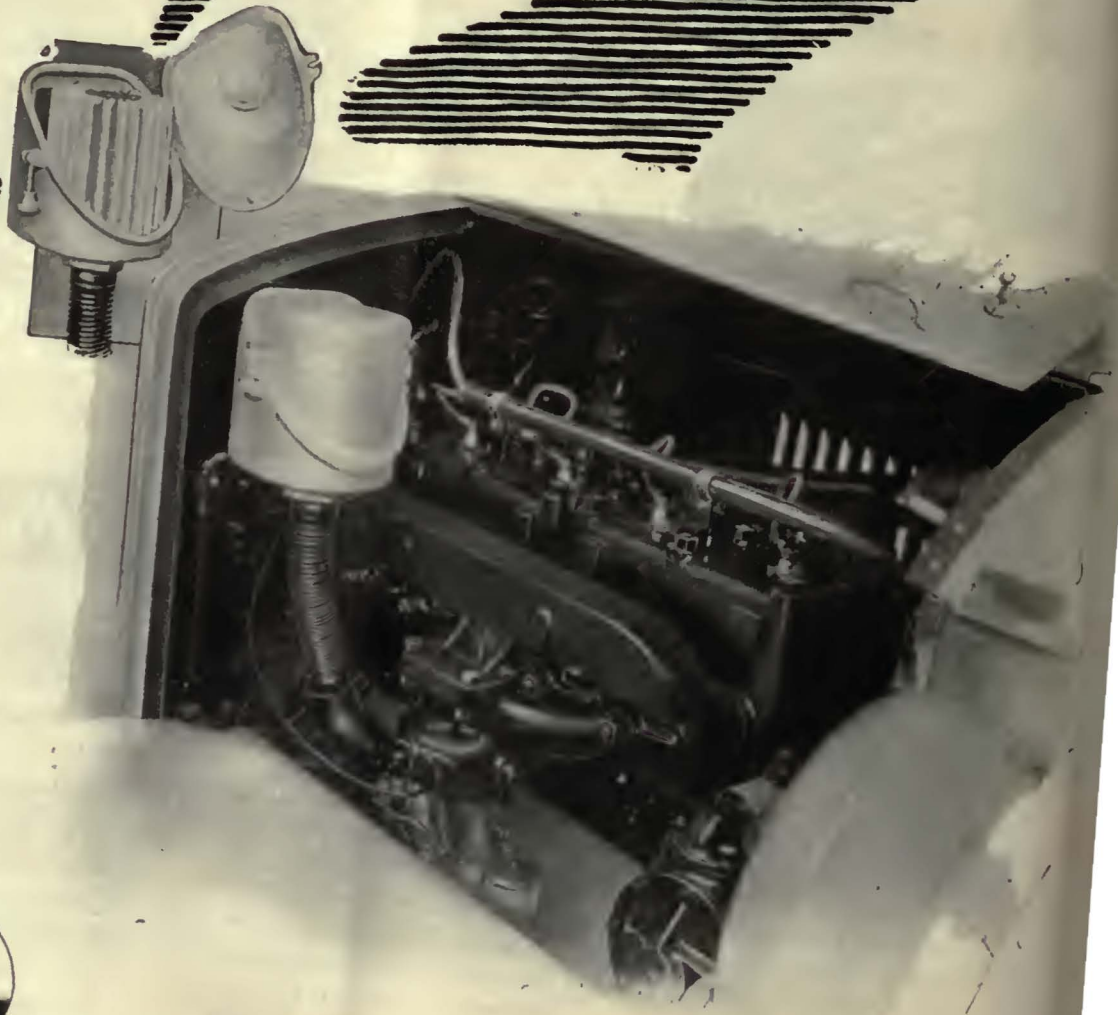
KEYSTONE CAR EQUIPMENT

Some Items Selected from Essco Catalog No. 7

Golden Glow Headlights
Faraday Signal Systems
Hunter-Keystone Signs
Steel Gear Cases
Motormen's Seats
Lighting Fixtures
Headlight Resistances
Air Sanders
Trolley Catchers
Shelby Trolley Poles

Rotary Gongs
International Fare Registers
Fare Register Fittings
Samson Cordage
Air Valves
Cord Connectors
Trailer Connectors
Automatic Door Signals
Standard Trolley Harps
Standard Trolley Wheels

Peerless Coil Winding Tools
Peerless Armature Machines
Insulating Materials
Cass Commutator Stones
Sand Driers
Peerless Pinion Pullers
Employees' Badges
Line Material
Portable Lamp Guards



The first bus was a Mack
the first Mack was a bus



The Bus
as you buy it—

An air filter is a small thing but—

Mack realizes the cost of dirt in the motor. To insure *clean* air in the Mack motor, it is taken directly from the interior of the bus, through an *Air Filter* into the motor. The pure air breathed by the passenger is used in the motor.

A detail, perhaps, but very important to the Mack policy of designing and building to *reduce operating costs* rather than purchase price. Every detail of Mack construction anticipates operating conditions with correct design.

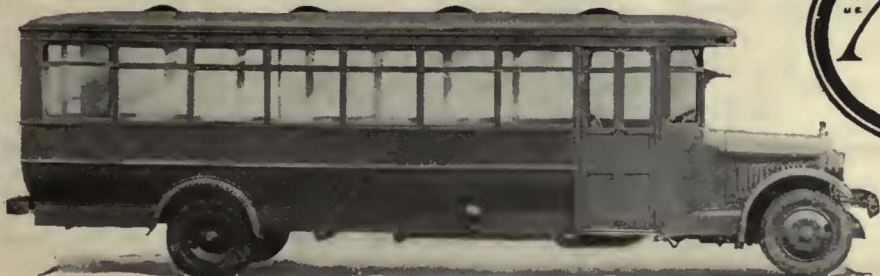
Cylinder wear, dirty oil, incorrect lubrication, dirty gasoline—all these are induced by road dust, which, if allowed to get in, exert an emery-like action on those parts

of the engine subject to wear from such abrasive treatment. Mack, therefore, uses an Air Filter to insure better engine operation, longer periods between valve grinding and carbon removal, longer life of oil and less wear on cylinder walls.

A little thing in Mack design, but in the aggregate such things, when solved by Mack engineers, make for more efficient operation and lower cost.

MACK TRUCKS, INC.
INTERNATIONAL MOTOR COMPANY
25 Broadway, New York City

Ninety-five direct MACK factory branches operate under the titles of: "MACK-INTERNATIONAL MOTOR TRUCK CORPORATION," "MACK MOTOR TRUCK COMPANY," and "MACK TRUCKS of CANADA, Ltd."



The **Mack** Bus

ATLANTA Equips with Economy Meters with Car Inspection Dials



Economy Meter with Power Saving
and Car Inspection Dials

The Georgia Railway & Power Co. will use these meters for the two-fold purpose of energy saving and for scientifically indicating inspection intervals.

THE ECONOMY METER WITH CAR INSPECTION DIALS is readily adaptable to any electric car or locomotive operating conditions for both power-saving and for showing when cars should be inspected.

The saving resulting from inspection on the kilowatt-hour basis has been found by many companies, sufficient in itself to make profitable the purchase of meters.

ECONOMY METERS are now standard on more than 200 Properties. This simple, rugged energy-measuring device has induced savings, from coast to coast, on both large and small properties, of from $\frac{1}{3}$ to $\frac{1}{2}$ a cent per car-mile.

From a transportation standpoint, from a record-keeping standpoint, from a "safety-first" standpoint and from a mechanical standpoint, the ECONOMY METER with car-inspection dials is a most efficient, simple, adaptable and profitable device. May we quote prices or answer detailed questions?

Ask about 24-months deferred rental payment plan.

Economy Electric Devices Company

L. E. Gould, *President*

1590-37 W. Van Buren St., Chicago

Sangamo Economy Meters (*General Sales Agents*) Aluminum Field Coils,
Air Rectifier

District Agents for

Peter Smith Heaters Woods Fare Boxes Bemis Boyerized Truck Specialties
Miller Trolley Shoes

Economy
Meters Give
Power Costs
For Each
Piece of
Equipment

Metering
Energy
Saves Energy
and
Equipment

ECONOMY METERS



Chicago's New Cars equipped with the National Pneumatic Automatic Treadle Door

If there is any point, where speed of passenger interchange and car operation is of vital importance, it is in the congested downtown sections of Chicago. These new Chicago cars are, therefore, fitted with National Pneumatic Automatic Treadle Exit Doors, operated by the passenger, (without effort), in the act of alighting. We will gladly send you the full details.

NATIONAL PNEUMATIC COMPANY

Executive Office, 50 Church Street, New York

General Works, Rahway, New Jersey

CHICAGO
518 McCormick Building

MANUFACTURED IN
TORONTO, CANADA, BY

PHILADELPHIA
1010 Colonial Trust Building

Railway & Power Engineering Corp., Ltd.



Installation of
OKONITE
 "Parkway" Cable
 Lead and Steel Taped

for the ornamental lighting around
 Lake Merritt, Oakland, California



THE OKONITE COMPANY
THE OKONITE-CALLENDER CABLE COMPANY, INC.

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ANNOUNCING THE UNITED STATES ROYAL CORD Motorcoach TIRE

THE United States Rubber Company has been working to produce a tire that would bring a new and higher standard of economical service to the operation of the great motorcoaches of today.

Corps of trained tire experts have made a careful, day-to-day study of actual operating conditions of these modern vehicles of transportation.

Out of this exhaustive research and the experience of years of building tires, has been evolved a tire so exactly suited to motorcoach requirements that it cannot justly be compared with any tire used in this service to date.

To make this plain the word *Motorcoach* has been placed on it.

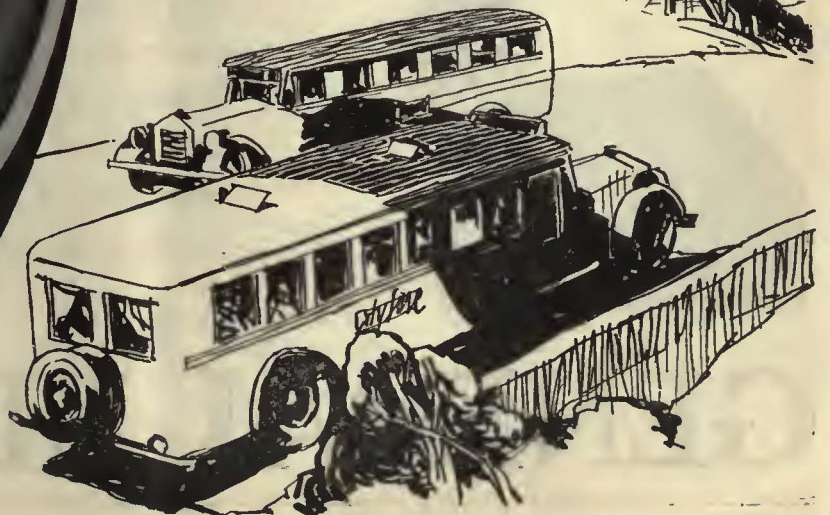
The carcass of the tire is of the famous Latex-treated Web Cord construction.

The tread is of Sprayed Rubber, the purest, most uniform rubber known.

The tread design insures slow and uniform wear.

From the quality of the rubber grown on the U. S. Rubber Company's own plantations and the quality of the cords woven in the Company's own mills, down to the last operation in the factory, every step in the building of this tire has been watched to assure the highest quality of material and construction throughout.

United States Rubber Company



Trade Mark



Give him "ready-cuts" —and save his time

Give your winder G-E Ready-cut Armature Insulations that are packed in individual dustproof cartons and cut exactly to fit the armature. With these he spends no time doing unnecessary cutting and fitting, and he wastes no material. You get the most economical and the most reliable re-insulating job.



GENERAL ELECTRIC

Electric Railway Journal

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

Published by McGraw-Hill Company, Inc.

MORRIS BUCK, *Managing Editor*

Volume 67

New York, Saturday, February 6, 1926

Number 6

Optimism Characterizes

C.E.R.A. Midwinter Meeting

NEVER has an annual meeting of the Central Electric Railway Association carried a message more clear than did the one held at Indianapolis on Jan. 28 and 29. In the addresses made by President Coates, Mr. Storrs and Mr. Budd the keynote of optimism was dominant. This was not based on hopes alone, but on facts and figures established by the industry during the past five years. In particular Mr. Budd cited examples of a dozen or more roads which have shown a material increase in operating income over a five-year period.

Progress has been made along many different lines. Physically the roads are being placed in better condition. New cars are replacing old, new track has been laid and adequate facilities have been installed. The use of one-man cars has become well-nigh universal, with not only a saving in car-mile operating expense, but an actual improvement in service. The bus has been changed from a competitor to a useful tool of the railway systems in such a way as to extend and complement the rail service.

A wholly new viewpoint has been taken by operators and holding companies as regards publicity. Once shunned, it now has become not only the usual thing, but managements are vying with one another to see which can devise the best methods and reach the largest number of patrons.

The effect has been widespread. Companies that have progressed along these lines have found it easier to get riders, easier to keep taxes and obligations within bounds and easier to finance. Perusal of the addresses and papers of the C.E.R.A. meeting will show other roads many of the methods actually adopted to make these things possible.

Change in Engineering Procedure

Should Facilitate Standardization

FAR-REACHING changes are to be anticipated by the revision of methods for voting on standards proposed by the American Electric Railway Engineering Association and approved by the American Association executive committee at its Indianapolis meeting. For years the work of standardizing dimensions of parts, materials and practices has been carried on by the Engineering Association. This has been conducted through the medium of investigation and report by committees, followed by action of the committee on standards. After this the procedure has been to present the proposals for standards before the annual convention, a vote taken by the delegates present giving acceptance or rejection. The point has been made that this procedure not only consumes the greater part of the time of the convention sessions, but does not assure

a representative vote. In fact, it is not possible to determine whether a majority of the accredited delegates present actually votes for or against the proposed standard, as a poll is rarely required.

In order to remedy this situation it is proposed to pass on standards by letter ballot of member companies. The committee reports are all printed and distributed to the membership. Each delegate should be thoroughly familiar with the subject matter, and able to vote intelligently on the proposition submitted. The result should be a higher level for the association's standards.

It was pointed out at the executive committee meeting that with the change in method of adopting standards in effect, their use by member companies and by the industry in general should be urged more than at present. There has been a disregard of standards by some prominent companies that at times has raised a serious doubt as to the advisability of continuing the work. Certainly it is a waste of time and money to ask responsible engineers to prepare standards that are not adopted generally.

Use of the letter ballot should do much to correct this situation, as an affirmative vote carries at least an implied obligation to adopt the standard. While there may be some slight inconvenience if the company standard has to be changed, this is not likely to continue for any length of time, and the benefits of having a standard for the entire industry are obvious.

Foreman Conference Demonstration

Something New in Convention Proceedings

DEMONSTRATION of an actual foreman training conference was a novelty in the program of the annual convention of the Central Electric Railway Association, held in Indianapolis last week. This brought out clearly the principles and application of one method of conducting such conferences in a way that will be long remembered by the audience, which followed every word of the foremen with keen interest. It was also convincing, because the participants were experienced foremen who showed by the way in which they took part in the discussion that they believed in what they were doing. This exhibit was staged by the committee on education of the American Electric Railway Association, with the co-operation of the Indianapolis Street Railway, the Terre Haute, Indianapolis & Eastern Traction Company and the Boston Elevated Railway. H. H. Norris of the latter company conducted the program in such a way as to emphasize the various points brought out in regular conferences of his foremen. The demonstration conference was an abbreviated session of conferences such as the Boston Elevated has been holding for the past few months.

Aside from the obvious merit of this plan for

dramatizing the recommendation of the committee on education, the "stunt" taught several important lessons. One is that the experience of foremen can be depended upon for intensely interesting and useful material for discussion. Another is that fundamental principles of foremanship can readily be proved by deduction from this material. When such analysis is based upon concrete incidents, these principles, if drawn logically from the facts presented, must be sound and must be appealing to the common sense of every thoughtful foreman.

Foreman training, by some such plan as the one illustrated, is a phase of educational work which the committee on education desires especially to stress this year. The C.E.R.A. demonstration, which followed a similar recent one by a Boston Elevated group before the New England Street Railway Club, will render more tangible the printed suggestions which the committee will distribute. The committee on management and operation, which also met in Indianapolis last week and many of whose members witnessed the demonstration, will reinforce the recommendations of the committee on education, as its regional committees carry on the work of visitation. The result cannot but be beneficial to all properties whose foremen will join in this effort to make themselves better leaders.

Where It Does Not Provide for Transportation, City Planning Must Give Way

CONSTRUCTION of a railway, whose convenience and necessity to the public have been proved, must not be held up because its construction may interfere with the interests of a few property owners. This decision was recently rendered in Wisconsin, where the question came up legally in connection with some extensions proposed by the Milwaukee Electric Railway & Light Company. There was no doubt that these extensions were justified on the grounds of the convenience and necessity of the public, but the grant was opposed by the authorities of Milwaukee County because certain parts of the route were said not entirely to fit in with the city plan adopted for one of the outlying suburbs. In consequence, an order was secured by the county from the Circuit Court requiring the commission to reconsider its permission for the proposed extensions and to hold such further proceedings as might be necessary, so that the effect on the zoning and city plan of the suburb mentioned would receive full consideration.

Fortunately, the Supreme Court of Wisconsin, before which the case came on appeal, has held that the inconvenience of individuals along the proposed right-of-way cannot affect the general subject of the need of transportation facilities by the general public. Hence, any evidence as to zoning, city planning and other similar matters of towns along the route is immaterial where the convenience and necessity of transportation are involved. Any injuries caused to the individual owners of real estate by the construction of the line, the Wisconsin Supreme Court said, can be offered in evidence for adequate compensation during the condemnation proceedings.

After all, a community cannot have the advantages of modern improvements, among which are included transportation, without their few minor disadvantages. The effect of introducing rapid transit facilities in a

community is usually vastly to increase the value of by far the greater part of the real estate. If individual owners suffer, they have their remedy in court and should not be permitted to stand in the way of blocking the benefits which will come to the majority from the construction of the line.

Idea of Celebration at Christmas Spreads Among Railways

PERHAPS there is no field of endeavor in which the electric railway has made more striking strides for betterment than in its human relations activities. Hitherto, these activities have been more or less confined to general welfare work in hospital cases, in awarding sick benefits and insurance policies as well as in establishing summer recreation camps and schools for the spiritual and intellectual stimulation of its employees.

More recently, however, as reflected in the news pages of the JOURNAL that department has become more expansive. It has founded an institution known as the Christmas Celebration, which in definite though different form is becoming part of the life of every man under railway management. This so-called Christmas spirit has been a long time finding its abode in the center of railway activity, and so worthy is the intention and so contagious the enthusiasm that ere long there will probably be no work left for the ghost of Marley to perform on Christmas Day. During the last holiday season innumerable companies entertained their employees around brilliantly decorated Christmas trees, gave presents to employees and expressed tangibly their well wishes even to employees' wives and kiddies. In some instances, the officers and employees celebrated the season by working with willing hands and anxious hearts toward making a Merry Christmas for the needy.

This taking on the Christmas spirit is one phase of the public relations work in which the personal material gains are negligible when compared with the inevitable spiritual gratification. The natural but too prevalent inward query "what shall I get out of it?" is either summarily dismissed from the mind or gradually, as the spirit takes hold of the employee, is merged into a more selfless trend of thought—"how much more of myself can I put into this scheme?" As the attitude of the company is almost sure to be reflected even in the lowliest employee and the spirit of the message transmitted by him in his dealings with the patrons, there is no telling how far reaching the benefits of the Christmas party idea will be.

Careful Analysis Will Prevent Errors of Uneconomic Bus Substitution

WHETHER or not to substitute bus service for electric railway service is sometimes a difficult question to answer. How it is done by the United Traction Company of Albany was told in a paper by E. A. Murphy presented at the midwinter meeting of the New York Electric Railway Association. Mr. Murphy gave a most astonishing indorsement of the bus in city service, saying that the popularity of buses over trolley cars is quite evident. Besides being more pleasing, Mr. Murphy stated that the transportation is quicker, safer and subject to fewer delays from traffic obstruction.

Before undertaking such a substitution earnings and reconstruction costs of a railway line are carefully surveyed. Great attention is given to consideration of the traffic that must be handled. If the substitution is made, will the smaller capacity buses successfully replace the larger capacity cars? It would be folly to make the substitution on the basis of reconstruction costs of track alone and then find in time that the traffic was too heavy to be economically handled by buses.

One method of reducing reconstruction costs of tracks that has been under consideration for many years, but has not made as much progress as could be desired, is obtaining relief from paving obligations. If this burden could be eliminated, it might change the situation in many cases of prospective changeover to buses by throwing the balance in favor of car operation.

In another paper presented at the same meeting, by William P. Capes, the suggestion was made that the New York State law relative to paving obligations be removed and the authority to determine the amount of such taxation placed on the political subdivision having immediate jurisdiction over the territory through which the individual railways pass. An upper limit of such taxation, however, would be the amounts now existing. This is a move in the right direction and indicates the tendency of the times.

That relief from such unjust taxation as that emanating from the horse-car days is bound to come is as sure as the industry itself. There were many serious errors made in early days of street car operation. Other errors of faulty substitution of buses must be guarded against just as certainly as errors arising from the failure to make bus substitution where an economic study indicates such a substitution desirable. Paving costs are so great a factor in studies of this kind that it is necessary to consider the situation from the standpoint of having obtained relief or else there may be much capital lost that might otherwise be saved.

C.E.R.A. Standard Freight Car a Service to the Industry

FOLLOWING years of talk concerning the elusive attribute of co-operation, certain members of the Central Electric Railway Association have at last proceeded to demonstrate that "a bird in the hand is worth two in the bush." In other words, they have gathered together in friendly conclave and, through the medium of their Master Mechanics' Association, formulated plans for a standardized freight car to be used in interurban service. Details of the new equipment and the plan under which it is being purchased by the several railways are published elsewhere in this issue.

Certainly such an outstanding accomplishment by any group of companies is well worthy of commendation. Advantages accruing from the use of standardized equipment are manifold. Reductions in initial outlay are not the least of these, since the manufacturers are able to produce the equipment at much less cost. Then, too, there are economies to be effected, particularly on lines that adjoin, by operating the cars jointly for through freight service. Both of these points are of considerable note. But the finest feature of the entire development is the admirable spirit of mutual accord which has marked the negotiations between the various participating parties. Every road has shown itself willing to meet the others more than half way in a

consideration of joint requirements. Needless to say, the industry has not been overly blessed with this spirit in the past, and it is the more welcome when it finally appears in so auspicious a fashion.

No little credit is due to T. A. Kenny, of Hodenpyl, Hardy & Company, whose efforts played a leading rôle in bringing the whole plan to fruition and in arranging the method of financing the purchase of cars. His assistance has been warmly appreciated by the interested companies.

Because of the widespread influence which this development undoubtedly will exercise, its value may extend throughout the entire industry. The work of standardization may well be carried further. Of course it would not be advisable for every company to standardize with every other road so far as the external design of passenger equipment is concerned. Individuality here is productive of appreciable returns and is a real asset to be cultivated. But in many items of passenger, as well as freight, equipment standardization can be carried out with excellent results.

Necessity for Co-ordination Shown by Indiana Bus Failure

COLLAPSE of the grandiose scheme of Ward B. Hiner to control intercity transportation in Indiana was referred to by Managing Director Storrs in his Indianapolis address as a demonstration for the need of greater care in analyzing the possibilities of competitive operation.

In this case the promoter, who controlled the Indiana Red Ball Lines, Inc., attempted to conduct an intercity bus system on a huge scale, not only in direct competition with interurban railways but with independent bus operators who would not meet his terms. The opportunity presented itself on account of lack of any regulation of bus operation on highways in the State of Indiana, a condition which since has been corrected. This operator failed to recognize the fundamental economic principle that business cannot be conducted indefinitely at a loss. His idea of the function of the bus was a mistaken one. Rate of fare seemed to be the sole appeal offered by his service. Mr. Hiner's vision seems to have been limited to seeing the existing passengers on the interurban cars as prospective riders for his buses.

Co-ordination on a single route may be effected in two ways: First, alternation of schedules of cars and buses, in which service and rate of fare are quite similar, but in which unnecessary duplication is avoided. This amounts virtually to a shortening of headways. Second, the bus may be used to give an entirely distinctive service at a distinctive rate of fare. This may contemplate the use of buses to give a de luxe express service, while normal service is given on the cars; or local transportation may be given by buses, while the cars are utilized for the high-grade service.

That there is a demand for bus service in this territory is indicated by the experience of the interurban roads, which themselves are operating vehicles on the highways. With the enormous growth in riding created by the automobile Mr. Hiner's attempt to win the interurban passengers by cutting fares rather than to obtain riders from automobile owners by rendering a service that would be attractive to them was the primary cause of his failure.

Mr. Storrs' Daily Dozen for Electric Railways

1 *Exercise Our Eyesight.* Look around and see what the conditions really are. Accept the situation and whether there is hope for increased business in our respective territories or no hope, let us see it clearly and know the truth.

2 *Exercise Our Imagination.* Let us view the future hopefully and ascertain what it holds for us. The days of trailing in the local transportation business are gone. We must lead, we must have vision, we must keep a jump or two ahead of our communities if we are going to prosper.

3 *Exercise Our Faith.* We must have faith in our employees and cause a like faith in them for us. Managements and men must work together. If mutual faith does not exist, personnel should be changed to bring it about. It is unfair to ourselves, unfair to our employees and unfair to the public to have inharmonious relations existing on our properties.

4 *Exercise a Fidelity to Our Traveling Public.* This industry cannot prosper if we lack the confidence of our customers. If any among us doubt this, let us first look honestly within and see if we cannot discern some reason for their lack of faith in us. If we are then convinced that the fault is not our own, let us go frankly to the car riders and tell them where and how we think they are wrong. They usually will be fair.

5 *Exercise Our Hearing.* Do we know as much as we should what the people are saying about our service? Pleased riders are our greatest assets. Let us find out what they want by listening to what they have to say and then give them what they need and should have as nearly as we can.

6 *Exercise Our Gift of Speech.* We are behind other industries in telling our story. Fortunately we are improving in this respect, but we should talk more. Let us, when opportunity offers, tell to individuals, to groups of half dozens, or to crowds of thousands, our point of view. One spoken word is worth a hundred printed ones.

7 *Exercise Our Legs.* Legs as a means of locomotion are going too much out of style the world over in recent years. In our business we use our own too little. Entirely too many electric railway officials depend on their motor cars and permit their employees to do likewise. We cannot inspire others to use our services if we don't use street cars ourselves. A rule that none in our employ, including executives, shall use automobiles for business purposes, save in exceptional or necessary cases, might not be a bad one.

8 *Backbone Exercise.* It is needless to tell the benefits of a firm, strong and stiff backbone. It means courage, grit, poise, balance, and all these cannot help but result in an alert vigilance.

9 *The Open Mind Exercise.* Let us not say that a thing cannot be done unless we are sure. Even if we are reasonably sure that it cannot be done let us think it over carefully before giving our decision. Sometimes we may find that the seemingly impossible request can be granted or compromised if given fuller and more thorough consideration. If it proves impossible a careful study of the request ought and usually will convince its maker that we have granted him every consideration. We do not want a reputation as a consistent "no" industry. A good way to avoid such a reputation is to render decisions affecting public relations only after slow and very careful deliberation.

10 *Exercise Cheerfulness.* For many years I fear our industry had a reputation for lack of consideration of public welfare. In recent years this attitude has changed. People come to us with the feeling that they will receive a cordial and friendly reception. Nothing will do more to foster it than a cheerful attitude in our relations to the public.

11 *A Bending Exercise.* Probably few single exercises are better for our own health and the health of the industry than this one. Especially if we bend over sufficiently to understand the other man's viewpoint. It is a splendid thing for the circulation. It will make us all feel better and add to our business, and if it limbers us to the extent of losing some old worthless ideas and acquiring some new ones the benefit is assured.

12 *Exercise of Our Chests.* The twelfth and last exercise I have to recommend is perhaps as important as any. It is that of expanding our chest privately and publicly. A great deal has been said about encouraging our employees to recognize the romance and possibilities of the electric railway business. We cannot expect them to romance about our business, however, unless we feel and show pride in it ourselves. Too many street railway men have for too long adopted a limp attitude and have hesitated to boast about what their industry means locally and nationally. I firmly believe that if we had indulged in more industrial chest expansion in past years we would be in a better situation than we are today. Ours is an essential industry. Without it communities could but poorly exist. We have splendid reasons for throwing out our chests and showing that we have pride, faith and hope in our great industry. Let us do it.

A Daily Dozen for Electric Railways*

Results of Constructive Work of the Leaders of the Industry Are Beginning to Be Felt—Bus Problem, Taxation and Financing Are Improving—A Series of "Exercises" for Electric Railways Is Proposed

By *Lucius S. Storrs*

Managing Director American Electric Railway Association

DURING this past year much constructive effort which is beginning to show results has been put forward by leaders of the industry, and particularly by members of the Advisory Council. My endeavor will be to present briefly a picture of the high points of the present conditions and possibly indicate the trend of affairs in local transportation throughout the United States.

This morning a most encouraging address by Mr. Budd must have proved to you without any question that there is a very marked and general financial improvement throughout the country. Mr. Budd's address should be read by everyone engaged in our industry; it is not only a message of optimism, but indicates so clearly the essential soundness of our industry and the underlying factors that are necessary to the success of any electric railway property, from one who is best qualified to speak with knowledge and understanding.

Summarized, conditions within our industry which are dependent in part on the influence of outsiders, such as city, state and national regulatory bodies, car riders, bankers and others, are improving steadily. By such conditions are meant rates of fare, jitney and bus regulation, paving relief, financing and collateral matters. Improvement has not been so marked in conditions over which the industry itself should have major control. By that I mean principally the increase of freight and passenger traffic. I am thoroughly convinced that as a whole we are depending too much on the natural trend of the business to bring an increase in traffic. We could do more than we have.

This is, of course, only a generalization. It is utterly impossible for anyone to summarize the national and local transportation business in a way that will fit every local condition equally. We can only say that business is better or worse than it was during a preceding year, speaking in general terms. For instance, during the last five months, passenger traffic in every geographical section of the United States, except New England, has increased. The upward move started in July and has continued uninterrupted since. The high point was reached in November, with 3 per cent more passengers than were carried in November of the preceding year.

The point I wish to emphasize, however, is that merely because business is better in a general way throughout the industry, it does not necessarily follow that business is better on every line. There are small and unfortunate properties on which business is not increasing. Probably there are some on which it never will increase. There is a point which we should not forget in any of our considerations; that is, the initial requisite to the success of an electric railway is sufficient population to warrant the giving of electric rail-

way service. We have heard a great deal in recent years about abandonment of electric railway properties. These abandonments have been expressed in miles, number of cars and in other ways by persons whose selfish interests were best served by giving publicity to such abandonments. But the fact that most of them were in communities where electric rail lines should never have been laid has been ignored. Most of them have been in sparsely settled communities. Of course, the best managements in the world could not have made such lines pay. There still are other lines in the same situation in this country. If there are not enough riders or enough trade to indicate profitable operation, it is futile for any management to make the effort. Just how many potential riders or tons of freight should be in sight in each case it is impossible for one to say, but any keen operator can tell in a general way what the prospects in each individual case must be. I am strongly in favor of modernization, progressive management and intensive effort, but all of them are useless unless the property to be operated is in a territory that gives reasonable promise of support.

THE BUS PROBLEM APPROACHES SOLUTION

Solution of the bus problem is slowly but surely coming about. You of the Middle West realize this possibility better than anyone else, because here you have had so many striking examples of the truth about bus operation. It has been demonstrated beyond all doubt, here in Indiana particularly, that bus rides cannot be furnished as cheaply as rides on electric rails and also that buses, which have a definite place in co-ordinated service, have been used as tools of promoters whose chief interest was the sale of securities and not the improvement of local transportation.

You are all familiar with the details of the failure of the Indiana independent bus operation, but it is such a clear example of what is going on in a similar way in a few other parts of the country that it may be worth a passing reference. Attempts were made within the last year to create in Indiana one of the greatest single independent bus operations in the United States. A huge bus terminal was built here in Indianapolis by subscription chiefly from merchants near that location and 75 or more buses operated into this terminal from about 100 Indiana communities. The promoter of the enterprise declared vehemently that buses could be operated at either 1 or 1½ cents per mile over the Indiana highways and made to return a 20 per cent profit to the operating companies. The inference left by this statement, of course, was that interurban railways charging 3 cents per mile and steam railways 3.6 cents per mile were robbing the public. The terminal was opened last May and on Dec. 21, some seven months later, the company went into the hands of receivers.

*Abstract of an address before the Central Electric Railway Association, Indianapolis, Ind., Jan. 28-29, 1926.

Coincidentally, Fred I. Jones, receiver for two of the companies, declared that "operation has been on a losing basis since its inception." One of his first steps after taking charge of the companies was to suspend 31 of the lines and to apply for a rate similar to that charged by the steam and electric lines.

Fortunately the promoter did not spread his stock very widely among citizens of Indiana. The losses, in the main, it is understood, were absorbed by a high corporation which backed him.

It is probable that out of this independent bus line experiment will come much good. It will be helpful in warning the public against buying stock in wildcat bus propositions. It will be a lesson to manufacturers who are willing to finance unwarranted competitive transportation systems, and it will protect electric railway properties which are rendering good service against unfair competition.

CREDIT SITUATION IMPROVING

Full or even partial rehabilitation of our industry will not have been accomplished until its credit has been restored. In this respect there is a marked improvement. Bankers are no longer refusing to lend money to electric railways. Their attitude generally is that they are willing to help finance companies operating in territory that seems to promise business development, progressive management with modern ideas and up-to-date methods and equipment, and public relations views of 1926 models. Any company measuring up to these requirements may approach financial houses with every measure of assurance that their applications will receive respectful consideration.

Modernization of equipment has received much discussion recently at the hands of our leaders, manufacturers, industrial publications and others. An erroneous impression that the association was advocating the junking of one-half of all cars in service has arisen. This should be corrected. It is true that modern equipment is necessary to the development of new business, but it is not true that a line to be modernized must junk all its equipment of a certain age. New cars are preferable to old, of course, and it is hoped that the manufacturers will be able to produce such satisfactory designs that there will be an added impetus to equipment purchases. This does not mean that all cars which have been in service a certain number of years must be discarded. All that the industry can hope to accomplish is to bring equipment up to a higher standard and to reassign all rolling stock to the proper service.

The reason which impelled our original suggestion for careful consideration of this matter was the hope that a different and more aggressive presentation of the advantages of the newer types of rolling stock would be made by the car building branch of the industry. There is no question but that results are being accomplished along this line. The work of the manufacturers' committee is really having the effect that was desired, and the future development of the idea can well be left to its efforts. And right here let me say that I want to express to the manufacturing group of our industry my sincere appreciation of the support and backing which it is evincing in my new undertaking.

The national tax situation presents a field worthy of the close attention of every management. As you doubtless know, our industry is paying the highest tax rate of any comparable to its size in the nation. Approximately one-tenth of our entire gross income is

being paid out in national, state and local taxation. We are carrying this enormous burden in great part because in the past we have not emphasized with sufficient insistence the inequity of this heavy charge upon the users of so essential a public service as ours. One of the activities of the past year has been to get part of the story of our tax situation recognized by national and state legislators as well as the public. Only a start has been made along this line and much more must be done. Local companies can be of the greatest assistance in carrying out this work and not only help the industry nationally, but themselves locally.

Despite the general inclination of tax-levying bodies to impose taxes on public utilities, there is scarcely one in the country that will not recognize the right of electric railways to relief when the facts are clearly stated. The individual companies have been woefully negligent in working with public officials on the tax problem.

One of the heaviest single burdens that the industry is carrying is the series of special imposts, including the paving charges. Imposition of this tax began half a century ago, but no relief from it was afforded any company until 1909; then the Cleveland Railway was given help. A ten-year interval without further relief for a single company followed, largely because companies did not make their situation known to the public and law-making bodies. However, in the last six years, owing to the increased willingness of companies forcefully to present this problem to the public, paving tax relief has been afforded in several states and about 50 scattering communities. There are few cases on record where relief has been refused after a full presentation of the true situation.

We cannot expect law-levying bodies to assist us if we do not help them by making clear to the people who elect them that the legislators in relieving us of taxes are only doing the fair thing for the public, which, of course, in the final analysis pays the charge.

Now let us pass from the situations in which the public has a hand and examine ourselves and our industry from the inside. Let us try to help ourselves.

THE INDUSTRY HAS MEANS FOR SELF-HELP

A favorite expression in recent years has been the "sick local transportation industry." And because many believed it was sick they have looked about for a cure-all. Many so called cure-alls have been offered. Some have been helpful. More have not. But no one cure has been found. I am one of those who do not believe much in medicine. Perhaps because I had for a great many years as a near neighbor, dear friend and adviser the late Walter Camp, who, with his famous daily dozen and his doctrine of exercise, has, I think, done more than any other one man to improve the health of this generation, I became a believer in exercise rather than drugs. Physical ailments often respond more readily and effectively to exercise than to pills and doses.

In the same way I believe this industry of ours has needed and now needs more exercise and less dope. And believing this, I am suggesting a daily dozen for electric railway managements, which, if adopted and followed faithfully, will, I believe, go far in helping to bring our industry back to a healthy, normal state. They are very simple exercises and any management, whether prosperous or poverty stricken, can practice them. In fact, many companies have already adopted them to a certain extent and are finding the results most advantageous.

Electric Railways Have Entered a New Era*

That Unlimited Possibilities Are Ahead Is Shown by Progress of Past Five Years—Regulatory Bodies Are Understanding the Problem, Fares Are Being Adjusted and Riding Has Increased—New Financing Has Permitted Physical Improvements

By *Britton I. Budd*

President Chicago Rapid Transit Company, Chicago, North Shore & Milwaukee Railroad and Chicago, South Shore & South Bend Railroad

MAKING a recovery that is almost without a parallel in American business, the electric railway industry has definitely entered a new era. There is evidence of this on every hand. It is clear to every executive who is engaged in electric railway transportation. We are in an epoch in which the possibilities are unlimited, one which challenges the courage and imagination and one which will bring prosperity to those with vision clear enough to see into the future and adjust themselves to the new and changed conditions.

In the comparatively short period since the close of the World War we have witnessed a virtual rebirth of the electric railway industry. It has become a transportation industry, embracing all forms of transit other than steam. We have seen a marked rebound from the hostility aroused through the necessary adjustment of fares to meet the vastly higher labor and other costs of producing transportation, this being expressed not only in the voiced attitude but in the wider use of electric railway facilities by the public.

We find state and municipal regulatory authorities acting with greater understanding of our problems. Very rapidly the economic absurdities written into franchises—unwitting impossibilities as respects performance either on the part of the railways or municipal officials; neither could possibly have foreseen the revolution that has come in transportation—are being wiped out. Both municipal officials and railways have found that what the people want is service; not slickly drawn contracts, which within a comparatively short time, because of the rapid change in methods of transportation and the necessities of the public, can have little or no meaning.

SINCE THE CLOSE of the World War we have witnessed a virtual rebirth of the electric railway industry. It has become a transportation industry, embracing all forms of transit other than steam.

* * *

The public expects the electric railway company . . . with its skilled organization and financial responsibility . . . to provide the entire transportation for a community, whatever the changing conditions may necessitate.

—BRITTON I. BUDD

There is no thought of fixing the price of shoes by law at \$4 a pair for 20 years, and equally so has the fixed price for transportation passed into the relic heap. There is appreciation that the fare must adequately cover the cost of production of transportation; that wages, interest, power bills, taxes and other costs are paid for, not in airy promises, but in the same kind of cash as that necessitated by other business.

No one believes horses will again pull street cars, and municipalities are rapidly wiping out the obsolete obligation on the electric railway rider of providing a racetrack for automobiles. No one believes a transportation company is going to rip up its rails, its power lines, its other properties

and quit providing communities with transportation service at the end of any fixed franchise period of 20 or 30 years. Rather the people of the communities are coming to believe, and have a right to believe, that the local transportation agency should be in a position continuously to finance itself through attractive offerings.

It is only through a constant flow of new capital into the business that the extensions of service necessitated by the public can be made, for, as is well known, fares fixed by state regulatory commissions do not comprehend that additions to properties will be made out of earnings. Electric railway new money must be obtained in the open market, where all other industries are bidding for it. There is a growing realization that the investor will go where the prospects seem brightest and that he cannot be sandbagged into parting with his savings.

The public expects the electric railway company, as an established agency, with its skilled organization and financial responsibility, to obligate itself to provide the entire transportation for a community, whatever the changing conditions may necessitate.

*Abstract of a paper presented before the Central Electric Railway Association, Indianapolis, Ind., Jan. 23-29, 1926.

Now all of the changes have not been made nationwide. But they are coming fast, becoming so universal that the time seems short when they will certainly be so. And with each progressive step forward in improving operating conditions, the public's big problem of building up adequate transportation facilities comes closer to solution.

During the period of evolution we have seen the manufacturers of electric railway equipment putting forth their best engineering skill to meet the demands for modern transportation. Obsolete equipment is rapidly going into the scrap pile. We have, in large measure, met the demand for speed and comfort in travel, combined with economy. The public has answered with increased patronage.

Is that last statement so? Possibly it would be well,

OBSOLETE EQUIPMENT is rapidly going into the scrap pile. We have in large measure met the demand for speed and comfort in travel, combined with economy. The public has answered with increased patronage.

Where the conditions are right it is easily proved that there is as much bonafide earning capacity in the industry today as at any time in its history. —BRITTON I. BUDD

before we go further, to prove it, although you know of many examples. We will take some figures of companies operating in widely separated sections; communities of different sizes and characteristics, although, of course, where electric railway operation has a proper field. The accompanying table shows the gross revenue and net income of twelve electric railways for 1924 as compared with 1920. In these there has been a substantial increase in the net. Another system, the Milwaukee Electric Railway & Light Company, carried 146,208,335 revenue passengers in 1919 and 150,857,684 in 1924, its revenue in the later year being 0.0664 cent per passenger compared with 0.0550 cent in 1919. Operating revenues are not separated, as it is a combination company.

In Chicago we find both the Chicago Rapid Transit Company—the elevated railroad system—and the Chicago Surface Lines carrying the greatest number of passengers in their history. The latter, just at present, is a victim of the provisions of an antiquated franchise, but its physical properties and its financial condition were never better than now.

I can talk intimately of the Chicago, North Shore & Milwaukee Railroad—the North Shore Line—one of the companies of which I am president. In 1916, when the present management took hold, it had an investment of \$12,251,997. At the end of 1925 the investment was \$32,950,000; we have been constantly developing the property. We only recently placed an order for 20 additional combination passenger cars, three more dining cars, some refrigerator cars, and are adding materially to our motor coach fleet. We are just completing construction of the Skokie Valley route, an additional main line route, which will greatly facilitate our express speed between Chicago and Milwaukee, permit us greatly to develop our freight business and, in addition, open up a beautiful new section of country for residential

GROWTH OF OPERATING REVENUE AND GROSS INCOME FOR TWELVE ELECTRIC RAILWAYS, 1920-1924

	Operating Revenue		Gross Income	
	1920	1924	1920	1924
Boston Elevated Railway....	\$33,750,862	\$34,045,581	\$7,119,527	\$7,329,190
Chicago, Aurora & Elgin R.R.	1,760,028*	2,318,570	297,094*	544,191
Chicago, North Shore & Milwaukee Railroad.....	4,193,669	6,198,987	823,208	1,311,302
Chicago, South Bend & Northern Indiana Railway	1,249,349	1,377,515
Cleveland Railway.....	17,382,358	17,313,549	1,408,318	1,913,993
Dallas Railway.....	3,200,392	3,325,517	319,989	693,885
Gary Street Railway.....	878,032	998,418	159,369	172,512
Indianapolis Street Railway.	5,367,936	5,588,177	790,597	1,120,073
Kansas City Railways.....	11,058,186	10,024,230	736,019	1,256,431
Los Angeles Railway.....	9,135,151	12,845,948	2,223,281	3,763,134
Pittsburgh Railways.....	21,137,223	22,063,777	2,514,459	4,409,542
San Diego Electric Company	1,379,032	1,482,832	161,897	220,566

* 1921

purposes. Our investment in this new line will be about \$9,000,000.

The situation as regards the Chicago, South Shore & South Bend Railroad, of which I only recently became president, is interesting.

In that instance, the companies under the management of Samuel Insull and associates provide the electric light and power and gas service of practically all of the territory through which the electric carrier operates. It was believed that the electric road could be made an important factor in the development of that territory. Then, too, the right-of-way is through a section already heavily populated with industries and seems destined to become the center of steel manufacture of the world.

The road, in spite of the extraordinary territory served, had defaulted interest for many years. Immediately upon taking over the management we started re-electrification to convert it into a high-speed electrified railroad. We are providing it with the best equipment to be had, including diners and observation cars and good freight facilities. We have already increased the service, even though our improvement work, which will cost in excess of \$4,500,000, is, at this time, only about half completed. We are hopeful that the road can be brought to such a high standard as to make it a transportation agency of real service to the people.

The figures given are somewhat startling, coming from an industry that has faced a highly competitive situation from other forms of transportation. Do they prove that every electric railway company, wherever situated, however managed and however financed, is successful? Not any more than such impossible conditions could be fitted to any other business.

A million dollar department store in the Sahara Desert wouldn't get much business. Neither does an electric railway which does not start anywhere or end anywhere, which does not operate through traffic producing areas, which is not on its toes meeting competition, whose engineering is not such as makes its operation of a character that meets modern conditions, or which has a top-heavy financial structure. Such a railway has no more chance of success than any other industry loaded with corresponding burdens. But where the conditions are right, it is easily proved that there is as much bona fide earning capacity in the industry today as at any time in its history.

Discussing the statement of President Alfred of the Père Marquette Railroad, who prophesied that in the future steam railroads would be running on tracks laid on a concrete bed, at speeds rivaling aircraft, the Chicago *Tribune* said editorially:

There are three problems the railroads must face. One is the competition growing out of the increased use of automobiles and trucks. The second is the competition growing out of air transportation. The third is the

crystallizing public sentiment against the smoke and soot of the steam locomotive.

Speed is the answer to the airplane; speed and the safety which it will take aircraft a long time to attain. Comfort is the answer to the airplane and automobile, comfort at 60, 70, 100 miles an hour. . . . To the threat of the automobile and the demand for clean transportation, the answer is already clear—electrification. . . . One-car units for short hauls will go far toward meeting bus and truck competition.

The change which has come about in our industry, even in the last five years, has been almost revolutionary. It has been as marked, for example, as that seen between the service given by the highly efficient American Telephone & Telegraph Company and the small rural line. In the case of the former we see the latest equipment that the world's best engineers can produce; in the latter, the old type where your number is "fourteen long rings and twelve short."

Within the last two or three years we have seen an increasing number of companies engaging in motor coach transportation as an auxiliary to railway operation. These companies have not only modernized their railway service but they have met the demand for rubber-tired transportation and shown themselves capable of serving the needs of their communities to the fullest degree.

In the interurban field we have seen some of our companies develop into high-speed, electrically operated railroads, with roadbed and equipment comparable with that of the transcontinental steam railroads. We see some of these lines handling freight and interchanging cars with the steam railroads and developing a business at once profitable to themselves and to their customers.

The adaptability of the electric railroad to this class of business has been conclusively shown. There is a demand on the part of merchants and manufacturers for the fast service which the electric railroad is capable of supplying. That is a subject to which our executives should give the closest attention, for I am convinced that there we have a wonderful field for real service.

I do not believe that any business has ever so clearly demonstrated its fundamental soundness as has the electric railway industry. Its remarkable virility and recuperative powers have been the wonder of investment bankers and investors. Its securities, which a few years ago were shunned by investors, are again taking the position in the money market which the importance and the soundness of the industry warrant.

Some of the important utility industries take pride in the fact that they went through the World War in good shape. The electric railway industry not only went through the war but through the same kind of fire for several years after the war ended and has emerged stronger and better equipped to serve the public than ever before.

"There is nothing either good or bad but thinking makes it so." Some, even yet, do not appreciate the fact that the sun is already shining upon our business, inviting them to roll up their sleeves and take advantage of the opportunities offered them. They are still weeping, but the busy world gives no sympathetic ear. They weep alone.

Some of us have always been optimistic. We have appreciated that there is \$6,000,000,000 of capital invested in electric railroads. We have believed that for mass transportation nothing has yet been devised that can take the place of the electric car running on rails, nor is there likelihood of any adequate substitute being

found. We have seen our urban population growing much faster than our rural population, which means an ever-increasing demand for electric railways. We have had faith in our industry and its future and today we are seeing our hopes and expectations realized.

When I was president of the American Electric Railway Association I preached modernization and correct financing. I said that where this was practiced, electric railways would prove good investments. I did not believe then, nor do I believe now, that the problems confronting our industry differ from those met in other kinds of business.

I believe the events of the last two or three years have fully verified my optimistic predictions.

I am ready to go a step farther today and predict that within a comparatively short time the motor coach

I PREDICT that those electric railways which are correctly financed and whose management is progressive and alive to the demands of the communities they serve have a great era of prosperity ahead of them.

This feeling of optimism which I have is shared by many others who are in close touch with recent developments in the electric railway field.

—BRITTON I. BUDD.

and all other gasoline-propelled forms of transportation now for hire by the public will be controlled by the steam and electric railroads of the country. I am satisfied that the public will demand this extension of our railroad service, if the industry itself does not take the initiative. We are in the transportation business, and it is up to us to give the public what it wants.

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Every executive here has felt the more sympathetic attitude of public officials and of the riding public toward our industry. The changed attitude of the regulatory authorities was well expressed by Harry G. Taylor, member of the Nebraska State Railway Commission and past-president of the National Association of Railroad and Utilities Commissioners, in his address before the annual convention of the American Electric Railway Association on Oct. 8, 1925. In printing that address *Aera* gave the paper a heading which read:

Era of Political Tinkering with Street Railways Is Closing

Demagogues Are Finding Out that Ordinances Fixing Unremunerative Fares Do Not Overthrow Economic Laws; Transportation Undergoing Readjustment and Railway Men Must Get New Viewpoint

Those are the views of a man who knows, one who has acted as a judge and impartial arbitrator. We who are in touch with the situation know that he is right. The situation has changed and the future is bright.

There may still be among us some who look upon the private automobile as a menace to our industry. But

if it has been a serious competitor, especially in the smaller communities, it has also worked indirectly in our favor. It has developed the riding habit in the people. One statistician estimates that the people of America traveled 1,703 passenger-miles per capita in 1925, compared with 618 miles in 1910. Whether this is a fair estimate or not, we all know that the riding habit is growing. The convenience of the automobile has developed that habit and it will continue to grow. The electric railway is getting and will continue to get its share of this increased riding. The share which we will get will depend on the character of the service we give the riders and how closely we will approximate the comfort and convenience of the automobile.

The automobile has educated the public in another way. It has given the public a lesson in the cost of transportation. The owner of the private automobile has found that it costs him from 10 to 20 cents a mile to supply his own transportation. He has learned that this is a heavy drain on the family exchequer. He will continue to use his automobile for pleasure riding when taking his family for a Sunday outing, but for ordinary transportation, other than business, he is finding out that it does not pay. With the experience he has had with his automobile, a 10-cent fare on the electric railway does not look as large as the old nickel fare.

In most of our large cities the automobile has almost reached the point of saturation. Reasonable speed is no longer possible on any of the heavily traveled thoroughfares. This condition is literally driving thousands back to the electric railways. Aside from the greater economy, they are learning that they can save time by using the railways in going to and from their places of business. If this trend back to the electric railway is to continue, it must be encouraged by the railways. The automobile has bred in the average American the desire for luxury in transportation. He is not as much interested in what it costs as in the character of the service. He wants to have the best that is obtainable and is willing to pay for it.

If the electric railways have transportation to sell that is fairly competitive with the automobile they will get the business, but we cannot afford to wait for it to come. We must go after it just as do other business concerns. The mere running of cars on a street or across the country will not of itself get business. This country is organized on a too highly competitive basis for that. To make a transportation company pay requires a definite selling policy. It requires the same sales effort as we see put forth by the manufacturers of "Quaker Oats," "Palmolive Soap," or any other highly advertised commodity. The selling of transportation is not an amateur's job, either. It is one which calls for experts who are highly trained and experienced in solicitation work. It takes a real live selling organization capable of meeting stiff competition.

Advertising isn't just so much space in a newspaper. It is what your advertisement says that counts, not

what it costs. We have probably as many electric railway men who think they are good advertising men as we have editors who think they could run a railway better than those who have made it their life work. If advertising does not sell what we have to offer the public, it is worthless. If a company feels it cannot afford to employ advertising experts, it will find the newspapers ready to lend their assistance.

Public relations is not a hobby. It is a thing which must be worked at and cultivated every hour of the day and every day of the week. It is not something that is confined to what is known as a "public relations" department. Every act performed by an employee who comes into contact with the public makes for good or bad public relations. Every employee who has to do with the maintenance of equipment or the upkeep of the property is making good or bad public relations, even though he may not come into actual contact with the public. His work shows, and if cars are not kept clean, windows are not washed, stations are untidy, roadbed is in bad repair, all that makes for bad public relations.

In this connection I wish to add a word about publicity. What is it? It does not mean boasting about a company or trying to make the public believe something that is not true. It means telling the public frankly and truthfully what the company and its employees are doing. We are engaged in rendering a public service; we are a quasi-public institution, and the public is entitled to know everything about this business in which it is so vitally interested. It is surprising, too, how much the public is interested in our problems. That is seen when some representative of a company speaks before a civic organization, a woman's club, a church organization, a university, college, or a public school. Such audiences are not only attentive listeners, but they propound many questions which show their eagerness to learn more about the details of our business. They are not hostile critics; they are eager to learn the facts.

This program of carrying our message direct by word of mouth to the public is one of comparatively recent development. It is one that is proving effective in developing good public relations. It is of great educational value, not only to the public, but to the representatives of the company who make such talks. It stimulates their interest in their work and in the company, because they necessarily must inform themselves on the various details before they can undertake to enlighten others.

In conclusion, I wish to emphasize my faith in the future of electric railways. I appreciate the fact that there are obstacles to surmount. But there are problems to meet and solve in every line of business. This is not peculiar to our business. Our problems are no greater than those of many other businesses, and I know that we have in the electric railway industry men who are capable of grasping the vast transportation opportunities which lie ahead and of turning them to the advantage of the public which we serve.

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Modern Cars— Not a Panacea, but an Essential Step*

Replacement of Obsolete Equipment Is a Problem of Economics—Many Examples Show That New Cars Will Pay for Themselves in Many Cases with an Improvement of Good Will—Manufacturers' Engineering Committee Is Making Economic Studies and Preparing Designs for Improved Cars

By Charles Gordon

Assistant Vice-President McGraw-Hill Company, Inc.

ACCORDING to the program, I am scheduled to talk about the economics of modern cars. Last summer I talked about their style. Any one who has a growing daughter will appreciate the logical sequence with which the program committee has carried me forward from style to economics.

But the word "economics" looks cold and uninviting in type. It tends to make you feel that the subject is heavy. You would probably skip over an article with such a head and promise yourself to read it when you get time. I shall therefore exercise the editor's prerogative of giving attention to his headline by calling my subject "Modern Cars—Not a Panacea, but an Essential Step."

Nevertheless, the subject is a matter of economics. The question is, Do new cars pay? If you will bear with me for just a moment I would like to put that another way, Do old cars pay?

There are several important factors involved in determining the answer to that question that do not appear on the account ledgers. These include, among other things, the effect of the condition of equipment on the public's attitude toward the railway; the effect on the morale of platform employees, on the regularity and speed of the service rendered and on the accident record of the property. But for the moment I wish to consider the two factors that directly affect the color of the figures on the ledger, namely, income and operating expense.

If we pride ourselves on any one thing in this industry it is the accuracy and completeness of our operating accounts. But how many properties can answer the question, "Do old cars pay?" by consulting their accounts. How many can tell from their records when the economic life of their equipment has been reached?

THERE HAS BEEN much discussion of what the proper life should be for electric railway cars. The final answer to this question is a matter of economics. Age alone is of little significance except when viewed in the light of developments in the art. Recent years have brought many improvements in cars. There is room for many more. But on the basis of actual progress that has been made in design since many existing cars were built, serious consideration should be given to their replacement. . . .

That life is most economical which at its end shows the greatest net earnings for the car.

Modern cars are not a panacea. They will not take the place of good management, but they are a part of good management. When combined with the modern merchandising viewpoint the entire status of some properties has been altered.

It so happens that an illustration I have in mind is drawn from a company operating buses in tour service. This is an old and seasoned organization. In general, bus accounting practice is still comparatively crude. But in the case of this company, which operates more than a hundred vehicles, the earnings, operating and maintenance costs for each vehicle are known at the end of the year. Its buses were purchased in groups over a period of several years. All of them are of the same type and manufacture. Each group is designated by the year of its purchase. The operating and maintenance accounts are recapitulated so as to show a comparison for the various groups. One can tell when the operating and maintenance costs on

the oldest group have become so high that the saving on new buses will show a favorable return on the money invested in them. This company scraps its old equipment on that basis. Its rates are regulated. The company uses its records as a means of establishing rates of fare that permit uneconomical equipment to be scrapped when it has served its useful life.

How many railway companies are handling the economics of cars on that basis? The life of a bus is comparatively short. For that reason, in the case of the company I mentioned, the subject of replacement is an important one, and the method of accounting in use was developed to take guesswork out of the all-important question of scrapping uneconomical equipment. The very fact that the life of electric railway cars has been considered to be almost indefinite is probably responsible for such a method of procedure not being followed generally in electric railway accounting practice. As a result, in many cases the economical life of cars has been overestimated. The factor of obsolescence has not been properly evaluated.

Here we find the basic reasons for the condition of

*Abstract of a paper presented before the Central Electric Railway Association, Indianapolis, Ind., Jan. 28-29, 1926.

electric railway equipment today. The average property cannot answer the question "Do old cars pay?" from its records; that's why there are so many of them still in service.

In the mind of the man on the street the status of the railway industry and the condition of a given property are determined by his contacts with it. To him an electric railway consists primarily of the cars and the men on the platforms.

The importance of the contacts between employees and the public is generally accepted. But the effects produced by the condition of the equipment have in many cases been overlooked. The appearance and condition of the cars have a direct influence on the attitude of the passenger toward the railway and also on the morale of the employees themselves. A man is a better, prouder and more courteous employee on the platform of a new, attractive car than when the equipment

EXPERIMENTAL AND DEVELOPMENT work is expensive. At the present time there is a lack of incentive for manufacturers to undertake such expenditures. The large variety of motors, trucks and cars that are required to meet the demands of a comparatively restricted market has been a powerful drag on development.

is old and obsolete. When a motorman takes out a new car he does so with the feeling that it is a good piece of equipment and he has some regard for the way in which it is operated. The resulting effect on passengers is obvious. In a paper some time ago W. C. Bolt of the Eastern Massachusetts Street Railway testified to the effect of new cars on the morale of maintenance men. When such a car comes into the shop the men feel that it is worth repairing.

Money spent for remodeling cars that have been in service fifteen to twenty years often merely postpones the day when up-to-date equipment can be purchased.

Leaders of thought in the industry have been convinced for some time that this subject of replacing obsolete equipment is of paramount importance. Surrounded, as we are, by other forms of transportation, where replacement proceeds at an amazing pace, the electric railways have suffered by comparison, so that, to the popular eye, they have seemed to be moving backward. The obvious method of bringing about improvement is to examine carefully into the state of affairs and then to present the results to the industry. This *ELECTRIC RAILWAY JOURNAL* has recently endeavored to do. In co-operation with the American Electric Railway Association, and with the aid of the General Electric and Westinghouse companies, which had collected considerable data on the subject, a survey of the age of electric railway cars was made and published on Jan. 2, 1926. The condition found speaks for itself. The picture is not a particularly attractive or complimentary one. Nevertheless, if we are to make progress, we cannot afford to overlook present conditions. It is far better to determine the facts and then to look for ways and means of improving the situation.

In this survey electric railway passenger cars were grouped in five-year periods: 14.2 per cent of the total

number of cars are more than 25 years old, 19.8 per cent fall in the period between twenty and 25 years, 20.5 per cent have seen from fifteen to twenty years of service. A total of 34 per cent are twenty years of age or older.

PROPER LIFE OF THE CAR AN ECONOMIC QUESTION

There has been much discussion of what the proper life should be for electric railway cars. The final answer to this question is a matter of economics. Age alone is of little significance except when viewed in the light of developments in the art. Recent years have brought many improvements in cars. There is room for many more. But on the basis of actual progress that has been made in design since many existing cars were built, serious consideration should be given to their replacement.

That life is most economical which at its end shows the greatest total net earnings for the car. In other words, a car should be disposed of just as soon as a comparison of the operating and maintenance cost and merchandising value of the old and new shows that it can profitably be replaced. The trouble has been that railways have clung to the old equipment for many years when plain economics would have shown that it should long since have been replaced simply on the basis of economics made possible by developments in the art.

The common plea has been that money could not be raised to buy new cars. In some cases that has been true. It has been repeatedly demonstrated, however, that in most instances when the railway has the will to modernize it is possible to finance new equipment on the basis of the savings in operating cost that can be shown. At least one large car builder makes the statement that no electric railway has ever defaulted on an equipment trust. An inquiry among car builders reveals that applications for the purchase of cars on equipment trusts are very rarely turned down. In most instances the builder is ready to back the judgment of the railway in financing cars on a basis under which the increased earnings and reduced expenses will return the cost of the cars.

Modern cars are needed to meet modern conditions. The car designer holds the key to public approval and increased patronage. Application of the same principles that lead a merchant to give careful thought to the appearance of his store front will attract more riders and make more friends for the railway. It is obvious that the most expensive car is the one that attracts no patronage.

There has come into car construction practice a definite attempt to provide more comfort for the passengers and to make cars both attractive and pleasing in appearance. The subjects of painting, of design to get streamline effect and to overcome stubby appearance in the smaller cars, the use of plate glass and pleasing decorations are receiving attention. Even the subject of color effects on the interior is beginning to be discussed with new interest by railway men.

It is well to note here that the bus has been brought to its present state of development by its manufacturers. As its use by electric railway companies has increased, there have been many demands for changes from the manufacturers' standard designs. If such demand lead to continuous improvements by the manufacturers it will be a healthy influence. If it leads to the breaking down of manufacturer initiative and fills his shop with many varieties of special jobs it will check orderly develop-

ment and will change what is now a manufacturing business into a contracting business, as it has done in the case of electric railway cars.

The car designer is not limited by the necessity of carrying his own power plant as is the bus man. Neither is he limited by the clearances on narrow highways. There is more room to provide facilities for boarding and alighting passengers. With a growing interest in the advantages of improved cars and under the stimulus of the expanding market which such interest will give, we may look forward to an era of rapid development and improvement in the electric rail car.

NOISE REDUCTION MAY INFLUENCE DESIGN

The subject of noise reduction is receiving much attention. Whether or not this will ultimately lead to a change from the present method of driving a car is at present difficult to foresee. Most car and truck builders feel that the simplicity of the present form of construction is an asset that should not be discarded in favor of a more complicated construction. There is, however, only limited opportunity of reducing noise under these conditions.

When the present form of construction came into general use the art of gear manufacture was in a comparatively crude state. The automobile has brought about an amazing development both in speed reduction mechanism and anti-friction bearings which permit close fits and accurate gear alignment. Little has been done toward the adaptation of such devices to street cars. Such a step involves a period of courageous development and experiment. By removing much of the present unsprung weight on the axles it offers the opportunity of materially reducing noise, and wear and tear on track.

It is the opinion of some designers that changes from the conventional design would increase the cost of maintaining equipment. Whether or not the advantages of a change from the present simple construction would outweigh the disadvantages can be determined only by experience. Although this is a matter of design, its solution is a problem in economics. Experimental and development work is expensive. At the present time there is a lack of incentive for manufacturers to undertake such expenditures. The large variety of motors, trucks and cars that are required to meet the demands of a comparatively restricted market has been a powerful drag on development.

Two constructive influences which may bring about a change in this condition are at work. A special committee of manufacturers is at present endeavoring to determine some basis for reducing the number of types and sizes of equipment. Such a simplification would greatly decrease development expense and would thereby stimulate improvement in cars and apparatus. This group of specialists, working as a committee of the American Electric Railway Association, is co-operating with the committee on unification of car design. Combined with this activity, increased appreciation of the advantages of new and improved cars will offer an additional incentive to development under the spur of competition by opening up an expanded market. Such interest is growing rapidly.

Many examples are available of the advantages which follow the replacement of obsolete equipment. Modern cars are not a panacea. They will not take the place of good management, but they are a part of good man-

agement. When combined with the modern merchandising viewpoint the entire status of some properties has been altered.

A comparatively small increase in the number of passengers carried, resulting from the attractiveness of new equipment, will show a handsome return on the investment in new cars. Savings in operating and maintenance costs per year in comparison with old and obsolete equipment have in some cases run above 20 per cent of the new-car cost. The effect on public relations has in many cases been beyond the possibility of measurement in dollars and cents.

A striking example is offered by the experience of the Buffalo & Erie Railway, operating a 92-mile line between the two cities from which it takes its name.

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This road was a losing venture from the day it was completed. It was in receivership for about nine years and its condition seemed hopeless. Its present owners thought differently. They backed their opinion with their money, and the results accomplished in the short period of a year amply justify their faith. But these results would have been impossible with the old cars. Others tried it and failed. The complete replacement of the old equipment was the starting point. That made possible many steps that followed rapidly. The results accomplished were dependent on providing a type of equipment which could compete with the automobile in speed and comfort, and at the same time would permit frequent service to be given. In the face of a severe local industrial depression on its lines that practically wiped out the short-haul industrial rider, service was increased to the extent of 16.7 per cent in car-miles over a corresponding ten-month period with the old equipment. Seat-miles were increased 33.4 per cent. The improved service attracted transients and former automobile riders for the longer hauls. Consequently, although total passengers carried decreased 14.7 per cent, the average length of ride increased, and the receipts per passenger rose 31.1 per cent. At the same time the operating expense per car-mile decreased 27.3 per cent. An increase in schedule speed of almost 10 per cent was made. For the first ten months of 1925 the net income was \$131,024.42, in comparison with \$14,335.89 for the corresponding period of the previous year.

The experience of the Lexington, Ky., property is too well known to require detailed discussion. Suffice

it here to note that at the end of the first year of operation with new equipment operating revenue increased 12.7 per cent in comparison with the previous year and operating expenses decreased 13.2 per cent, while service was increased to the extent of a 38.3 per cent increase in car-miles operated. The number of late trains was reduced 64.2 per cent. Net revenue was doubled.

Lack of time permits only a mention of some of the properties where the effect of modern cars warrants careful study by the industry. Introduction of new cars in Brooklyn, which made possible operation at higher schedule speed, while at the same time reducing power operating and maintenance costs, resulted in an increase of 28.2 per cent in the number of passengers carried on two typical lines in comparison with the same lines a year before when they were operated with old equipment. So far as the management was able to determine no fundamental changes had occurred which could account for the increased traffic other than the attractiveness of the service rendered with the new cars.

In January, 1925, the Interstate Consolidated Street Railway, operating some 30 miles of track serving the group of Massachusetts towns known collectively as "the Attleboros," was purchased out of receivership at a time when the line was faced with the possibility of shut-down and was showing an operating loss of approximately \$120 per day. Service had been rendered with a miscellaneous collection of 35 cars of various types, both closed and open. New equipment made possible savings in operating costs alone that more than justified their installation.

When service is discontinued on an electric railway, due frequently to the combination of excessive local restrictions and artificial operating burdens imposed by an uninformed public, the example is seized as an evidence of the decadence of the entire industry. Frequently such suspension of service is no indication that the electric railway in that location has outlived its usefulness under proper operating conditions. New equipment has in several instances been the means of securing very much better co-operation from the community. The New Haven & Shore Line Railway, a 34-mile interurban line running from New Haven, Conn., east along the edge of Long Island Sound, was shut down and abandoned for more than four years. In the fall of 1924 service was resumed with new equipment. During the first few months of operation passenger revenue was built up sufficiently to pay operation and interest charges and to keep the line in service.

Approximately two years ago the Ohio Valley Electric Railway at Huntington, W. Va., was operating a miscellaneous lot of rolling stock of various types, sizes and weights. It was discovered that this was costing an excessive amount for maintenance, was making a bad impression on the public and at the same time was causing rapid deterioration of expensive track construction. The property was entirely re-equipped with 40 new cars of uniform type. The resulting saving in cost and the effect on the attitude of the communities served have demonstrated the wisdom of the action taken.

The effort in Grand Rapids to popularize street car riding by providing a more attractive type of equipment has been watched by the entire industry with a great deal of interest. On the Cherry line, where the three sample cars were placed in service last summer, riding was increased an average of 7,240 passengers per month

over the corresponding period of the previous year. This was during the months of June, July and August, when automobile traffic is at its highest and when railway riding usually showed a severe drop. During the period of observation riding on the system as a whole was lower than in the previous year. During the month of August the increase on the Cherry line was 10.46 per cent. In a direct comparison of the riding on the three sample cars with the other cars on the same line, they showed 63 per cent more passengers. Part of this may be attributable to novelty. But it certainly indicates that car improvements attract the attention of the public and build riding.

We could go on with many other examples of properties on which the replacement of obsolete equipment has been followed by results that warrant careful study. This list would include a number of properties in the C. E. R. A. territory. The experience of Pittsburgh, Hannibal, Mo.; York, Pa.; the Evansville & Ohio Valley Railway, the Illinois & Fox River Electric Company, the Eastern Wisconsin and the Illinois Valley division of the Illinois Traction System are worthy of attention. On this latter line results in 1925 compared to 1923 show a saving in operating cost equal to 21 per cent of the investment in the cars and an increase in passenger revenue amounting to 17 per cent of the car cost. At the same time an hourly service was given in comparison with two-hour headways in 1923.

THE INDUSTRY ON A FIRMER FOUNDATION THAN EVER

The electric railway industry has survived through a period of serious economic and operating handicaps. It continues today, more clearly than ever before, to occupy a firm position as a fundamental basic necessity in modern community development. Among those who are in position to view conditions in broad perspective, there is a growing conviction that the industry is on the threshold of an era of renewed prosperity. The public is being gradually enlightened in several notable instances.

The last, and what seemed for a time the greatest, burden, namely, automotive competition, is in some respects not an unmitigated evil. It has not only caused a vastly increased riding habit in the form of a desire to move about more frequently but it has also brought into railway ranks a new point of view on transportation.

The chief function of a railway company is to sell rides at a profit. This purpose is accomplished only when it succeeds in rendering satisfaction to the public. It is only when the railway is furnishing a form of transportation superior to any other of equal cost and showing a tendency to improve and progress as conditions change that favorable results may be expected. Again this is a matter of economics. Success today in transportation is dependent on creating demand through improvement of the product. The blind following of precedent frequently leads to the toleration of a great many really obsolete practices. It is therefore very desirable that railway men compare the progress of their industry with that made in other lines of business and try to withdraw themselves far enough from the immediate detail problems of the moment to get a perspective of their own tools as they appear to others. Having this viewpoint, there may come the necessary inspiration and ideas for accelerated progress.

C. E. R. A. Pioneers with Standardization

Uniform Freight Trailer Equipment Has Been Designed by Master Mechanics—Nine Companies Are Planning Operation of These Cars—New Specifications for Many Features

NEVER before had a concerted attempt been made among electric railways to standardize upon freight car equipment until nine companies in the Central Electric Railway Association undertook that very thing. When it became evident that considerable new freight handling equipment would be necessary in the central area within a short time, in order to render feasible the drive for additional freight business which was about to be launched, the Master Mechanics' Association was authorized to draw up specifications for a car. The operating characteristics of the various companies were carefully analyzed, in order that the requirements of all might be served effectively by the new units.

The advantages of standardized equipment are legion and need not be tabulated. Not the least among them, of course, is the item of reduced costs of manufacture and the corresponding saving in initial outlay. Then, too, the item of maintenance is considerably diminished, since a less varied stock of replacement parts is required. In spite of these facts, however, it was noteworthy that so complete a spirit of co-operation and harmony was maintained throughout the negotiations by the various railways joining in the pool.

An important matter to decide was that of the manner in which the purchases would be financed. Through the efforts of T. A. Kenny of Hodenpyl, Hardy & Company arrangements were made with the Kuhlman Car Company under which the cars would be sold on car trust certificates which would carry a down payment of 10 per cent and equal monthly installments over a period of five years. Thus far, all of the companies which have definitely contracted with the Kuhlman company have seen fit to make use of this plan. A number of the original members of the pool are still withholding

definite action on the plan, pending more complete investigations into their individual requirements.

The companies which have already signed contracts, together with the number of cars ordered by each, are as follows:

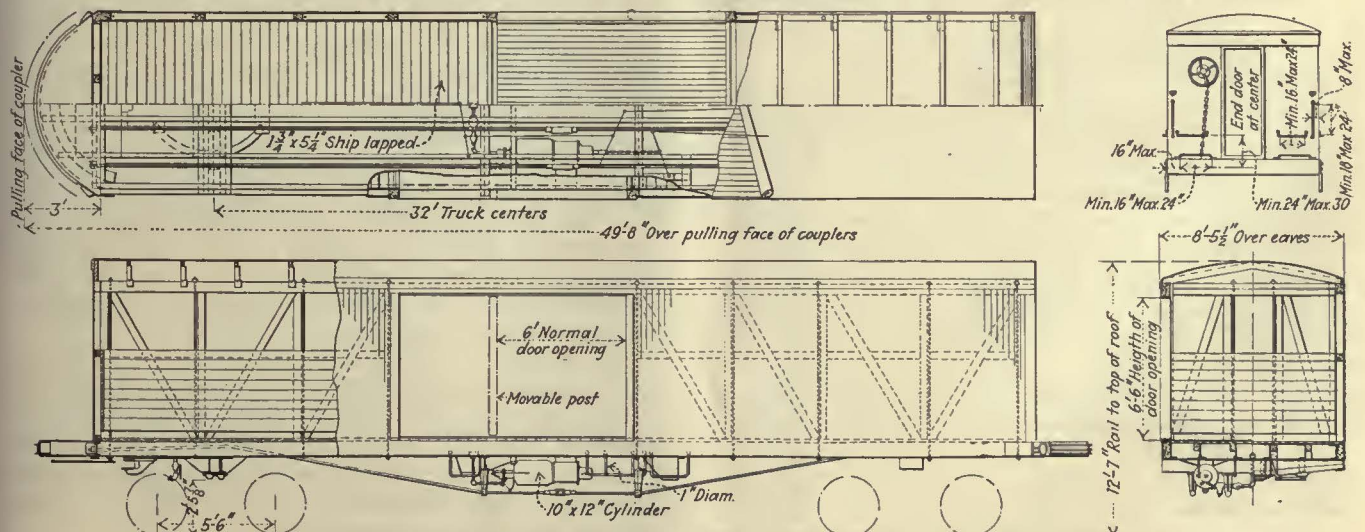
Northern Ohio Traction & Light Company	25 cars
Michigan Railroad	15 cars
Western Ohio Railway	10 cars
Toledo, Bowling Green & Southern Traction Company	10 cars
Penn-Ohio System	10 cars

The Lake Shore Electric Railway was reported to be contemplating the purchase of twenty units, but this report has not been officially authenticated. The Terre Haute, Indianapolis & Eastern Traction Company and the Union Traction Company of Indiana are still undecided as to the number of cars which they shall purchase. The Detroit United Lines are in full accord with the whole general situation, but anticipate that several months must elapse before funds will be available for a purchase.

The cars are completely specified as to details throughout. A number of optional features, such as a choice between round and square ends, center or side location of end doors or their elimination, are left to the discretion of the purchasing companies. In such cases, however, the details of all possibilities are prescribed by the Master Mechanics' Association. Many details are specified according to A. E. R. A. standard or A. R. A. standard, but in a still greater number of instances the designers of the car have seen fit to break away from former practice and to establish entirely independent specifications for various features of the new equipment.

Some of the more essential features of the cars are detailed as follows:*

*Note: If it proved desirable to construct the cars with round, rather than with square ends, a duplicate set of specifications was provided by the Master Mechanics' Association for the details affected.



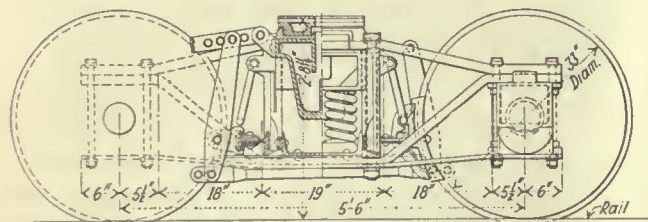
Plan and Elevation of Standard Freight Trailer. End Door Is Optional

Flooring—To be single thickness yellow pine 1½ in. x 5½ in. faced, ship-lapped and applied crosswise of car. At door openings there is to be applied an additional course of 1½-in. x 3½-in. faced maple floor laid longitudinally with bevel strips at edges.

Side and End Sheathing—To be of yellow pine 1½ in. x 3½ in. faced, tongue and groove "V" beaded, applied vertically. Flashing of galvanized steel to be applied at bottom of end sheathing. Joints are to be white-leaded.

Bolsters—To be built up of structural steel, box type, having 18-in. x ½-in. top cover plate, ½-in. web plate, 14-in. x ½-in. bottom cover plate and 3-in. x 3-in. x ½-in. bottom angles. The height of bolster over cover plates to be 10½ in.

End Sills—To consist of 8-in., 11½-lb. channels, fitted



C. E. R. A. Arch Bar Trucks for Freight Cars—Several Modifications Made in Design

between sill channels with flanges inward. To be connected to the channel sills by ½-in. bent plate connections and riveted to buffer beam top cover plate. End sill to have 6-in. x ½-in. bottom cover over full width of car.

Side Posts—To be of yellow pine 3½ in. x 4 in. Three side posts to be applied between door post and corner post at one end of car and two at opposite end of car. Vertical side frame rods to be ¾ in. in diameter, one located at each side post, corner post and door post, having single square nut and washer top and bottom.

Corner Posts—To be of yellow pine 3½ in. x 5 in. with curved yellow pine end corner post 4 1/8 in. x 6 1/2 in., with ½-in. steel curved corner post cover plate, secured by wood screws.

Inside Lining—Side lining to be 1½ in. x 5½ in. faced yellow pine, tongued and grooved and applied longitudinally. End lining to be 1½-in. x 5½-in. faced ship-lapped yellow pine applied horizontally over full width of car. Both to extend from 4 in. from top of floor to top of belt rail.

Carlines—To be 2½-in. x 2½-in. x 7/8-in. angles, bent at center and side plates and bolted to side plates with

one vertical bolt and one horizontal bolt through steel angle clip riveted to carline. Carlines to be spaced not more than 2 ft. 6 in. centers.

Roof—To be 1½-in. x 3½-in. faced tongue and grooved yellow pine, secured to carline fillers with one 2½-in. blind nail and one 1½-in. No. 12 flat head wood screw at each carline, set below the surface of the boards. Roof curvature to extend straight to end of car. Roof covering to be No. 8 duck laid in heavy white lead and oil applied on roof boards and canvas laid while paint is wet.

Side Doors—To be double doors for a 10-ft. opening, divided into a 6-ft. normal opening and a 4-ft. opening. The 6-ft. door will slide to the right. Doors are to be outside hung, with Camel Company's door hangers and fixtures, or equivalent, to be used. Opening between door and post in closed position to be made weather-proof.

Air-Brake Equipment—Westinghouse fundamental (HC) combined freight car brake equipment will be provided.

Brake Arrangement—Breaking power is to be 90 per cent of the light weight of the car, based on 50-lb. cylinder pressure. Levers and rods to be designed for emergency cylinder pressure of 75 lb. All brake pins to be 1½ in. in diameter, machined and case-hardened, and all brake pin holes in levers and rods to be bushed with hard steel tubing.

Couplers—It was considered advisable to specify the heavier type Tomlinson coupler, form 23, instead of the previous standard Tomlinson, form 13. Hence it was necessary to reduce the truck centers from 32 ft., as shown on the drawing, to 30 ft., in order to maintain proper clearances.

Wheels—Rolled steel wheels, 33 in. in diameter, A. E. R. A. standard, with 3½-in. tread.

Truck Bolsters—To be cast steel, suitable for 40-ton capacity truck, with side bearings integral and center plates cast separately and with vertical center dead lever guide brackets.

Truck Brake Rigging—Truck levers to be vertical with wrought-iron bottom connections. No part of truck brake rigging to be nearer than 6 in. to the rail.

More Insurance for Insull Employees

AFTER a year's trial of co-operative group insurance, the Chicago Rapid Transit Company, Chicago, Ill., and the Chicago, North Shore & Milwaukee Railroad, Highwood, Ill., have enabled their employees to double their protection by expanding the programs adopted in January, 1925.

The new plan adopted by the companies will increase the total coverage from about \$6,500,000 to more than \$12,000,000 life insurance, while the same figures hold true for the supplementary accidental death and dismemberment insurance in force. Under the combined plans, an employee receives \$2,000 life insurance and a similar amount of accidental death and dismemberment insurance.

The latter plan of insurance not only assures the payment of \$4,000 death benefits to an employee's beneficiary in the event of accidental death but also guarantees the employee himself certain fixed amounts for the loss of sight or limbs. The Metropolitan Life Insurance Company, which issued the original policies, is underwriting the additional insurance.

GENERAL DIMENSIONS OF THE C. E. R. A. FREIGHT CAR

Length over coupler pulling face.....	49 ft.	8	in.
Length over buffer beams	48 ft.	8	in.
Length inside at corner post	42 ft.	4 1/2	in.
Center to center of king pin	32 ft.	0	in.
Width over side sills	8 ft.	3	in.
Width over side sheathing	8 ft.	4 1/2	in.
Width inside	7 ft.	6 1/2	in.
Width at eaves	8 ft.	5 1/2	in.
Extreme width	9 ft.	0	in.
Rail to center of coupler.....	2 ft.	10 1/2	in.
Rail to bottom of side sill.....	3 ft.	7 1/8	in.
Bottom of side sill to top of side plate.....	7 ft.	11 1/8	in.
Top of side plate to top of roof.....	0 ft.	12 1/2	in.
Floor to under side of carline at center at door.....	7 ft.	9 1/8	in.
Rail to top of roof at center.....	12 ft.	7	in.
Height of door opening.....	6 ft.	6	in.
Width of door opening.....	10 ft.	0	in.
Capacity	30,000	lbs.	
Trucks	Four-wheel	arch bar	type
Rail to center plate bearing surface.....	2 ft.	5 1/2	in.
Track gage	4 ft.	8 1/2	in.
Truck wheelbase	5 ft.	6	in.
Journals	5 in.	9	in.
Brakes	Inside	hung	
Radius of sharpest curve at center of track.....	35 ft.	0	in.

Extensive Rapid Transit Plan Proposed for North Jersey

New Electric Railway System Comprising 82.6 Miles of Route Recommended in Report of Commission—Distributing Unit of System Would Be an Interstate Loop Line, 17.3 Miles Long, Costing \$194,000,000, Including Equipment—Double-Track Line to Battery to Be Built First

PRINCIPAL features of a comprehensive plan for passenger transportation between communities in the nine northern counties of New Jersey and the city of New York are outlined in a report submitted on Jan. 15 to the Legislature of the state by the North Jersey Transit Commission. A preliminary report presented about a year ago was abstracted in *ELECTRIC RAILWAY JOURNAL* for Feb. 7, 1925, page 222. The ultimate object of the program recommended is the creation of a new electric railway system comprising 82.6 miles of route, and the electrification of 399 route-miles of railroad now operated by steam. As the first step it is proposed to construct an interstate loop line 17.3 miles in length connecting with all of the north Jersey commuters' railroads and passing under the Hudson River into New York City by two tunnels, one uptown and one downtown. A new low-level subway through Manhattan would complete the loop. Construction costs of this preliminary project are estimated at \$154,000,000, with \$40,000,000 additional for equipment. The cost of power facilities is not included in this estimate.

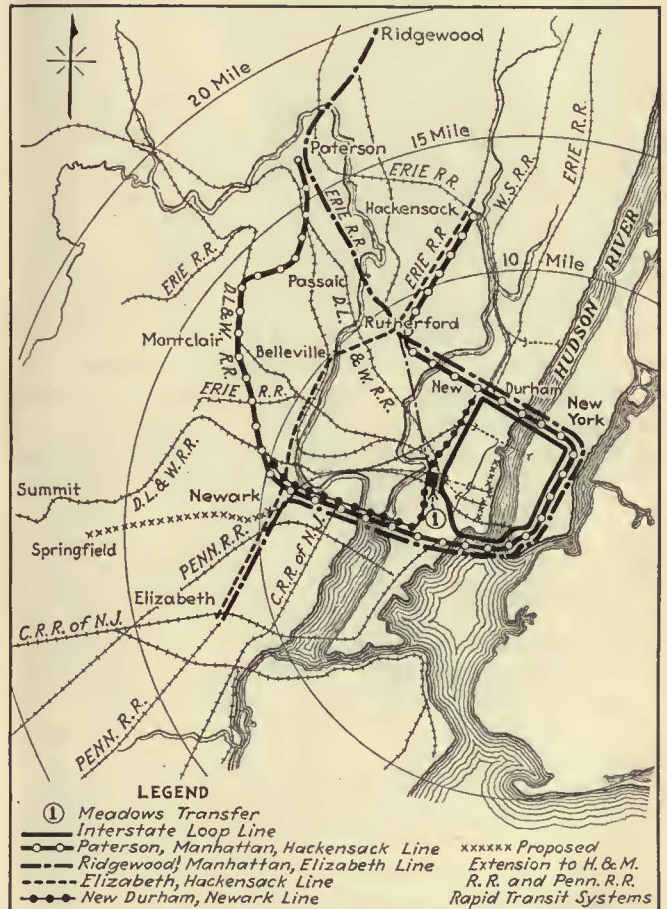
In developing the plan three separate problems were considered. The first was to furnish rapid transit facilities for the area within 20 miles of New York City and to connect this area with Manhattan by facilities providing service comparable to that of present subways. The second problem was to provide eventually for a commuter or suburban transit service for the area within 40 miles of New York City. The third was to utilize the existing rapid transit facilities, the Hudson & Manhattan, the Interborough and the Brooklyn-Manhattan systems to serve North Jersey more effectively than at present.

As the result of the study of these problems the commission has recommended a program consisting of six principal parts. Listed in the order of their importance, they are as follows: (1) Construction of a new North Jersey rapid transit system. (2) Hudson & Manhattan Railroad extensions in New Jersey. (3) Interborough extensions of its Manhattan lines to New Jersey. (4) Brooklyn-Manhattan Transit system extensions from Manhattan to New Jersey. (5) Extension of north Jersey rapid transit system, listed as part one of this program, to serve a larger area. (6) Electrification of existing steam railroads.

Construction of this comprehensive system cannot be realized in any large way at the outset, the report states. Its tremendous cost alone precludes such a realization. It is outlined only as a guide to present and future transit development in this region.

The North Jersey rapid transit system, part one of the program, would consist of the following five lines: (1) Interstate loop line, running north and south be-

tween the Hackensack River and Bergen Hill in New Jersey, passing under the Hudson River via a tunnel at the Battery, up through Manhattan to 57th Street and back through another tunnel to New Durham. Its length would be 17.3 miles. A so-called Meadows transfer station would be located near the intersection of the Erie and D., L. & W. Railroads. (2) A line from Paterson through Montclair and Newark, following the interstate loop route through Manhattan to New Dur-



Operation Diagram of the North Jersey Rapid Transit System Showing the Five Routes Proposed by the Commission

ham and thence to Rutherford and Hackensack. The length of this route would be 41.9 miles. (3) A line from Ridgewood via Paterson, Passaic, Rutherford, New Durham, the interstate loop route in New York City, to Newark and Elizabeth. Route mileage would be 39.8. (4) An intrastate route from Elizabeth through Newark and Rutherford to Hackensack, 18.8 miles in length. (5) Another intrastate line from New Durham to Newark, 13.0 miles in length. The location of these routes is shown on an accompanying map.

Total mileage for the five routes would be 130.8, of which 48.2 miles would be duplication because some routes operate over the same tracks as others. The net total route mileage would be 82.6. Construction cost of the entire undertaking is estimated at \$260,000,000 with \$122,000,000 additional for equipment, or \$382,000,000 altogether.

Because the expense of building this system is thought to be too great to permit proceeding with it as a single project, the commission suggests that it be undertaken progressively. The interstate loop line constitutes the Manhattan circulating and distributing unit for the whole system and it is held to be logically the first construction step.

PRESENT SUBURBAN FACILITIES SATURATED

During 1924 the suburban railroads and ferries serving northern New Jersey transported to and from their terminals 246,000,000 passengers. Of these 201,000,000 were railroad passengers. A 24-hour traffic survey was made by the commission and the railroads working in co-operation. On the day of the survey 264,000 New Jersey commuters arrived in New York City, of whom 204,000 were railroad passengers. During the maximum half-hour period in the morning between 8 and 8:30 more than 25 per cent of the daily one-way traffic was carried, amounting to about 97,000 passengers. This is the real tax on the suburban transportation facilities. Some 71 railroad trains arrived at all the terminals combined during this period, or one train every 25 seconds on the average.

This state of affairs has almost saturated the existing suburban facilities serving northern New Jersey. The railroad and ferry traffic during the past ten years has increased about 46 per cent, or at an average rate of about 4 per cent per year. The need for relief is so urgent, the report states, that temporary measures must be resorted to at once. This is the basis upon which the plans of the commission have been developed and upon which its recommendations have been made, despite the fact that piecemeal rapid transit development is thought to be undesirable.

ALTERNATIVE MEANS OF RELIEF

It is recognized that there are two ways of serving the north Jersey commuter traffic. First, additional terminal facilities might be provided to relieve the present and increasing congestion. This would require all passengers to alight at the terminals just as they do now and to find their way by other facilities to their destinations. Second, the existing terminals might be abandoned and through service to New York City established, thereby delivering all passengers directly to their destinations without requiring them to transfer or use any other facility. The second is the alternative which the commission believes should be adopted.

To throw light on how the New Jersey lines should be routed, the traffic survey made by the commission included investigation of the actual destinations of the Manhattan-bound New Jersey traffic. Distribution of this traffic after reaching Manhattan is shown in the accompanying table.

Although the New Jersey traffic enters from the west, slightly more of it is bound east of Broadway than west of Broadway. The respective percentages are 52 and 48.

Analysis of the traffic distribution in Manhattan indicates, according to the report, that the first additional

transit facilities provided for New Jersey should enter at or near the Battery, and be routed up through Manhattan at least far enough to serve the 59th Street district.

Having determined that the north Jersey rapid transit line should cover Manhattan north and south, the next thing was to determine the streets along which it should be routed. A rapid transit line will conveniently serve a district a half mile on each side of the line, the report states. Manhattan Island at Chambers Street is about 1 mile wide, its width gradually decreasing to nothing at the Battery. Therefore a north and south line located anywhere below Chambers Street will conveniently serve that area. Above Chambers Street Manhattan increases to about 2 miles in width at Canal Street, and from there north to 125th Street its width remains constant. North of Chambers Street two lines located about half

DISTRIBUTION OF NEW JERSEY RAILROAD COMMUTER TRAFFIC IN NEW YORK CITY

Destination District	Per Cent of Total Traffic
Below Chambers Street	38
Chambers to Fourteenth Street	14
Fourteenth to 33d Street	15
33d to 42d Street	12
42d to 59th Street	10
North of 59th Street	5
Brooklyn	5
Queens	1
	100

a mile away on each side of the center will conveniently serve Manhattan from river to river.

Eventual construction of two lines up and down Manhattan are recommended. It is proposed, however, to construct only one such line at the start, and the East Side line has been selected for the reason that it enters Manhattan from the west and therefore will have to cross all the west side and central New York City rapid transit lines. In this way it will furnish its passengers with easy transfer facilities to such lines.

The proposed route is from the Battery under Washington and Barclay streets, Park Row, Mulberry Street, Lafayette Street, Irving Place, Lexington Avenue and 57th Street to the Hudson River. The loop will be a two-track line for its entire length excepting only a short distance in New Jersey where it will be four-track to permit Hudson & Manhattan trains to operate to the proposed Meadows transfer station. All under-river tunnels and all underground portions of the line will be constructed large enough to accommodate standard steam railroad equipment so that electric locomotives may haul commuter trains and standard steam trains around the loop pending the electrification of the suburban lines, after which it is assumed that multiple-unit equipment will be used.

Because it would be utilized in both directions the capacity of the proposed interstate loop line would be equivalent, it is said, to two two-track lines or one four-track line from New Jersey to New York City, although it consists only of a two-track line up and down through Manhattan. Its carrying capacity is estimated in the report to be as follows:

Tracks	2
Trains per hour	70
Cars per hour	770
Passengers per hour	77,000
Daily passengers	192,500

This estimate is based on the operation of 35 trains per track per hour. Each train would be of eleven cars and would carry 100 passengers per car. The daily

passengers is based on a rush-hour load ratio of 40 per cent of the daily one-way traffic being carried in the maximum hour.

METHODS OF FINANCING

There are three ways in which a transit project may be financed, the report states. Private capital may be called upon either to assist in the financing or to provide all of the money necessary. State, city or community credit may be utilized by issuing bonds. A benefit assessment plan may be used to raise the money under which each beneficiary, the rider, the taxpayer, the land owner and the steam railroad traversed may pay a share of the cost of the line and the service on it proportional to the benefit that each receives. These financial plans may be used separately or in combination with each other.

According to the commission a 10-cent fare will be possible on the interstate loop if the interest and sinking fund charges on the construction costs can be eliminated. However, if these interest and sinking fund charges must be included, or in other words, if all of the money must be borrowed and therefore the most costly method of financing must be adopted, then a 15-cent fare will be required. It is considered that the quantity of service provided would permit a comfortable rush-hour travel without excessive overloading. Seating capacity per car is assumed to be 72 and the average rush-hour load 100 passengers. This means on the average only 28 standees per car or a 40 per cent overload.

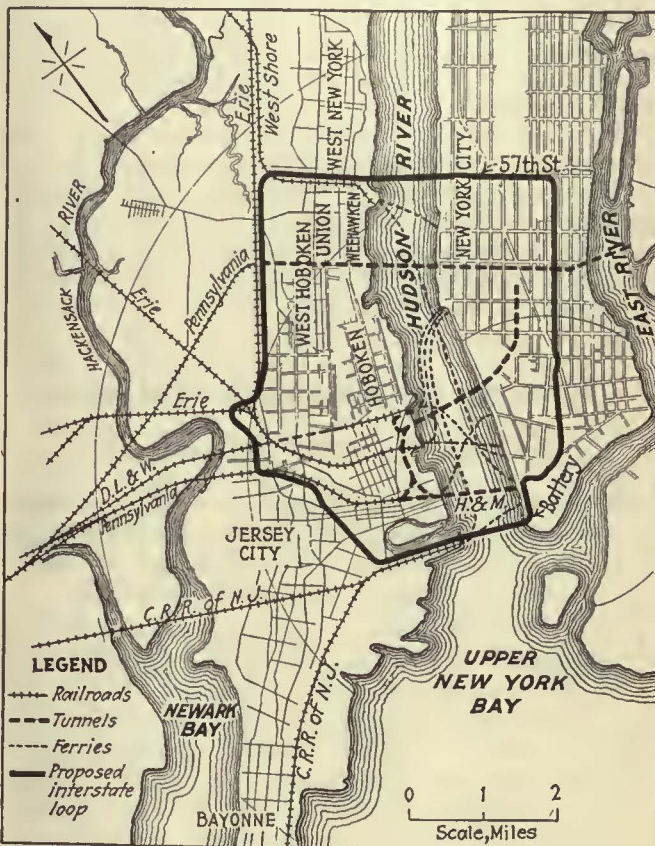
BATTERY LINE AS FIRST RELIEF

It is recognized that as a temporary expedient and as an emergency measure it may be necessary to start with a project requiring an even smaller expenditure than the \$154,000,000 required to construct the interstate loop line. In such an event the report states that the only recourse is to utilize some of the existing rapid transit facilities and to extend them somewhat. Construction of the proposed new Battery tunnel and the continuation of the line in New Jersey to and including the Meadows transfer station, constituting the southern part of the proposed interstate loop, will afford the easiest, cheapest and most effective means of securing immediate relief for northern New Jersey, the report states. Such a line might be operated either by the Interborough Rapid Transit Company, or the Hudson & Manhattan Railroad. If the Interborough becomes the operator the local tracks of the east and west side subways will be connected with the line at the Battery as a temporary measure, the west side subway by a short connection from Morris and Greenwich Streets, the East Side Subway by continuing the construction of the interstate loop line as far as Vesey Street, and further connecting it with the subway at Spruce Street. If the Hudson & Manhattan becomes the operator the Battery line will be continued as a part of the interstate loop to the first station in Manhattan at Morris Street, and there stop temporarily. The cost of the Battery line exclusive of power facilities would be \$73,500,000.

Besides possibly using the Battery line section of the interstate loop as a temporary transit measure, at some time in the future the Hudson & Manhattan System can be extended in New Jersey to advantage. Two such extensions are recommended. One is in Hoboken from the Lackawanna Station along Washington Street to Fourteenth Street, a distance of 1.3 route-miles, and the second is in Newark from the proposed Pennsylvania

Railroad Market Street Station out Clinton and Springfield Avenues to Springfield, a distance of 8.1 miles. This is a total of 9.4 route-miles and the cost is approximated at \$75,000,000, including equipment.

Similarly the Interborough Rapid Transit Company in time may have extensions constructed under the Hudson River to New Jersey. Three such possible extensions are outlined: First, the east side subway from Spruce Street via Vesey and Washington Streets to a tunnel at the Battery, a distance of 1 mile; second, the west side subway from Morris Street via Greenwich Street to the Battery and thence with the east side subway extension under the Hudson River along the Central of New Jersey right-of-way under the Boule-



Construction of an Interstate Loop Line Connecting All the North Jersey Commuters' Railroads with Manhattan Is Recommended by the Commission. Battery Section to Be Built First

vard, Tonelle Avenue through Meadows transfer under Manhattan, Central, Bergenline and Anderson Avenues to Cliffside Park, a distance of 15.0 route-miles; third, the Queensboro subway from 41st Street and Eighth Avenue under 41st Street, the Hudson River and Franklin Street to connect with the Bergenline Avenue line, a distance of 2.5 route-miles. These extensions are all for two tracks and are roughly estimated to cost \$150,000,000 for construction and equipment. At the Battery these extensions would require their own tunnels so the operation could be entirely independent of the interstate loop.

The Brooklyn-Manhattan Transit Corporation Fourteenth Street line now terminating at Sixth Avenue in Manhattan could be extended under the Hudson River, Seventh Street, Hoboken, and South Street, Jersey City, to the Meadow transfer station, thus affording New Jersey commuters access to Manhattan at Fourteenth Street and thence across Manhattan into Brooklyn with

convenient transfer by means of the B.-M. T. lines to almost anywhere in Brooklyn.

Later on additional lines may be added to the north Jersey rapid transit system, thereby extending the advantage of rapid transit to a larger part of the inner ring area. Ultimately an electric suburban system for the commuters from the outer ring area may be inaugurated by electrifying the existing railroad facilities traversing the area, and thus furnishing a through service into and through Manhattan eventually for all commuters in New Jersey.

During the past year the work of the commission has dealt largely with the engineering features of the proposed plan. Co-operation was received from the Transit Commission and Board of Transportation of New York City, the Public Service Commission, the Westchester Transit Commission, the Port of New York Authority, the Regional Plan of New York and the various railroads.

In submitting its report to the Legislature the commission expresses the belief that the scope of its work is most clearly set forth by simply transmitting the report of Daniel L. Turner, its consulting engineer, and Charles N. Green, its chief engineer. An indorsement of the proposed plan by Col. William J. Wilgus is included at the end of the report.

Extent of Electric Railway Replacement by Buses

Survey Shows Transportation Service Now Being Rendered by Motor Vehicles on Approximately 2,000 Miles of Route Where Economic Factors Forced Suspension of Rail Operation

COINCIDENT with the development of the bus as an influential factor in city and intercity transportation, a considerable abandonment of electric railway trackage has occurred. A careful survey of the situation made by *Bus Transportation*, however, shows that economic factors, rather than bus competition, were the principal causes of these abandonments. The widespread use of the private automobile was a major factor. Rising costs of labor and materials without commensurate increases in revenue were additional factors. Although the bus was not the cause of the railway abandonments, its service has replaced car service on approximately 80 per cent of the route mileage.

Because the present bus routes do not in all cases follow exactly the same streets as the former car lines, it is impossible to determine accurately the mileage where service by bus has replaced service by car. In numerous instances a new bus route has been extended beyond the former rail heads to tap newly developed territory. On the other hand, in some localities where the railway track had already been extended into thinly populated and unprofitable territory the bus service has been established along only a part of the former route.

Replacements of rail service by bus service may be classified under three general heads:

(a) Abandonment in part of the trackage of an electric railway and the substitution of buses by the same or a subsidiary company.

(b) Abandonment of an entire electric railway system and the operation of buses by the same or a subsidiary company.

SUMMARY OF REPLACEMENT OF ELECTRIC RAILWAYS BY BUSES

	Number of Companies	Approximate Miles of Track
Substitution of buses for part of rail system	79	725
Substitution of buses for entire rail system with service now rendered by same company	30	395
Substitution of buses for entire rail system with service now rendered by separate company	67	880
Track abandoned and no service now rendered	54	500
Total	230	2,500

(c) Complete rail service abandonment and substitution of bus service rendered by some outside agency.

Among these classifications the first includes the largest number of companies. The survey shows that within the last ten years some 79 electric railways have suspended car service on certain lines totaling approximately 725 miles of track and now operate buses to serve the districts formerly served by the cars. It is interesting to note, however, that this represents only a comparatively small part of the total bus route mileage now operated by the electric railways. The remainder, over 12,000 miles of route, represents new service or service supplementing that rendered by the cars.

Reasons why rail routes or parts of rail routes have been abandoned and bus service commenced are numerous. Probably the most usual cause of a replacement of this kind is to save the expense of rebuilding track which has become worn out. Greater flexibility of bus operation as compared with car operation on single track lines is another reason. The possibility of slightly modifying the route by the substitution of buses for cars and thereby providing a more convenient service has been a factor in other specific cases.

Under the second classification are some 30 former electric railways which have abandoned all rail service on 395 miles of track and now operate buses exclusively. The mileage of the present bus routes totals slightly more than the former car routes, or a little over 400 miles. In general, the reasons why an entire railway system has been supplanted by buses are the same as those given in the preceding paragraph for the replacement of individual routes or parts of systems by buses.

Under the third classification the survey shows that during the past ten years 67 electric railways have abandoned all car operation on approximately 880 miles of track, and that traffic formerly dependent on the cars is now handled by buses operated by newly formed organizations. In some cases under this classification the operating personnel for the present buses has been largely drawn from the former electric railway personnel, although the company no longer has any corporate existence.

RECENT TREND TO RAILWAY BUS OPERATION

Comparison of the list of electric railways which have entirely replaced their car service with bus service with the list of those whose service has been replaced completely by bus service rendered by others sheds an interesting light on the development of the bus. The survey shows that there are somewhat more companies having been superseded by separate organizations than there are companies having themselves gone over to all-bus operation. It is noteworthy, however, that in the main the replacements by outside companies occurred during the early part of the decade just ended,

and that the tendency recently has been for the same company to continue to render the service, changing only the type of vehicle. In this situation is reflected the changing attitude of the electric railway industry toward the bus. Transportation men who a few years ago could see little merit in this type of vehicle have now come to regard it as a valuable facility.

In addition to the electric railway mileage on which car service has been replaced by bus service either by the same or a different agency, 54 small electric railways have completely suspended operation and no substitute transportation service of any kind is now provided. The total trackage involved, however, is less than 500 miles, or an average of about 9 miles of single track per company. These were, in the main, the so-called marginal companies which were built in sparsely settled territory and where the expected traffic failed to develop in sufficient volume to support their operation. The small average mileage per company well illustrates their unpromising character. Had their prospects been brighter they would undoubtedly have been merged with other companies to form larger and more stable systems. As it was, they were left to sink or swim, and were finally forced under by the economic pressure resulting from the war and the post-war readjustment.

Thus it will be seen that during the last ten years approximately 2,500 miles of electric railway track has been abandoned and that bus service is now supplied on about 2,000 miles, or 80 per cent of the total. Whether or not the substitute bus is providing service as acceptable as that formerly provided by the trolley is beyond the scope of this survey. To determine it would require comparison of frequency of service, rates of fare, riding comfort of equipment, adequacy of return on capital invested, etc. These factors it would be manifestly impossible to determine accurately for such a large number of situations spread all over the country.

Particular interest attaches to the cause of railway suspension. Contrary to a somewhat general impression, the bus had been responsible for the abandonment of comparatively little electric railway trackage. In many instances the survey showed that a considerable period of time elapsed between the suspension of rail service and the inception of bus service. Thus it appears that the bus was brought in to fill a transportation need created by the railway suspension and was not itself the cause of that suspension. In cases where the railways themselves undertook bus operation along routes formerly served by their cars, there was no gap between the ending of one service and the beginning of another. In the great majority of these cases, too, economic factors were the reason for replacement.

U. S. Pays Railways \$619,200

DURING the last fiscal year the Post Office Department paid \$619,201 to electric railways for the transportation of mail. The postal revenues accruing from the mails handled on electric railways aggregated \$499,591,478. During the current fiscal year it is estimated that mail carrying \$660,000,000 in postage will be transported by electric railways, for which service the government will pay \$715,913, or \$1,085 for each million dollars of the postal revenue.

During the next fiscal year the amount will have increased, it is estimated, to \$702,900,000 (revenue basis). The electric lines will receive \$725,000 for the service performed.

Fare Reduction Increases Revenue

By J. O. HORTON
West Penn Railways

BECAUSE of decreasing revenue it was necessary recently to take steps toward lowering expenses without lowering standard of service of one of the operating divisions of the West Penn Railways, joining the towns of Kittanning and Ford City. This line is 9.4 miles in length, serving an industrial and mining territory with a population of approximately 17,500. It is paralleled by a good hard-surface road, permitting unlimited competition from the private automobile, although there is no competing bus service. The only way available was to go to one-man operation. Service at that time was given by three two-man cars on a 30-minute headway, except that one terminal zone had only two trips in the morning and five in the afternoon.

Analysis of the rates prevailing indicated that one-man operation would be difficult with the diversity of fares. There were five zones, complicated by overlaps. There were six types of tickets, ranging from 5 cents (nine for 50 cents) for single zones to 14 cents (ten for \$1.40) for special three-zone combination. The cash fare was 6 cents and school tickets three cents per zone. Two-thirds of the revenue came from cash fares, involving much change-making. The ticket sale amounted to less than one-third of the revenue.

In view of the economy expected it was decided to revise the rates of fare and a liberal concession was made to regular riders. All previous adult fares were abolished in favor of a cash fare of 8 cents instead of 6 cents per zone, standard ticket fare of 6½ (four for 25 cents) per zone and three weekly passes. The passes practically eliminate zone boundaries, inasmuch as one pass at \$1 covers above half the route, a second pass at \$1 covers the other half, while a third pass at \$1.50 covers the entire line, over which the original cash fare per trip was 30 cents and at present is 40 cents.

With simplification of fares, the classification register was replaced by a locked fare box. The following figures show that a loss of 4.61 per cent was changed to a gain of 9.52 per cent, an algebraic improvement of 14.13 per cent:

	Per Cent
First ten weeks, Sept. 20 to Nov. 29, of new fares, average weekly revenue compared with eight preceding weeks, increased	9.52
Similar comparison for corresponding period of 1924 shows a decrease of	4.61

Change in fares had an interesting effect on the ratio of revenue from different classes of riders, as follows:

	Old Fares		New Fares	
	July 27 to Sept. 20, Per Cent	Week Ended Sept. 27, Per Cent	Week Ended Nov. 29, Per Cent	Eight Weeks Average, Per Cent
Cash	69.1	19.6	8.6	11.3
Ticket	29.7	50.9	62.5	60.1
Passes	29.2	28.2	28.1

Saving in platform expense for seven weeks of one-man operation from Sept. 21 to Nov. 8 as compared with preceding ten weeks of two-man operation amounted to 42.5 per cent.

An additional car was placed in service on Nov. 9. This change gave extra service to the end of the line, a car each hour between 7 a.m. and 10 p.m., instead of tripper service morning and evening. The extra car decreased saving in platform expense, but for three weeks ended Nov. 29 a saving of 35.2 per cent was shown.

Association News & Discussions

Optimism Characterizes C. E. R. A. Midwinter Meeting

Many Speakers at Two-Day Session on a Variety of Topics Carry the Same Theme—Predictions for the Future Are Based on Accomplishments of Past Five Years

ENTHUSIASM to a greater extent than has been observed in any recent convention marked the two-day midwinter meeting of the Central Electric Railway Association held in Indianapolis on Jan. 28 and 29. More than 400 attended the sessions, and the estimates made by the dinner committee were exceeded by about 100 guests, a total of 264 being served at the Indianapolis Athletic Club.

President Frank R. Coates sounded the keynote in his presidential address. Progress made by the electric railway industry in the past five years, he said, is almost unbelievable. Recommendations of the Federal Electric Railways Commission have been carried out and the industry is now firmly on its feet and moving ahead. Mr. Coates' address and the other papers and formal discussions are published elsewhere in this issue.

The same theme was expanded and many illustrations were cited in a paper by Britton I. Budd, president Chicago Rapid Transit Company. In the absence of Mr. Budd it was read by C. E. Thompson. At its conclusion President Coates voiced the sentiment of the meeting in expressing sincere thanks to Mr. Budd.

R. H. Pinkley, assistant general manager the Milwaukee Electric Railway & Light Company, followed with a paper on the economic trends of electric railway and bus service, illustrating with the experiences of his own company.

Discussing Mr. Pinkley's paper, A. C. Blinn, vice-president and general manager Northern Ohio Traction & Light Company, said that electric railways must get into interurban bus operation. In general the managements have not been able to see the reasons for the falling off of the interurban railway business and the growth of the bus traffic. However, it will be necessary to use a new type of salesmanship to make the most of bus service. This matter of selling is of prime importance, in order to get automobile owners to leave their cars at home and ride the buses.

The use of special buses on tours presents a great chance for developing business, said Mr. Blinn. In fact, it may be one of the most profitable phases of the service. The equipment cannot be too good. In the past managements have been pennywise and pound foolish, he said. Cars appear to be preferred by passengers in the winter and buses in the summer, according

to the experience on the Northern Ohio property. The fares on both classes of service should be worked out in such a manner that each will have a chance to render service and return a profit.

Continuing the discussion, R. N. Graham, manager of railways Pennsylvania-Ohio Electric Company, Youngstown, Ohio, gave an outline of experiences and practices on his property. There is no rubber urge as such, he said. It is superior service that gets the results.

R. R. Smith, vice-president and general manager Chicago, South Bend & Northern Indiana Railway, made the point that the real menace to the electric railway is not the bus but the private automobile.

CAR MODERNIZATION URGED

Cars should be replaced as soon as new ones show a greater return financially than old ones, said Charles Gordon, assistant vice-president McGraw-Hill Company, in a paper on the economics of modern cars.

Concrete results of car modernization were given in a paper by L. J. DeLamarter, vice-president and general manager Grand Rapids Railway, which was read by Major H. C. Havens of the same company.

J. N. Shannahan, past-president of the A. E. R. A., in a few well-chosen remarks, stated that the industry is taking on a new life. He has observed that a more vital interest is being shown. This is due to a renaissance, he feels, which will have far-reaching results of great benefit to the electric railways.

The progress of the Central Electric Railway Master Mechanics' Association since its organization a year ago was outlined by its president, T. H. Nicholl, superintendent of motive power Union Traction Company of Indiana. In the central territory the railways started as independent lines with little in common. Their expansion has brought them closer together and has resulted in many problems connected with interchange of equipment. Freight service in particular has been handicapped. Organization of the Master Mechanics' Association was effected as a means of getting harmony between the various roads involved in this section. The group is small enough to handle any problem in a quick and effective manner. Its meetings consist of a general discussion and reports of committees, followed by a trip through the shops of

the local company where the meeting is held. One accomplishment has been to put in shape the interchange rules passed down from the old Engineering Council of the C. E. R. A. This took a great deal of time. Another piece of work which is ready for adoption, which will be a second forward step, is a uniform schedule of charges for work done on equipment of other roads in the association. Still another accomplishment is the design of a standard box car. A discussion of this design appears in another part of this paper.

FOREMAN CONFERENCE DEMONSTRATED

The work of a group conference, as practiced on the Boston Elevated Railway, was demonstrated by H. H. Norris, educational adviser of that company, with sixteen foremen, three of whom came from Boston, while the remainder were from the Indianapolis Street Railway and the Terre Haute, Indianapolis & Eastern Railway. This demonstration was given to show, for the benefit of the C. E. R. A. and the management and operation and education committees of the A. E. R. A., what can be accomplished by a group of foremen discussing problems which arise in their daily work. The demonstration, which was a condensation of a standard foremen's conference, showed a great deal of interest on the part of the men and the possibility of giving them a new appreciation of the duties and responsibilities of their positions.

Unusual in attendance and in the character of the talks, the dinner continued the theme of the meeting. The principal address, by Managing Director Lucius S. Storrs of the A. E. R. A., is published elsewhere in this issue. In a way which appealed to his listeners Mr. Storrs pointed out some of the dangers which can and have been overcome, and showed ways of analyzing the effectiveness of public relations work.

E. F. Wickwire had arranged to give the same address he had presented at the New York Electric Railway Association dinner the night before, but after making a desperate effort to be present, was unable to reach Indianapolis. His address was read by Lahert St. Clair. An abstract will be found in this paper, issue of Jan. 30.

At Friday's session the same theme of optimism was carried forward by T. A. Kenney, vice-president Northern Ohio Traction & Light Company. Accomplishment rather than hopes marks the status of the electric railway industry today. When operators meet now they tell how things have been done, and how they have increased business both on rail and on bus lines. This testimony will be helpful, he said. The way to get more business, whether on rails or on co-ordinated systems, is to give service.

In order to get back the traffic lost by the rails to competitors a few years ago real service is needed. In the past these competitors have been able to offer a better service, although their operation was unfair in many respects. Undoubtedly the time is not far off when all forms of transportation will come to regulation on the same terms.

Mr. Kenney is a thorough believer in co-ordinated rail and bus systems and rail and motor truck systems. The advisability of considering door-to-door delivery should be considered. This service in competitive form took considerable business away from the interurbans. To provide similar service will get back a large share of the business that has been lost and will develop still more.

The central territory, largely because of its geographical location, has more than its share of competition. Not all the extensions of electric railways made twenty years ago were wise. The same holds true of some of the bus and truck lines now, he said. The men of the Middle West have had more vision than those in other parts of the country. Here is where the great automobile factories are located. There is more freight development in this territory than in any other. This business has been made profitable in many cases. Its growth has been remarkable. One company with a relatively small investment has developed a gross business of \$750,000 for 1925, with a good net revenue remaining.

He cannot advise too strongly in favor of going after the freight. Electric railways can deliver much more quickly than can the steam roads or the truck lines. However, there must first be an organization to solicit the business, and there must be adequate facilities, including terminals, to handle it.

The railway man is a much better business man than he was 25 years ago. He has become able to analyze costs. The executive has helped himself by these studies, and has shown the value of the rail lines. He also has been helped by the A.E.R.A. and its executives, particularly the Advisory Council and Managing Director Storrs. In conclusion, he said the electric railway has been shown to be an economic necessity. It is over the hill and is coming back in fine shape.

The place of the woman in the public utility business was considered in a paper by Miss Helen E. Steiner, director of public relations Ohio Public Service Company, Lorain, Ohio, who indicated many places which give opportunities where women can serve better than men.

OFFICERS ELECTED

C. L. Henry, receiver Indianapolis & Cincinnati Traction Company, stated that the constitution of the C. E. R. A. fixes the executive committee at twelve members. The limitations are such that only one new railway member can be added each year. The association voted to appoint a committee to consider a change in the constitution. The report of the nominating committee, which was accepted and the nominees declared elected, was as follows:

President, G. K. Jeffries, general

superintendent Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis.

First vice-president, M. Ackerman, general manager Lake Shore Electric Railway, Sandusky, Ohio.

Second vice-president, W. S. Rodger, general traffic manager Detroit United Railway, Detroit, Mich.

Secretary-treasurer, L. E. Earlywine, Indianapolis.

Executive committee: F. R. Coates, Toledo, Ohio; Harry Reid, Indianapolis,

Ind.; J. P. Barnes, Louisville, Ky.; R. I. Todd, Indianapolis, Ind.; A. C. Blinn, Akron, Ohio; H. A. Nicholl, Anderson, Ind.; F. W. Coen, Sandusky, Ohio; J. F. Collins, Jackson, Mich.; G. R. Millican, Evansville, Ind.; John Benham, Chicago, Ill.; J. H. Drew, Mansfield, Ohio; J. P. Longon, Cincinnati, Ohio.

Following the election Mr. Jeffries was conducted to the platform and installed as president, after which the meeting adjourned.

The Industry Has Kept the Faith*

Recommendations of the Federal Electric Railways Commission Five Years Ago Have Been Followed and Wonderful Progress Has Been Made—The Public Has in the Main Done Its Part Also

BY FRANK R. COATES

President Central Electric Railway Association

DEPENDABILITY of promises usually can best be judged by the performance of past pledges. It is fair, then, in considering the electric railway industry's present pledge of good service to review its record of carrying out its promise, made to the federal government and car riders five years ago, to improve local transportation throughout the country. That promise has been kept, and, having kept it, the industry is entitled to the confidence of riders when it says it

will go on providing the best possible local transportation, both by car and bus, in the future.

All of you doubtless will remember what caused the federal government to become interested in the future of electric railways. During the war they were called upon to function as a part of the government war machinery and they readily responded. An office was maintained in Washington throughout the war and every available facility of the industry was placed at the disposal of the government. Thus President Wilson learned first hand that the properties, owing to rapidly increasing wages and material costs, were in a bad way. At one time one-sixth of the mileage of the country was in receivership and it looked as if the rest of it might go in at any time. Many of the largest companies in the country were involved.

Realizing how necessary electric railways were to the welfare of the country, President Wilson appointed the Federal Electric Railways Commission to investigate the situation and make recommendations to help the industry get back on its feet. This commission consisted of representatives of the public, labor, financial institutions and electric railways. Hearings were held in New York and Washington for about a year and every phase of the electric railway business was gone into. Summarized, the commission found that the industry was without financial credit and was not performing its public function of furnishing good local transportation.

The primary causes of this condition were found to be economic. Contributing chief influences named were increased labor and material costs, early financial mismanagement of properties and failure of the uniform 5-cent fare.

To cure this situation these remedies were suggested:

Restoration of credit by removing public antagonism, enlisting public co-operation and assuring the investor a fair return on his investment.

Economy in operation, improved service and assurance of a fair return on a fair property value.

Elimination of special assessments for sprinkling, paving, construction and maintenance costs of bridges used as highways.

*Presidential address before the Central Electric Railway Association, midwinter meeting, Indianapolis, Ind., Jan. 28-29, 1926.

COMING MEETINGS

OF

Electric Railway and Allied Associations

Feb. 8-11—American Institute of Electrical Engineers, midwinter convention, 29 West 39th Street, New York, N. Y.

Feb. 11—Central Electric Railway Master Mechanics' Association, Portage Hotel, Akron, Ohio, 9 a.m.

Feb. 18—A. S. C. E., A. S. M. E., A. I. E. E. and A. I. M. M. E., joint meeting, Engineering Societies Building, New York, N. Y., 8.15 p.m.

Feb. 24-26—Electric Railway Association of Equipment Men, Southern Properties, Mobile, Ala.

March 8-11—National Railway Appliance Association, annual exhibition, Coliseum and Annex, Chicago, Ill.

March 9-11—Oklahoma Utilities Association, annual convention, Mayo Hotel, Tulsa, Okla.

March 12—Pennsylvania Street Railway Association, annual meeting, William Penn Hotel, Pittsburgh, Pa.

March 17-18—Illinois Electric Railways Association, Illinois State Electric Association and Illinois Gas Association, annual joint convention, Springfield, Ill.

March 23-25—National Conference on Street and Highway Safety, Washington, D. C.

April 13-16—Southwestern Public Service Association, Galveston, Tex.

June 2-4—Canadian Electric Railway Association, annual convention, Quebec, Canada.

Strict regulation as public carriers of jitneys, motor buses and similar public motor conveyances.

Public control flexible enough to assure sufficient revenue to pay the entire cost of service, including both capital and labor costs.

Fair valuation of property and voluntary reduction of excessive capitalization to the basis of the property value.

Installation of the cost-of-service plan, experiments having proved that it results in a fair return upon capital, establishes credit and effects reasonably satisfactory public service.

Payment for extensions into new territory by property thus benefited.

Living wages, humane hours of labor and working conditions for employees; settlement of labor disputes voluntarily or by arbitration in a binding manner which will eliminate both strikes and lockouts.

The only thing that the transportation leaders asked was that the public do its part in bringing about the rehabilitation of service as suggested by the commission.

That was five years ago. Today, when you make a survey of the industry and see the progress it has made along lines laid down by the commission, the situation seems unbelievable. Without question electric railways have kept faith with the government, and the public, in the main, also has done its part.

To summarize briefly, today virtually every large property in the industry either is out of receivership or on the verge of emerging from it. Included in properties in receivership are those of Kansas City, St. Louis and Denver, all of which may come out at any time. Then there will be very few large properties in the United States under the direction of the courts.

More than 16,000,000 persons are being carried annually by the properties. This is particularly significant when it is taken into consideration that there are probably 17,000,000 pleasure automobiles in this country, in addition to a very large number of buses.

CARS AND BUSES GO TOGETHER

One of the outstanding problems of recent years, the co-ordination of car and bus service, is being solved rapidly. Today more than 5,000 buses are being operated by some 275 electric railway companies in co-ordination with their car service, and the tendency to run both buses and cars under single managements is decidedly on the increase.

Those are the high points as revealed by a quick survey. Let us now consider specifically how the industry has carried out the suggested remedies of the commission.

The initial recommendation of the commission that public antagonism be removed and credit thus restored has received the chief attention of managements. The commission's investigation showed plainly that the best way to get riders behind managements was to clean house, have a good story to tell and then tell it as often as possible. The industry as a whole has done just this thing. Financial reorganization has taken place on a wide scale, and with houses clean, managements have invited the public in to see that not only do things appear well on the surface, but that no dirt was swept under the beds. More than 300 companies, embracing a very large majority of the mileage of the country, today are doing intensive public relations work through paid advertising, publicity, public

speaking and personal contact with customers.

Credit has not been fully restored, but it is decidedly on the mend. Whereas five years ago it was practically impossible to go into financial circles and effect a loan, this is not the situation today. More and more financial people are coming to realize, through learning true conditions in local transportation from managements themselves, that there is a very decided demand for electric railway service where progressive, honest, enthusiastic management is in charge of a property, and the public is fair; the securities of that property usually offer a safe investment. The credit of properties will continue to improve largely in proportion to the management's efforts to remove public antagonism by honest endeavors to give good service. And since the majority of managements are making this effort, the outlook for steadily improved credit conditions is good.

Great forward strides have been made in effecting economies in operation. The necessity for making every dollar count has spurred operators on to the exercise of great care of expenditures. The result has been that properties today are being operated more efficiently and economically than they ever have been in the past. With this economical operation has come improved service. Managements everywhere realize that the best service results from running cars only where there is a demand for them that will pay a reasonable return. As a result many branch lines, which probably never should have been built, have been eliminated from service in recent years. In some cases buses have supplanted these lines, and in this service the bus has proved very helpful. Doubtless it is in such supplemental work that the bus eventually will find its most important field.

A good start has been made by the public in eliminating special assessments, particularly for paving, and much more should be done along this line. Complete or partial relief from paving burdens has been afforded companies in two states and about 50 cities. It must be said frankly that one reason why this relief has not been more general is that electric railway managements themselves have not properly presented their story to the public. It is a rare community indeed which, when it is told the whole story of electric railway tax burdens, will not indorse some sort of relief. If the industry will carry on this campaign for tax relief properly, good results doubtless will be obtained. It cannot, however, expect the public to rise up voluntarily and begin to lop off taxes.

Regulation of jitneys, motor buses and similar public conveyances, recommended by the commission, has been widespread, but much more must be done, particularly in a national way, with this situation. Since the commission made its report various legislative bodies in some 38 states and the District of Columbia have regulated these vehicles as common carriers and required them to obtain certificates of convenience and necessity before operating. National legislation of a similar character now is pending in Congress.

The Supreme Court recently held that no official body had any control over motor vehicles engaged in interstate commerce, and, as a result, the National Association of Railroad and Utilities Commissioners has had a bill introduced which seeks to put motor vehicles in the same regulated class as our steam and electric lines.

The readjustment of fares, so as to insure sufficient revenue to pay the entire cost of service, including both capital and labor costs, has received widespread and respectful attention by the public. The 5-cent fare, and, in fact, all fixed fares, have been practically wiped out. Today, with the exception of about a dozen communities, the principle of riders paying a fare of sufficient amount to meet all costs of operating a road is generally recognized. A later survey of the association shows that 83 cities have a 10-cent cash fare, three a 9-cent, 31 an 8, 67 a 7, 47 a 6, and only ten the original 5-cent fare.

FARES GOVERNED BY LENGTH OF RIDE

The sum and substance of the whole fare situation is that if rides are short enough and costs are low enough they probably can be provided for 5 cents, or even less, but if rides are not short enough or costs low enough more than a nickel will be required. Fares respond to the same inexorable economic laws as any commodity.

In these days of public service commission valuation the cry of watered stock is a hollow one. Stories of such historic financial jugglery came up frequently in the commission hearings, and doubtless there was truth in the claims that there was some mismanagement in the early days. But nowadays fares are fixed on the value of the property, and hence so-called watered stock has nothing to do with them. Furthermore, commissions and managements themselves have pretty thoroughly drained all the water out of electric railway securities.

Service-at-cost plans have worked out well in some communities. The theory of service at cost, which is simply providing a fair ride for a fair return, is becoming universal.

The recommendation that property owners pay for extension lines into new territory has not been generally adopted, and this is due in part to the rapid development of the bus. Nowadays most companies are serving sparsely settled new territory with buses until such time as laying of rails is warranted. There have been some cases where communities have paid for laying rails.

Electric railway labor today is receiving the highest wage in the history of the industry, except for a short time in 1921. The most recent report shows that 85 companies, operating more than 100 miles of track each, are paying an average of 56½ cents an hour to their men. This is more than double the average wage that was being paid at the beginning of the European war. The average annual earnings per man in the industry is about \$1,700. When regularity of employment is taken into consideration, the electric railway men's jobs are good ones indeed.

The foregoing, in brief, is a summary of how the electric railway industry has kept its faith with the government and the public. Of still greater importance, the industry has kept this faith gladly. Its greatest desire is to continue successfully along the lines it has been following in the last five years, but to go forward to still greater achievement. It recognizes that carrying, as it does, four out of every five

persons who ride any kind of a vehicle, it has a great duty to perform to the public. At the same time it recognizes that, representing an investment of almost \$6,000,000,000, it has a similar duty to perform to some 1,300,000 investors. Its purpose, in a nutshell, is to render the best service possible at the lowest cost consistent with obtaining a fair return on the investment for its efforts.

Winning Public Good Will*

Many Methods Have Been Used in Grand Rapids to Obtain Public Recognition for the Railway and Overcome Long-Standing Indifferences and Prejudice

By L. J. DELAMARTER

Vice-President and General Manager Grand Rapids Railway

GOOD will and good public relations are the fulcrum by which the street railway industry will elevate itself into greater community confidence and service, municipal co-operation and increased revenues, provided that at the same time the industry offers the improved degree of service the public now expects and demands through its usage of vehicles offered by automotive manufacturers.

The success of winning good will depends so much upon the intangible, indefinite "feeling" to do the right thing at the right time, to take full advantage of changing conditions promptly, to believe enthusiastically in your job. Admitting that during the past few years to believe enthusiastically in the average street car with the same color scheme, the same flat wheels, same old slat or cane seats, same clanging gongs, same old more or less dirty blue uniforms, same old dirty windows, same old advertising signs and same old hundred and one things that our fathers and some grandfathers looked at, one has to have some vision and be considered about ready for the asylum.

The history of the street rails in Grand Rapids during the past few years, we presume, is more or less similar to that in most cities. Using the history of the Grand Rapids property for the past few years as an example will, it is believed, bring out the points to be emphasized. Confronted with the necessity of a new franchise, of refinancing and asking for increased fares during the interim and other problems known to most general managers, all of these problems now being behind us, we believe is proof that our good-will methods, in a general way, have brought definite results, as the company now has a 30-year franchise, an 8 per cent allowed return, a 10-cent cash fare with six tokens for 50 cents. When our new service-at-cost 30-year franchise was submitted to the people, with no appeals for public favor, such as lower fares or extensions, it was approved by 72 per cent of the electors voting. Before the election the franchise was approved by all the local newspapers, by ten improvement associations, by nineteen civic bodies, by the four noon-day luncheon clubs, be-

sides various other clubs and organizations, including the Trades and Labor Council.

In addition to the franchise we have refinanced our entire bonded indebtedness without recourse to capital reconstruction. The bankers gave much credit to and were influenced to a great extent in approving the refinancing because of the good will as evidenced by the attitude of the city authorities, the local newspapers and the public. In our judgment public good will was one of the biggest single factors entering into the refinancing. We also secured, previous to the passing of our franchise, several increases in fare without any decided opposition.

In winning good will the three main factors, we believe, are: (1) Relations with newspapers; (2) relations with city authorities; (3) relations with the public, car riders.

In relations with newspapers the prudent manager will always keep his mind open and alert to cultivate the friendship and confidence not only of the owner or editor but of reporters and the desk men. Meet the newspaper reporter as a friend, make the effort to see him in his office if possible, and always in your office if he calls, for it is he who writes the articles that help mold good will for your company. If he is not your friend, the artful newspaper reporter can subtly inject into his articles a sting that hurts, or, being friendly, he will unconsciously reflect in his articles an intangible good fellowship that helps create popular favor for the railway company. Encourage friendship of or acquaintance with the desk men, the copy readers and others on the newspaper staff who, in some way, may some time handle the news pertaining to your company. They play a vital part in your good will program because they edit or headline the news matter, and into the "heads" they write they can also reflect the good will they unconsciously feel for your company if they are on friendly terms with you.

The local manager who feels above accepting advice from a newspaper man, who is in touch with the public and its affairs, is losing a trick. My experience over years with dealing with newspaper boys is that whenever one has something he doesn't want printed, by coming "clean" and explain-

ing why it shouldn't be printed, 99 per cent of the boys will not betray confidence. On the other hand, if they get a news "tip" and you try to evade it, they will dig up the facts and print them and you have forever lost good will and confidence, for which you will have to pay eventually. The same rule applies to city authorities.

How well our policy serves in creating and sustaining public good will is reflected, quite forcefully, in the fact that not one adverse editorial or so-called "Letters from the People" article has appeared in the local newspapers during the past three years. The company's program has been constructively supported.

We have been fortunate in receiving unsolicited editorial support that has a far-reaching effect in helping the public have a better understanding of the street railway's problems. An example of this editorial co-operation, taken from the *Grand Rapids Press*, issue of Aug. 10, 1925, reads:

Since the days of the horse cars there has never been a defensible reason for requiring the street car company to pave between the tracks, except the obvious one that the company has to do it to get the franchise and the city wants the money. The street cars do not touch the pavement and the wear upon concrete or brick between the tracks is from precisely the same vehicles as run over other streets. The ingenious claim that street car line paving, due to vibration of the tracks, will not last as long as paving elsewhere, seems to have been developed to bolster an obsolete and unjust tax against the street car company.

Illustrations of the thought given to crystallizing sentiment in favor of a public utility:

In the Grand Rapids theaters no criticism or ridicule of the street railway's cars, service or its interests is used by actors. This is because of the selling to local theater managers the idea that they should help the local railway and have the actor cut out anything adverse to its interests. Civic contact to further good will is gained by the officers of the company, like those in other cities, belonging to the leading clubs and organizations.

Talks are broadcast regularly from the local station by our safety engineer, known to the radio fans as "Uncle Bob." He gives a general safety talk and quietly injects interesting suggestions regarding the railway company. This broadcasting has secured splendid good-will results.

Our advertising, always optimistic, appears in many forms, newspaper ads, car posters, folders, pamphlets, theater slides, motion pictures, construction signs, and others. *Trolley Topics*, a monthly publication for car riders, has 36,000 circulation and is being increased to 50,000. An interesting good-will phase of this work was the conducting of a referendum on the three new trial coaches by ballots in *Trolley Topics*.

Novelty advertising, such as our "Don't Worry" campaign, not only caused much favorable comment but impressed the message that the "street car is the safest place in the city." It proved beneficial.

We occasionally employ a refined woman to criticize, from her viewpoint, what is displeasing to the car riders. Her reports have been far reaching in results because they have

*Abstract of a paper presented before the Central Electric Railway Association, Indianapolis, Ind., Jan. 28-29, 1926.

taught us good housekeeping methods for our cars. We believe that managers should make a real, studied effort to anticipate criticism of service.

Don't forget to keep on your Christmas list the man who has done favors for you but can't any more. Aim to do thoughtful things when you have no ax to grind. Don't forget to write a longhand note promptly to your friend, with an expression of appreciation. Don't dictate it. Cultivate the crossing policemen. Don't merely send them cigars at Christmas time, but occasionally write a personal note, or an appreciative word to their chief.

The city authorities, with their political futures at stake and the old "fight the corporation" in their blood, offers serious consideration. The first step toward the goal is to sell the idea that the street railway business is a legitimate one and not illegitimate. Then by systematically visiting city officials at their offices for frank discussion of your problems, asking for advice, giving thoughtful consideration to their side of all questions, the majority of public officials, properly approached, will meet you part way at least.

Again, it is our belief that city authorities may be "sold" any proposition better by local manager, attorney or engineer than by outsiders.

During our recent car test in Grand Rapids we have proved beyond any doubt that cheery, comfortable cars, courteous and neatly uniformed operators, giving rapid service commensurate with safety, not only have created and established a greater good will through public relations but have tended to shatter the false belief held by many people that the gasoline-propelled vehicle is spelling the doom of the electric street car.

Because attractiveness and comfort are two of the surest methods of regaining lost patronage, keeping old customers and winning the potential car rider, our three new electric rail coaches, aided by the remodeled Birney car, the "Ramona," and other newly painted cars, also prove that new and cheerful color combinations, newly devised comforts and the latest refinements are winning the people back to the street cars. This has been exemplified both by increased riding patronage and greater public interest and good will on the lines where the cars have been operated. Echoing back to the company come words of unsolicited praise or satisfaction from members of societies and clubs expressing their delight for the new cars and their many refinements and comforts. Many letters are also received complimenting the company for its progressive efforts. In fact, street cars are more talked about favorably in Grand Rapids than ever before.

The new electric rail coaches in Grand Rapids have exceeded our expectations. They are responsible for a great amount of the good will as shown; they are indelibly impressed on the minds of the people. I dare say that if any one in this audience has relatives in Grand Rapids and should write them regarding the new coaches a very general description of the

"St. Louis," the "Minnesota" or "Ohio" would soon be received. They have created interest.

OTHER MEANS OF GETTING GOOD WILL

Developing industrial riding, offering through trip cars to industrial districts, adopting motor bus equipment for two purposes, feeders to existing railway lines and independent routes in new territory, operators' visits in uniform to the homes of patrons of their lines to sell the company's service; utilization of the corner drug store, a long-neglected asset, for the display of time-tables in neat standards on showcases and otherwise aiding in selling the service, are other features of the good-will policy of the company.

An outstanding feature by this company in promoting good will, as evidenced by results and by widespread interest, is the establishment of a Commercial Drivers' Club. Organized by our company's safety engineer, the club is made up of the drivers and operators of trucks and other commercial vehicles. Its membership is more than 2,200. It dominates the commercial traffic situation. Bi-weekly meetings are held in the railway company's assembly hall, in which the company's operators join. The delays, the accidents, the displeasure of patrons occasioned by the lack of co-operation between electric cars and vehicles on the street is a serious problem well known; the creation of this organization has to a great extent furnished the remedy. It has established a desirable contact between drivers and car operators and is eliminating the old blocking of tracks and frequent belligerency. It has been instrumental in helping popularize street car riding by speeding up running time and reducing collisions.

Not only to the city as a whole does the management endeavor to carry the gospel of greater service and public utility good will, but to the sectional business or community district located in various outlying districts. By paying small but important attention to these growing and enterprising localities and appealing to their pride and loyalty the railway management, it believes, is gradually building up a confidence and patronage that is limited only by the future growth of the city itself. For instance, the company named a newly painted and very attractive car the "Creston," after one thriving business section. That community quickly responded as these lines from the *Creston News* show:

The Grand Rapids Railway got the jump on Santa Claus and last Saturday surprised the residents of Creston by putting into service on the Division-Plainfield line a very attractive street car that has been christened "Creston."

Harmonious color combinations, glistening varnish surface, gold letters and installation of comfort-giving devices all combine to make the latest innovation of the street railway company's system and service in Creston in keeping with this rapidly growing and progressive part of the city. Creston residents are proud of this car and desire, through the *Creston News*, to thank the railway company for this fine favor. . .

An anticipated reaction came almost immediately from Burton Heights, another prosperous district at the opposite side of the city and at the other end of the same street car line that

serves Creston. The editor of the *Burton Heights Record*, with true and loyal spirit for his equally thriving section, penned an editorial, under the caption, "Why Not a Street Car Christened Burton Heights? Of course Burton Heights merchants and residents received their car.

Then Madison Square, another busy district, acquired the new car name habit and through its community newspaper appealed for a car named after the Square. The request was granted. And just a few days ago another outcropping of regional pride for and interest in brightly painted street cars was chronicled. The residents of Fairmount Park asked the railway company to do them the honor of naming a car after that community. This good-will opportunity was quickly grasped by the railway management.

In furthering this community interest, we have inaugurated another name plan that probably will be far reaching in good will and financial profit because it extends to hundreds of homes where ancestral pride, fond memories and the cherished records of public accomplishments are recognized by the railway company and friendly reaction is and has been created.

Names of worthy early settlers, pioneers and prominent citizens whose public records and business achievements have written their names indelibly into the history of Grand Rapids are being used. Until recently this would have been impossible because no family would have found pride and satisfaction in having its name or that of its ancestor emblazoned on one of the old, rattling dreary cars. They would have procured an injunction to prevent it. Now people asking for it and submitting names. The management is receiving much whole-hearted co-operation in the new names-for-cars scheme as a substitute for the old numbering system.

Today the pleasing color combinations on the three trial coaches have caused so much favorable public reaction that tests have proved the people will wait for and ride in these new cars in preference to the older types. Cultivating good will in another direction is the illuminated dash and pennant design. By using the pennant colors of local schools, both public and parochial, universities and colleges, attention of the students and alumni is attracted, then pride for their alma mater makes them friendly to the car company for displaying their favorite colors. Carrying the plan still farther, the Grand Rapids management abolished the cold-blooded number system for its operators, substituting neat and attractive name plates that are displayed in the cars; this in addition to the neat chauffeur uniform adopted early last year.

Summed up, the Grand Rapids Railway is:

Endeavoring to capitalize on harmonious color combinations to eliminate red from its ledgers and change its bank accounts from silver to gold.

Educating its employees that a request, prefaced with "please" and spoken with a smile, proves the best

broadcasting code to tune in on the public.

Abolishing the word "can't" from its service lexicon.

Proving that good public relations is the father of good will, and that service is the mother of efficiency.

Teaching its operators that a shave today is worth two tomorrow.

That a motorman is best known to his patrons by the back of his clean collar.

That "safety first" is the greatest agent the adjustment department has as a dividend saver.

That every happy, satisfied patron can be made a good singer—of the praises of the street railway company. Solos are best heard and appreciated.

A rider's smile for an employee's kindness sometimes stretches to the promotion department.

Visualizing the industry and its conditions, I firmly believe that the pendulum of public opinion has started to swing back from the privately owned auto to the electrically operated rail coach. Our industry was doomed to pass through this evolution period. Nothing that we might have offered in the way of a vehicle, even a gold plated one, could have saved us from this cataclysm. It had to be. Now many of the American public, for various reasons, seem to have had their fling with motor luxury and are ready

to return to the street car. The psychological moment is here. The trend proves that. But we must be prepared to aid that return, to hasten that moment, by offering the public a more attractive electrically operated rail coach that represents the utmost in comfort, than we have for years past. This adds to the continued studied effort for good will.

The days of miracles in public service have passed. Our books, records, methods and procedure must be open to all. Being a legitimate business we should have nothing to hide, nothing to obscure. Many companies are passing through financial crises. To survive, to be of the fullest service, they must be rehabilitated both morally and physically.

By morally I mean that there must come between street car users and street car companies a closer and more helpful relation.

By physically I mean that street car properties must be thoroughly modernized. We have passed through a severe period of destruction. That which has been torn down must be rebuilt. To rebuild requires money, courage and patience. We are facing forward. Aided by the combination of cordial public relations and modernized equipment the industry in which we are all so vitally interested will progress and prosper.

definitely determined. There has been and will continue to be a marked reduction in non-essential interurban operation.

As the automobile becomes more generally used streets and their intercity highways rapidly developed. The jitney competition reached a climax in 1914-15, utterly failing in its purpose, though encouraged by early legislation, or lack of legislation, and propaganda. The jitney gave way to some extent to the city bus; then the intercity bus became a menace to the interurbans. Although unable to replace the latter, the electric rail service nevertheless suffered great harm.

In order to co-ordinate the various branches of its service, the Milwaukee Electric Railway & Light Company found it expedient to extend its bus service in other directions where business warranted, over the excellent paved highways radiating out of Milwaukee, without regard to the location of its existing interurban railways. It now operates 56 buses in interurban service, serving a territory having a radius of about 100 miles, with Milwaukee as its center, and covering 805 miles of interurban routes. The company also operates 36 buses in strictly city service and 32 buses in conjunction with street car lines.

The total gross receipts of the Milwaukee Electric Railway & Light Company for all bus operation in 1925 was well over \$1,000,000, showing a substantial increase over receipts for the year 1924.

At the time of this writing the company is encountering no bus competition. The regular responsible high-class railway and bus service, as rendered by the company, has discouraged numerous competitors. In the early days of bus development many promoters appeared in the field, whose sole purpose was to inaugurate competing bus lines with the idea of selling these out at a profit to the then established operating concerns. This sort of promotion no longer forms a profitable occupation. There have been times when bus manufacturers have been tempted to back and finance the promoters of this kind of bus competition for the purpose of forcing the sale of their particular make of equipment. I am glad to say, however, that this practice is no longer considered ethical. Competition at its best in public utility service is expensive and the public must ultimately pay its cost. The best safeguard for both the public and the operators is to have all transportation utilities regulated by state authority.

The interurban railway furnishes its own right-of-way, nevertheless it is tremendously taxed due to its monopolistic character. The same legislatures that have taxed the interurban railways as monopolies have constructed highways with public funds and permitted the unrestricted operation of competitive bus and truck service over such roadways. This condition is being rapidly changed by the ever-increasing taxes which are being applied to bus operation and by increasing demand for proper state regulatory measures. In the instance of one company, it might be stated that the taxes and municipal

Economic Trend of Interurban and Bus Services*

While It Is Hardly Possible that Much Interurban Construction Will Take Place in the Next Few Years, the Interurbans Will Use the Bus to Amplify Service

BY R. H. PINKLEY

Assistant General Manager
Milwaukee Electric Railway & Light Company, Milwaukee, Wis.

WHEN work is plentiful and wages are reasonably high the American public is not generally guided by considerations of efficiency and economy in choosing its means of transportation, especially when one of these means possesses the element of novelty. More adverse times tend to force conclusions along more logical economic lines. Therefore it is difficult to analyze economic trends of services which have not yet fully yielded to the pressure of economic laws.

The present era of prosperity, which has provided a private automobile for almost every American family, has greatly stimulated the desire for travel; it has also increased the demand for transportation facilities to such an extent that most electric railways have been able to hold their business in the face of growing competition. Each locality has its peculiarities, and to determine adequately the general trends of public travel would require collecting and summarizing a large mass of data, the results of which would not apply to the average situation. This discussion will, therefore, be confined to developments in the State of Wis-

consin which have come under the writer's observation, and particularly the experience of the Milwaukee Electric Railway & Light Company.

An example of foresight was exhibited in the case of the Chicago, North Shore & Milwaukee Railroad, which was originally built on a straight right-of-way with flat grades, except in one location where village streets were used and where a new cut-off has recently been completed. The Milwaukee Electric Railway & Light Company is now engaged in projecting extensive cut-offs on two of its interurban lines, which, in addition to furnishing rapid transit to local districts, will serve to shorten interurban routes and to remove the traffic from public highways. These are instances of trends of development which should give the interurbans advantages over possible competitors.

The development of bus operation has effectually checked expansion of interurban railways for the past few years, and it is quite certain that, except in rare and special instances, no new interurban railways or extensions to existing lines will be built for a number of years to come, or until the distribution of traffic between these railways and competing buses has been

*Abstract of a paper presented before the Central Electric Railway Association, Indianapolis, Ind., Jan. 28, 1926.

fees for operating a 29-passenger intercity bus in Wisconsin now amount to nearly \$800 a year. It is certain that as the bus industry expands it must be placed under the same state supervision and regulation as other carriers. The ultimate result must be that the buses will serve territories not now adequately served by interurban railways.

Even at this time it is found that the public sometimes shows a preference for the electric railway instead of bus service. This was demonstrated in the case of the village of Whitefish Bay, a suburb of Milwaukee, in the fall of 1925, where the company offered to substitute buses on a parallel concrete road, giving more frequent service with the bus than with the existing cars. The trial operation was made for a period of 30 days and then an additional trial of 30 days operation giving parallel electric car and bus service. A referendum was taken at the polls, resulting in a two to one majority in favor of restoring the car service. The principal influences which prompted this decision were the fear that the buses, being unregulated, might be discontinued at any time if found unprofitable and that the buses might not be found as dependable in case of heavy snow.

To undertake to give reliable and continuous transportation service to a community is no light obligation. The interurban railways have demonstrated their ability to do this and have shown their willingness to spend large sums of money when required to clear the lines of snow and in other ways to maintain continuity of service.

Development of the bus business has been so rapid in the past five years that any equipment more than one year old at this time might be considered out of date. Neither bus operators nor equipment manufacturers can well predict what will be the last word in bus development. The manufacturers are in a continual state of despair because nothing can be standardized and every job must have special features. The de luxe bus of today may be passé next spring. However, we venture to prophesy some of the features that may be expected following the present trend of intercity bus development:

1. Weights of buses for interurban service will not be materially increased. Highway officials will see to that.
2. Interior frills and fancies must yield to more plain and substantial features which can be maintained with reasonable expense. Comfort and ease, however, cannot be sacrificed. Headroom may be increased and the general height made greater, especially where there is heavy short distance riding.
3. More steel and metal and less wood will be used in frames and bodies.
4. Balloon tires are being tried and if found practical may be adopted.
5. Four-wheel brakes of pneumatic or hydraulic types will be considered essential.
6. More powerful engines will be developed, possibly by adopting eight cylinders, but certainly not less than six. Bus patrons are just as particular about vibration and excessive gear noises as the private car driver.
7. In general, riding qualities of buses will more nearly approach private car standards.

An important feature in the trend of bus operation is the development of proper standard sizes of buses to be used for various conditions of traffic. This requirement must be determined for each locality and for each condition of traffic. There is no doubt but

what the lighter weight vehicles traveling on more frequent headways will draw additional traffic. Any decrease in seating capacity, however, increases the operating cost per seat. A bus which carries only eight or ten passengers must average 50 per cent of its seats filled over every mile of its operation to pay its way, whereas a bus which seats 29 passengers may be operated with an average of 30 per cent of its seats filled at all times. It is obvious, therefore, that if smaller vehicles are used either the traffic must be fairly dense or a higher rate of fare must be charged.

The financing of bus operations presents special problems. Although the investment required is not large

compared with that for railways, working capital is needed, the financial risk is high due to the uncertainties of the business and the borrowing power is relatively low due to rapid depreciation of the equipment. Properly enforced state laws requiring certificates of convenience and necessity or equivalent broadly protective franchise grants are essential to the financial welfare of any public transportation utility. The trend of bus line ownership is toward the larger, well-established companies which have developed valuable properties, and especially toward those which have earned the full confidence of the public and in which the public has acquired a direct financial interest by purchase of preferred stock.

Determination of Satisfactory Bus Fares*

By R. R. SMITH

Vice-President and General Manager
Chicago, South Bend & Northern Indiana Railway

DEVELOPMENTS in the interurban and bus business in the State of Wisconsin are dealt with in Mr. Pinkley's paper. On the whole, his conclusions and findings as to the trend of interurban and bus service apply equally well in the State of Indiana. This being true, it may be interesting, and it may throw some additional light on the subject, to outline some of the experiences through which the company I represent has passed in endeavoring to meet the situation created by the bus.

In my opinion the real menace to the electric railway industry is not the bus. It is the privately owned automobile. That is the threatening cloud on our horizon.

The Chicago, South Bend & Northern Indiana Railway was the first electric railway in the State of Indiana to operate buses. Like the Milwaukee company we early decided to protect our position as the natural and proper agency to furnish whatever transportation was reasonably demanded by the public in the territory served by our lines. However, we did not reach this decision in regard to our interurban service until we had felt the effect of bus competition by independent operators. We had previously established city bus lines in territory not served by street railway lines.

As soon as our interurban lines began to feel the effects of unregulated bus competition we established intercity bus lines paralleling the interurbans. Where possible to do so at a reasonable price, we purchased the bus line of our competitor. Where our competitor had an exaggerated opinion as to the value of his line, we put on our own buses. In some localities this resulted in the field formerly served only by the interurban being served by two bus lines in addition. One serious effect of this overdose of transportation was to educate the public to demand more service than could possibly be given at a profit. With a rate of fare on the bus lines sufficiently below the interurban rate to attract travel, it is not difficult to make a guess as to what happened to interurban earnings.

In June, 1925, we decided it was time for us to begin a series of experiments with interurban equipment and also with our rate of fare. We had two objects in mind: First, to ascertain the effect on the volume of traffic of a new type of interurban car at a lower rate of fare than our basic 3 cents per mile, and, second, to convince our bus competitor that we could so reduce his income as to force him to do business at a loss.

We placed in service two interurban parlor cars equipped with individual chairs, carpeted floors and a new lighting system. In these cars the wooden bulkhead between the motorman's compartment and the smoking compartment was replaced with glass. We changed the position of the heater so as not to obstruct the view of the passenger who wished to look ahead down the track. It is certainly not particularly pleasant for a passenger to gaze at a wooden partition, and we argued that if he could look ahead along the road in a bus, why not in an interurban.

On one interurban division we established an excursion rate of 1½ cents per mile, with a 25 per cent reduction for commutation riders. On another division we established an excursion rate of 2 cents per mile, with the same reduction for commuters, and on our third division we maintained our old basic rate of 3 cents per mile. All rates were made good for single one-way trip on every train, and on account of the fact that commutation tickets were sold by the drivers of buses we placed commutation books in the hands of our conductors so that passengers need not be put to the inconvenience of going to any of our stations to purchase them. Every interurban conductor was practically made an agent of the company for the sale of tickets. The rate of fare on buses was made the same as on the interurbans. We were therefore in a position to study the effect on travel of three different rates of fare and also in a position to study the effect of having interurbans and buses operating at the same rate of fare.

From the day it was established the 1½-cent per mile rate showed for a period of three months an increase of 92 per cent in the number of passen-

*Abstract of discussion before the Central Electric Railway Association, Indianapolis, Ind., Jan. 29, 1926.

gers carried by interurban lines. The 2-cent rate showed an increase of approximately 70 per cent, while the number carried on the 3-cent rate showed a consistent decrease. Buses, at the 1½-cent rate, showed practically the same increase in number of passengers as the interurban. From the increased number of passengers carried, it was evident during this period that many owners of private automobiles put up their cars and made use of either the bus or the interurban.

Within three months our principal bus competitor negotiated with us, with the result that we were able to purchase his certificate at a reasonable figure. Since gaining control of the bus lines, we have continued our experiments with our interurban rates, using 2 cents per mile on interurban cars and 2½ cents per mile on our buses, with 25 per cent reduction in commutation rates. With these rates of fare in effect, we showed in the months of November and December, 1925, an increase in the number of interurban revenue passengers of more than 60,000 compared with the same months of 1924. The number of passengers carried on our intercity buses, however, has shown a steady decrease since the establishment of the 2½-cent per mile rate. It seems evident to us that the rate of fare charged is a very considerable factor in determining the distribution of traffic as between interurbans and buses.

We now control all intercity bus operation in our territory except one stretch of 14 miles. Service has been co-ordinated so that where we formerly operated hourly interurbans we now operate in addition an hourly bus schedule, so staggered as to give a half hourly service on one type of vehicle or the other.

Our parlor cars have been operating at the same rates charged on other cars and have proved very popular, so much so that it is now a problem to care for the number of passengers who wish to use them. The decreased seating capacity of the parlor car makes it possible to handle only about 50 per cent of the number of passengers which can be carried on the old type of car. The exclusive use of parlor cars would therefore mean a very considerable increase in interurban equipment.

In that an intercity bus usually picks the passenger up at his door or drops him there, we feel that that service is a preferential one. The passenger should therefore pay more for this class of service than for the interurban, where he may have to walk a half mile to the nearest stop.

From our experience we have drawn certain conclusions, which may be summed up as follows:

We are convinced that the character of service and rate of fare are large factors in the success of interurban service. Interurban cars must be comfortable, clean and fast. While these three qualities are essential, please place the accent on comfort.

When bus competition was first started, if we had met it by improving our interurban service and adopting a lower rate of fare, it would have been possible to prevent a large part of this competition.

The bus is admirable for opening new city lines and in interurban territory not served by other means of transportation. In territory adequately served by existing lines the independent bus will eventually be eliminated.

The bus fits in very well in handling summer excursion business. The automobile has educated the traveling public to the point where it does not always want to return to the same old amusement resort. The bus meets this need.

In bus service the selection of the proper size of vehicle for the service to be performed is an important factor. It may mean the difference between a profitable and unprofitable

operation. Today the cost of taxes and passenger insurance on a 25-passenger bus in intercity service in Indiana approximates \$875. If a 21-passenger vehicle would perform this service there would be a very considerable saving in this one item.

Properly co-ordinated bus and interurban service has its place in thickly populated territory, the bus taking care of local business and the interurban handling through limited business.

Finally, it is our conclusion that while the interurban and the bus each has its proper field, the bus is not nearly the menacing and serious problem it was a year ago.

Experience with Interurban Railway and Bus Service*

BY R. N. GRAHAM

Manager of Railways Pennsylvania-Ohio Electric Company, Youngstown, Ohio

SINCE Mr. Pinkley has covered the full amplitude of his subject, I will content myself with discussing those phases wherein the operations of the company by which I am employed differ from those more particularly noted by Mr. Pinkley.

The interurban services of the Pennsylvania-Ohio Electric Company were originally developed as extensions to urban street railways, so the tracks in general follow the public highway and were primarily intended to serve growing suburban residential districts. Our rights-of-way in general are subject to the burdens of street and highway improvements.

No part of the United States is free from problems presented by the ever-increasing use of the private automobile, and these problems are acute in the case of our own property. Under these circumstances the natural line of reasoning seemed to call for two policies:

1. To endeavor, by any reasonable means in our power, to preserve our traffic in the face of the competition of the privately owned automobile and necessity of advancing fares.

2. To reduce expense of operation in conformity with changed conditions.

Both these policies pointed to the necessity for acquiring a new type of equipment. From the standpoint of preserving our traffic, it was necessary that our interurban cars should be comfortable in seating and in riding qualities, attractive in appearance, well lighted and well ventilated.

Fortunately, with the developments in the art, it was possible to secure cars not only attractive in appearance and riding qualities, but at the same time furnished with such modern electrical equipment and of such light weight as to reduce materially expense of maintenance and cost of power. These cars were designed for one-man operation, which made a further saving.

Within the past three years all of our interurban and suburban lines have been equipped with cars of this modern design. We operate no cars in pas-

senger service on any of our interurban or suburban lines which require the services of two men. As a result of the light weight of these cars it has been possible, with the same expenditure in maintenance of track, to keep our roadbed in much smoother and better condition, and even with very much reduced cost of maintaining equipment it has been entirely feasible to keep our rolling stock in such condition as to paint, upkeep and cleanliness as to render these vehicles attractive, with the general result that we are holding our own in traffic notwithstanding the very general increase over the country in the use of the privately owned automobile. Through the economy brought about by the use of this type of equipment we have more than held our own in the general operating result of our interurban and suburban operations.

With an experience of from one to three years on all our suburban lines with this type of equipment we feel that we can readily subscribe to the following conclusions:

1. That the operation of interurban and suburban cars in industrial districts of comparatively heavy traffic, with the use of one man on the car, is entirely efficient and satisfactory.

2. That the substitution of light-weight, attractive, modern equipment for heavier interurban equipment of the older type under such conditions is entirely justified from an economic standpoint.

3. That the expenditure to provide new equipment with comfortable upholstered seats, attractive lighting fixtures, plate glass window and good floor covering produces an adequate return in greater inducements to the riding public.

In the keen competition with the advantages offered the industrial rider by the use of his private automobile it is necessary to give concentrated attention to the subject of schedules to best serve individual manufacturing plants which may be located on the various lines. Special fare should also be studied which might be an inducement to special groups of riders, such as those working at industrial plants.

*Abstract of discussion before the Central Electric Railway Association, Indianapolis, Ind., Jan. 28, 1926.

Further attention must be focused on the development of courtesy and salesmanlike attitude on the part of the operators of the cars. To overlook means or methods of advertising our product is to lose a valuable opportunity to improve the gross.

We were early compelled to parallel our suburban lines with bus lines in order to meet bus competition. While we still maintain such lines, they are in no case directly parallel except in point of route. The bus fares are higher than the corresponding railway fares and the bus service is being maintained as a supplementary or express service for those willing to pay the higher fare for a different sort of transportation.

On the other hand, it has been our policy, both in city and in interurban operation, to extend bus service into localities where no street railway service exists at the present time. In our operation we use 57 city buses and 27 interurban coaches. During the year 1925 our gross income from bus operation was approximately \$1,000,000.

From our experience we find that when a superior service is given by the

bus the people have no objection, apparently, to paying more money to take the bus, but when the quality of service is substantially the same we have found little difference between the attitude of the public on those routes that are served by street car lines and those served by bus lines.

In city operation the chief handicap of the bus is its limited carrying capacity, and we feel that the single-deck city bus cannot be operated profitably at the city rate of fare except where the lines are short, in our own experience the critical length of bus route being 3 miles.

In the operation of buses, the same as in the operation of street cars, there is a benefit to be derived from standardization, in economy of buying and storing parts. If a vehicle is originally well designed for the service in which it is to be run it is hardly necessary to change it with every passing whim or fancy of the body or equipment manufacturer. In this connection I think that we may still be guided by the essayist who said:

Be not the first by whom the new is tried.
Be not the last to lay the old aside.

The Utility Powder Puff Versus the Utility Razor*

BY HELEN E. STEINER

Director Public Relations Ohio Public Service Company

WHAT the world needs at present is not more power but a more wise distribution of power; not more energy, but a wiser conservation of energy; not more capacity, but more personality. It is horse power that we as a nation have developed for the last hundred years, and not human man and woman power. Every man here should take heed and develop his man and woman power. That is the most important work you can do in your relations to the public—build up your man and woman power, make it better, make it more adaptable.

A mechanic can fix your automobile if it goes awry, but when something goes wrong in your organization, in your contacts with the public, you cannot go to a garage for the remedy. You must then have experts in humanics and not mechanics. As "a man is judged by the company he keeps" so a public utility must be judged by the employees it keeps.

Public utilities are daily becoming more sensitive to that fact. They are, at least most of them, educating their employees in the knowledge of the company and its business and in the matter of public relations. Employees should all be schooled in the art of handling the public, for public regulation of utilities calls for 100 per cent co-operation from every man and woman on the payroll. No company can afford to keep an employee who does not live up to an appreciation of this fact. It is worse than money wasted, it is an investment jeopardized, for any employee not to work in the

closest possible harmony with the executive heads who are putting their whole souls into the building up of good public relations.

The place of woman in the business world is just as legitimate as that of man, and it offers equal opportunities and possibilities. Woman is looked upon in a great many cases as only a pencil pusher or a key puncher with the ability to do one thing perfectly—namely, to "powder her nose." We can't hold that against women, for we all have our little vices and idiosyncrasies, and while woman is queer a man is still more queer! For to him it's the razor that is nearer and dearer. That thought has given me my subject this morning. The "Utility Powder Puff vs. the Utility Razor" is but a polite way of putting the age-worn question, Why not have women in the industry filling the same places that men occupy and receiving equal recognition?

Although Christopher Columbus is given credit for the discovery of America, it was a woman who had the faith to look beyond the superficial beliefs of the ages and to see possibilities which brilliant men had rejected as impossibilities. Had it not been for Queen Isabella of Spain, Columbus might never have had the ships with which to cross the ocean.

Behind every great event in life—past, present and future—may be found the hand of woman if we but search for it. Women today are gradually taking their places in the business world and exerting their influence directly, where before they exercised it indirectly.

Are you men in the railway industry

capitalizing on the genius and ability of your women employees, and on women in general? Are women playing as great a part in your industry as they should? Are they contributing to the upbuilding of better public relations?

In seeking a satisfactory solution of the public relations problems you men have learned to attach a deeper significance to the word "Service." The thought of serving, of helping and of doing more than just that which is paid for, is becoming more and more a dominant note. In order to make your service of greater convenience to your customers you must consider more than their mere legal rights and imperative necessities. Service has an intangible value that cannot be measured in dollars and cents or by yard sticks or tape lines. It spreads and grows from day to day. We might say it is cumulative and compounds daily. Good service becomes an amazing asset, poor service becomes a liability. You can sell transportation to mankind, but its greatness depends upon the degree of service rendered.

Service is not entirely dependent upon the quality of your commodity, but real service means the smile and pleasant greeting accorded patrons; it means quick and efficient handling of complaints; satisfactory adjustments; in short, it means what money cannot buy—the intangible something that makes a man feel that he wants to have more dealings with your company. Such a condition can come about only through the channels of properly trained employees and more prominence accorded to woman. For I believe that a woman in most cases is more efficient than a man in meeting another woman. Women in every department of your industry can appeal more forcibly to other women, who form the major portion of your passengers.

A.S.M.E Asks Help for French Exchange Professorship

IN ORDER to effect the full exchange of French and American professorships, the American Society of Mechanical Engineers, through the activities of its secretary, Calvin W. Rice, is attempting to secure contributions from those who may be interested in aiding this cause.

For some years there have been a number of scholarships under which students may study in foreign lands, but too little provision has been made for an exchange of professorships. The simple exchange of one outstanding educator from European schools makes it possible to establish a valuable contact for thousands of students. For a number of years seven American universities, Columbia, Harvard, Johns Hopkins, Cornell, University of Pennsylvania, Massachusetts Institute of Technology and Yale, have been exchanging professors with the universities in France. Eminent men have thus had the opportunity of broadening their views and many students have profited in this exchange.

Those who are interested should communicate with Calvin W. Rice, who will be glad to receive contributions.

*Abstract of a paper presented before the Central Electric Railway Association, Indianapolis, Ind., Jan. 29, 1926.

American Association News

American Executive Committee

Many Important Matters Discussed and Progress Reports Received at Indianapolis Meeting

SINCE there was no midyear meeting of the American Electric Railway Association this year, the regular meeting of the executive committee was held at Indianapolis on Jan. 29 in connection with the midwinter meeting of the Central Electric Railway Association. There were two sessions, the first taking up regular business. A luncheon meeting followed, at which the committee chairmen presented oral reports of progress.

At the morning session the members present were President F. R. Coates, Managing Director Lucius S. Storrs, Executive Secretary J. W. Welsh, Harry Reid, C. L. Henry, H. L. Brown representing E. F. Wickwire, J. H. Hanna, J. H. Handlon, C. R. Ellicott, E. P. Waller, T. A. Kenney, M. B. Lambert, A. W. Brady, G. H. Clifford, J. N. Shanahan, C. R. Harte, J. J. Stanley, S. J. Cotsworth, B. A. Hegeman, Jr., and Thomas Finigan.

The budget submitted by the Engineering Association for the expenditure of funds appropriated at the last meeting of the executive committee was approved and referred to the finance committee for action.

The publicity committee reported that a series of speeches has been prepared by Labert St. Clair under its supervision. These have been worked out in co-operation with the state and sectional committees on public utility information. It was reported that the manufacturers' campaign is well under way. Posters, stickers and signs have been prepared, as announced previously in this paper. The demand for these up to date has been considerably greater than was anticipated.

For the membership committee, Mr. Hanna made a detailed report. The result of the campaign for new members has been very encouraging. There has been a growth of 128 manufacturers in the past three years, or more than 50 per cent, while the railway members have remained at the same number, even though there have been not a few consolidations in this period.

Telegrams of regret that they could not be present at the meeting of the executive committee from W. H. Sawyer and G. H. Harries were read by the chairman.

Harry Reid, for the committee on national relations, stated that the bill for the regulation of interstate bus lines sponsored by the National Association of Public Utilities Commissioners has been introduced both in the Senate and in the House. He hopes that hearings will be held during the month of February. Attention was also called to other pending legislation, including the railroad labor bill and the Cummins transportation act.

On motion of Mr. Reid, made at the suggestion of H. L. Stuart, it was decided to reprint the speech of Managing Director Storrs made at the C.E.R.A. banquet Jan. 28.

Mr. Reid announced the death of W. H. Maltbie of Baltimore, a chairman of committee on special taxes and of the committee on valuation. It was the expression of the executive committee that this loss leaves a place that it will be difficult to fill.

J. J. Stanley, J. H. Hanna and A. W. Brady were appointed a committee to prepare suitable resolutions on the death of Mr. Maltbie.

The publication committee presented a brief report through Mr. Welsh. The progress of *Aera* was noted. Attention was called to the preparation of pamphlets on education in collaboration with the committee on that subject.

Chairman C. E. Morgan of the committee on location had planned on attending the meeting, but because of a train delay was unable to be present until the luncheon meeting. This made it impossible to hold a meeting of his committee prior to the executive committee meeting. Mr. Stanley and Colonel Alexander of Cleveland invited the association to that city for the convention. Mr. Ellicott pointed out that the association should go where it will get the most for the money expended. Cleveland is near the center of the country and also near the center of the automotive industry. Its facilities are excellent.

Mr. Hanna called attention to the meeting of the conference on street and highway safety which will take place next March. He felt that it is a subject of great importance to members of the association.

President Harte of the Engineering Association presented a plan for the elimination of a great deal of the routine business of that association at the annual meetings. The principal feature of this is elimination of the procedure of acting on standards submitted by the various committees on the floor of the convention, and substituting a letter ballot. This would give time for the consideration of live topics and the presentation of papers and discussion. After some discussion, in which it was brought out that the floor vote is not representative, and sometimes leads to disregard of the standards adopted, it was approved.

The special committee on awards, of which Mr. Storrs is chairman, reported that propositions had been received for contests among electric railways from *Electric Traction* and *Forbes* magazine. The report was referred to the committee on policy.

Resolutions were adopted on the

death of past-president John I. Beggs. The death of Past-President Joel Hurt was announced.

COMMITTEE CHAIRMEN REPORT AT LUNCHEON MEETING

Following the morning session, the members of the executive committee and committee chairmen were guests of President Robert I. Todd of the Indianapolis Street Railway at a luncheon given at the Indianapolis Athletic Club. The principal business at this meeting was to hear reports of progress from the various committees of the association. This is a new feature, which was begun by President Coates at the November meeting of the executive committee.

J. H. Handlon, for the Claims Association, reported that excellent progress is being made by that association. For the advisory committee on electric railway finance, H. L. Stuart stated that the total public financing of purely electric railways last year, in amounts of more than \$250,000, amounted to approximately \$30,000,000. The electric railway securities, he said, were wholesaled very quickly, some of the issues going in less than two days. Mr. Stuart strongly recommended campaigns for local stock ownership. Mr. Lambert said that in his talks with electric railway men a question that has been asked is where they can get money for improvements.

In the absence of Mr. Wickwire, Labert St. Clair gave a brief report of the committee on co-operation with manufacturers. He described the signs and posters that had been prepared. Advance requests had far exceeded early estimates, he said, so that he will have to revise his figures for printing the posters.

Mr. Clifford stated that the work of the committee on co-operation with state and sectional associations was progressing in fine shape in all but two districts. Steps are being taken to arouse interest in these districts, and it is hoped that definite results will be had in the near future.

For the education committee, H. H. Norris, speaking for Edward Dana, said that the plans announced at the last executive committee meeting are under way. The committee on management and operation has been co-operating closely with the education committee. At the suggestion of Chairman Carbutt of the former committee, a demonstration of a foreman conference was put on before the Central Electric Railway Association the day previous, for the benefit of both that body and the education and management and operation committees. Mr. Lambert brought out that this conference had been held at considerable expense, the Boston Elevated Railway, the Indianapolis Street Railway and the T. H. I. & E. Electric Railway having furnished men to make the demonstration possible. On his motion, a vote of thanks was given these companies for their co-operation.

G. C. Hecker, secretary of the management and operation committee, represented R. F. Carbutt, who had been called away. He outlined the meeting which had been held Wednesday night at Indianapolis. This committee, he

said, is planning to have an extensive campaign of visits to various properties.

The manufacturers' engineering committee held two meetings, said Chairman G. C. Hecker. The first problem was to design a series of cars and the second to make operating studies showing where new cars have reduced maintenance expense and have increased riding. The committee is also studying methods of refinancing to make the purchase of new cars possible.

Charles Rufus Harte, the new president of the Engineering Association, outlined the change in organization of the Engineering Association by which the way committee and the building and structures committee have been combined. Mr. Harte also asked that the association use the Engineering Standards. He stated that a great deal of work is done by the engineers and the standards are not always used.

President Coates reported that a letter of invitation for the 1926 Charles A. Coffin prize contest has been sent out.

For the Transportation and Traffic Association, Mr. Clifford stated that it is working on four principal subjects. There is a great deal of enthusiasm in this association and he is looking forward to an excellent convention.

C. E. Morgan, chairman of the committee on locations, was detained in New York and did not arrive until near the end of the luncheon. He stated that sub-committees had visited Cleveland and Atlantic City, and that propositions had been received from other locations. No meeting of the whole committee had been held, so that no recommendation was made. Mr. Morgan told of the possibilities of these various locations. In order to facilitate preparations for the next convention, a sub-committee of the executive committee was appointed to consider the report of the committee on locations with power to act. This sub-committee consists of C. E. Morgan, chairman; T. A. Kenney, J. H. Hanna, Harry Reid, E. P. Waller, Thomas Finigan and C. R. Ellicott.

The executive committee decided to hold the convention on Oct. 4-8 inclusive.

Following a vote of thanks to Mr. Todd for his many courtesies in connection with the meetings of American Association committees held in Indianapolis, the section adjourned. The next meeting of the executive committee will be March 26 at New York.

Management and Operation

ON JAN. 27, following a dinner arranged for through the courtesy of L. M. Brown, a meeting of the committee on management and operation was held at the Indianapolis Athletic Club, Indianapolis, Ind. Members present at the meeting were: R. F. Carbutt, chairman; Morris Buck, C. L. Van Auken, E. J. Dickson, H. H. Norris, S. E. Emmons, D. J. Locke, A. C. Spurr, J. E. Wayne, G. B. Powell representing Samuel Riddle, F. L. Butler, L. M. Brown, J. F. Johnson, R. R. Smith, J. S. Hyatt, R. H. Pinkley, W. H. Burke, C. J. Griffith, W. W. Holden, A. Blunk representing S. B. Irelan, R. J. Lockwood, G. I. Plummer, R. R. Hadsell and G. C. Hecker. Frank R. Coates,

J. W. Colton, Labert St. Clair, G. H. Clifford, T. O. Kennedy, A. E. Scott, James Harmon, J. Q. Martin, John Mellett, J. H. Handlon, J. B. Stewart, Jr., and C. F. Young were present as guests.

Chairman Carbutt stated that this meeting had been called primarily to discuss the procedure outlined for the committee this year. He then introduced John Mellett, executive secretary Indiana Public Utilities Association, who delivered a brief address of welcome.

F. R. Coates, president of the American Electric Railway Association, expressed his appreciation to the members for their participation and particularly for their attendance at this meeting. He spoke of the excellent work done in past years and said he was sure the committee would continue its activities this year with even greater enthusiasm.

Chairman Carbutt read a telegram from Managing Director Lucius S. Storrs, who expressed regret at his inability to be present, stating that he felt there were great possibilities for bringing about improvements through the collection and dissemination of information by personal visits of committee members. He also said that they can be of great service in ascertaining personal opinions of railway executives regarding the major problems on which the association should concentrate for the best interest of the industry. The chairman then informed the committee of the death of two of its members, Ralph D. Hood, Haverhill, Mass., and F. I. Fuller, Portland, Ore.

The procedure outlined by the advisory board, consisting of the chairman and regional directors, was read by Mr. Carbutt. He then called on the regional directors to discuss the proposed procedure and to comment on the work done during the past two years.

Mr. Boyce expressed his thanks to the members in his district for their attendance at the meeting and his appreciation for their co-operation last year. He said that it would help members making visits if both Mr. Storrs and Mr. Coates would write to the managements of the properties to be visited advising them of the coming of the committee members and asking them to be prepared to discuss important problems with them. In some instances, he said, considerable time was wasted because appointments had not been made and members were unable to obtain interviews.

G. B. Powell expressed Mr. Riddle's regret at his inability to be present and stated that District No. 3 may be counted upon actively to carry out the committee work this year.

L. M. Brown stated that in his opinion the members through their visits receive the most benefit from the committee activities. In the work last year the managements of the properties he visited were glad to see the committee members and discuss their problems. While certain practices in operation on one property might not be applicable in just that form on another property, with modification they might be used on many properties. He spoke of the visits of electric railway men from various parts of the country to the property of the Interstate Public Service Company, and said that if individual

companies found it worth while to send their men out to visit other properties certainly the industry as a whole should benefit through the work of this committee.

W. H. Burke said that he is planning to divide District No. 6 so as to have members cover the entire territory. In Mr. Burke's opinion the idea of modernization and popularizing service should be stressed by the members in their visits. He also felt that the committee members should interest managements in competing for the Charles A. Coffin prize. Mr. Burke then told of attending the November meeting of the Midwest Electric Railway Association in Wichita, Kan., as a representative of the American Association. In an address at that meeting he attempted to acquaint the delegates more fully with the work of this committee.

The secretary read a letter from D. W. Pontius, in whose opinion the subjects covered during 1925 still furnished a large field for development and can be considered further in the order of their importance.

A. L. Hodges, New York City district, was absent. R. R. Hadsell stated that Mr. Hodges had arranged to hold a meeting of the members of his district on Jan. 27 and that he had made an allotment of the companies in the district to the members so that every company will be visited.

The secretary read a letter from D. E. Blair of the Canadian district, who stated that he had heard many favorable comments on the committee work from executives in Canada. He stressed the importance of properly editing the data collected by the committee and compiling it in convenient form for later reference.

J. W. Colton told the committee members that the information collected in 1924 and 1925 was now being published in a handbook of approximately 300 pages. Mr. Colton felt that a great deal of valuable information had been collected. Mr. Carbutt said that the American executive committee had underwritten the publication of the new handbook to the extent of \$3,000. He stated the book would be placed on sale at approximately \$2. Secretary Hecker spoke briefly about the handbook and said that it was planned to initiate an advertising campaign to promote the sale of the book. It was his belief that the book would be available for distribution within the next six weeks.

Labert St. Clair reviewed briefly the organization of the committee and said that the results of its work can already be seen, especially in the publicity and advertising activities of various companies throughout the country. Next to modernization Mr. St. Clair believes that selling service is the most important problem of the industry. He urged the members to go to the newspaper editors with the executives of the properties visited and get their viewpoints. He felt sure that the newspapers would be glad to publish any news which the committee members would give them and urged that such news be given local color. He also urged close co-operation with the Public Utilities Information Bureau, of which he said there are 25 in 37

states. A recent survey made by Mr. St. Clair shows that in all but four states these bureaus are receiving support from electric railways.

Mr. St. Clair then spoke of the work of the advertising section of association headquarters. He said that in addition to the regular service rendered by the department it is always glad to give special service desired by a member company.

H. H. Norris represented the committee on education and outlined its objects and its plans for putting information into the hands of the members of the committee on management and operation, so that the latter might assist in promoting educational work. Mr. Norris said that four pamphlets are now being prepared for distribution to the committee on management and operation which will outline the reasons for educational work and tell how to start an educational program. He spoke of the foremen conference plan and the group conference plan, both of which are in effect on the Boston Elevated Railway.

The meeting was then opened to general discussion. In response to a query by Mr. Boyce, it was the general opinion that photographs and drawings should be obtained with contributions wherever possible, as these could be used should it be found that it is desirable to publish a supplement to the handbook.

Mr. Blunk felt that committee members should not fail to acquaint those whom they visit with the activities of the headquarters staff, and called attention to the vast amount of information available to members at association headquarters.

Reports from regional directors should be completed and forwarded to the secretary not later than July 1, said Chairman Carbutt, answering a question by Mr. Smith. They will serve as the basis of the committee report, which will be prepared by the advisory board, consisting of the regional directors. Mr. Carbutt said that contributions for the handbook should be sent in as promptly as possible and that these could be continued after July 1, since probably the publication of a supplement would be withheld until after the convention.

Mr. Kennedy called attention to the necessity of advising district managers of groups of properties of the coming visits of committee members so that district managers might check up with the local managers and assist in securing better co-operation.

Mr. Clifford stated that he was one of those at the last convention who disapproved of discontinuing this committee work. He said he believed that its activity offered greater possibilities than that of any other association committee. He spoke of the value of personal contact of its members with the managements of electric railways and also spoke of the value of educational work among employees. As to the work of the public utilities information bureaus, Mr. Clifford urged the members to send news to Mr. St. Clair to be passed along to the directors. Others who spoke briefly were J. Frank Johnson, W. W. Holden and C. J. Griffith.

At the conclusion of the meeting

Chairman Carbutt urged the regional directors and members to begin their work immediately. He said he hopes this year will be the most successful one since this committee activity had been initiated.

Poster Campaign for Manufacturers

WITHIN the next few weeks the special committee on co-operation with manufacturers will endeavor to impress on the public the fact that some 500,000 factory workers are employed in making electric railway materials in the United States. Posters for bulletin boards, stickers for letters



Labels of This Design Are Being Used in a Campaign Advertising the Industry

and express packages will be used to help carry this message. E. F. Wickwire, chairman of the committee, has circularized all manufacturer members, inclosing samples of posters, labels and stickers which will be supplied without charge in any quantity desired. All of them are of the general design illustrated above, the wording only being changed.

The outdoor sign feature of the campaign is being handled by the George H. Tontrup Corporation. Mr. Tontrup, as the only sign manufacturing member of the association, is co-operating with the committee in the preparation of a special sign, the wording of which is similar to that on the posters. The cost of these signs will range from \$35 upward, depending entirely upon the quality. All signs are of the same size, but some are illuminated and others are not.

Electric railway companies also will co-operate in this campaign by displaying posters in their cars and using stickers on their letters.

Claims Executive

ON JAN. 29 the executive committee of the Claims Association held a brief meeting in the office of J. G. Bruce, claim agent Indianapolis Street Railway. Those present were President J. H. Handlon, J. S. Kubu, L. F. Wynne, G. T. Hellmuth and H. K. Bennett.

Subjects for the October convention were considered. Several topics, including collection for property damage, vehicle regulation and other means for promoting safety, and use of moving pictures in claims work, were considered. It was decided to obtain expressions of opinion from all members of the subjects committee and all claim agents.

T. & T. Executive Committee

REPORTS of committees and the program for the October convention were the principal topics considered at a meeting of the Transportation and Traffic Association held at Indianapolis on Jan. 27.

For the accident prevention committee M. W. Bridges stated that a large meeting of the joint committee composed of Transportation and Traffic members and Claims members had been held the same morning. At this meeting the relations between Claims and T. & T. Associations had been taken up and arrangements had been made so that both would work together. The aims this year are to get out statistics that will do the most good in accident prevention work and hold a joint meeting of the two associations at the convention, with men from each discussing accident prevention work from the point of view of each department. Some years ago, said Mr. Bridges, a standardization of accident statistics had been attempted by the American Association, but it had not been found possible to standardize as to causes. The president was empowered to appoint a committee of four with two co-chairmen to get up a report on the subject. The sub-committee will send out questionnaires to collect statistics.

Several of the members spoke of accident classifications in use on their properties. Mr. Walker stated that on his road accidents are classified as avoidable and unavoidable. The number of avoidable accidents is an indication of the morale of the trainmen. Mr. Clifford said that on his roads accidents are classified in four groups. There is an honor roll for men having the best records. Mr. Powell said that in Louisville the costs of accidents are entered on each trainman's card. This record is kept up to within ten days of date. Mr. Clifford stated that in Texas on the Stone & Webster properties a campaign is being waged to show that the cost of accidents comes back on the car rider.

Labert St. Clair appeared before the committee and stated that as the Hoover conference will be finished next month, he will have time available for other work. He said he would like to have a poster campaign on safety and would be glad to prepare copy.

Mr. Stewart presented a progress report for the committee on bus operation. A list of some seventeen subjects which are being studied by this committee were discussed. Mr. Clifford said that if there ever was an opportunity to make progress for something that is popular this was the time. Care must be taken not to make the mistake of becoming tied down by a fare similar to the old flat street railway fare. The program of the bus operation committee was approved and President Clifford expressed his appreciation of the scope and thoroughness with which the work was being done.

Members present were G. H. Clifford, J. V. Sullivan, E. M. Walker, G. B. Powell representing Samuel Riddle and G. C. Hecker representing J. W. Welsh. Chairman M. W. Bridges of the accident prevention committee and J. B. Stewart, Jr., of the committee on bus operation were also in attendance.

Maintenance of Equipment

Four-Section Tower Truck

Power-Operated Tower May Be Raised or Lowered Either from the Driver's Seat or from Platform of the Tower Itself—Large Spotlights Provide Illumination for Night Work

BY J. R. BRITTAIN

Mechanical Engineer Los Angeles Railway, Los Angeles, Cal.

IMPROVEMENTS in a gasoline-propelled emergency line tower truck are proving of great assistance in speeding repairs and reducing labor. This emergency truck has just been built and placed in service by the Los Angeles Railway. It is stationed at a central point, is subject to call at all times and functions in much the same manner as fire department apparatus. When the alarm is sounded, operators receive directions by telephone and the city accords them the same right of way over traffic as fire and police vehicles.

To provide safe and rapid wire repairs a four-section power-operated tower has been adopted. Linemen can stand on the floor of the tower platform, protected by the railing, and work safely on trolley wire at its highest point. The tower can be raised much higher than old ones used by the company and can also be lowered farther to give additional clearance under low points.

The engine of the truck has a power takeoff consisting of a set of gears with housing. This is operated by the engine clutch. The power takeoff gearing has an individual shift lever and can be disconnected from the engine when the hoist is not in use. The tower is raised and lowered by a mechanical hoist driven by the power takeoff. The hoist consists of an interlocking worm with gearing which has a large speed ratio. The hoist is driven through a connecting shaft with a universal joint at the hoist and a flexible thermoid at the power takeoff end. The gear shift lever for raising and lowering the tower is placed conveniently beside the driver's seat, so that the tower can be raised or lowered to suit the lineman's requirements, while he still remains on top of the tower. This eliminates the necessity of a lineman getting down each time to help the

driver raise and lower the tower by hand power. The hoisting and lowering movements are protected by safety limit stops, which throw the shifting gear in a neutral position whenever the tower reaches its highest or lowest position.

In addition to the driver's control, the tower can be raised or lowered by the lineman while he is on the tower platform. This control is provided by means of a telescopic collapsible shaft made of four square seamless steel tubes, each fitting into the other and connected to the hoist gear shifting mechanism. By turning a crank the lineman on the platform raises or lowers the tower to the exact amount required.

The tower hoist cable arrangement consists of two steel cables attached to two large sheaves mounted on the hoist shaft. The cables pass over two smaller sheaves fastened to the upper members of the first section and the cable ends are anchored to the lower members of the second section. Four cables are attached to the chassis and then passed over four sheaves and are fastened to the upper members of the second section. The cable ends are anchored to the lower members of the third section.

Four cables are attached to the



The Tower in Its Raised Position Provides for Work on the Highest Part of the Line and the Workmen Are Protected by Rallags

lower members of the second section and pass over four sheaves fastened to the upper members of the third section. These cable ends are anchored to the lower members of the fourth section. Heavy wire guards are placed around the first section to protect the cables and sheaves from possible damage by objects which may be forcibly thrown against the



The Emergency Truck of the Los Angeles Railway Presents a Neat Appearance and Is Arranged for Particular Convenience of Workmen

tower. These guards also prevent linemen from getting hands or feet caught while the tower is being raised or lowered.

The truck chassis is of 2-ton capacity and equipped with a high-speed engine. Large pneumatic tires are used. The driver's cab is built of steel and is furnished as a part of the chassis by the manufacturer. The truck body was specially designed and built for emergency service. Two lockers are placed adjacent to and back of the tower for the small tools. The remainder of the body is used for larger equipment, such as jacks, blocks, rope, chains, etc. The body floor was built high above the chassis to provide sufficient clearance for lockers to hold the fire hose bridge.

Electric red lights are placed on the front, side and rear of the body. Two large spotlights are provided for furnishing illumination during repairs. Warning sirens which are electric motor operated and a hand operated warning bell are installed on the cab. The new truck has been in service slightly more than four months and has proved of extreme benefit in keeping cars moving dur-

ing heavy peak loads. This is a very difficult problem in the city of Los Angeles, due to the great number of vehicles which use the streets through which the car lines operate.

Improved Axle Bearing Storage*

AXLE bearings in the shops of the Denver Tramway, Denver, Col., were formerly piled on a bench in groups by sizes and for various types of motors. This arrangement had the disadvantage that the bearings were not easily located and also that they presented an unsightly appearance. In order to improve this condition a large rack has been constructed which is divided into vertical and horizontal compartments. These are labeled with the type of motor and size of the bearing. Each compartment is provided with angle-iron slides so that the bearings are supported by the flanges or set upright on the bearing flange so as to rest on the angle irons.

*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.

wheel independent of the other and assures traction on either wheel regardless of whether or not the other is free to spin.

The motor ventilation scheme is similar to that described for the generator. Ball bearings are used. Each motor has a nominal rating of 25 hp. at 250 volts.

The main controller has six operating positions, one for "forward" operation, one "off" position, three for "electric braking" and one for "reverse." These are so arranged that the controller handle is moved forward for forward operation of the vehicle, and backward for reversing.

The controller is hand operated. It is built so that it may be mounted under the operator's seat or at any other convenient place where the shaft can be connected to the handle by means of gears and shafting or bell cranks and linkages. The handle may be moved from "forward" to "off" or "braking" by a single motion, but cannot unintentionally be moved from "forward" to "reverse" or vice versa.

A field resistance controller has been designed for mounting on the steering column. It is provided with an extended handle so that it may be operated without removing the hand from the steering wheel. A roller running over a notched plate enables one to "feel" the positions.

The purpose of providing for increased resistance in the main generator field circuit is threefold. Overloading of the engine is prevented when its capacity has been temporarily reduced for some reason. It permits the engine to reach a high speed in a minimum of time and if the resistance is then reduced maximum accelerations are obtainable on severe grades or with heavy

New Equipment Available

Westinghouse Builds Gas-Electric Bus

THREE well-known manufacturers—the Westinghouse Electric & Manufacturing Company, Fageol Motors Company, and the American Car Company — have worked together in the construction of the latest gas-electric bus. The engine is a Hall-Scott, mounted on a Fageol chassis, motors and control are Westinghouse, and the body is of the Birney type built by the American Car Company.

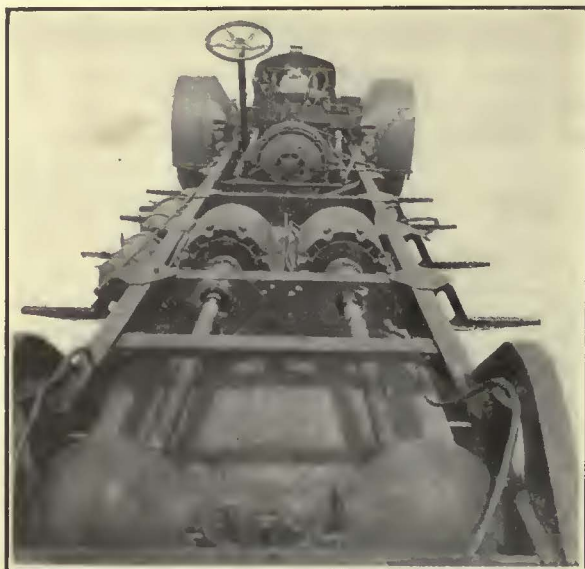
The electrical equipment consists of a shunt-wound generator, two motors, a main controller and a field resistance controller. The generator is direct connected to the engine through a flexible coupling. It is primarily a self-excited shunt generator, but is supplied with a small amount of separate excitation supplied from the 2-volt starting and lighting battery.

The generator is thoroughly ventilated and has a nominal rating of 53 hp. at 1,500 r.p.m.

Two interpole motors are used. They may be mounted in parallel or in tandem. When mounted in tandem they are connected together by means of a suitable flexible coupling and may drive the rear wheels through a standard automotive rear end. When mounted in parallel, a dual drive axle may be used. This permits one motor to drive one rear



New Westinghouse-Fageol Gas-Electric Bus on Exhibition at Indianapolis



At Left, Driving Mechanism Consists of Westinghouse Type V-91 Motors Mounted on a Figeol Chassis. At Right, Interior of the Body, Built by the American Car Company, Closely Resembles that of the Typical Birney Car

loads. It has also been found by tests that there is a "best" combination of engine speed, resistance, and grade, to obtain the highest vehicle speed.

A small toggle switch is provided to open the battery field circuit. It is arranged to be connected to the foot throttle and operates so as to close the circuit when the pedal is depressed and to open it when the pedal is released. This eliminates unnecessary battery discharge as would occur when coasting and when the vehicle is stopped.

SPECIFICATIONS OF NEW GAS-ELECTRIC BUS

Weight with passenger load.....18,000 lb.
 Wheel diameter30 to 36 in.
 Gear ratio8-12 to 1
 Free running speed30 to 50 m.p.h.
 Schedule speed15 to 25 m.p.h.

GENERATOR

One Westinghouse type 177, nominal rating 53 hp. at 275 volts, 1,500 r.p.m.

MOTORS

Two Westinghouse type V-91, nominal rating 25 hp. at 275 volts, 1,800 r.p.m.

CONTROL

One Westinghouse hand-operated directional and emergency braking controller.
 One Westinghouse steering column field resistance controller.

This gasoline-electric coach was built in St. Louis and has recently been driven on an initial demonstration tour with very satisfactory operating results. Cities visited have been Terre Haute, Dayton, Columbus, Toledo, Detroit, Cleveland and Indianapolis. It was demonstrated to street railway and motor bus company officials in each of the cities visited. During the tour from St. Louis to and between the cities mentioned, the gasoline consumption has averaged 5½ miles to a gallon.

Improved Concrete Breakers

TWO new concrete breakers of improved type have just been announced by the Sullivan Machinery Company, Chicago, Ill. These are DW-221 and DP-221. The valve for these breakers is an improved modification of the pioneer Sullivan drill valve. Its outstanding characteristics are light weight, rapid action, positive control of the piston and hard, snappy blows.

The valve mechanism is secured in the chest by side rods which hold the valve buffers and the single leaf buffer springs in position. The valve buffers are round pieces of tool steel turned and heat-treated. The valve itself is made from alloy bar steel especially heat-treated to resist shock and breakage. A hood or deflector is provided as part of the

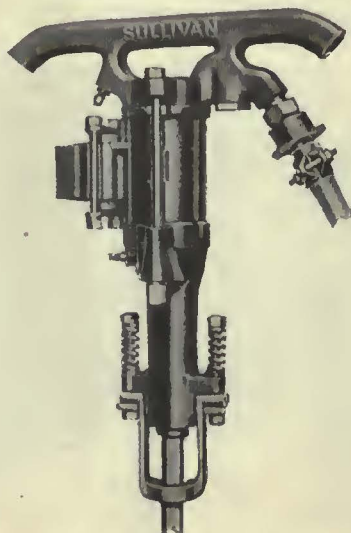
valve chest to throw the exhaust from the drill away from the operator.

The piston is made from bar stock of special alloy steel, ground after heat treatment to a close running fit in the cylinder. The forward end has a button turned on it, which lessens the possibility of upsetting and binding in the bushing if operated on poor shanks. The striking end is guided in a long bearing, which is a part of the cylinder.

The cylinder is a solid drop forging, machined, hardened and ground to exact size. The valve chest is not separate, but is a part of the forging. The bore of the chest is ground accurately and holds the valve chest bushings in which the spool valve reciprocates, so that in case of wear the bushing may be renewed without having to replace the cylinder. A dustproof chuck housing made from a solid drop forging bored out, hardened and ground incloses the chuck and chuck bushing. Lubrication of front end parts is by a tapped opening closed by a thumb plug.

The back head has an oil boss on top of the seat for the throttle valve. Oil can be poured into this chamber, which leads to the main inlet port. This carries oil through the working parts of the drill. A separate oil reservoir in the side of the cylinder provides an automatic oil feed through the main inlet port.

The DP-221 concrete breaker is a lighter type, fast-running tool, weighing but 41½ lb., while the DW-221 is a heavy-duty breaker, weighing 75 lb.



Type DW-221 Concrete Breaker

The News of the Industry

Draft of St. Louis Grant Under Way

The rough draft of the franchise under which the newly formed Public Service Company of St. Louis, Mo., will be asked to operate when it takes over the properties of the United Railways has been prepared by City Counselor Selor Muench is merely to be used as a ler and his special franchise committee. The substance of the proposed ordinance will not be made public until it has been finally approved by the committee. The draft prepared by Counselor Muench is merely to be used as a basis of discussion by the committee of which Mayor Miller is chairman.

In a general way the agreement between the city of Montreal and its railway will be followed in the preparations of the new St. Louis ordinance. The terms of the Montreal franchise will, however, be changed to conform to local conditions in St. Louis, particularly with respect to the size of the car system and the problems that have developed since the Montreal bill was put into effect in 1918.

Seven-Cent Fare in Louisville

The Louisville Railway, Louisville, Ky., has been granted a straight 7-cent fare. The new rate became effective on Feb. 1. Tokens, which were sold at five for 30 cents, are being accepted as the equivalent of 6 cents, when an additional cent is added, this provision having been made to facilitate matters in the interest of the car riders. The old rate was 6 cents on tickets or 7 cents cash. Instead of tokens, paper tickets will be issued.

City Attorney William T. Baskett issued a statement to the effect that the added revenue will probably increase earnings of the company from \$300,000 to \$500,000 annually.

Under the ordinance passed in 1923, authority for the raise was granted the railway, members of the Board of Works said, after it had been shown that the barometer fund had dropped to \$36,000. The question of an increase in fare for the company came up for discussion when the Louisville Railway showed on Dec. 31, 1925, the earliest date a fare increase could be asked for, that the fund had depreciated to such an extent that operation to bring the fund over the \$200,000 mark, fixed by ordinance as the minimum, had not been successful.

Bound by the ordinance, the Board of Public Works had only to view the books of the railway, and, if it accepted the figures as kept by the company, the raise automatically went into effect.

The Board of Works objected to certain charges made against the fund and questioned the right of the railway to charge off depreciation and other ex-

penses which, it was claimed, should have been made against capital. On that question several conferences between the board and railway officials hinged.

At the same time accountants for the Public Utilities Bureau had other figures which they claimed would bring the barometer fund to \$175,000 with certain items carried off, and even held that under certain bookkeeping interpretations of the ordinance the fund would exceed \$200,000.

The question of the general plan to be followed by the company in making charges against the fund has been a subject of debate between the city and the company.

In the event the barometer fund reaches \$500,000 fares are reduced automatically by progressive stages.

Mayor of Tacoma Charged with Double Dealing

Internal disturbance in jitney bus circles at Tacoma, Wash., has come to an open rupture between Mayor A. V. Fawcett and George F. Vandever, Seattle, attorney and heavy stockholder of the Puget Transportation Company. Mr. Vandever accused the Mayor of playing politics with the jitneys and sacrificing the stockholders to further his own political interests. The Mayor branded these charges as false.

Incensed at the Mayor's statements, Mr. Vandever threw open the books of the company to show that the buses were operating at a loss. In fact, operation has failed to show a profit for a single month since the company was organized, a year ago last October. He denied, however, that he had threatened to suspend operation. According to Mr. Vandever, the company will continue to operate in the hope that it will be able to establish itself on a paying basis. In the future the Mayor will have no voice in the policy of the company. The buses are operated in Tacoma in competition with the railway lines of the Tacoma Railway & Power Company.

During the controversy the Mayor is reported to have said he "could close out the Tacoma Railway & Power Company tomorrow if I want to. But I can't until I find something to take its place. With 100 buses I can do everything the railway is doing, and run the buses further out."

Paving Relief Bill Introduced in New Jersey

Senator Abell has introduced into the Legislature of New Jersey a bill which would relieve street railways from paving expense except that incurred in construction or repair of tracks. The bill is favored by Public Service Railway.

Belated Moves Being Made at Chicago

Members of the local transportation committee of the City Council at Chicago hope to submit a tangible plan for the solution of Chicago's traction problem to the voters in the November election.

Whether the plan to be submitted will be based on a 50-year franchise to the surface lines at the expiration of the existing franchise on Feb. 1, 1927, or whether the plan will be so arranged as to provide the issuance by the city of terminable permits to the companies has yet to be determined by the committee.

If the voters approve the plan, it will be submitted to the Legislature, which meets early in January, 1927, for the needed enabling legislation, on which, in either case, the plan will be based. Between the time that the Legislature convenes and the date of the expiration of the railway franchises there are a few days during which the passage of the enabling measure may occur.

While Alderman McDonough, chairman of the local transportation committee, was discussing the probability of a tangible plan for submission to a vote in November, bankers representing the bondholders of the surface lines were announcing the personnel of the protective committees appointed to conserve the interests of the bondholders. Mr. McDonough said:

Inside of a few weeks we will have something tangible to work on—a rough draft of a traction ordinance being prepared by C. M. Doty and J. J. Coughlin, assistant corporation counsels, assigned to the committee.

If necessary the committee will meet every other day to consider this rough draft and work out a final solution to the problem. Whether the solution is going to be based on a city-issued permit or on a 50-year franchise will have to be decided by the committee. The committee, however, will have an ordinance ready for submission to the people at the November election, and based on the necessary enabling legislation, which is needed whether we have a 50-year franchise or the permit plan.

When Chicagoans approve this plan, we will submit it to the Legislature as an expression of the majority of Chicago's population and demand that the enabling legislation on which this plan is to be contingent be passed. This could be done before the ordinances expire on April 1, 1927, and in this way a receivership will be avoided.

So far as the general public is concerned the reported action by the bankers caused some misgivings. Largely on this account the bankers explained publicly that the appointment of bondholders' committees at this time was merely a matter of form and in preparation for the future. Until the payment of principal is actually defaulted, an event which cannot happen before Feb. 1, 1927, the bondholders cannot do anything. The personnel of the committees has been published before in the ELECTRIC RAILWAY JOURNAL.

Purchase of Taxis Is in Hands of Public Service Commission

Coleman J. Joyce, counsel for the Philadelphia Rapid Transit Company, Philadelphia, Pa., has petitioned the Public Service Commission for approval of the purchase of the capital stock of the Yellow Cab Company, Philadelphia. The price specified is approximately \$3,000,000. It is stated in the petition that this move is a part of the general program of bringing together the various transportation facilities of the city for the greatest good of the largest number of people. The railway regards a combination of this kind as an economic necessity.

The taxicab company's capital stock is represented by 5,000 shares and the price agreed upon covers several pieces of real estate which it owns. The sum of \$50,000 was paid by the P. R. T. at the time that the agreement of sale was made and the balance must be paid not later than July 1, 1926. A hearing will be fixed by the commission.

Plans Made for Great Northern Cascade Electrification

At Boston, Mass., which he visited during the week ended Jan. 30 to discuss matters related to the development of the Northwest and the forthcoming electrification of a new Cascade mountain tangent tunnel with Jackson & Moreland, consulting engineers, Ralph Budd, president of the Great Northern Railway, stated that the new tunnel will be about 7½ miles long. It is expected it will be completed in about three years. It will cost about \$10,000,000. More than 18 miles of grades and curves will be eliminated. This will permit a reduction of several hours in the running time of trains. Hydro-electric power from the road's existing plant will be used.

In connection with this tunnel the improvement in line will call for the electrification of about 25 miles of track. Single-phase transmission and the use of d.c. motors in driving the locomotives is contemplated.

Service Changes on Detroit Lines

The fare by railway to the village of Redford, which was recently annexed to the city of Detroit, has been fixed at 12 cents, or double the regular city fare, and a contract has been entered into whereby the Detroit Department of Street Railways is to use the tracks of the Detroit United Railway to the center of the old village of Redford.

Effective on Jan. 17 the Grand River car line was extended from Meyers Road, the old terminal, to Redford Center. The fare is 6 cents for the ride from the city points to Mill Road and 6 cents from Mill Road to Redford. Full transfer privileges are granted.

Coaches formerly operated on Grand River Avenue between Meyers Road and Mill Road have been discontinued and D.S.R. coaches are operated on Grand River Avenue from Redford Center to the Telegraph Road. As the bus fare is 10 cents, this arrangement allows passengers to travel from the Telegraph Road into the city for 22 cents. It has also been announced that bus service is to be furnished from

Brightmoor to Mill Road for 10 cents, giving residents of Brightmoor the same privileges as those of Redford.

According to the terms of the contract with the Detroit United Railway, the city department will pay the D.U.R. 10 cents per car-mile for each car operated over its tracks leading to Redford. The contract can be terminated upon 90 days' notice.

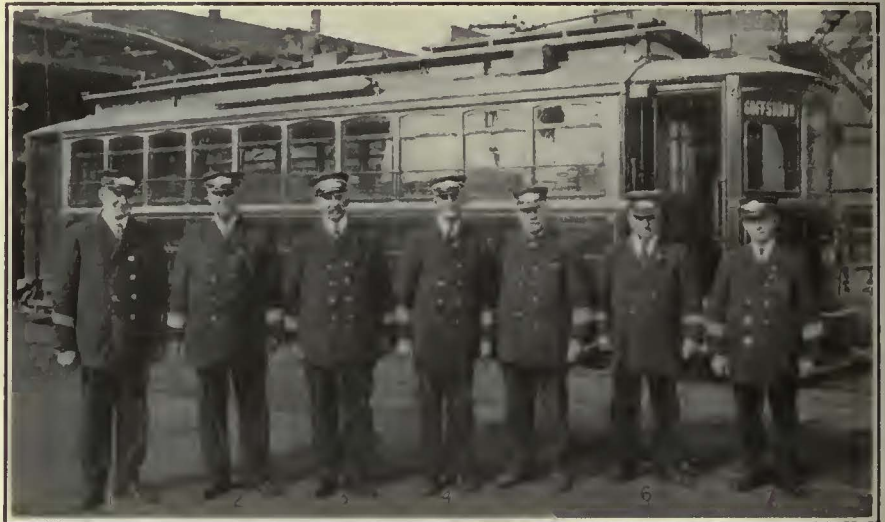
Hearing on Los Angeles Terminal Adjourned

The hearing on the application of the city of Los Angeles for an order of the Railroad Commission to compel steam roads in Los Angeles to construct the Plaza Union Passenger Terminal has been adjourned until March 2 to permit several different associations to present additional briefs and data. A hearing was held in Los Angeles before the California Railroad Commission on Jan. 4 and continued several days, but nothing of significance developed. At this rehearing the city of Los Angeles based its appeal on the decision handed down some time ago by the Interstate Commerce Commis-

206 Years of Safety Is Record of Seven Manchester Motormen

In the employ of the Manchester Street Railway, Manchester, N. H., are seven motormen who have established a remarkable record of 206 years of active service in the employ of the company without having been involved in an accident which resulted in any expense to the company. In this period of 206 years these men have operated their cars approximately 5,000,000 miles, or 200 times around the world. This record is a source of great pride.

William Tarr, the oldest in length of service, started work for the company on Feb. 19, 1886, is a veteran of the horse-drawn car days and has 39 years of service to his credit. James Herod is second in years of service. He began work with the company on April 1, 1892, and has 33 years to his credit. William Drennan started to work on July 1, 1893, and has more than 32 years to his credit. Both Mr. Drennan and Mr. Herod are veterans of the old horse-car days. John O'Sullivan began work 28 years ago on April 1, 1897, and Alphonse St. John started



Manchester's Honor Men

(1) John Kirk; (2) William Drennan; (3) John O'Sullivan; (4) James Herod; (5) William Tarr; (6) John Dugan; (7) Alphonse St. John

sion that the Southern Pacific, Union Pacific and Santa Fé lines should provide a union station for Los Angeles. This plan as proposed by the city called for the separation of several dangerous grade crossings that existed on the steam road and interurban lines entering the city. The steam road and electric lines in opposing the Interstate Commerce Commission's views on a union station have presented plans for a system of station facilities, elevated lines and grade crossing separations that is considered the logical solution to the congestion in certain sections.

One-Man Cars to Speed Up Service.—An experiment with one-man cars on the Dorr Street line of the Community Traction Company, Toledo, started on Jan. 17. The purpose is to speed up downtown operation by establishing a new plan of pay-enter inbound and pay-leave outbound. This will eliminate collection of fares in the congested area. The one-man cars have been operating on three other lines for many months.

one year later, on April 1, 1898. John L. Dugan started 24 years ago on July 5, 1901, and John Kirk 23 years ago on May 1, 1902.

When asked to comment upon this wonderful record, Thomas H. Kendrigan, superintendent of the Manchester Street Railway, pointed out that in his opinion the showing is due to the fact that all of these men are of a type which any community would be proud to number among its citizens. They have always lived up to the standards of the company. He said:

I have no recollection that any of these men was ever late for work. If I were asked to name the principal qualifications that go to make up a good motorman, I would name loyalty, co-operation and courtesy. All of these traits are characteristic of these men. I have never known one of them to be disagreeable to the public, or indifferent to the orders of the company. They have tutored practically all student operators on our lines within the last twenty years. By their devotion to their duties they have earned the respect of the officials of their company, and by the courteous and efficient manner in which they have conducted their daily work they have earned the trust and confidence of the public.

Rapid Transit Plan for Immediate Use Suggested at Detroit

The plan for "rapid transit" operation of street cars on main traffic arteries in Detroit, Mich., which was submitted to the City Council by Harry R. Miller and Nicholas J. Schorn, Detroit real estate men and engineers, has been referred by that body to the Department of Street Railways and the Rapid Transit Commission for study. The D. S. R. and Rapid Transit Commission were directed to report to the Council at the end of four weeks as to the possibilities of the proposed plan.

As has been explained previously in the *ELECTRIC RAILWAY JOURNAL*, the plan, known locally as the Miller-Schorn plan, was originally presented to the Council last year. Included in it are the following recommendations:

1. That four-track subways be built within the half-mile circle, designed for extension when the need arises.

2. That street cars can be operated as express trains outside this district, making stops every half mile or mile at depots placed in the center of the street, between the tracks, and reached from the sidewalks by underground passages.

3. That buses supplant the trolley cars in the slower, many-stop service.

The plan is advanced by its originators as the most practical and economical one for rapid transit offered in Detroit. They urge that recommendations 2 and 3 be put into effect without delay.

In commenting on the plan, H. U. Wallace, general manager of the D. S. R., stated that tests mentioned in the reports submitted by the plan's proponents, indicating a saving of more than twenty minutes by the use of the Miller-Schorn system on the Woodward Avenue line between Jefferson Avenue and the city limits, were made after midnight when traffic was light and that they might therefore be inaccurate.

Mr. Mitten Would Reorganize Labor Bank

An offer of \$1,000,000 for the rehabilitation of the Producers and Consumers Bank, Philadelphia, Pa., a labor institution, which closed its doors some months ago, has been made by Thomas E. Mitten, chairman of the Philadelphia Rapid Transit Company. The offer was accompanied by a comprehensive plan for reorganization, in which the interests of the stockholders and depositors would be fully protected. Albert M. Greenfield, receiver, favored acceptance of the plan, through which, it was said, losses to depositors sustained in the failure would be eventually recovered.

Employees at Detroit Protest Change in Hours

Although not entirely satisfied with the new arrangement of working hours at the Highland Park shops of the Detroit Department of Street Railways, the 500 employees who walked out at noon on Saturday, Jan. 23, were back at work again Monday morning.

Some time ago the men, who were not entirely satisfied with the wage scale, asked an increase in wages. After a survey of factory conditions in Detroit by Frank J. Denny, assistant to

H. U. Wallace, general manager, it was reported that the men were receiving a good hourly wage rate, but that they were working only 44 hours a week, whereas employees in factories on similar lines of work were employed 48 to 49 hours a week.

Following the findings of Mr. Denny, the general manager ordered that the men in the Highland Park shops be permitted to work on Saturday afternoon, thus increasing the number of hours per week to 48, the additional hours to be paid for at standard rates.

The department manager does not contemplate any alteration of the wage scale and apparently no further step is planned by the shop men.

Oklahoma Railway Affected by Withdrawal of Jitney Rules

The transportation situation at Oklahoma City, Okla., was somewhat muddled Jan. 27 when city officers were ordered to discontinue enforcement of the ordinance governing bus operation in a restraining order issued by Judge Tom Chambers of the district court. This court order resulted from a suit filed against the City Commissioners by the People's Transfer Company, in which it was alleged that the Oklahoma City bus and jitney ordinance is "unreasonable, discriminatory and oppressive." Acting upon the strength of a previous decision upholding the ordinance the railway put on several buses to supplement its street car service.

The temporary restraining order threw down the bars for the establishment of jitneys on several Oklahoma City streets which are operating in competition with the Oklahoma Railway. This complicates the financial problem which the Oklahoma Railway has been facing since it went into receivership more than a year ago. The Oklahoma City ordinance, the enforcement of which is temporarily restrained, requires bus operators to pay an annual license of \$30 per seat on every bus. It also gives City Commissioners the right to specify the routes of bus lines and fixes a penalty of \$19 and cost for violation. Each violation counts as a separate offense, according to the ordinance.

A City Commissioner Sets a Good Example

Herman H. Green of the City Commission of Salt Lake City, Utah, in carrying out a plan announced by himself some weeks ago, has turned his commissioner's automobile in to the city garage. Commissioner Green is riding the street car to and from his office, and walks when it is necessary to go about town on city business. Mr. Green has taken this action in the interest of economy and reduction in automobile expense for the city. The commissioner's idea is that just enough cars to take care of the actual needs of the city should be kept for emergency business.

Accident Prevention Contest in Rochester

An accident prevention contest has been started by the New York State Railways, with the various divisions, lines, teams and individual trainmen of the Rochester city lines. Rewards will be given to winners and to all men operating 300 days without a chargeable accident.

The plan is to divide all motormen and conductors into teams of ten men each. The same percentage of extra men will be on each team. Teams will be picked so they will operate as near as possible an equal number of car-miles. Each member of the winning team having the fewest number of accidents during the year will be presented with a new uniform as a reward for his carefulness. Each motorman and conductor who operates his car for 300 days without a chargeable accident will be presented with a \$1,000 sick and accident insurance policy, good for one year. All accident records will be posted on the various bulletin boards in the carhouses, and banners or flags, which can be displayed in front of the carhouses, will be presented the first day of each month to the division operating the largest total of car-miles per accident during the preceding month. The contest will last throughout the year.

Name of Stone Mountain Cars to Commemorate Leading Men

Each of the five new interurban cars which will be operated on the Stone Mountain line by the Georgia Railway & Power Company, Atlanta, Ga., will bear the name of some distinguished citizen of the community.

The suggestion about naming the cars came from a patron of the line. It was eagerly adopted by officials of the company. Patrons along the Stone Mountain interurban have been asked to send into the company the name of some person after whom they would like to have a car named along with their reasons. The names are to be limited to those who have served the community and whose careers are now ended. The five persons receiving the highest number of votes in the contest will have their names placed upon the first five new cars. Other cars will be named as they are purchased and placed in commission.

Thirty-eight Years in Service

This coming spring Ellsworth E. Rhodes will celebrate 38 years of continuous service with the Poughkeepsie & Wappingers Falls Electric Railway, Poughkeepsie, N. Y. In the days when that company kept about 60 horses in readiness for service a young man who hailed from Clintondale became the driver of an old green car which left the carhouse and ran to the river, then back to the Poughkeepsie & Eastern Railroad. This man, now grown old in the service, recently spoke of his experiences with Mike, the utility horse; of the one-man car, not, in this veteran's opinion, an innovation, and the arrangements made with Vassar College girls to meet the "Mary Powell," bound for New York.

Survey at Springfield Progressing

The survey of the lines of the Springfield Street Railway, Springfield, Mass., by the committee of three is progressing rapidly. The committee consists of Engineer J. T. B. Woodruff of the Springfield, Mass., planning board; President Clark V. Wood of the Springfield and the Worcester street railways and W. J. Flickinger, vice-president of the Connecticut Company.

To date the committee has the report of J. T. B. Woodruff. The paper reviews the problem of traffic control as it affects the operation of street cars, routing of cars, overcrowding of cars, track repairs and renewals, the elimination of unnecessary stops and the desirability of extending parts of the double-track system.

It is said that Mr. Woodruff recommends the repair and removal of a large part of the system and that he suggests a plausible solution for traffic control. Only the cars operated over the Longmeadow line are said to be so antiquated as to need to be replaced. This is a matter which is receiving the attention of the committee. A new standard car which is said to be favored is lighter of weight and lower of body than is the type in use at present. A model one-man, two-man car is being built by the Wason Manufacturing Company.

Expenditure needed to rehabilitate the system is placed at about \$1,000,000.

Quincy & Northeastern Receives Certificate

It is reported that the Quincy & Northeastern Railway, Quincy, Ill., has been granted a certificate of convenience and necessity to operate a line between Quincy and Monmouth, Ill. It is generally believed that the Quincy & Northeastern will be operated with electricity supplied from the Keokuk, Iowa, power dam. No right-of-way has been secured, but a preliminary survey has been made. Efforts to reach Charles H. Petsch, New York City, said to be president of the new line, were unavailing as Mr. Petsch was out of the city.

Commission Recommended for Newark

The creation of a Transit Commission in Newark, N. J., to consist of five representative citizens to serve without pay and have the help of an expert on traffic and transportation as consultant is favored by the Newark Chamber of Commerce. This action, taken at the regular meeting, expressed the approval of the Chamber on the report by a special committee on traffic, transit and transportation. After reciting the results of an extensive survey the committee suggested in its report that the commission be appointed by the Mayor with the authorization of the City Commission or the Legislature, and that the city appropriate \$60,000 for the commission's work. Mayor Raymond said he did not believe that the City Commission should delegate its power to a transit commission because the responsibility for what is done would rest eventually with the city officials.

News Notes

Rate Rehearing Denied.—The California Railroad Commission has denied a petition for a rehearing filed by the city of Oakland in the matter of the temporary increase in rates of the Southern Pacific Company for its trans-bay ferry and interurban electric railway service in Alameda County.

Fare Rehearing Sought.—The Pacific Electric Railway, Los Angeles, Cal., has applied to the Railroad Commission for a rehearing of its application for an increase of its local railway and bus fares in the city of Pasadena. Its application was denied recently by the Railroad Commission.

Radio Tells of Seattle's Service.—The Seattle Municipal Railway recently utilized the radio in Seattle, Wash., to advertise its service. An elaborate program of music, singing and talks was arranged by R. E. Furse, assistant to the general superintendent. Included in the program was a talk on "Operation of Seattle Municipal Railway," by D. W. Henderson, general superintendent.

Committee Opposes Increase in Speed Limit.—The Milwaukee Electric Railway & Light Company, Milwaukee, Wis., has been refused permission to increase the speed of its street cars from 15 m.p.h. to 20 m.p.h. by the public utilities committee of the Common Council. The committee felt that it would be unfair to grant this privilege to the railway when the speed of autos, buses and taxis is held by ordinance to 15 m.p.h.

Fare Increase Denied.—The Public Service Commission of West Virginia on Jan. 27 denied the increase in rates asked by the Wheeling Traction Company, Wheeling, W. Va. The commission held that the company did not present its case in a manner which would enable the commission to distinguish properly the interstate and intrastate business and therefore an additional charge could not be authorized. It was held by the commission that no competent evidence had been adduced by the railway to enable the commission to fix the present fair value of the company's lines and properties.

\$15,660 Safety Bonus Awarded.—The San Diego Electric Railway, San Diego, Cal., distributed at two meetings on Dec. 22 and 23, 1925, \$15,660 in safety-first bonus checks to 172 conductors, motormen and bus operators. In addition to the safety-first bonus, during 1925 an additional bonus amounting to \$7,079 was distributed to trainmen under a plan wherein it is possible for each trainman to earn \$5 a month as an award for courtesy, safety, neat appearance, accuracy and general efficiency. At a meeting the subject of the benefits of the third year of welfare work carried on by the company were discussed, and in addition Hamilton watches were awarded to two employees for twenty years of faithful service. Both were elected to membership in the twenty-year service club.

Transfer Charge in Mobile.—At a recent meeting of the Alabama Public Service Commission, held at Montgomery, Ala., permission was granted to the Mobile Light & Railroad Company for a 1-cent transfer charge where through street cars are transferred from one line to another and the passenger does not change cars. This change does not increase the present fare, but is in lieu of the existing traffic charge where passengers change cars. The railway company wanted the change in order to put on through cars to carry students to the new Mobile high school.

No Strike in New Orleans.—There will be no car strike in New Orleans, La. The vote cast in a recent referendum was 823 against and 697 for. The possibility of a strike came about through the dismissal of two conductors on the lines of the New Orleans Public Service, Inc. Oscar C. Pertuit was discharged, it was said, for circulating election propaganda during the recent contest for president of the union and Robert Martin for inciting the men against the company. Herbert B. Flowers, president of the New Orleans Public Service, Inc., said that representatives of the union had called upon him and asked that the two men be reinstated, but that he had said that the men had been dismissed in keeping with the agreement between the union and the company.

Fares Between Wellston and St. Charles Cut.—The Missouri Public Service Commission on Jan. 25 authorized the Missouri Electric Railroad, controlled by the United Railways, St. Louis, Mo., to place a schedule of reduced fares into effect between Wellston and St. Charles, Mo., effective on Feb. 1. Under the new order the fare will be 21 cents. The new rate means a saving of 10 cents for through trip riders due to a change in the zones on the line. The fare in each zone will be 7 cents or a token for each adult and 3 cents cash for children. The reduction was sought to meet bus competition. The private buses running from Wellston to St. Charles recently cut their fares below those charged by the street cars. The competition in this section was referred to in the ELECTRIC RAILWAY JOURNAL previously.

New Long Beach Line Opened.—The new Daisy Avenue freight line of the Pacific Electric Railway, Los Angeles, Cal., was recently dedicated to the development of the Long Beach Harbor. More than 600 acres of new Long Beach industrial territory will be opened up in the west side district. The line cost the railway \$237,000. It will develop territory that now lacks rail facilities and will shorten the freight operating haul to and from Long Beach and Los Angeles, 2.3 miles. Mayor Clark of Long Beach said that the construction of the new line showed the unbounded faith the Pacific Electric had in the future of Long Beach Harbor. The new freight line extends northerly along Daisy Avenue from State Street to a point of juncture with the Los Angeles-Long Beach main line at Los Cerritos. It is estimated that freight can be moved to and from Los Angeles over the new line in 90 minutes.

Recent Bus Developments

New York Commission on Buses

State Body with Jurisdiction Outside of New York City Cites Its Views

It seems apparent to the Public Service Commission of New York that the substitution of buses for electric railway lines which have ceased to be profitable or that operate in territories which may better be served by buses is inevitable. With the continued growth in the amount of business carried on by bus lines in the state, the commission sees the need for further authority for the regulation of these agencies. In the opinion of the commission there should be added to the present public service commission law an article specifying in detail the supervision which the Legislature desires the commission to exercise over bus lines. It says the necessity for legislation upon this subject is recognized not only by the commission and the general public but also by the operators of bus lines.

Two other recommendations upon this subject contained in the last annual report of the commission are renewed, namely, an amendment to Sec. 5 of the public service commission law specifying more in detail the authority of the Public Service Commission and the Transit Commission where a bus line is partly within and partly without the territorial limits of the city of New York, and an amendment of the railroad law which will permit street railways to engage in auxiliary bus business without the necessity of the formation of separate corporations for that purpose.

The commission sees the bus business gradually unfolding itself. It says that in the early development of the bus no attempt was made to co-ordinate lines. They were developed and operated as the immediate needs dictated and as the financial ability of the operator permitted. Too often the available capital was so slender that the equipment soon suffered from inadequate maintenance and in many instances the original operator disappeared, to be followed by an equally enthusiastic and poorly equipped successor. The past year, however, has presented a rather wholesome consolidation of a number of such lines into systems extending over wide areas, back of which there are adequate financial resources to permit the lines to be efficiently and successfully operated. The close of the year finds these lines just beginning to function at their best. In the next season there is every reason to believe there will be a further consolidation with wider extensions which will ultimately provide the state with a class of service of the first order.

At one place in its comment the commission says:

Within the state bus operation has superseded electric railways in Newburgh (except partially for a short period in the summer when passengers are transported to

Orange Lake Park), in Middletown, in Glen Cove and in Port Jervis. In Albany, Troy, Utica, Rochester, Buffalo, Auburn and Watertown electric railway service has been superseded in part by bus service, either through extension of lines or creation of new lines.

Service to University Supplied by Baton Rouge Company

More than an ordinary public service is being supplied by the Baton Rouge Electric Company to the new Louisiana State University in Baton Rouge, La. The route is 2.6 miles long, of which 2.43 miles is over a hard-surfaced highway. Service by bus was started immediately upon the completion of the paving work on the Highland Road about three months ago.

The bus equipment consists of three 29-passenger Mack-Birney safety buses, two of which are in service from 6 a. m. to 8 p. m. on weekdays, while the third is used in tripper service between 7 a. m. and 8 a. m. and 11:30 a. m. and 1:30 p. m. On Sundays, when no students are handled, one bus furnishes a 30-minute headway, whereas a ten to fifteen minute headway is furnished on weekdays. The bus equipment represents an investment of about \$9,000 for each vehicle. Costs approximate 16 cents per bus-mile. Licenses and taxes average yearly about \$200 per bus.

During November the company handled 24,700 passengers. About 25 per cent of these were hauled between 7 a. m. and 8 a. m. during the rush for 8 o'clock classes.

The railway fare in Baton Rouge is 5 cents, but the bus fare is 10 cents including transfer privilege. Transfers from street cars are honored on the buses upon the payment of an additional 5 cents in cash. Transfers are issued from buses to street cars without additional charge.

The Louisiana State University has outgrown its accommodations in the heart of town. It was recently moved to a new site just outside the city limits. The new development contemplates an ultimate outlay of \$7,000,000. More than 1,600 students are enrolled. At present all students live downtown, pending the completion of the dormitories.

De Luxe Bus Service Proposed for North Jersey

Proposals have been made by the Public Service Transportation Company to establish de luxe bus service through certain high-class residential districts in North Jersey. The plan contemplates operation of parlor car buses providing a seat for every passenger at a fare higher than that of the street car. One of the districts which it is proposed to serve in this manner is the Forest Hill section of Newark, lying between the Mount Prospect Avenue car line and Branch Brook Park. A considerable part of this district is several blocks away from present service of the Public Service Railway. Some years ago bus service was attempted by an independent company operating at a 10-cent fare. The schedule speed was comparatively slow, however, and the service never achieved any great degree of popularity. Objection was made by some of the residents to the noise created by the buses. After some months trial this service was discontinued.

Another proposed line would serve the northern section of Glen Ridge, a suburb of Newark. A large residential district has been built up some distance from the nearest car line and it is proposed to furnish direct service between this district and the downtown section of Newark.

Limitations to Bus Operation.—The Gardner-Templeton Street Railway is operating buses between West Gardner Square and the Templeton town line, but is not permitted to pick up passengers bound for West Gardner or for Baldwinville, Mass. This restriction protects a private line which operates between Gardner and Winchendon.

Twelfth Line Started.—The twelfth bus line installed by the Philadelphia Rapid Transit Company, Philadelphia, Pa., within the last year started its first bus on Jan. 31 connecting Frankford, Olney, East Germantown and Chestnut Hill. During rush hours buses will run at intervals of two or three minutes, with a ten to fifteen minute schedule during the early hours of the day and a late night schedule of 22 minutes. The new line will provide a crosstown service for workers and students. A 10-cent fare with the 3-cent exchange privilege to and from all connecting surface lines is charged.



Students en Route to University

Buses for Light Hours.—The Public Utilities Commission has approved the petition of the Connecticut Company to discontinue railway service in Bridgeport, Conn., for a total distance of ½ mile except that at specific times service will be supplied over part of this route. The company will operate buses during the hours of off-peak traffic.

Seeks to Operate in Millbury.—Officials of the Worcester Consolidated Street Railway have asked the selectmen of Millbury, Mass., for permission to operate buses within the town limits. Bus concerns which asked for permits were turned down because the Selectmen felt the railway should be given first consideration. The railway is operating two buses to serve the Speedway and Tatnuck Square districts in that city. Both sections have been without transportation facilities. The regular 10-cent fare is being charged. Passengers are permitted to transfer between bus and trolley.

Refuses Bus Substitution.—The Alabama Public Service Commission on Jan. 27 denied a petition of the Alabama Power Company to abandon a portion of its car tracks in Montgomery and substitute a bus line. In denying the petition the commission established a policy of declining to entertain such petitions until the municipal authorities have expressed their opinion. The Alabama Power Company sought to make the change as a measure of economy, but the citizens protested. The company failed to get a statement from the City Commission and then resorted to the Public Service Commission.

Enlarges Service.—The East St. Louis & Suburban Railway, East St. Louis, Ill., through its affiliated company, the Red Line Company, has extended its bus service into St. Louis from Collinsville, Ill. The new service will be from St. Louis to Greenville, Ill. The buses formerly operated only between Greenville and Collinsville. Two 29-passenger buses are being used in the service.

Purchases Independent's Rights.—Unable to secure authority from the Indiana Public Service Commission to operate a bus line between Hammond and Indiana Harbor, Ind., because of the existence of one line in that field, the Gary Railways took another step in the unification of northern Indiana bus routes by purchasing the certificate of the Blue Safety Coach Company of Indiana Harbor to operate between the two points.

Line in Pennsylvania Acquired.—The West Chester Street Railway, West Chester, Pa., which owns and operates the unified railway and bus system known as the Chester Valley Lines, has acquired the bus line between Pottstown and Reading from the Reading & Pottstown Bus Company, which will be operated as part of this system. The consolidation will enable the Chester Valley Lines to provide direct bus service from Reading to Norristown and from Wilmington, Del., to Reading, through West Chester and Pottstown. The extent of the use of the bus by this company has been the subject of review before in the ELECTRIC RAILWAY JOURNAL.

Financial and Corporate

Cincinnati Results Promising

First Two Months Under New Service-at-Cost Grant Show Small Balance—President Draper Discusses Buses

After all expenses, rental, interest and return on capital the Cincinnati Street Railway, Cincinnati, Ohio, earned \$6,774 for the two months period ended Dec. 31, 1925. This fact was disclosed in the report by President Draper, which reviewed operations since the company took over the operation of the street railway system from the Cincinnati Traction Company on Nov. 1 last. Mr. Draper said that having in mind that the essence of a service-at-cost franchise was that only a sufficient revenue could be secured to pay the operating cost, taxes, fixed charges and return on capital, it was apparent from the results obtained in the two months his company had been operating that the 8½-cent fare provided sufficient revenue to meet these requirements and a small surplus in addition. The report for the two months shows the following result:

	November and December
Operating revenue	\$1,239,313
Operating expenses	847,858
Net operating revenue.....	391,455
Taxes	123,369
Operating income	268,085
Non-operating income	2,956
Gross income	271,042
Rental, interest and return on capital	264,268
Balance	\$6,774
Total revenue passengers carried.....	14,446,892

Mr. Draper referred to the increase that occurred in the number of revenue passengers carried compared with the period that preceded the beginning of operation by his company on Nov. 1 at the reduced rate of fare. The number riding in the last two months of 1924 under the old plan and at the higher rate of fare averaged 6,879,025, while the number of revenue passengers riding in the last two months of 1925 under the new operations was 7,223,446. It was the hope of the officials, Mr. Draper said, that they may so operate the railway as to be able to continue the lower fare charges.

On the matter of bus transportation Mr. Draper said that the city authorities have under consideration his company's application for four bus lines from the center of the city to outlying suburbs, two crosstown bus lines and two connecting or feeder lines. It was the opinion of the company's officials that the public could be best served by a unified transportation system. The lines now proposed to be operated by the company formed the nucleus of a bus system to be developed as needs require and routes have been selected with a view toward their permanent operation rather than with the idea of competing with existing rail or bus lines.

Five new directors were added to the board of the Cincinnati Street Railway at the recent meeting of the stockholders. The new directors were: James M. Hutton, president of the Cincinnati Chamber of Commerce; Attorney John B. Hollister, Albert Benham, vice-president of the company; J. B. Stewart Jr., general manager, and C. V. Link, treasurer.

Passenger Traffic on Increase—Figures of Fares and Wages

Passenger traffic on electric railways continued to increase during December, 1925, compared with December, 1924, although at a somewhat retarded rate. This retarding of the rate of increase is undoubtedly due in part, according to the American Electric Railway Association, to the unusually heavy traffic carried in December, 1924, when there was a very sharp increase over November. The number of passengers reported by 209 companies for December, 1925, and 1924 was as follows:

December, 1925	839,574,559
December, 1924	827,894,938
Increase, per cent	1.39

For the calendar year 1925 compared with 1924 the number of passengers carried by these companies is as follows:

1925	9,395,058,568
1924	9,433,386,205
Decrease, per cent	0.41

Average cash fares (in cents) in 272 cities of 25,000 population and over:

Jan. 1, 1926	Dec. 1, 1925	Jan. 1, 1925
7.6066	7.5882	7.4926

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

	Jan. 1, 1926	Dec. 1, 1925	Jan. 1, 1925
Average hourly rate	56.30	56.30	55.87
Index No. (1913 = 100 per cent)	206.61	206.61	205.03

Merger Move Under Way in Indiana

Samuel Insull and Randal Morgan have approved a plan under which Halsey, Stuart & Company, as readjustment managers, will propose to the security holders of the Central Indiana Power Company and its subsidiaries and to the Terre Haute, Indianapolis & Eastern Traction Company and certain subsidiaries a readjustment of their securities so as to enable the consolidation of these properties into the Indiana Electric Corporation. This will bring the electric light, power and traction business of central northwest Indiana under one large operating company with ample financial and physical resources to provide the best electric light, power and traction services at the most reasonable rates consistent with

the interests of the company and the public to that part of Indiana.

The common stock of the Indianapolis Street Railway, which operates the street railways in Indianapolis, is owned by the Terre Haute, Indianapolis & Eastern Traction Company, but it is not intended to include the street railway in the merger, not at this time at least. Both Mr. Insull and Robert I. Todd, president of the Indianapolis Street Railway, are quoted to this effect.

The purpose of the deal is to provide for an adequate and constant supply of electrical energy to meet the anticipated future demands, to improve the service to the public and to eliminate the intricate financial structures brought about during the growth of the properties by the creation of numerous corporations, associated through ownership or control of stock or otherwise, and to furnish a satisfactory basis for the future financing which the development of the territory will require.

For a number of years Indianapolis has been handicapped by the lack of power with which to move cars when the peak loads were encountered. The need is for a central supply station of greater capacity than exists now on the properties of either the Indianapolis Street Railway or the Terre Haute, Indianapolis & Eastern Traction Company.

As indicated in the *ELECTRIC RAILWAY JOURNAL* for Jan. 30, Mr. Insull was reported to have said that the interests he represented were not going into the consolidation primarily from the traction point of view, but that with their traction lines in northern Indiana and the Interstate Public Service Company's line from Indianapolis to Louisville, closer traction relations were certain, with through interurban service at high speed possible from Chicago to Louisville.

Suburban Line May Go to Cincinnati Railway

The last link in the unification of the electric railway system at Cincinnati, Ohio, by the Cincinnati Street Railway will be accomplished if the stockholders of the Cincinnati & Hamilton Traction Company approve the plans set forth in a letter mailed to them. The letter is signed by Samuel Assur, president of the Cincinnati & Hamilton Traction Company. It states that the Cincinnati Street Railway has agreed to give 20,000 shares of street railway stock for the properties. The approval of this plan was recommended by the directors of the Cincinnati & Hamilton Traction Company, after a committee representing the common and preferred stock holders had devised a plan of distribution to the shareholders. Stockholders of the company are to meet March 4 to discuss the offer.

The plan calls for the distribution of 80 per cent of the Cincinnati Street Railway stock or 16,000 shares to the preferred stock holders. The remainder will go to the common stock holders. The time limit for acceptance of the offer is March 31. The present plans call for the transfer of the properties to the purchasing company on April 1.

If the stockholders approve the plans the Cincinnati & Hamilton Traction Company will be liquidated.

The letter to the stockholders is as follows:

The franchises held by your company in the villages of Wyoming, Lockland and Glendale have expired and despite negotiations with said villages by officers of your company and officers of the Ohio Traction Company and the Cincinnati Street Railway said franchises have not been renewed on a basis acceptable to this company or to your lessee, the Cincinnati Street Railway.

Under the lease from your company to the Ohio Traction Company, which was assigned to the Cincinnati Street Railway, on Nov. 1, 1925, the Cincinnati Street Railway has the right to discontinue operation of your lines and refuse to pay rental in the event of the failure of your company to secure renewals of franchises acceptable to the lessee or which arbitrators may decide should be accepted by your lessee. In the event of the exercise of such right the Cincinnati Street Railway would have

the right to demand payment from your company for all improvements and betterments made to your property by your lessee during the term of the operation of your property by the said lessee.

The lease for the operation of the Cincinnati & Hamilton Traction Company's property was assigned to the Ohio Traction Company by the Cincinnati Interurban Company in July, 1905. The lease was taken over by the Cincinnati Street Railway last November along with the other electric railway properties held in Hamilton County by the Ohio Traction Company, which were operated under the name of the Cincinnati Traction Company.

The Cincinnati & Hamilton Traction Company has 36.24 miles of single track. The lines extend from the Zoo to Glendale and Hamilton with a branch at Lockland.

Some Fine Points at Issue

Court to Settle Dividend Payments by Eastern Massachusetts—Public Trustees Praised—Did They or Did They Not Divert Too Much Money to Improvements?

AS MASTER in the suit by L. Sherman Adams against the Eastern Massachusetts Street Railway, in which Mr. Adams claimed \$24 back dividends were due to the holders of common stock on each share and \$5 due the adjustment stockholders, Judge Frederic H. Chase has filed his final report with the Supreme Judicial Court. This report is not materially changed from the original draft reported last October. It supports the contention that the company has earned enough to pay the dividends. His report sets forth in much detail the financial operations of the company, and the present conditions. It leaves only the question of law unsettled, and that is whether the board of public trustees has the discretionary power to withhold the dividends, to be applied to the upbuilding of the property. On that point the case will go to the full bench for argument in March.

Judge Chase finds that the true surplus was \$3,632,450 on Dec. 31, 1922, and \$4,343,141 on Dec. 31, 1924; that on Dec. 31, 1922, the liquid assets exceeded capital stock, bonds and obligations representing capital investments by \$5,071,564, and that in addition the company then had in its treasury in liquid form a reserve fund of \$500,000 applicable to the cost of service and unmatured bonds and equipment notes of the company which it had bought in and held uncanceled in the treasury, amounting to more than \$1,600,000, and that on Dec. 31, 1924, it had the same reserve fund of the same amount and unmatured bonds of the company purchased and held in the treasury uncanceled of a par value of \$1,981,000, and in addition to these funds it then had liquid assets of \$3,597,284, in excess of its capital stock and capital obligations.

In this connection he points out that up to Dec. 31, 1924, the outstanding funded indebtedness of the company had been reduced \$6,221,102 by payment and by purchase of bonds and equipment notes.

Judge Chase finds also that there

had been expended and charged to operating expense \$1,920,835 to Dec. 31, 1922, and at least \$2,920,000 to Dec. 31, 1924, which should have been charged to an asset account; that there has been expended to Dec. 31, 1924, for additions and improvements \$5,079,249; that the capital expenditures for rehabilitation carried as an asset amounted to \$539,044 Dec. 31, 1922; that the total charges to operating expense for accrued depreciation to Dec. 31, 1924, amounted to \$4,778,042, and that the balance of the accrued depreciation account carried as a liability Dec. 31, 1924, was \$2,432,331; that represented by cash or investments on the asset side of the balance sheet, there was charged to profit and loss for losses on road and equipment retired to Dec. 31, 1924, \$275,546, and to operating expense for road and equipment retired over \$800,000; that the road and equipment as a whole are much improved in efficiency and earning power over what it was when the trustees received it in 1919, and the value of the property as a whole for operating purposes is greater today than it was in 1919.

Regarding earnings Judge Chase says:

The operation of the road has yielded enough income to meet proper maintenance and all other operating expenses, pay taxes, rentals, interest on all obligations, dividends on the preferred stock and 6 per cent on the common stock, make adequate allowances for depreciation, obsolescence of property, rehabilitation, and losses in respect to property sold, destroyed and abandoned, and defray all other charges which properly may be made against income or surplus.

He finds that the trustees charged to operating expense expenditures which were described by the company as additions and improvements and which were allowed as such by the Department of Public Utilities, amounting to \$63,009, and he disallowed a claim of the trustees that reserve should be held on the liability side of the account to meet an estimated expense of \$25,000 "for counting, canceling and burning old bonds," finding that "no claim of this kind has as yet

been presented, however, and I am unable to see how such a large expense can reasonably be incurred for services of this character. I am allowing, therefore, a reserve of only \$1,000 for this purpose."

Judge Chase says that the trustees have always considered that dividends on all classes of stock are included in the cost of service, and that they have been mindful of this in fixing rates of fares. Their contention is, however, that notwithstanding this, the provisions of the act, they have not been able to get enough revenue from fares to enable the company to pay dividends on the common stock. The trustees take the position that their right to apply income to rehabilitation of the road is not limited to depreciation accruing after the new company was incorporated, but includes large depreciation which accrued before that time while the road was being operated by the Bay State Street Railway and by the receiver. The report says:

If the statutes are to be so construed, that the trustees are to operate the property and maintain it at the condition it was in when received, and are not to improve or increase its capital value out of income until they have paid all cost of service, including dividends, then I find that the dividends have been earned. Revenues have been sufficient to cover the full cost of service, as defined in the act, including dividends.

If, however, the statutes are construed to mean that the trustees have discrimination in the matter of declaring and paying dividends and may improve and increase the capital value of the assets of the company before dividends can be said to have been earned, as may directors of ordinary business corporations, the question takes a different aspect, involving consideration not only of the amount of income received, but the disposition made of it for various purposes and its distribution among various accounts.

As to the wisdom of the trustees in their use of the funds the report says:

When the trustees took possession the road was in poor condition in many respects, and no reserve depreciation had been accumulated. Since then, as before stated, the trustees have greatly improved the operating lines and their equipment. They have replaced worn-out rails and ties, improved the rolling stock and other equipment, reduced the cost of operation and increased the efficiency of the system as a whole. The trustees have been, and are, men of integrity and business experience. They have in large measure left questions of policy and active management to their chairman. The chairmen have been individuals of experience and ability who have endeavored to manage the company for its best good as they saw it. Whether they have misconstrued their duty toward the stockholders with respect to dividends seems to be largely a question of law. If this were a business corporation, organized under the general provisions of law, there might be little doubt as to the propriety of their conduct, inasmuch as the company has been honestly managed, its assets prudently conserved, and earnings put back into the property have enhanced its capital values. With this corporation, however, under the provisions of the special act, the questions involved may depend upon different principles.

The report of Judge Chase concludes with the statement:

So far as shown by the evidence, with-out regard to increase in population of the district served by the company, as to which no testimony was introduced, I find that it is reasonable to believe that the present net return on the property will continue during the period of public control. The road is in excellent condition and seems to be on a basis sufficiently sound to assure, with good management, the continuation of a net revenue substantially equal to the present yield. It is true that the gross earnings show decreases, but the net operating revenue has been stabilized by economies, and has been maintained without great variation since 1921 even with reduction in fares.

Denver Tramway Has \$284,790 Net for Six Months

The Denver Tramway Corporation, Denver, Col., successor to the Denver Tramway Company, has published its earnings for the period of six months ended Dec. 31, 1925. The surplus earned, after paying 5 per cent on the preferred stock, was \$20,819 applicable to an additional 2 per cent, it being understood, by agreement, that the company will pay 7 per cent if possible. The successor company at Denver stepped in on July 1 so that the report covers the first six months of the corporate life of the new company. The statement follows:

DENVER TRAMWAY EARNINGS FOR SIX MONTHS	
Operating revenue	\$2,230,929
Operating expense	1,491,165
Operating income	\$739,763
Miscellaneous income	30,014
Gross income less operating expenses	\$819,778
Deductions for taxes and interest	534,987
Net income	\$284,790
Profit and loss charges	3,560
Surplus after profit and loss charges	\$281,229
Preferred dividend requirement at 5 per cent.	260,410
Surplus after preferred dividend at 5 per cent.	\$20,819

Suit to Foreclose Hartford & Springfield Issue

Harrison B. Freeman, receiver of the Hartford & Springfield Street Railway, Warehouse Point, Conn., has been made defendant, along with the company, in court proceedings instigated by Ernest E. Rogers looking to foreclosure action against the railway. Mr. Rogers is trustee for the holders of \$600,000 of the railway bonds. Action to foreclose was suggested by Judge A. L. Brown so that the railway could be reorganized.

Lucius F. Robinson, counsel for Mr. Rogers, states that the bonds, issued July 1, 1901, have been long overdue and in default. It is further brought out that two-thirds of the holders of these bonds have made demands for foreclosure action. The specific issue of bonds on which the present action is based covers the properties of the company in Enfield, East Windsor and South Windsor. Since these bonds were issued the railway has acquired franchise rights in a number of other towns. Interest on the bonds has not been paid since July 1, 1918.

New Directors Chosen.—John A. Kelley, president of the First Citizens Corporation of Columbus, has been chosen director of the Columbus Railway, Power & Light Company, Columbus, Ohio, in place of Walter B. Beebe, now on a European tour. Edward G. Borer, Philadelphia, has succeeded B. C. Denman, Davenport, Iowa, as a director.

Partial Abandonment Approved.—The Public Service Commission approved on Jan. 29 a declaration of abandonment of the portion of the route of the Binghamton Railway,

Binghamton, N. Y., in Johnson City from Floral Avenue to Riverside Drive along Ackley Avenue, Union Street and Burbank Avenue. The resolution was adopted by the directors Dec. 1, 1924, and by the stockholders of the company May 15, 1925. The commission has determined that the operation of this part of the route was no longer necessary for the convenience of the public.

Seattle's Tax Issues Deferred.—Hearing on one phase of the litigation over the 1919 street railway tax between Seattle, Wash., and the Puget Sound Power & Light Company, which was set for Jan. 27, has been postponed until March, Corporation Counsel T. J. L. Kennedy has been informed by the clerk of the U. S. Supreme Court. The Old Colony Trust Company's part in the case was to have been heard this month.

\$200,000 Issue for Improvements and Obligations.—The Shreveport Railways, Shreveport, La., recently filed an application for an amended charter. This amendment, officials stated, authorizes the issue of \$200,000 of preferred stock, in addition to present capital, to be used in making improvements to present property and liquidating outstanding obligations.

Income Lower.—For the six months period ended Dec. 31, 1925, the passenger revenue of the Brooklyn City Railroad, Brooklyn, N. Y., was \$5,688,734, against \$5,704,133 for a similar period the year before. After the consideration of operating expenses and taxes as well as income deductions a net corporate income remained of \$721,516 for the six months ended Dec. 31, 1925, against \$739,938 for the six months period ended Dec., 1924.

New Directors in Jamestown.—Alfred A. Anderson and Fred B. Tinkham were named recently members of the board of directors of the Jamestown, Westfield & Northwestern Railroad. They are local merchants of Jamestown, N. Y. The choice of these merchants is in line with the company's idea of enlisting the aid of manufacturers in insuring continued operation.

Offers to Pay for Abandonment.—The Tri-City Railway has agreed with the city of Rock Island, Ill., to pay the municipal public benefit fund \$7,000 in consideration for right to abandon its Fourth Avenue double-track line from First to Fifteenth Streets, Rock Island. The agreement became part of the record of the hearing before Frank D. Ayres of the Illinois Commerce Commission. The railway will remove the tracks, fill in with rock to bring the avenue to grade and furnish the money for curb along a proposed boulevard down the avenue.

Seven-Mile Alabama Line Dismantled.—The tracks, trolley wires and poles of the old North Alabama Traction Company in Decatur and Albany, Ala., are being dismantled. Thus the last visible traces of the railway system are being removed from these two north Alabama cities. Some months ago service was abandoned on the lines in Decatur and Albany, Ala. At that time officials of the company said the railway no longer paid owing to automobile and taxicab competition.

Legal Notes

ALABAMA—Assessment for Paving on Railway as Abutting Property Owner

A railway bought an easement 25 ft. wide in undeveloped territory on which it built its track. Several years thereafter the city obtained a strip of land on each side of this easement and dedicated these strips for public streets. Later, these strips, but not the railway right of way, were paved, and the railway company was assessed about half the cost of paving as an abutting property owner. When it refused to pay, the city threatened to advertise its right of way for sale. The court held that an assessment for street improvement against such a right of way could not be enforced by sale, so was unenforceable, though leaving a cloud on the title of the railroad, which the latter could require it to be removed by mandamus. The case was differentiated from that of the Alabama Traction Co. v. Selma Tr. & Sav. Bank (104 So. 517) which gave the municipality the right to assess the railroad for the cost of street paving laid between its rails and 18 in. on each side. [Alabama City et al. vs. Alabama Power Co. 160 Southern Rep., 39.]

ARKANSAS—Act Requiring the Company to Pave Held Valid.

In 1923 the Legislature passed an act requiring a certain railway company to pay for paving between its rails. The company was operating under an indeterminate permit. Although the act was a special act, it was held valid by the Supreme Court. [Fort Smith L. & P. Co. vs. Board of Improvement, 276 Southwest. Rep., 1012.]

FEDERAL COURT—Conditions of Issue of Certificate to Interstate Carrier.

A motor truck company, which claimed it was not a common carrier, appealed to the Federal Court for an injunction to prevent the Public Utilities Commission of Ohio from interfering with its use of the highways of that state in both interstate and intrastate business. The District Court for the Southern District of Ohio held that the Commission had not denied an interstate certificate and that it was justified in denying the intrastate certificate as the carrier had failed to permit himself to be classified as a public carrier. The District Court also held that a State may exact compensation for the use of its highways by interstate carriers, provided the charges are reasonable and uniform, but that a requirement for the carrier to file a satisfactory liability insurance policy or bonds upon terms specified is not applicable to interstate traffic. [Red Ball Transit Co. vs. Marshall, 8 Federal (Second) Rep., 635.]

FEDERAL DISTRICT COURT—Workman on Uncompleted Part of Station Not Engaged in Interstate Commerce.

A workman engaged to clear up debris during the construction of a

stairway to a station on a road engaged in interstate commerce was injured. At that time the stairway had not been completed, and the employee was held not to be engaged in interstate commerce. [Clemence vs. Hudson & M. R.R. Co., 8 Fed. (Second) Rep., 317.]

FEDERAL SUPREME COURT—Reasonable Extensions of Service Only May Be Required by Public Service Commission.

The court will not substitute its own judgment for the determination of a public service commission as to what extensions of the service of a public utility company may be required as reasonable but the court will consider the investment required to make the necessary service extension and the effect of the new service upon the company's income. Then, if it appears that the power to regulate results in an infringement of the right of ownership, the order of the commission will be held invalid. Under the guise of regulation, a state may not require a public service company to make large expenditures for extensions into new territory when the necessary result will be to compel the company to use its property for the public convenience without just compensation. [People ex rel. Woodhaven Gas Light Co., vs. Public Service Commission of New York, 46 Supreme Court Rep., 83.]

FEDERAL SUPREME COURT—Utility, with Franchise Calling for Inadequate Rate, Not in Position to Maintain Suit to Enjoin Enforcement of that Rate.

A water company operated on a 40-year franchise which provided for a schedule of prices for water. After the appointment of a state utilities commission which was given control over rates, the water company applied to the commission for power to make a specified increase and received permission for half of the increase asked, to continue for six months. After that time it was told it might apply again for such relief as the results would justify. At the end of the six months' test, without applying again for an increase, the company filed a bill to enjoin the commission from continuing to enforce the rates last fixed on the ground they were confiscatory. The Supreme Court held that the company, having a franchise rate, was not entitled to any judicial relief, however inadequate the rate, and that a grant of any relief, even if only partial, was entirely within the power and discretion of the commission. [Henderson Water Co. vs. Corporation Commission of North Carolina et al., 46 Supreme Court Rep., 113.]

ILLINOIS—Care Required to Avoid Injury to Child.

An instruction that if a motorman, by the exercise of ordinary care, could have known that a child was about to cross the track or was in a position of danger, it was his duty to exercise

ordinary care to avoid injury, ordinary care being defined as that degree of care which ordinarily prudent persons under the same or similar circumstances would have exercised is not an erroneous instruction. It does not require the motorman to possess absolute knowledge of what the child proposed to do. [Liska vs. Chicago Railways, 149 Northeast Rep., 469.]

INDIANA—City Authorities Can Prohibit jitney Buses from Operating Over Certain Streets.

Public streets are for the use of the public and for general ordinary use, but their use to carry on private business is a privilege and not a right. Hence their use by jitney buses may be permitted by the city upon such terms as it may prescribe. In this decision, the city of Muncie was held to have power to prohibit the operation of such buses on those parts of the city's streets on which there were located street railway tracks, over which cars were regularly operated. The fact that such an ordinance might be a benefit to the street railway company did not make it unfair or unreasonable, and it was not a grant of special privilege or unjust discrimination. [Denny vs. City of Muncie et al., 149 Northeast. Rep., 639.]

MAINE—Weight to be Given Expert Medical Opinion.

A trial developed a decided difference of opinion between the expert witnesses on each side as to the injuries which the plaintiff sustained and counsel for the defendant contended that it greatly preponderated in favor of his client and the jury manifestly erred. No claim of bias or prejudice on the part of the jury was made. The court held the testimony of expert witnesses is only an expression of opinion, from which the jury may obtain some assistance, not otherwise available to them, but this testimony is wholly for the consideration of the jury. There is no doubt the plaintiff was seriously injured, so that it is impossible to say that the jury manifestly erred in the award of damages. [Johnson vs. Bangor Ry. & Electric Co., 131 Atlantic Rep., 1.]

MASSACHUSETTS—Duty of Operator of Car in Reservation Limited to that of Refraining from Reckless Conduct.

For a considerable distance on Huntington Avenue, Boston, the electric cars operate in a reservation with a vehicle highway on each side. A person intending to become a passenger was struck by a car while he was walking on this reservation toward a stopping post. The court held that the company owed such a person no duty except to refrain from wanton or reckless conduct. [Treen vs. Boston El. Ry., 149 Northeast. Rep. 625.]

PENNSYLVANIA—Duty of Pedestrian Crossing Track.

Failure of a pedestrian to look out for cars continually when crossing a street on which there are tracks is negligence *per se*. After crossing one track, the pedestrian should look out for cars on the second track of a double track line. [Patton vs. George et al., 131 Atlantic Rep., 245.]

Personal Items

G. K. Jeffries Heads C. E. R. A.

Operating Head of Terre Haute, Indianapolis & Eastern Made President of Central West Body

Guy K. Jeffries was elected president of the Central Electric Railway Association at the annual meeting in Indianapolis, Ind., on Jan. 27. Since 1916 he has been general superintendent of the Terre Haute, Indianapolis & Eastern Traction Company. Before that for several years he was the superintendent of the company. This makes the period of his connection with electric railways one that covers more than 23 years, all spent in work in the Central West.

For 43 years Mr. Jeffries has been



G. K. Jeffries

engaged in one phase or another of railway work. In 1883, when he was only seventeen years old, Mr. Jeffries entered the service of the Cleveland, Cincinnati, Chicago & St. Louis Railroad, or the so-called "Big Four," as telegraph operator. Three years later he was promoted to the position of train dispatcher. After another period of three years Mr. Jeffries resigned from the "Big Four" to become connected with the Erie Railroad as chief train dispatcher and trainmaster. In that post he remained nine years, widening his experience and turning his attention to phases of railroad work which he had not undertaken before.

Just about this time the building of the interurbans was getting under way. Men with experience similar to that of Mr. Jeffries were difficult to find in electric railway work and many new electric roads turned to the steam railroads for operating talent. This is what the Indianapolis & Northwestern Traction Company did. It drafted Mr. Jeffries as superintendent of the road between Indianapolis and Lafayette. Events seemed again to be working in cycles of three years, for Mr. Jeffries in 1906 resigned from the Indianapolis & Northwestern Traction Company to

become superintendent of the Terre Haute, Indianapolis & Eastern Traction Company's line between Indianapolis and Richmond. Ten years later he was made general superintendent.

Messrs. Sawyer and Eales Off for Australia

W. H. Sawyer, president of the East St. Louis & Suburban Railway, and Herbert W. Eales of the Union Electric Light & Power Company, St. Louis, Mo., left on Jan. 28 for Australia, where they will direct an extensive survey into electrical development for the Victorian government. Both were honored at a farewell dinner at the Missouri Athletic Association, St. Louis, on Jan. 27. The hosts were the officials of St. Louis public utilities and electrical concerns.

The speakers at the dinner were Louis H. Egan, president of the Union Electric Light & Power Company; Col. Albert T. Perkins, manager for the receiver of the United Railways, St. Louis; T. O. Maloney, W. L. Upson, Fred D. Lyon, G. W. Welsh and Edward Sawyer. Waldo O. Lyman, president of the St. Louis Electrical Board of Trade and president of the Wagner Electric Corporation, was toastmaster.

Messrs. Sawyer and Eales were to sail from San Francisco on Feb. 2. The subjects which they expect to cover in their survey were indicated in the account of their appointment in the ELECTRIC RAILWAY JOURNAL for Jan. 9, page 90.

H. A. Mullet Advanced to Vice-President

Howard A. Mullett, who left the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., to join the Yellow Cab Company, Chicago, last August, has just been named vice-president of the latter company, which is now a General Motors subsidiary. Mr. Mullett began his career as an apprentice in a Pittsburgh electrical plant, went through every phase of the business and then entered the automotive field. In Milwaukee he rose from motorman to assistant general manager in charge of transportation. At the time of the establishment of the new department his jurisdiction was extended to cover the company's newly created city and interurban motor bus division.

Charles H. Brough, formerly Governor of Arkansas, has been selected director of the Arkansas Public Service Information Bureau. Dr. Brough served as Governor of Arkansas from 1917 to 1921 and his administration was marked for its progressive and constructive legislation. Before his election as Governor he was identified with the educational interests of Arkansas and Mississippi, serving for twelve years as professor of economics and sociology at the University of Arkansas.

M. Ackerman with Lake Shore

Former Official of Cincinnati & Dayton Traction Made General Manager of Cleveland Interurban

M. Ackerman, general manager of the Cincinnati & Dayton Traction Company, has resigned to become general manager of the Lake Shore Electric Railway, with headquarters at Sandusky, effective Feb. 1.

In thus going to the Lake Shore, Mr. Ackerman is returning to take charge of the property on which he obtained his early electric railway experience. There he started at the bottom, serving, first, as a shop man and, later, as a motorman. Added responsibility came with his appointment as train dispatcher. Later he was made trainmaster.

In December, 1907, Mr. Ackerman started service with electricity on the Youngstown & Ohio River Railway, originally a steam line operating between Washingtonville and Salem, Ohio. Another move came in April, 1908,



M. Ackerman

when he was made general manager of the Springfield & Xenia Railway. Here he successfully operated a property which had previously been a losing venture. By the fall of that year the improved condition of the company's finances made it possible to pay a dividend to stockholders.

He continued with this property until January, 1914, when he took charge of the operation of the Interurban & Terminal Company at Cincinnati with the title of general superintendent. Again an unprofitable line was put on a paying basis and by 1916 there was a surplus in earnings. An unfavorable situation kept the margin small. Every effort was made to meet the severe conditions brought about by the war, but operating costs mounted rapidly and the company was finally forced to abandon service.

As a result of the reputation he had established for himself in his handling of these properties, Mr. Ackerman was made general manager of the Cincinnati & Dayton Traction Company in July, 1918. Subsequently outstanding mortgages on the property expired and the owners of the underlying liens refused to renew them. To conserve the property a receiver was appointed in

November, 1920. Mr. Ackerman remained as the active operating head. The difficulties encountered by the entire industry during the past few years did not deter the management. It struggled to bring the property back to a profitable earning basis. This work is bearing fruit. Improved conditions have opened a new outlook for the property, which is about to be reorganized. Announcement has been made of a receiver's sale to be held on March 8 as the first step in connection with this proposed plan.

In returning to the Lake Shore Electric Railway, Mr. Ackerman will be in a position to apply to the affairs of that company experience ripened during the most difficult years of the industry's history, a period in which he assumed responsibilities that constantly grew greater.

J. E. Albert Joins Public Service Railway

J. E. Albert, for the past two years assistant general manager of the Wheeling Traction Company, Wheeling,



J. E. Albert

W. Va., resigned that position on Jan. 1 to become traffic engineer of the Public Service Railway, Newark, N. J. Mr. Albert began his railway career with the West Penn Railways in 1916 while a student at the University of Pittsburgh. At this time he was engaged in valuation work. During the summer of 1917 he again engaged in work for the West Penn.

Upon graduation from the School of Engineering of the University of Pittsburgh he enlisted in the U. S. Army and was connected with the air service. He was later commissioned and rated as an aerial observer. In January, 1919, he returned to civil life and entered a special engineering department of the West Penn Railways, dealing with rates and valuation and the appraisal of electric and other properties prior to absorption by that company. He was also engaged on special reports covering arbitration of wages and similar subjects. He remained in this work for three years.

In January, 1922, he was transferred to the office of Vice-President C. P. Billings as assistant to that official. Two years later he was appointed to the position of assistant general manager at Wheeling.

London Tramways Honor Mr. Fell

A. L. C. Fell, who retired recently as general manager of the London County Council Tramways, London, England, owing to ill health, was entertained recently by his numerous friends at a complimentary dinner in London. The gathering included a large number of tramway managers and engineers as well as representatives of municipalities and many men of note associated with tramway enterprise. Sir John Timpson, chairman of the Portsmouth Corporation Tramways Committee, presided. He said in proposing the health of the guest that the increase of passengers and revenue of the London County Council Tramways during Mr. Fell's managership was enormous, and it spoke well for Mr. Fell that he carried out so efficiently his duties in connection with the development. C. J. Spencer, general manager of the tramways associated with the London underground railways, declared it was due to the foresight of those who designed the London tramcars that today these were among the finest passenger vehicles in existence.

Sir Albert Stanley, Sir Arthur Balfour, Sir John Courtis, James Dalrymple and A. Croxton, all men prominent in the British tramway field, spoke of the great work which Mr. Fell had done for the development of tramway services.

In his acknowledgement Mr. Fell said that for transport there was nothing more effective than a steel wheel running on a steel rail. It would have been a happy day for London if the London County Council could have obtained through running rights for cars in the metropolitan area. So far it had not been possible to enter into an agreement that would include the tramways and the omnibuses, but he hoped before long a fusion of interests would take place, because it was the only way in which the traffic of London could be handled satisfactorily.

E. D. Adams Receives John Fritz Medal

Award of the John Fritz Gold Medal to Edward Dean Adams, New York City, for achievement as "an engineer, financier, scientist, whose vision, courage and industry made possible the birth at Niagara Falls of hydro-electric power," is announced by the Engineering Foundation.

This medal was established in 1902 in honor of John Fritz, pioneer in the American iron and steel industry. It is bestowed annually for notable scientific or industrial achievement and is the highest honor bestowed by the engineering profession in this country.

Most of Mr. Adams' long and intensely active business life was devoted to large enterprises combining engineering and finance. He had a leading part in the organization and reorganization of numerous railroads, including the West Shore, the Central of New Jersey, the Western Maryland and the Northern Pacific.

He created the American Cotton Oil Company out of innumerable small companies, led in establishing the All-America Cables and had an important

share in many other industrial undertakings. He was also in the investment banking business for many years.

R. G. Winans in Operating Post

R. G. Winans has resigned as assistant engineer of the New York State Public Service Commission to accept the position of field supervisor with the Fitkin Utilities, Inc., under the direction of the General Engineering & Management Corporation, New York.

After he was graduated from Pratt Institute of Science and Technology, in the industrial electrical engineering course, Mr. Winans was employed in the testing and switchboard and central-station construction departments of the General Electric Company. He was also employed by the Schenectady Railway, Schenectady, N. Y., in the power and mechanical departments, later being appointed engineer of power and equipment.

Mr. Winans has been assistant engineer with the New York State Public Service Commission for twelve years. During most of that time he has been



R. G. Winans

in charge of electric railway engineering and operation in so far as it has effected public regulation. To him the subject of valuation has furnished no end of interesting work. Determination and regulation of adequate facilities and service has always offered to him the opportunity for constant study because of the ever-changing traffic requirements.

In his new position he will be associated with C. A. Brooks in the supervision of electric railway properties under the management of the Fitkin Utilities, Inc.

Ed Jacobs, formerly secretary and treasurer of the Shreveport Railways, Shreveport, La., was elected vice-president of the company at the recent annual meeting. He succeeds Capt. W. T. Crawford, who died on Aug. 2.

Lewis Goldberg assistant Attorney-General of Massachusetts, has been appointed a commissioner in the Massachusetts Department of Public Utilities, succeeding David A. Ellis, resigned. In 1914, after practising law for a year, he was appointed Assistant United States Attorney in the Boston district and was active in the Palmer régime in the prosecution of "Red" interests in

New England. Mr. Goldberg was born in Russia 38 years ago and was brought to Lawrence, Mass., at the age of three months. He was educated at Harvard College and was graduated from the Harvard Law School in 1913.

W. G. Curren has been appointed general manager of the New York terminals of the Baltimore & Ohio Railroad to succeed R. B. White, now an officer of the Central Railroad of New Jersey. In his new capacity Mr. Curren will be in charge of the lines of the Staten Island Rapid Transit Railway, recently electrified.

Charles A. Brann, superintendent of traffic for the Houston Electric Company, Houston, Tex., has also been made superintendent and passenger agent of the Galveston-Houston Electric Railway. He succeeds George G. Morse, who has gone to Palm Beach, Fla., as general superintendent of the Florida Motor Bus Transportation Company.

Obituary

Charles Payson Treat, the engineer who built the street railway system of Trinidad, Col., died at Palo Alto, Cal., on Jan. 28. Mr. Treat took a very prominent part in the building of the Nicaragua Canal and then built a railroad across the Greytown swamp in Nicaragua. He was 79 years old.

Dr. A. C. Harrison, chief surgeon of the United Railways & Electric Company, Baltimore, Md., died on Jan. 17. Many employees of the company feel his death as a personal loss because of his tireless work in their behalf. He entered the World War service in January, 1918, in time to assemble the personnel for what was to become the highly efficient army base hospital 42. Dr. Harrison was 62 years old.

Arthur R. Bush, manager of the industrial department of the General Electric Company, Schenectady, N. Y., died at his home there on Jan. 24. In 1884 he entered the employ of the Edison Company. In 1892 he was made district engineer of the Edison General Electric Company in the New England district, but resigned this position in 1904 to accept the vice-presidency of the Union Bag & Paper Company. In 1906 he returned to the General Electric Company as manager of the power and mining department. Later he was made manager of the industrial department.

Harry C. Mason, electric street railway engineer for the Texas Company, died in Quincy, Mass., on Jan. 26. For many years Mr. Mason was operating engineer in the public utility field. His experience and reputation were recognized in other pursuits and he turned his attention to the science of lubrication as an outlet for his engineering talents, becoming connected with the Vacuum Oil Company in 1902. After three years he went to the Galena Signal Oil Company and after twelve years entered the service of the Texas Company. Mr. Mason was an active member of the New England Street Railway Club. He was born in Portland, Me., on Nov. 10, 1867.

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

A Field with Neglected Possibilities

A Synthesis of Opinion Regarding the American Attitude Toward Foreign Trade

Domestic prosperity abounds in the United States. In the electric railway field, as in practically every other line of industry, manufacturers are engaged in a steady, if not an exciting, rate of production. This has resulted in a certain indifference on their part toward export business, of necessity carried on in a manner different from the trade practices of American industry. The attitude of "take it or leave it" quite fits the characterization which many Americans have adopted in the past, when taking part in the drama of international trade.

Mr. Manufacturer asks himself, "Why should I seek to build up a foreign business, in handling which I must make exorbitant concessions as to credit allowances and perhaps throw my policy of highly standardized production to the four winds, when my domestic market is quite adequate for my sales requirements? If the manufacturers of other countries wish to go to the lengths which are demanded of them by the consumers in South America, the Orient, and elsewhere, they are welcome to the business. I prefer to follow the even tenor of my way, and to be undisturbed by any of these annoying considerations which are constantly cropping up in the export business."

That is the shortsighted view. The domestic market may not forever be a purveyor of golden eggs, and the manufacturer who has not made an honest effort to emulate the early Egyptians and store up fodder sufficient for the lean years may find himself very much out in the cold. It is, perhaps, stressing the obvious to paraphrase Washington and say, "In time of plenty prepare for want," but a foothold in the foreign field, gained at the present time, might open a welcome channel for distribution in the event of a slackening of the domestic market. However, the manufacturer must be prepared to go half way in meeting the foreign consumer.

The operator of a railway in the Argentine, for example, has been accustomed to purchasing equipment under a scheme of long-time payments—sometimes six months, sometimes a year and sometimes even two or more years. He has been given these credits by European manufacturers from time immemorial and has come to accept them as a matter of course. If American manufacturers are not willing to talk business with him on something approximating this basis he will, in most cases, take his trade elsewhere.

Furthermore, the foreign operator cannot be brought overnight to a com-

plete adoption of standardized products. He may want a special type of brake on his car which has been long since thrown into the discard by the manufacturers of brake equipment. But if they flatly refuse to turn out a small order of these brakes for him, on the grounds that they could not be produced efficiently, he will most assuredly go to some one who will take a more sympathetic attitude toward his wants, as he conceives them.

The fact that American capital has been so widely distributed throughout the foreign field of recent years augurs well for a wider acceptance of materials produced in this country, provided the manufacturers follow up this very real advantage in their methods of dealing with the consumer. A prominent South American business man stated not long ago that German and English products were widely used in his country prior to the war, because from those sources capital had been secured for investment in the industries there, and, further, that the European manufacturers had always striven to understand his countrymen.

One of the most difficult problems of the export concern, particularly the one that deals with the countries of South America and the Orient, in which the industrial life is carried on at a rate much less intense than is the case in this country, is to impress the American manufacturer with the truth of these facts. The comment has been made time and again that Americans do not and will not understand. But for those who will make a serious effort to study the requirements of the foreign markets a real harvest is at hand, if these same exporters may be credited with knowing whereof they speak.

Hark to the Words of the Maintenance Man!

A touching lament concerning the disturbing custom of bus manufacturers who change the catalog numbers of bus parts with utter abandon and with the most complete disregard for the nerves of maintenance foremen in the operating companies appeared in the January issue of *Two Bells*, the official publication of the Los Angeles Railway. The appeal for the standardization of bus parts follows:

Catalog numbers of bolts and nuts mean little in the bus manufacturer's life when it comes to a little matter of improving parts, and it follows that these numbers vary with the seasons, owing to the program of improvements in bus equipment. To the troubleman who knows the parts by number, one improvement and another, meaning changes in catalog numbers, force him to gather his repair parts by guess and by gosh, which doesn't always help a stalled bus to get moving. Here is an incident related at the garage to illustrate the state of affairs:

Bus operator, to dispatcher: "This is bus 66. I have trouble with my clutch and can't move! A nut is lost off the lever,"

Dispatcher, to garage: "66, clutch trouble, make it snappy!"

Garage foreman to trouble man: "Go out to bus 66 and put a nut on the clutch lever."
 Trouble man: "What kind of clutch lever on that model?"

Foreman: "If that bus has a number 79 transmission, it has a 1366 clutch, and let's see, that lever has a double clevis that takes a 5A99 nut, but if that bus has a 92 transmission it will have a 1581 nut."

Trouble man: "Huh!" Goes to store room, "Gimme a bunch of clutch levers and nuts."

Trouble man arrives at bus 66 only to find its transmission has been changed to an 86, which takes a 47 1/2-16 pin!

All joking aside, there is much that the bus manufacturers can do along this line in effective co-operation with the transportation industry.

C. C. Castle Joins the New American Car & Foundry Motors

Charles C. Castle has resigned from the National Railway Appliance Company, New York, the Hegeman-Castle Corporation, Anglo-American Varnish Company and the Genesco Corporation, and on April 1 will be associated with the American Car & Foundry Motors Company.

Important Data Condensed

Mitchell-Rand Manufacturing Company, New York, has prepared a novel wall sheet of the tables most frequently used in both electrical and machine shops. Tables of inch equivalents, copper wire and similar data have been separately printed in many forms for shop reference, but a single chart containing all of the tables in general use is indeed unique.

The United States Bureau of Standards supplied data for the copper wire card and allowable carrying capacities for copper wire. The dimensions of twist drills and machine screws and other shop helps have heretofore been available only after search through technical publications.

P.R.T. Gets 135 Buses

Seventy-five double-deck, semi-enclosed gas-electric buses were ordered a few days ago by the Philadelphia Rapid Transit Company. In addition, 60 single-deck gas-electric 29-passenger buses are to be obtained. The new units will be supplied by the Yellow Truck & Coach Manufacturing Company of Chicago, Ill. It is expected that the buses will cost approximately \$1,750,000. Their purchase is one of the steps which P.R.T. is taking to prepare for the Sesqui-Centennial Exposition crowds.

Metal, Coal and Material Prices

Metals—New York		Feb. 2, 1926
Copper, electrolytic, cents per lb.	14.04	
Copper, wire base, cents per lb.	16.00	
Lead, cents per lb.	9.25	
Zinc, cents per lb.	8.40	
Tin, Straits, cents per lb.	62.00	
Bituminous Coal, f.o.b. Mines		
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons.	\$4.85	
Somerset mine run, Boston, net tons.	2.20	
Pittsburgh mine run, Pittsburgh, net tons.	2.05	
Franklin, Ill., screenings, Chicago, net tons	1.625	
Central, Ill., screenings, Chicago, net tons	1.25	
Kansas screenings, Kansas City, net tons.	2.30	
Materials		
Rubber-covered wire, N. Y., No. 14, per 1,000 ft.	\$7.00	
Weatherproof wire base, N. Y., cents per lb.	17.75	
Cement, Chicago, net prices, without bags	2.10	
Linseed oil (5-bbl. lots), N. Y., cents per lb.	11.30	
White lead in oil (100-lb. keg), N. Y., cents per lb.	15.50	
Turpentine (bbl. lots), N. Y., per gal.	\$1.03	

No Need for Concern

Fear for Condition of Steel Industry Is Unfounded—Railway Buying Is Active

The post-holiday period in the steel trade is always one of temporary retrenchment, with a considerable decrease in purchasing and in orders received by fabricators and other consumers of steel. Having established a new record for production last year, the market has been content to rest for a time upon its laurels and to indulge in the luxury of a breathing spell. Some prophets of gloom have, of course, been quick to predict the inevitable slump. But the majority of observers are maintaining an optimistic outlook upon things generally, with a healthy inclination to proceed a bit cautiously and to advise against any incipient movements toward inflation.

The mid-January issue of *Iron Age* says:

It has taken the first ten business days of the new year for the steel market to get a fair start and much of its activity in that time has been in specifications rather than new orders. While the heavy finished steel bookings in November brought out some suggestions of a movement toward higher prices, there are no indications today of such an effort as that of last January to stimulate specifications by advancing quotations.

Railway buying has been a considerable feature of the past month's activity, with some heavy orders placed for rails, cars and structural steel. The majority of this has of course occurred in the steam railroad field. A rather interesting comment on the price situation which has existed in the face of record production was made by A. I. Findley, editor of *Iron Age*, in his annual review. He said:

Now that producers know how easily we can have a 44,000,000-ton year, which ought to give a fair business and fair profits for all, cannot some of them cease selling as though they were in a 30,000,000-ton year and cease trying to operate as though it were a 50,000,000-ton year?

Improvements Made in White Chassis

To meet the changing conditions of passenger transportation the White Company has made a number of improvements and refinements in its special bus chassis, which hereafter will be known as the White bus chassis Model 50-B, supplanting Model 50-A.

One of the more important changes is the installation of Westinghouse air brakes as standard equipment. This type of brake on rear axle makes it possible to use metal to metal friction surfaces, considered the most effective way of dissipating the heat which accompanies severe braking and regarded as the best way to insure effective brake control under all conditions and long life for brake linings.

Various mechanical refinements have been made in the motor, improving flexibility and smoothness of operation. Among other changes, the manifold has been fitted with a hot air stove. The oil system has been revised and improved by increasing the oil pump capacity and by the installation of an effective oil strainer. A large area of fine mesh wire screen removes all dirt

particles, providing a clean oil supply at all times.

Other refinements made in the chassis include an improved rear axle with double bearings of taper roller type at wheel ends of spindles, designed to meet the most severe conditions of operation; a stronger frame, 10 in., with gusseted cross members; an improved radiator, consisting of heavy cast aluminum shell with removable core; a faster third speed, with other transmission improvements; a heavier housing and tube in the steering gear, making easier steering, and larger tires, 34 by 7 pneumatics, with duals in rear.

The White Model 50-B bus chassis is built with the optional wheelbases of 198 in. or 230 in. to accommodate bodies seating from 25 to 29 passengers.

Record Order for Fare Boxes Placed with Johnson

What was said to be the largest single order for fare boxes to be used in one-man bus operation ever placed in this country was that recently accorded to the Johnson Fare Box Company, Chicago, Ill. This concern was chosen to supply the apparatus necessary to collect fares on the 333 gas-electric buses recently ordered by the Public Service Railway, Newark, N. J.

The boxes to be manufactured for this order will be of the 12-volt, automatic type, the electric current for their operation being supplied from the storage batteries of the buses. They are the same general type as the boxes in use on the street cars of the Public Service Railway, except that the voltage feature has been modified to suit bus operation.

Messrs. Woodin and Curwen Head New Brill Company

W. H. Woodin, head of the American Car & Foundry Company and the American Locomotive Company, has been elected chairman of the board of directors of the Brill Corporation. The other directors include Samuel M. Curwen, Francis A. Lewis, W. Clarke Mason, E. P. Rawle, W. M. Hager, C. S. Sale and G. R. Scanland. The executive committee consists of W. M. Hager, chairman; S. M. Curwen and W. H. Woodin.

The directors elected the following officers of the new corporation which was organized recently to acquire the J. G. Brill Company, the Hall-Scott Motors Corporation and the Fageol Motors Company:

President—Samuel M. Curwen.
 Vice-President—G. R. Scanland.
 Secretary—H. C. Wick.
 Treasurer—S. A. Mallette.

Rolling Stock

Sunbury & Selinsgrove Railway, Selinsgrove, Pa., has ordered three double-truck closed motor cars, equipped with Brill 77 E-1 trucks, from the J. G. Brill Company, Philadelphia, Pa.

Arkansas Central Power Company, Little Rock, Ark., has ordered 30 single-end safety cars, equipped with Brill

79 E-1 trucks, from the American Car Company, St. Louis, Mo.

Medelline Municipal Railways, Colombia, has ordered from Brill four single-truck safety cars for first-class service and two single-truck safeties for second-class service.

Bogota Municipal Tramways, Brazil, has ordered one complete single-end safety car equipped with Brill 79 E-1 trucks from the J. G. Brill Company, Philadelphia, Pa. In addition, seven car sets, complete except for woodwork, have been ordered from the same source for erection in Brazil. These are of the single-end, double-door type, equipped with Brill trucks.

New York, Westchester & Boston Railway, New York, N. Y., is contemplating the purchase of ten or twenty additional standard passenger motor cars for service on the various lines of the company.

Georgia Railway & Power Company, Atlanta, Ga., at the end of 1925 received 40 one-man safety cars for use on the city line in Atlanta. The company ordered in January of this year ten new one-man cars. Five of these are for the Stone Mountain line and five for the Atlanta to Marietta line. Details of the city cars are as follows:

Bullder of car body	Cincinnati Car Company
Type of car	Double-end, double-truck safety
Seating capacity	48
Weights:	
Car body	17,444 lb.
Trucks	10,860 lb.
Equipment	9,076 lb.
Total	37,380 lb.
Bolster centers, length	20 ft. 6 in.
Length over all	46 ft. 4 in.
Truck wheelbase	5 ft. 4 in.
Width over all	8 ft. 4 in.
Height, rail to trolley base	11 ft. 8 in.
Body	All steel
Interior trim	Light mahogany
Headlining	Agasote
Roof	Low monitor
Alr brakes	Safety Car Devices
Armature bearings	Sleeve
Axles	Brill, Cambria hammered steel
Bumpers	Pressed steel
Car signal system	Faraday
Car trimmings	Bronze oxidized, Dayton
Center and side bearings	Brill
Compressors	Westinghouse Traction Brake DH-16
Control	General Electric K35-JJ and line breaker
Curtain fixtures	Rex roller; Curtain Supply No. 90, pinch fixture
Curtain material	Pantasote, grain Morocco, color No. 86
Destination signs	Keystone ILL
Door-operating mechanism	National Pneumatic Door Engines
Energy-saving devices	Economy Meter
Fenders	H-B wheel guards
Finish	Enamel
Gears and pinions	One-half GE A-1, one-half Tool Steel
Hand brakes	Peacock staffless
Heater equipment	Consolidated Car Heating No. 321 and thermostats
Headlights	one-half Crouse-Hinds, one-half Golden Glow
Journal boxes	Brill
Lightning arrester	General Electric aluminum cell
Motors	Four GE-265-A, Inside hung
Registers	Ohmer
Sanders	Ohio Brass, form 2
Sash fixtures	Dayton, wedge type
Seats	Hale & Kilburn, AWO-400
Seating material	Springless canvas-lined cane
Slack adjusters	American automatic
Springs	Brill
Step treads	Aluminum, Cincinnati Car Company
Trolley catchers	Ohio Brass No. 13141
Trolley base	Ohio Brass, form 4
Trolley wheels	Nuttall 6 in.
Trucks	Brill 77-E-1
Ventilators	Monitor sash
Wheels	26 in. chilled
Special devices	Treadle door, rear exit signal lights, brakes and power interlocked with treadle door.

Track and Line

Hot Springs Street Railway, Hot Springs, Ark., is expending nearly \$100,000 in paving its right-of-way and improving its roadbed and service generally.

Capital Traction Company, Washington, D. C., undertook approximately ten rebuilding and replacement jobs in 1925. One of the most important was the rebuilding of tracks from 29th Street to 35th Street in Georgetown. Rebuilding and paving from 29th Street to 32d Street, cost \$70,000. From 32d Street to 35th Street there were general repairs to the tracks and a new paving at a cost \$17,500. On Eighth Street Southeast, another complete track rebuilding job cost \$77,500. A new crossover on You Street at Portner Place, cost \$17,150. A switch at Rock Creek Loop, which had to be completely rebuilt, cost \$8,520. The east crossing at Pennsylvania Avenue and Fourteenth Street was rebuilt at a cost of \$14,100, of which the company paid \$7,050. A crossing over the Baltimore & Ohio Railroad tracks at Chevy Chase Lake, cost \$1,680. New ties, ballast and joints for the track on Kennedy Street, cost \$6,040. Work on Connecticut Avenue in connection with the removal of the center poles, and other work, cost \$49,600. The total for all the work was \$255,040.

Power Houses, Shops and Buildings

Interstate Public Service Company, Indianapolis, Ind., suffered a loss of approximately \$40,000 on Jan. 20 when a new building, an addition to the machine shops at Scottsburg, Ind., was destroyed by fire. The building was equipped with much valuable machinery, most of it new. The loss is covered by insurance.

Boston Elevated Railway, Boston, Mass., is considering the erection of a garage on Washington Street, Somerville. A. J. Blackburn, the company's engineer, is preparing plans.

Chicago & Joliet Electric Railway, Joliet, Ill., has announced plans to erect a garage, with a capacity for 25 buses, at St. Louis and Osgood Streets, Joliet, Ill. Work will start as soon as weather permits.

Trade Notes

Fred M. Egolf is now representing the Timken-Detroit Axle Company in the Eastern territory. He was formerly with the Haskelite Manufacturing Company and joined the Timken organization as a railway representative the first of the year. After a period of instruction at the Detroit plant of the company he was transferred to New York, where he will make his headquarters at 2 Rector Street.

G. R. Scott has become connected with the Electric Service Supplies Company, Chicago. Mr. Scott has been connected with the Electrical Engineer-

ing Company, St. Paul Electric Company, Fort Wayne Electric Works, General Electric Company and recently has been district manager of sales in Chicago for the Jeffery-DeWitt Insulator Company. Mr. Scott will cover the states of Minnesota, North and South Dakota, Iowa and eastern Nebraska.

Walter Jackson, Mount Vernon, N. Y., has reprinted in pamphlet form the paper "What Can Railway Men Do Toward Relief of Traffic Congestion," presented by him before the meeting of the New England Street Railway Club at the Copley-Plaza Hotel, Boston, Mass., on Oct. 29, 1925.

Earle Gear & Machine Company, Philadelphia, Pa., has announced the sale and transfer of all designs, patterns, patents and good will covering Earle centrifugal pumps to the Aldrich Pump Company, Allentown, Pa. The transfer will in no way conflict with the Earle company's regular business of manufacturing Earle truck gears, cold metal saws and special machinery.

Atlas Safety Brake Company, Inc., Buffalo, N. Y., manufacturer of hand brakes and safety brakes, has been chartered at Albany with \$200,000 capital. Edward C. and Louise M. Norton, 37 North Division Street, Buffalo, and Charles J. Kuhn, 90 Main Street, Tonawanda, N. Y., are the directors and subscribers. Hubert E. Collins, 622 Prudential Building, Buffalo, is attorney for the corporation.

New Advertising Literature

International Harvester Company of America, Chicago, Ill., has issued a 95-page bulletin illustrating the various types of McCormick-Deering industrial tractors and operating equipment which are available for road work and other types of industrial service.

Crouse-Hinds Company, Syracuse, N. Y., has issued a folder setting forth the various applications of its safety hand lamps. These are constructed to withstand the severe service encountered in railway shops, garages, industrial plants, storehouses, and similar places. A number of types are provided so that varying service requirements may be met with a maximum of efficiency. The lamps are listed and described in Bulletin No. 2071.

Armed Culvert & Flume Manufacturers' Association, Middletown, Ohio, has issued Bulletin R-23, entitled "Reducing the Cost of Culvert Replacement." It deals with the problem of placing culverts under existing embankments which are in active use for transportation purposes and indicates that the "jacking" method is the most effective manner of carrying on this type of work. Ten advantages of this method are given. They are: (1) Roadbed is undisturbed. (2) No work is done on track level. (3) No false work required. (4) No traffic interruption. (5) "Slow orders" not required. (6) Safety of train operation unimpaired. (7) Cuts construction period to one-half or one-third. (8) No special equipment or skilled labor required. (9) No settlement of track after construction. (10) Installation costs reduced to less than one-half.

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Modern air brakes are as nearly perfect as human ingenuity can make them. But there are possible conditions under which they become ineffective, as every railway man knows. Suppose such a condition occurs on a grade, or in other dangerous circumstances. Will your hand-brakes meet the situation?

With Peacock Staffless Brakes the motorman spins the hand wheel and the car quickly comes to a stop.

A serious accident has been averted—and the installation of Peacock Staffless Brakes is justified. For these brakes are dependable—always “there in a pinch.”

Because there is no limit to the length of chain that can be wound in with the Peacock Staffless Brake, neither slack chain nor worn shoes nor extensive piston travel can prevent effective braking.

The tremendous braking power obtainable, the minimum platform space required, the simplicity of operation and the low charges for maintenance are additional reasons why Peacock Brakes are standard equipment on most of the prominent electric railway systems throughout the country.

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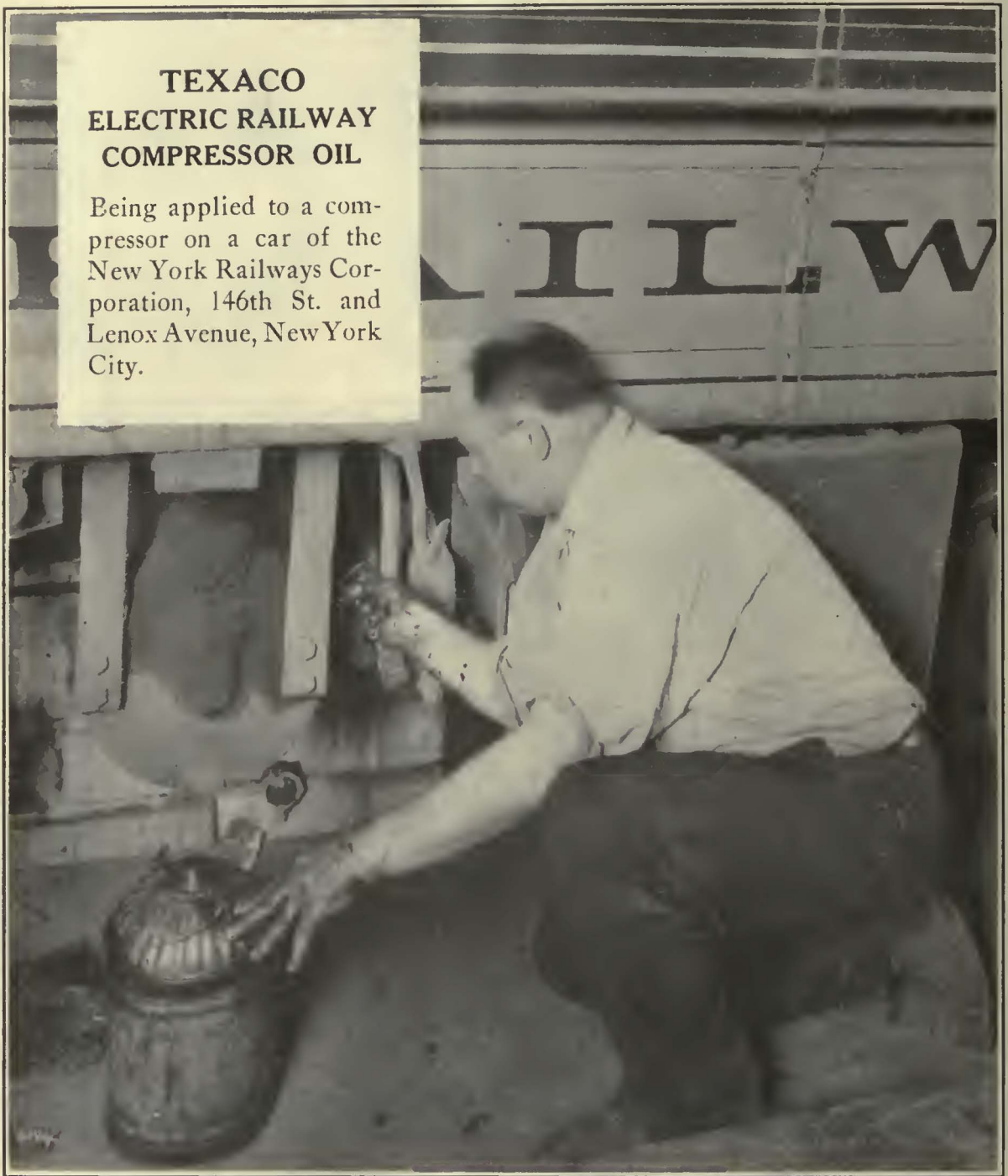
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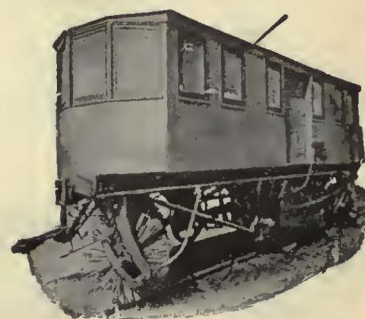
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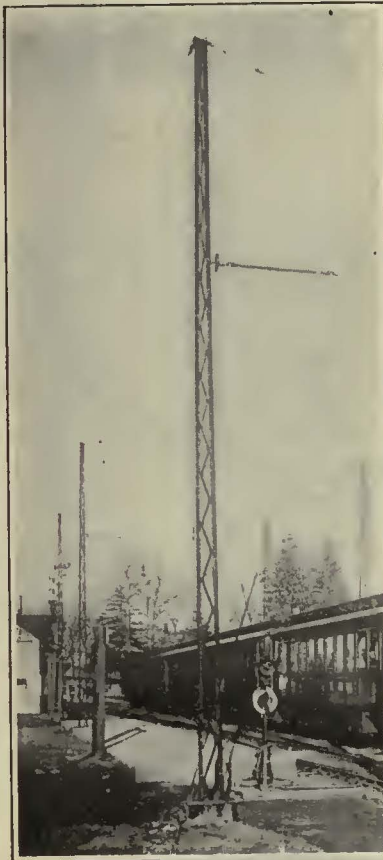


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Sales Mount Despite



What the Weston Electrical Instrument Corporation did, as expressed in terms of the McGraw-Hill

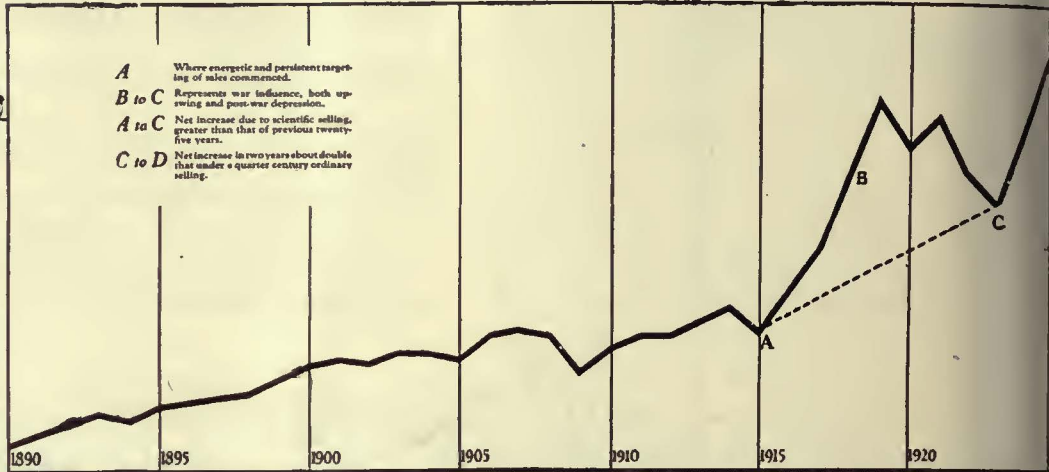
FOUR PRINCIPLES OF INDUSTRIAL MARKETING

1. **Market Determination:** Each Market was analyzed and its sales possibilities were accurately appraised. The application of Weston instruments in solving the problems of each industry was also carefully worked out. This provided the salesman with definite information on which to base their selling and eliminated misdirected effort.

2. **Buying Habits:** Since Weston salesmen were selling service first and instruments only as an incident to the service it became important to contact with the men who came closest to the problems involved. This idea was behind the careful study of buying habits.

3. **Channels of Approach:** The Weston Sales promotion program to get its story to the proper persons was nicely balanced to include the intensive use of publications which cover worth-while buying groups; manufacturers' literature and special missionary work through salesmen. These were supplemented by certain worth-while exhibits.

4. **Appeals that Influence:** The Weston advertisements and literature were changed from descriptions of instruments and made a source of helpful information. Industry found in them solutions of their problems and suggestions for more efficient and economical operation. Salesmen keyed their selling to the same basis of helpfulness. This type of appeal was very helpful in winning recognition for Weston representatives.



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Four Principles of Industrial Marketing

AT SOME time in its career most every business faces a situation that is perplexing. The course is not always charted—the way not always clear.

The Weston Electrical Instrument Corporation faced perplexing situations not only once, but often. Tied up as they were with the electrical industry, their problem continually was to keep abreast of its ever-shifting development.

More than once the company saw markets which consumed as much as 40% of its volume gradually disappear. Fortunately the foresight of Weston engineers anticipated develop-

ments. The needed new types of instruments were ready.

But would Weston continue to keep sales mounting under shifting markets and the highly competitive conditions ahead?

What would be the position of the company when important patents expired?

These were the questions which faced the Weston corporation at various times.

The company answered them by deciding on a policy of intensive study and cultivation of markets. Not only were present markets an-

Shifting Markets

alyzed and appraised, but trends were studied and many types and forms of new instruments were developed to meet the future markets. Complete detailed studies of the production problems of each market were placed in the hands of the Weston field organization. Salesmen were equipped to know where business was to be obtained and how to perform a service to the customer in getting it.

This plan squares perfectly with the McGraw-Hill Four Principles of Industrial Marketing, and the results prove their effectiveness.

The net result of ten years' operation under this plan shows in the chart. A gain in eight years greater than that of the previous twenty-five is an achievement, while a gain in the past two years of about twice the gain of a quarter century is tremendous testimony to scientific selling.

Every manufacturer who sells to industry cannot fail to recognize the soundness of these McGraw-Hill Four Principles of Industrial Marketing. The important thing is to apply them to one's own selling. To help accomplish this the McGraw-Hill Company offers its fifty years' accumulated experience with industry. The same wide knowledge of industry which makes the McGraw-Hill publications the authority in their fields is available to individual manufacturers and their advertising agents in working out their sales programs.

Each McGraw-Hill office is able to extend this service to manufacturers in its territory. Its staff of Marketing Counselors will be available at any time for conference on this most important matter. Such counsel is freely offered in the interest of efficient selling to industry.

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COAL FIELD DIRECTORY

KEYSTONE CATALOG KEystone CATALOG
(Coal Edition) (Metal-Quarry Edition)

ANALYSIS OF NON-METALLIC MINING, QUARRYING
AND CEMENT INDUSTRIES

⌈ This advertisement is the eighth of the series which is appearing in the *New York Times*, *Philadelphia Public Ledger*, *Wall Street Journal*, *Cleveland Plain Dealer*, *Chicago Journal of Commerce* and *New York Herald-Tribune*; in *Printers' Ink*, *Advertising and Selling Fortnightly*, *Class*,

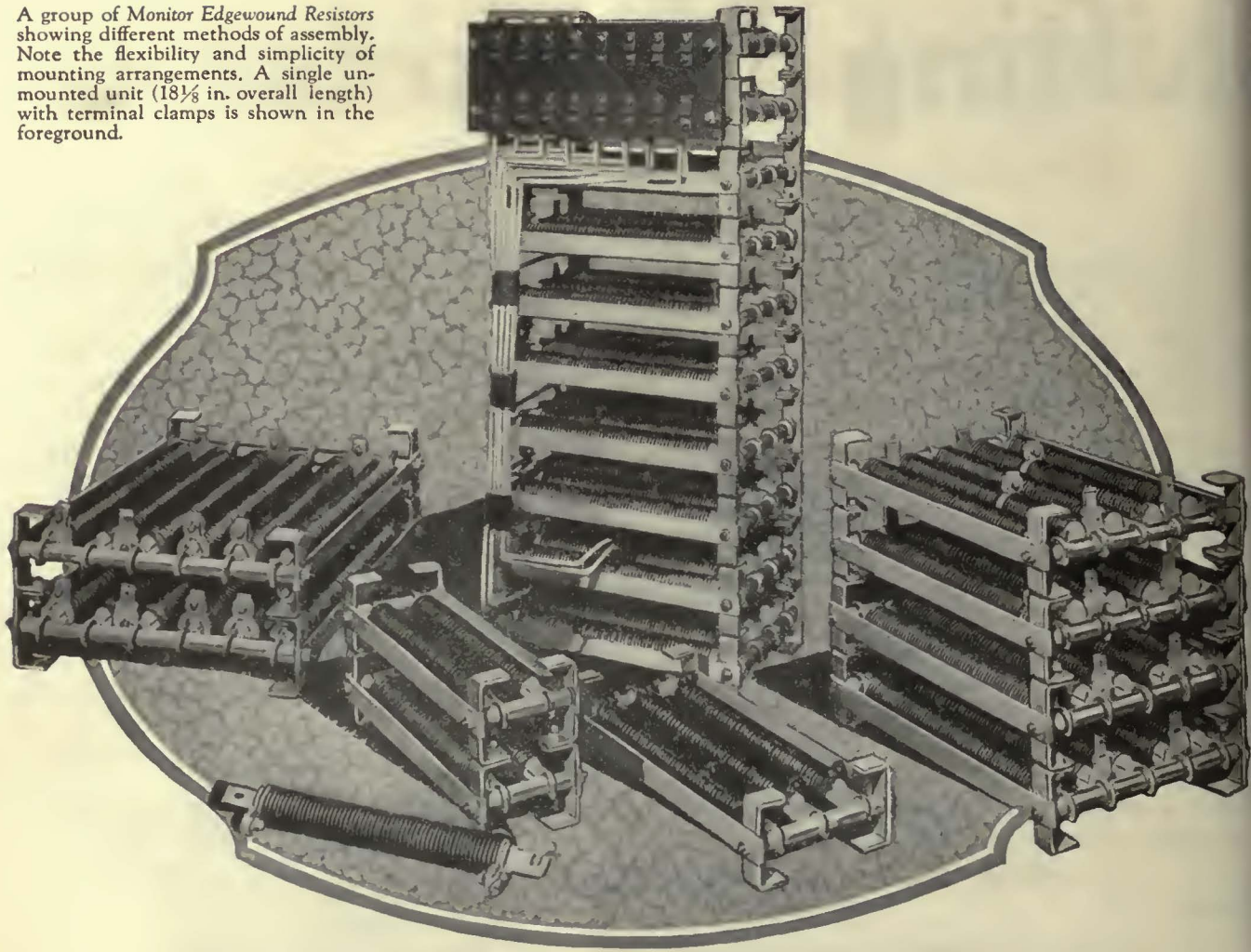
Sales Management, and in the McGraw-Hill Publications. The purpose of these advertisements is to arouse a national appreciation of the need for improving industrial sales efficiency, and to awaken a keener interest in the correct principles of industrial selling. ⌋

McGraw-Hill Company, Inc., New York, Chicago, Philadelphia, Cleveland, St. Louis, San Francisco, London, Publishers of

McGraw-Hill Publications

REACHING A SUBSTANTIAL MAJORITY OF THE BUYERS IN THE INDUSTRIES THEY SERVE

A group of Monitor Edgewound Resistors showing different methods of assembly. Note the flexibility and simplicity of mounting arrangements. A single unmounted unit (18½ in. overall length) with terminal clamps is shown in the foreground.



Fits any space—carries any current

A YEAR ago the *Monitor Edgewound Resistor* was offered as the solution of the heavy-current electrical-resistor problem. Extensive use by the U. S. Government and in numerous widely diversified industries typify the quick and favorable acceptance which it received.

Among the features leading to such quick adoption of *Edgewound Resistor* are the following:

Resistive Conductor—Tough, strong, non-corrosive and amply supported. Ohmic

resistance practically the same at all operating temperatures.

Flexibility—Units may be arranged in various ways and taps taken off at any point.

Simplicity—Relatively few units for given capacity; method of connection simple and positive.

Compactness—Possible because of excellent heat dissipation.

Dependability—Practically non-breakable; no localized heating with resultant burn-outs.

Ask for Bulletin 1077 which describes the *Edgewound Resistor* in detail.

MonitorControllerCompany

500 E. Lombard St., Baltimore, Maryland

New York
Chicago
Buffalo

Cincinnati
Detroit
Pittsburgh

The Original
Just Press a Button
System

Cleveland
Boston
Philadelphia

St. Louis
Birmingham
New Orleans
Washington



From the First



THE average man—even the average trained operating engineer—does not realize the harm that may be done to machinery by even the occasional use of a poor lubricant. When a piece of machinery is run for a short time with a lubricant which does not provide an unbroken film of oil between the bearing surfaces, these surfaces become slightly roughened. However slight this roughness may be, it tends to break the protective film of lubricant, even when the correct grades of oil or grease are used.

The only way to make sure of getting full power and service from any piece of machinery is to prevent this first slight abrasion of the bearing surfaces by using the right grades of lubricants from the time the machine is put into operation. Whenever you install a new machine, get the advice of a competent lubricating engineer as to the grades of oils and greases to use, and provide a supply of these lubricants before permitting the machine to be used.

Standard Oils and Greases

are made in grades which cover the lubrication requirements of all machines in use in the industrial world. The lubricating engineers of the Standard Oil Company (Indiana) will be glad to make a survey of your plant and recommend the grades that are suited to your machinery.

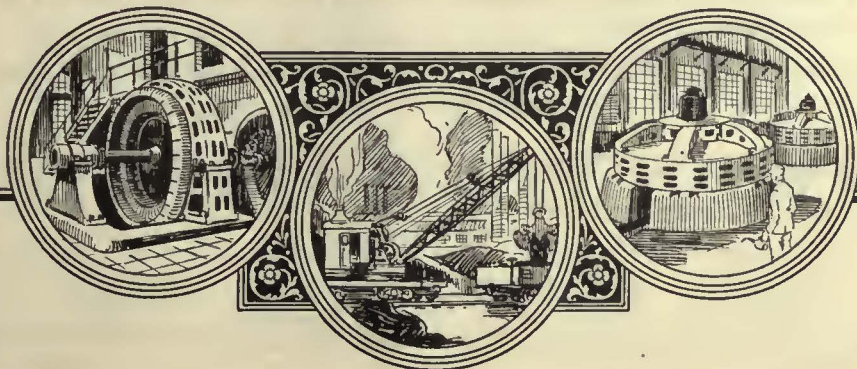
No charge is made for this service. To make arrangements for such a survey, phone or write our nearest branch.

STANDARD OIL COMPANY

(Indiana)

General Offices: 910 S. Michigan Avenue

Chicago, Illinois



STUD TERMINAL RAIL BONDS



View of main line New York, New Haven and Hartford Railroad. Insert is our type CPOF Bond a concealed type of bond which is used on all main line tracks.

Performance is the best means by which the efficiency of a rail bond can be determined.

The use of Stud Terminal Rail Bonds, exclusively by the New York, New Haven and Hartford Railroad clearly indicates that this type of bond has stood the test of time.

No bond has more convincingly demonstrated its efficiency and ease of maintenance on lines carrying heavy traffic.

The catenary messengers shown in the illustration are Extra High Strength Galvanized Steel, furnished by the American Steel and Wire Company.

AMERICAN STEEL & WIRE COMPANY

Sales Offices:

CHICAGO.....208 So. La Salle Street
 NEW YORK.....30 Church Street
 CLEVELAND.....Rookefeller Building
 WORCESTER.....94 Grove Street
 BOSTON.....185 Franklin Street
 PHILADELPHIA.....Widener Building
 PITTSBURGH.....Frick Building

BUFFALO.....670 Ellicott Street
 DETROIT.....Foot of First Street
 ATLANTA.....Trust Company of Georgia Building
 CINCINNATI.....Union Trust Building
 BALTIMORE.....32 So. Charles Street
 WILKES-BARRE, PA.....Miners Bank Building
 ST. LOUIS, Liberty Central Trust Company Building
 KANSAS CITY.....417 Grand Avenue

ST. PAUL-MINNEAPOLIS, Pioneer Bldg., St. Paul
 OKLAHOMA CITY.....First National Bank Building
 BIRMINGHAM, ALA.....Brown-Marx Building
 MEMPHIS, TENN.....Union and Farmers Bank Bldg.
 DENVER.....1st National Bank Building
 DALLAS.....Praetorian Building
 SALT LAKE CITY.....Walker Bank Building

Export Representatives: U. S. Steel Products Co., New York Pacific Coast Representative: U. S. Steel Products Company, San Francisco Los Angeles Portland Seattle



“ONE WEAR” MEANS “ONE COST”

When first cost is final cost repair burdens disappear.

Maintenance calls for shops, for tools, for men.
Maintenance is a necessity for some steel wheels.

But

DAVIS “ONE WEAR” STEEL WHEELS

never need re-turning. They are worth more than other wheels because their first cost is their final cost.

AMERICAN STEEL FOUNDRIES
NEW YORK CHICAGO ST. LOUIS

DAVIS WHEELS ARE SAFER WHEELS

The Measure of Your Message

THE measure of your message is the number of actual readers reached by the publications carrying your advertising.

You may buy "10,000 circulation," but is it delivered, or is it merely a "claim" of the publisher?

The A. B. C. offers a service that will enable the advertiser and advertising agent to measure every message placed in the leading publications of the United States and Canada.

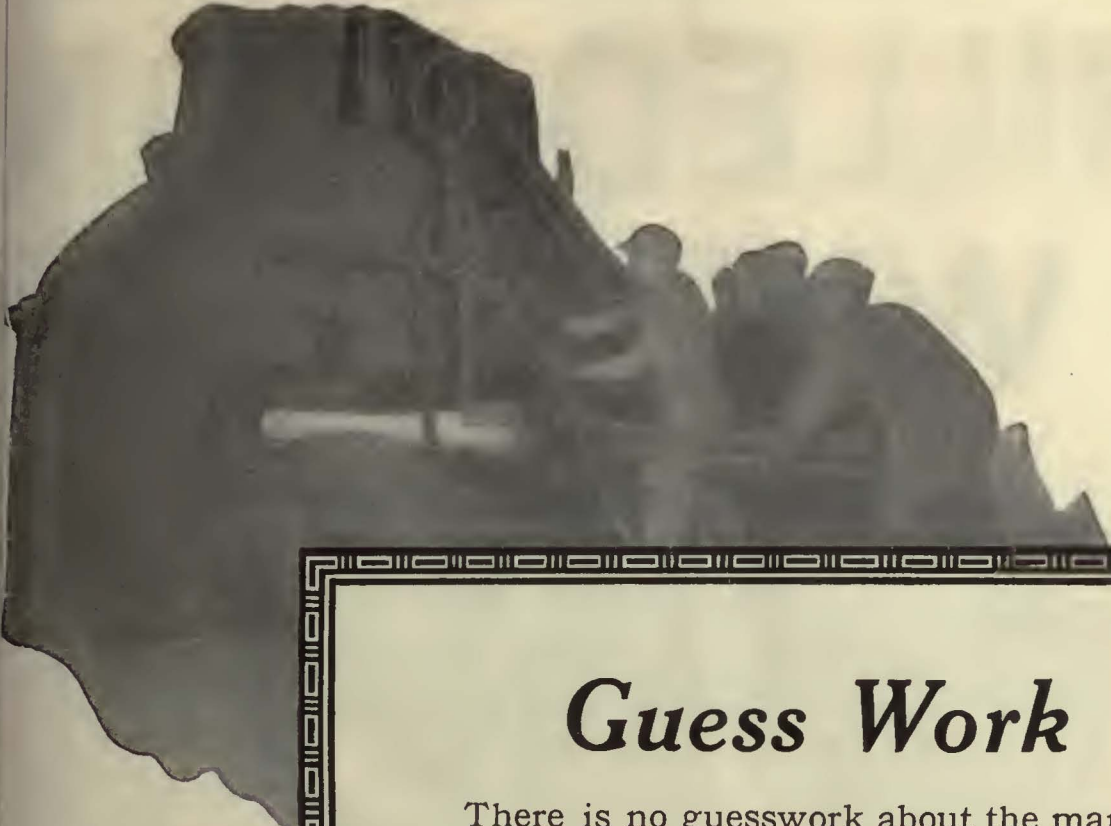
Every day in all parts of the Continent A. B. C. auditors are checking the records of publishers, and their findings are tabulated in the form of A. B. C. reports.

These reports, by the authentic, reliable, verified data they contain, enable the advertiser to measure exactly how widely his message has been distributed.

*Ask for the latest A. B. C. Report
on the ELECTRIC RAILWAY JOURNAL.
It is a member of the A. B. C.*

ELECTRIC RAILWAY JOURNAL

36TH STREET AT 10TH AVENUE
NEW YORK, N. Y.



Guess Work

There is no guesswork about the manufacture of Carnegie Axles. More than sixty years of experience in their making, coupled with every facility for correct heat treatment and accurate testing, insure the meeting of the specification in the finished product.

Nor is the purchase of Carnegie Axles guesswork. Rather it represents an assurance of satisfactory service.

Prompt Deliveries
of
Car and Tender Axles
Engine Truck and Driving Axles
Electric Motor and Street Car Axles
Miscellaneous Forgings

CARNEGIE STEEL COMPANY

General Offices • Carnegie Building • 434 Fifth Avenue

PITTSBURGH



PENNSYLVANIA

CHILLED IRON WHEELS



There is a wheel for every service

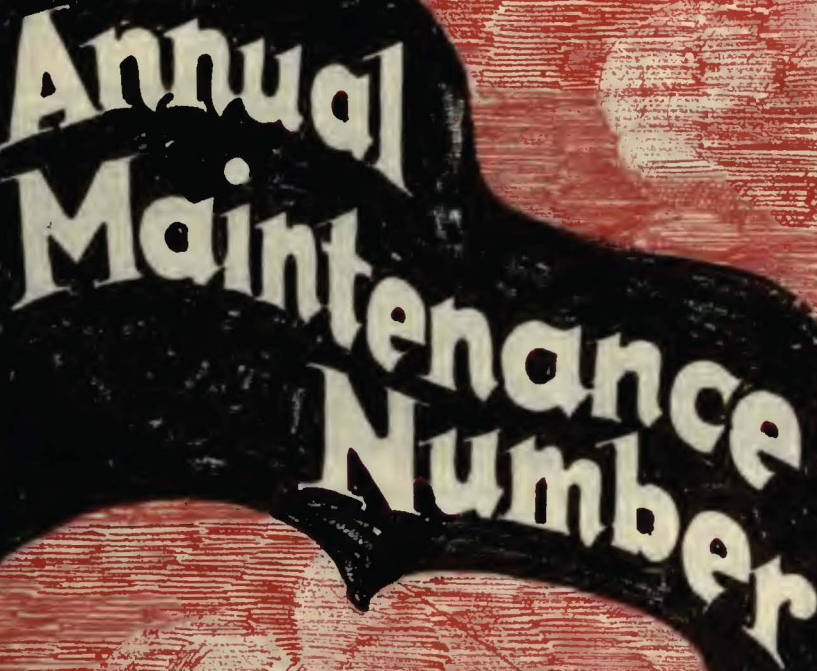
Highest co-efficient of Brake Shoe Friction with Minimum Loss of Brake Shoe Metal.

The hard tread becomes polished in service, reducing to a minimum wear between wheel and rail.

The soft hub insures easy machining and perfect axle fit.

**ASSOCIATION OF MANUFACTURERS
OF CHILLED CAR WHEELS**
1847 McCormick Building
CHICAGO

50 PLANTS ~ DAILY CAPACITIES 20000 WHEELS



Annual Maintenance Number



A Banner Issue in a Banner Year

More riders through better maintenance is the keynote of the

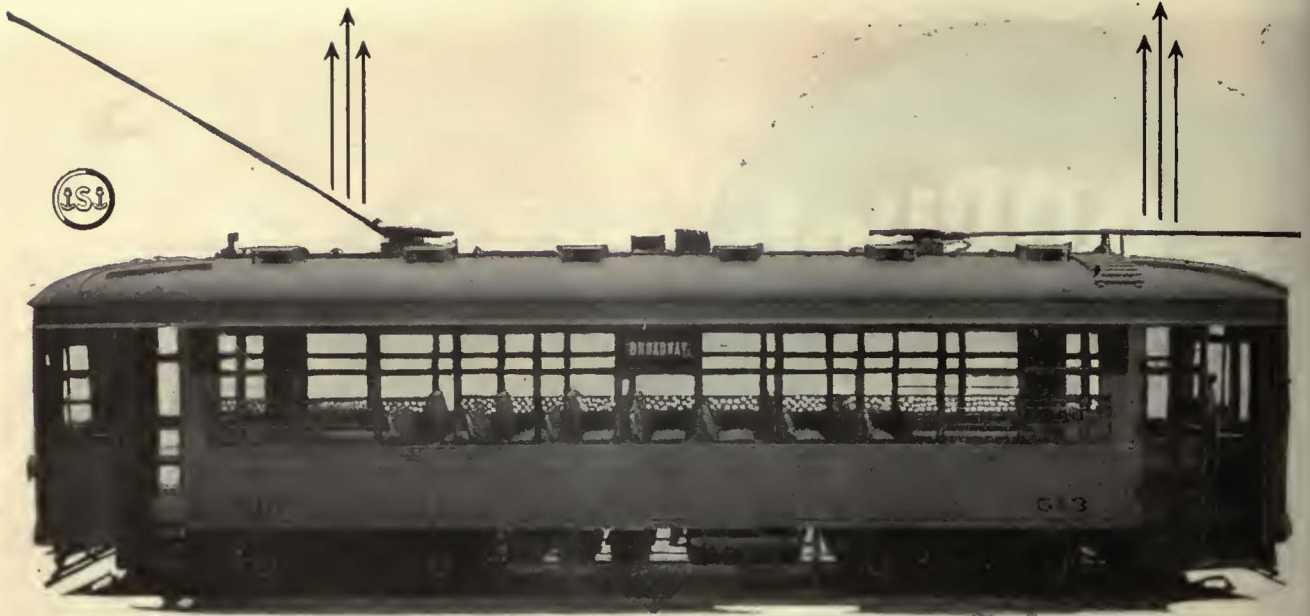
Annual Maintenance Number Dated March 20,

of Electric Railway Journal. Maintenance experts will tell how to merchandise transportation through improved rolling stock and noise reduction; better maintenance of track, trolley and sub-station and by the use of modern methods in shop and garage repair work.

Plan to capitalize your opportunity through strong and effective advertising space in this banner issue.



Electric Railway Journal



FIFTEEN new cars — recently ordered by the Indiana Service Corporation — are equipped with “STANDARD” Rolled Steel Wheels, Quenched and Tempered Carbon Steel Axles, and “Standard” Coil and Elliptic Springs.



Rolled Steel Wheels
Quenched and Tempered
Carbon Steel Axles
Coil and Elliptic Springs

STANDARD STEEL

WORKS COMPANY

PHILADELPHIA, PA.

BRANCH OFFICES:

CHICAGO
ST. LOUIS
NEW YORK
HOUSTON, TEXAS

PORTLAND, ORE.
RICHMOND, VA.
SAN FRANCISCO
BOSTON

ST. PAUL, MINN.
PITTSBURGH, PA.
LOS ANGELES, CAL.
MEXICO CITY, MEX.

WORKS: BURNHAM, PA.



Let Thermit help unload this burden!

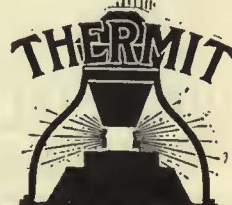
When you ask the City Council, or the Legislature, for relief from paving costs and maintenance, you want to be pretty sure of your ground, don't you? You want to demonstrate to them, if possible, that your cars do not damage the pavement.

Think how often holes in the paving occur at the rail joints, while along the rail the balance of the surface may be perfect.

You can greatly reduce the effect that rails may have on pavement by eliminating the joints. Rail joints in paved track are unnecessary, and they afford too much room for argument about paving damages.

Thermit welding eliminates the joints, and with them the principal source of paving damage. It costs no more than other methods of joining rails and does a solid, permanent job. No joint is left to get loose or pound. This preserves the paving surface and prevents water from getting under it to cause damage.

*Thermit Welds are
the best track insurance.*



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

PITTSBURGH

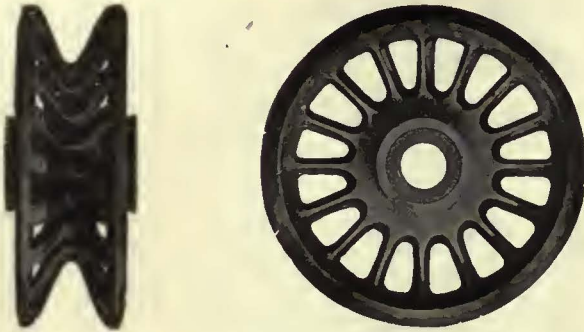
CHICAGO

BOSTON

SOUTH SAN FRANCISCO

TORONTO

SLEET CUTTING DEVICES



Nuttall Sleet Wheels replace the standard trolley wheels and efficiently clean sleet coated wires.

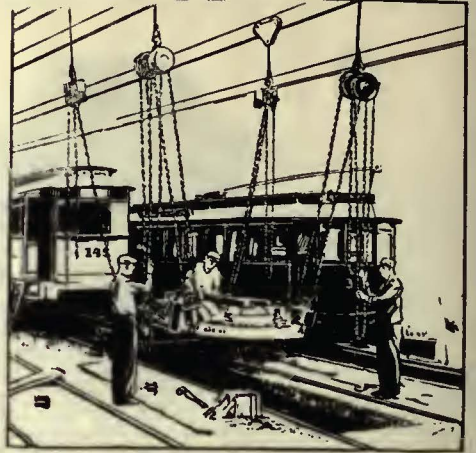


Nuttall Sleet Scrapers hook over the trolley wheel—can be attached instantly, and clean the wire thoroughly. Don't wait for a sleet storm—order today.

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.

TRIBLOC CHAIN HOIST



Good tools for better work

Making the worker's job more agreeable shows a favorable result on production cost sheets.

Get this result in your shop by transferring the costly drudgery of load lifting to sturdy Tribloc Chain Hoists. Proper load lifting devices keep your mechanics at the job they're paid to do.

We will gladly tell you how Triblocs can be used to advantage in your shop—making more profitable the efforts of hard-to-get mechanics.

Send for Catalog 7-B

FORD CHAIN BLOCK COMPANY
2nd and Diamond Sts., Philadelphia, Pa.

2303-D



Complete satisfaction

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

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

Earll Catchers and Retrievers

C. I. EARLL, York, Pa.

Canadian Agents:

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

In All Other Foreign Countries:

International General Electric Co., Schenectady, N. Y.

The "RING" of a COIN!

Just as a coin—Johnson Electric Type Fare Boxes ring true—and this is true, literally as well as figuratively. Each coin dropped in the slot rings the bell with a pleasing note of finality that indicates the transaction is closed.

Johnson Fare Boxes are protecting, saving and earning money for transportation companies in every state in the union, making their operations more profitable.

They are preventing mistakes, carelessness and other forms of human weakness. They are reducing expenses, improving services, and paying for themselves by the savings effected.

Just as a coin rings true in a Johnson Fare Box, so do Johnson Fare Boxes ring true in their unflinching every day service to the transportation companies.



JOHNSON FARE BOX CO.

CHICAGO, ILL.
4619 Ravenswood Ave.

NEW-YORK, N.Y.
980 Eighth Avenue



Wisconsin Avenue Circle, Washington, D. C., where concrete was laid by the District of Columbia and, with the aid of Cal, was opened to traffic in six days.

How they clipped 12 days from concrete street curing time in Washington



Upshur Street, Washington, D. C., showing Washington Railway & Electric Company's line where, with the use of Cal, concrete was laid while cars were in constant operation.

THE city of Washington requires a curing time of 18 days for concrete streets, and this would have been the case with Wisconsin Avenue Circle—but for Cal.

The Washington Street Railways Company has used Cal in all track construction concreting for the past four years. On their recommendation, the city used it in this case with complete satisfaction—opening the street to *full traffic* in six days—one-third the former time.

Cal is the standard accelerator. Use it with your favorite brand of Portland Cement. It is a powder, packed in bags like cement, and is ready for work the minute it reaches the job.

**A Little More Cost—
A Lot Better Job**
Five pounds of Cal to each bag of cement
Less car lots - 2 3/4c lb.
Less than ton lots 3c lb.
Carlot prices on request
All prices f. o. b. factory, Berkeley, W. Va.
Cement dealers charge these prices plus freight and handling costs

NORTH AMERICAN CEMENT CORPORATION

Successor to
Security Cement and Lime Company
HAGERSTOWN, MD.

WASHINGTON

BALTIMORE

ALBANY

PERFECT
MICANITE
INSULATOR
Reg. U. S. Pat. Off.

ELECTRICAL INSULATION

Micanite armature and commutator insulation, commutator segments and rings, plate, tubes, etc., Empire oiled insulating materials; Linotape; Kablak; Mico; and other products—for the electrical insulating requirements of the railway.

Catalogs will gladly be furnished

MICA INSULATOR COMPANY

Sole Manufacturers of Micanite

Established 1893

68 Church St., New York 542 So. Dearborn St., Chicago

Works: Schenectady, N. Y.

8-F

T. S. Q.

says

"I save repair costs."

Tool Steel Quality

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

You're having brush trouble

CORRECT IT

USE LE CARBONE CARBON BRUSHES

They talk for themselves

**COST MORE PER BRUSH
COST LESS PER CAR MILE**

W. J. Jeandron

Hoboken Factory Terminal,
Building F, Fifteenth Street, Hoboken, N. J.

Pittsburgh Office: 634 Wabash Bldg.

Chicago Office: 1657 Monadnock Block

San Francisco Office: 525 Market Street

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



Don't Overlook Opportunities

Men who regularly keep in touch with the market through other channels often overlook the many opportunities that are to be found in the

SEARCHLIGHT SECTION

For Every Business Want

"Think SEARCHLIGHT First"

0154

AMERICAN BRIDGE COMPANY

EMPIRE BUILDING—71 BROADWAY NEW YORK, N. Y.

Manufacturers of Steel Structures of all classes particularly **BRIDGES AND BUILDINGS**

ALSO STEEL BARGES FOR HARBORS AND RIVERS, STEEL TOWERS FOR ELECTRIC TRANSMISSION, HEROULT ELECTRIC FURNACES, ETC.

SALES OFFICES:

NEW YORK, N. Y.
Philadelphia, Pa.
Boston, Mass.
Baltimore, Md.

PITTSBURGH, PA.
Cincinnati, Ohio
Cleveland, Ohio
Detroit, Mich.

CHICAGO, ILL.
St. Louis, Mo.
Denver, Colo.
Salt Lake City, Utah

Pacific Coast Representative:
U. S. Steel Products Co.,
Pacific Coast Dept.
San Francisco, Cal.
Los Angeles, Cal.
Portland, Ore.
Seattle, Wash.

Export Representative: United States Steel Products Co., 30 Church Street, New York.

Bethlehem Products for Electric Railways

Tee and Girder Rails; Machine Fitted Joints; Splice Bars; Hard Center Frogs; Hard Center Mates; Rolled Alloy Steel Crossings; Abbott and Center Rib Base Plates; Rolled Steel Wheels and Forged Axles; Tie Rods; Bolts; Tie Plates and Pole Line Material.

Catalog Sent on Request

BETHLEHEM STEEL COMPANY, Bethlehem, Pa.

BETHLEHEM

WHARTON

TRACKWORK

Switches, Mates, Frogs
Complete layouts of all kinds
Made by the originators of
Manganese Trackwork

Wm. Wharton Jr. & Co., Inc.
Easton, Pa.

The DIFFERENTIAL CAR



Standard on 60 Railways for

Track Maintenance
Track Construction
Ash Disposal
Coal Hauling
Concrete Materials
Waste Handling
Excavated Materials
Hauling Cross Ties
Snow Disposal

Use These Labor Savers

Differential Crane Car
Clark Concrete Breaker
Differential Bottom Dump Ballast Car
Differential Car Wheel Truck and Tractor

THE DIFFERENTIAL STEEL CAR CO., Findlay, O.

Lorain Special Trackwork Girder Rails

Electrically Welded Joints

THE LORAIN STEEL COMPANY

Johnstown, Pa.

Sales Offices:

Atlanta Chicago Cleveland New York
Philadelphia Pittsburgh
Pacific Coast Representative:
United States Steel Products Company
Los Angeles Portland San Francisco Seattle

Export Representative:
United States Steel Products Company, New York, N. Y.

WHEEL TRUING BRAKE SHOE

PAT. MAY 31, 1918, SEPT. 1, 1913, AUG. 2, 1914, DEC. 29, 1910, JUNE 15, 1908, APR. 21, 1914, APR. 20, 1915
U.S. TRADE MARK—WHEEL TRUING BRAKE SHOE

DON'T REMOVE WORN WHEELS

This shoe does the work while your car is in service.

SAVES TIME—SAVES LABOR—SAVES MONEY

WHEEL TRUING BRAKE SHOE CO.
Detroit, Mich.

EST. 1854
LUDLUM

Tool Steel HURON

THE SUPER ENDURING TOOL STEEL FOR BLANKING SILICON TRANSFORMER SHEETS AND ARMATURE DISCS

LUDLUM STEEL CO.
WATERVLIET, N. Y. — U. S. A.

WE HAVE A SPECIAL TOOL STEEL FOR EVERY SPECIFIC PURPOSE.



THE BABCOCK & WILCOX COMPANY

85 LIBERTY STREET, NEW YORK

Builders since 1868 of
Water Tube Boilers
of continuing reliability

Makers of Steam Superheaters
since 1898 and of Chain Grate
Stokers since 1893



WORKS
Bayonne, N. J.
Barberton, Ohio

BRANCH OFFICES

BOSTON, 49 Federal Street
PHILADELPHIA, Packard Building
PITTSBURGH, Farmers Deposit Bank Building
CLEVELAND, Guardian Building
CHICAGO, Marquette Building
CINCINNATI, Traction Building
ATLANTA, Candler Building
PHOENIX, ARIZ., Heard Building
DALLAS, TEX., 2001 Magnolia Building
HONOLULU, H. T., Castle & Cooke Building
PORTLAND, ORE., 805 Gasco Building

BRANCH OFFICES

DETROIT, Ford Building
NEW ORLEANS, 521-5 Baronne Street
HOUSTON, TEXAS, 1011-13 Electric Building
DENVER, 435 Seventeenth Street
SALT LAKE CITY, 405-6 Kearns Building
SAN FRANCISCO, Sheldon Building
LOS ANGELES, 404-6 Central Building
SEATTLE, L. C. Smith Building
HAVANA, CUBA, Calle de Aguiar 104
SAN JUAN, Porto Rico, Royal Bank Building

THE WORLD'S STANDARD "IRVINGTON"

Black and Yellow
Varnished Silk, Varnished Cambric, Varnished Paper

Irr-O-Slot Insulation Flexible Varnished Tubing
Insulating Varnishes and Compounds

Irvington Varnish & Insulator Co.
Irvington, N. J.

Sales Representatives in the Principal Cities

Kalamazoo Trolley Wheels

The value of Kalamazoo Trolley
Wheels and Harps has been
demonstrated by large and small
electric railway systems for a
period of thirty years. Being
exclusive manufacturers, with
no other lines to maintain, it is
through the high quality of our
product that we merit the large
patronage we now enjoy. With
the assurance that you pay no
premium for quality we will
appreciate your inquiries.



THE STAR BRASS WORKS
KALAMAZOO, MICH., U. S. A.

ELRECO TUBULAR POLES



THE "WIRE LOCK" / / THE CHAMFERED JOINT

COMBINE

Lowest Cost **Lightest Weight**
Least Maintenance **Greatest Adaptability**

Catalog complete with engineering data sent on request.

ELECTRIC RAILWAY EQUIPMENT CO.
CINCINNATI, OHIO

New York City, 30 Church Street

B. A. HEGEMAN, Jr., President C. C. CASTLE, First Vice-President
H. A. HEGEMAN, Vice-Pres. and Treas. F. T. SARGENT, Secretary
W. C. PETERS, Manager Sales and Engineering

National Railway Appliance Co.

Grand Central Terminal, 452 Lexington Ave., Cor. 45th St., New York
Munsey Bldg., Washington, D. C. 100 Boylston St., Boston, Mass.
Hegeman-Castle Corporation, Railway Exchange Building, Chicago.

RAILWAY SUPPLIES

- | | |
|---------------------------------|--------------------------------|
| Tool Steel Gears and Ptolons | Economy Electric Devices Co.'s |
| Bell Locked Fare Box and Change | Power Saving and Inspection |
| Maker | Meters |
| The Aluminum Field Coils | Anglo-American Varnish Co., |
| Walter Tractor Snow Plows | Varnishes, Enamels, etc. |
| Cutler-Hammer Electric Heaters | National Hand Holds |
| Genesco Paint Oils | Ft. Pitt Spring & Mfg. Co., |
| Garland Ventilators | Springs |
| Flaxlinum Insulation | Anderson Slack Adjusters |
| Yellow Coach Mfg. Co.'s Single | Feasible Drop Brake Staffs |
| and Double Deck Busses. | Dunham Hopper Door Devices |
| B. G. Spark Plugs | |



We make a specialty of
**ELECTRIC RAILWAY
LUBRICATION**

We solicit a test of TULC
on your equipment

The Universal Lubricating Co.
Cleveland, Ohio
Chicago Representatives: Jameson-Ross Company,
Straus Bldg.

Hubbard and COMPANY

PITTSBURGH • OAKLAND, CAL • CHICAGO



{ *The Hardware makes the line* }
{ *Hubbard makes the Hardware* }

SEARCHLIGHT SECTION

USED EQUIPMENT & NEW—BUSINESS OPPORTUNITIES

UNDISPLAYED—RATE PER WORD:

Positions Wanted, 4 cents a word, minimum 75 cents an insertion, payable in advance.
Positions Vacant and all other classifications, 6 cents a word, minimum charge \$2.00.
Proposals, 40 cents a line an insertion.

INFORMATION:

Box Numbers, in care of any of our offices count 10 words additional in undisplayed ads.
Discount of 10% if one payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

DISPLAYED—RATE PER INCH:

1 to 3 inches.....\$4.50 an inch
4 to 7 inches..... 4.30 an inch
8 to 14 inches..... 4.10 an inch
Rates for larger spaces, or yearly rates, on request.
An advertising tick is measured vertically on one column, 3 columns—30 inches—to a page.

“SEARCHLIGHT” IS Opportunity Advertising

—to help you get what you want.
—to help you sell what you no longer need.

Take Advantage Of It

For Every Business Want

“Think SEARCHLIGHT First”

G-36

POSITIONS VACANT

WANTED young engineer, 25-35 years old, experienced street railway equipment installation, research and operation, preferably from manufacturer's end, for similar work by prominent bus manufacturer. Give age, family circumstances, education, and details of employment and experience in order by date, also references and inexpensive photograph. P-881, Electric Railway Journal, Guardian Bldg., Cleveland, Ohio.

POSITIONS WANTED

ENGINEER, 24 years' experience in electric railway rolling stock maintenance and transportation supervision, open for position. PW-879, Electric Railway Journal, Tenth Ave. at 36th St., New York.

BOOKS AND PERIODICALS

For Sale

25 years' unbound copies Electric Railway Journal, \$50. B&P-880, Electric Railway Journal, 7 So. Dearborn St., Chicago, Ill.

4 High Grade, High Speed, 46 PASSENGER CARS with COMBINATION (Smoking and Baggage) SECTIONS

Exceptionally good for Interurban Service
Every car in first-class operating condition. Built by Cincinnati Car Company. Length over all, 47 ft. 8 in. Height over trolley board, 12 ft. 6 1/2 in. Height over all, 13 ft. 1 1/2 in. Number of seats, 15 across, 4 long. Type of motor, four G.E.-204. Make of trucks, Standard. Wheel base, 6 ft. 6 in. Controller K-34-D. Toilet, 29 in.x34 in. Air Compressor, WH-D-2. These cars good for one or two man operation. See our advertisement in the Jan. 30th issue of this publication for illustration of these cars. Write for further particulars.
We also have some 68-passenger cars of this type, as offered in our advertisement of January 2nd.
J. W. GERKE, Railway Equipment
303 Fifth Ave., New York City

FOR SALE

30 Birney Safety Cars Brill Built

West. 508 or G. E. 204 Motors. Cars Complete—Low Price—Fine Condition.

ELECTRIC EQUIPMENT CO.
Commonwealth Bldg., Philadelphia, Pa.

“SEARCHLIGHT” is the “OPPORTUNITY”
advertising of this industry.

0095

ROOT Life Guards Snow Scrapers

Remove Snow as it falls—with Root Scrapers.
Root Spring Scraper Co.
Kalamazoo, Mich.



STUCKI SIDE BEARINGS

A. STUCKI CO.
Oliver Bldg.
Pittsburgh, Pa.



CHILLINGWORTH

One-Piece Gear Cases
Seamless—Rivetless—Light Weight
Best for Service—Durability and Economy. Write Us.

Chillingworth Mfg. Co.
Jersey City, N. J.

A Single Segment or a Complete Commutator

is turned out with equal care in our shops. The orders we all differ only in magnitude; small orders command not 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 built. That's why so many electric railway men rely absolutely on our name.

Cameron Electrical Mfg. Co., Ansonia, Connecticut

100 New Users in the Last Nine Months
KASS SAFETY TREADS
HIGH
in efficiency and lasting qualities
LOW
in weight, initial and upkeep costs
Morton Manufacturing Co., Chicago

“Axle Specialists Since 1866”
Address all Mail to Post Office Box 515, Richmond, Va.

CAR AXLES J. R. JOHNSON AND CO., INC. FORGED STEEL AXLES

For Locomotives, Passenger, Freight and Electric Cars
Smooth Forged or Rough Turned—Carbon or Alloy Steel—Plain or Heat Treated, Forged and Turned Piston Rods, Crank Pins, Large Shafts, Round Bars, etc.

WHAT AND WHERE TO BUY

Equipment, Apparatus and Supplies Used by the Electric Railway Industry
with Names of Manufacturers and Distributors Advertising in this Issue

Advertising, Street Car
Collier, Inc., Barron G.
Air Receivers & Aftercoolers
Ingersoll-Rand Co.
Air Springs
Cleveland Pneumatic Co.
Anchors, Guy
Elec. Service Supplies Co.
Ohio Brass Co.
Westinghouse Elec. & M. Co.
Armature Shop Tools
Elec. Service Supplies Co.
Automatic Return Switch
Stand
Ramapo Ajax Corp.
Automobile Safety Switch
Standa
Ramapo Ajax Corp.
Automobile Trucks
General Motors Truck Co.
Axles
Johnson & Co., J. E.
Standard Steel Works
Axles, Carbon Vanadium
Johnson & Co., J. R.
Axles, Car Wheel
Bemis Car Truck Co.
Bethlehem Steel Co.
Brill Co., The J. G.
Carnegie Steel Co.
Johnson & Co., J. B.
Taylor Electric Truck Co.
Westinghouse Elec. & M. Co.
Axles, Rear
Clark Equipment Co.
Axles, Steel
Carnegie Steel Co.
Johnson & Co., J. R.
Ludlum Steel Co.
Badges and Buttons
Elec. Service Supplies Co.
Barges, Steel
American Bridge Co.
Batteries, Dry
National Carbon Co.
Nichols-Lintern Co.
Bearings and Bearing Metals
General Electric Co.
Westinghouse Elec. & M. Co.
Bearings, Center and Roller
Side
Stucki Co., A.
Hearings, Roller
Hyatt Roller Bearing Co.
Bells and Gongs
Brill Co., The J. G.
Consolidated Car Heating
Co.
Elec. Service Supplies Co.
Benders, Rail
Railway Track-work Co.
Bodies, Bus
Long Body Co.
Body Material, Haakelita & Plymetl
Haakelita Mfg. Corp.
Boilers
Babcock & Wilcox Co., The
Boiler Tubes
National Tube Co.
Bond Testers
Amer. Steel & Wire Co.
Elec. Service Supplies Co.
Bonding Apparatus
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Elec. Ry. Improvement Co.
Elec. Service Supplies Co.
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Railway Track-work Co.
Una Welding & Bonding Co.
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Amer. Steel & Wire Co.
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(See also Pulcs, Ties, Posts
etc.)
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Brake Adjusters
Nat'l Ry. Appliance Co.
Westinghouse Tr. Br. Co.
Brake Shoes
Bemis Car Truck Co.
Brill Co., The J. G.
Wheel Truing Brake Shoe
Co.
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Brill Co., The J. G.
General Electric Co.
National Brake Co.
Westinghouse Tr. Br. Co.
Bridges, Steel
American Bridge Co.
Brooms, Wire & Rattan
Parson Co.
Brushes, Carbon
General Electric Co.
Jeandron, W. J.
Le Carbone Co.
Westinghouse Elec. & M. Co.
Brushes, Wire, Pneumatic
Ingersoll-Rand Co.

Brush Holders
Anderson Mfg. Co., A. & J. M.
Bulkheads
Haakelita Mfg. Corp.
Bunkers, Coal
American Bridge Co.
Buses, Motor
Auto Body Co.
Brill Co., The J. G.
Mack Trucks
Busings, Case Hardened and Mangance
Brill Co., The J. G.
St. Louis Car Co.
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(See Wires and Cables)
Cambric Tapes, Yellow & Black Varnish
Irvington Varnish & Ins. Co.
Cambric Yellow & Black Varnish
Mica Insulator Co.
Carbon Brushes
(See Brushes, Carbon)
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Elec. Service Supplies Co.
Car Mfrs. Ass'n
Railway Car Mfrs. Ass'n.
Car Panel Safety Switches
Consolidated Car Heating
Co.
Westinghouse Elec. & M. Co.
Car Wheels, Rolled Steel
Bethlehem Steel Co.
Cars, Dump
Differential Steel Car Co.,
Inc.
Cars, Passenger, Freight
Express, etc.
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Brill Co., The J. G.
Cummings Car & Coach Co.
Kuhman Car Co., G. C.
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Catenary Construction
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(See also Snow-Flows,
Sweepers and Brooms)
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McGraw-Cummings Mfg. Co.
Ohio Brass Co.
Coal Spring Scraper Co.
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(See Conveying and Hoist-
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Colls, Armature and Field
Economy Electric Devices
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General Electric Co.
Westinghouse Elec. & M. Co.
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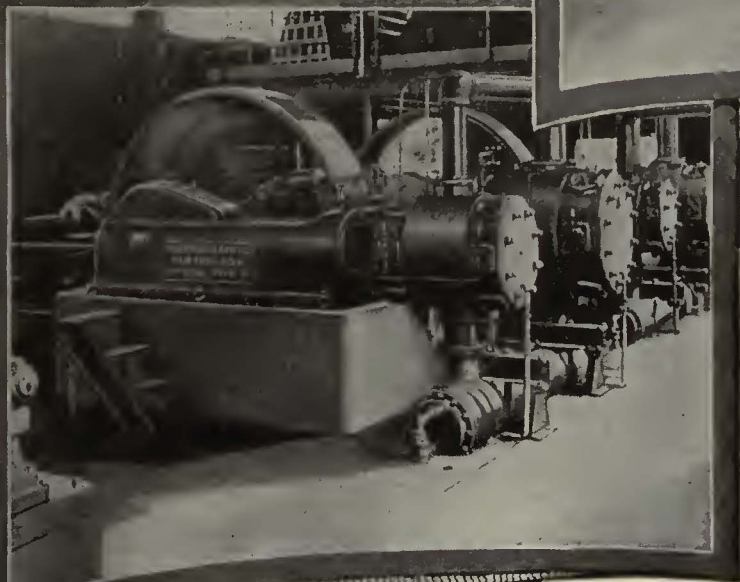
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- Slag**
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- Sleet Wheels and Cutters**
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- Snow-Plows, Sweepers and Brooms**
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Cummings Car & Coach Co.
Root Spring Scraper Co.
- Soldering and Brazing (See Welding Processes and Apparatus)**
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Irvington Varnish & Ins. Co.
- Special Trackwork**
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Lorain Steel Co.
Wm. Wharton, Jr. & Co.
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Amer. Steel & Wire Co.
- Splining Compounds**
U. S. Rubber Co.
- Westinghouse Elec. & M. Co.**
- Splicing Sleeves (See Clamps and Connectors)**
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American Steel & Wire Co.
Brill Co., The J. G.
- Standard Steel Works**
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- Stair and Steel Products**
Morton Mfg. Co.
- Steps, Car**
Morton Mfg. Co.
- Stokers, Mechanical**
Babcock & Wilcox Co.
Westinghouse Elec. & M. Co.
- Storage Batteries (See Batteries, Storage)**
- Strain Insulators**
Electric Service Supplies Co.
Ohio Brass Co.
Westinghouse E. & M. Co.
- Strand**
American Steel & Wire Co.
Roebbing's Sons Co., J. A.
- Superheaters**
Babcock & Wilcox Co.
- Sweepers, Snow (See Snow Plows, Sweepers and Brooms)**
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Ramapo Ajax Corp.
- Switches and Switchboards**
Anderson M. Co., A. & J. M.
Electric Service Sup. Co.
General Electric Co.
Westinghouse Elec. & M. Co.
- Switches, Magneto**
Monitor Controller Co.
- Switches, Remote Control**
Monitor Controller Co.
- Switches, Selector**
Nichols-Lintern Co.
- Switches, Tee Rail**
Ramapo Ajax Corp.
- Switches, Track (See Track, Special Work)**
- Tampers, Tie**
Ingersoll-Rand Co.
- Track-work Co.**
- Tapes and Cloths (See Insulating Cloth, Paper and Tape)**
- Tee Rail, Special Track Work**
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Ramapo Ajax Corp.
Wm. Wharton, Jr. & Co.
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Electric Service Sup. Co.
- Terminals, Cable**
Standard-Underground Cable Co.
- Testing Instruments (See Instruments, Electrical Measuring, Testing, etc.)**
- Thermostats**
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Gold Car Heating & Lighting Co.
Railway Utility Co.
Smith Heater Co., Peter
- Ticket Choppers and Destroyers**
Electric Service Sup. Co.
- Ties and Tie Rods, Steel**
American Bridge Co.
Carnegie Steel Co.
W. S. Godwin Co., Inc.
International Steel Tie Co.
Ludlum Steel Co.
- Ties, Wood Cross (See Pole, Ties, Posts, etc.)**
- Tires**
Goodyear Tire & Rubber Co.
U. S. Rubber Co.
- Tool Steel**
Bethlehem Steel Co.
Carnegie Steel Co.
- Tools, Track and Misc.**
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Bates Expanded Steel Truss Co.
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- Track, Special Work**
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Ohmer Fare Register Co.
- Transfer Tables**
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- Transformers**
General Electric Co.
Westinghouse Elec. & M. Co.
- Transmission Towers & Structures**
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Nat'l Ry. Appliance Co.
Nuttall Co., R. D.
Ohio Brass Co.
- Trolley Buses, Retrieving**
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Nat'l Ry. Appliance Co.
Nuttall Co., R. D.
Ohio Brass Co.
- Trolley Buses**
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General Electric Co.
Westinghouse Elec. & M. Co.
- Trolley Materials**
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Ohio Brass Co.
Westinghouse E. & M. Co.
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- Trolley Wheels (See Wheels, Trolley)**
- Trolley Wheels & Harps**
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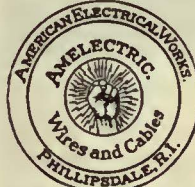
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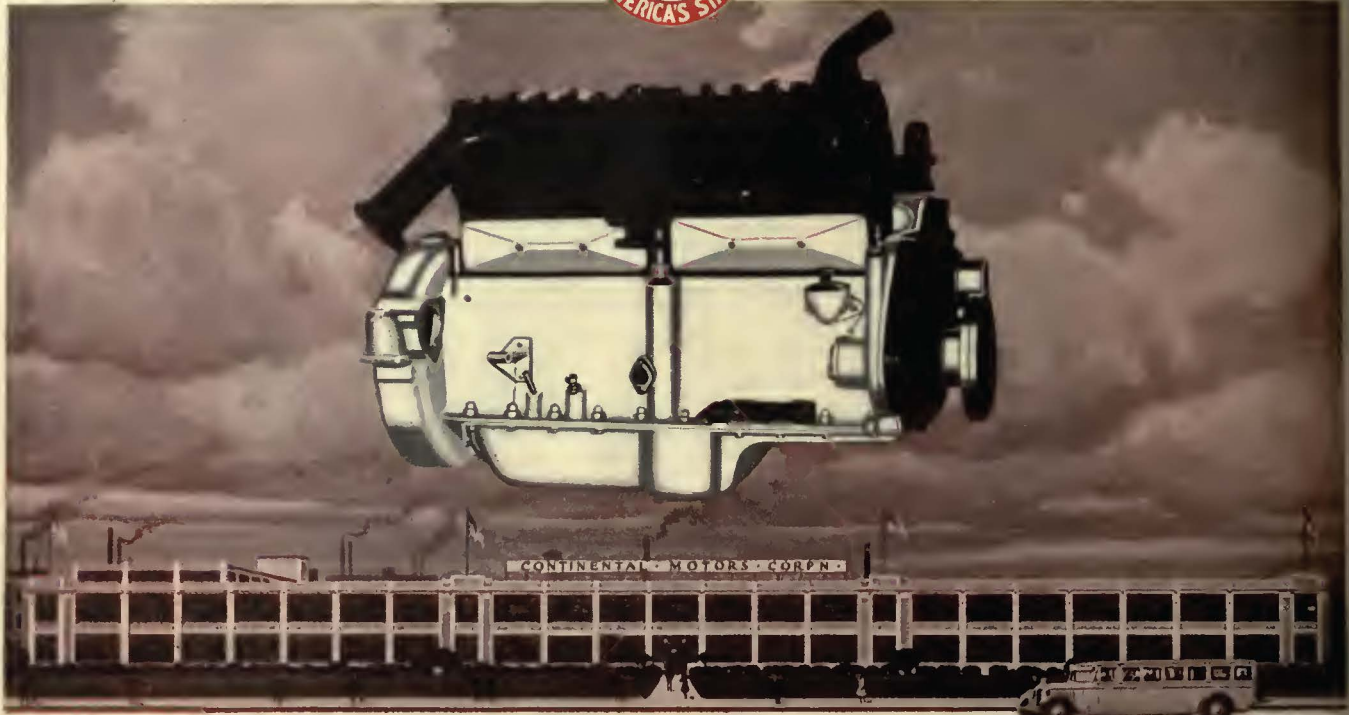
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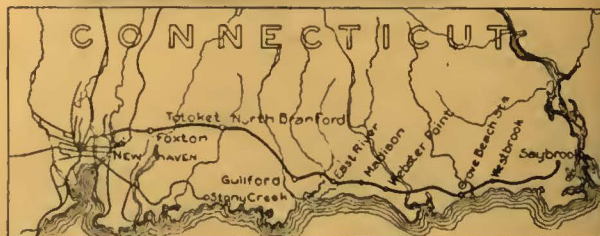
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