

ELECTRIC RAILWAY JOURNAL

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MAY 26, 1928

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Timken Thrust-Radial Capacity for Armatures

Reduced friction in armature bearings is *highly desirable*. But extreme endurance is *absolutely indispensable*. BOTH can be had in Timken-equipped railway motors, because Timkens are the anti-friction bearings which provide greater load carrying area, full thrust-radial capacity, highest shock resistance, and positive closure.

Wear in all its forms is balked by Timken Bearings with their exclusive combination of Timken tapered construction, Timken *POSITIVELY ALIGNED ROLLS*, and Timken-made electric steel. Timken-mounted armatures remain perfectly centered, free from the risk of abrasion and burn-out. Maintenance is reduced to a matter of lubricating only a few times yearly!

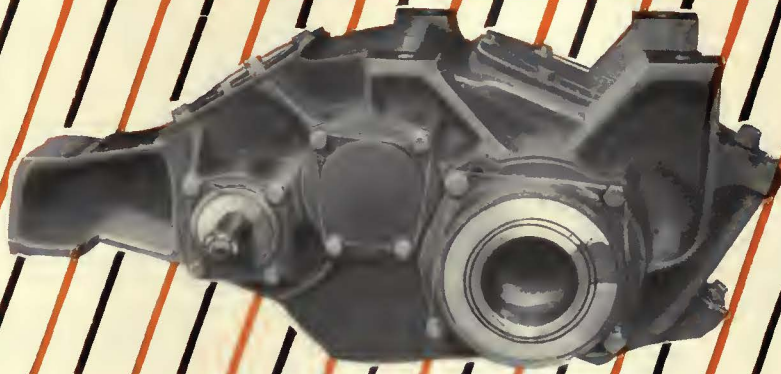
Timken Bearings in both railway motors and journals are a direct step toward economical, smooth, continuous on-schedule operation. Get the data from Timken or motor manufacturers.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO



TIMKEN Tapered Roller **BEARINGS**

Another big improvement in Electric Car Drive



The New W-N Drive

Back in the early days most operating men thought that the cast steel spur gear was the last word in car drives—until they tried the Nuttall Helicals.

Now comes another big improvement known as the new W-N Drive, the speed reducer of the traction field, a unit consisting of heat treated helical gears mounted in an oil tight steel case and revolving on Timken Roller Bearings in a continuous bath of oil.

With the W-N Drive you can take full advantage of the efficiency of modern high speed motors, gearing them down without loss, to deliver an even flow of power, with smooth starting, quick acceleration and quiet operation.

The new W-N Drive is economical both in original cost and upkeep as well as in the space that it occupies on the truck. Let us tell you more about this latest development in electric car drive.

R.D. NUTTALL COMPANY
PITTSBURGH  PENNSYLVANIA

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Nuttall

ELECTRIC RAILWAY JOURNAL

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Vol. 71, No. 21

May 26, 1928

Pages 845-884

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Worcester Builds for Adequate Maintenance 848

Carrying through the rehabilitation program agreed to last year, the Worcester Consolidated Street Railway has just completed a new carhouse and garage on a single plot. Some 203 cars and 50 buses will be operated from this point, and there is room for expansion, both for cars and buses. This article covers all the facilities included in the group.

International Association Meets at Rome 857

Reports on many subjects were presented at the biennial convention of the Union Internationale de Tramways, de Chemins de fer d'interet local et de Transports Publics Automobiles. This association, which was organized in 1885, has just finished its 21st meeting at Rome. The papers published this week are: "Radial-Axle Cars," by Charles Harmel; "Electric Railway Construction on City Reservations," by J. Lenartowicz; "One-Man Car Operation in Holland," by P. Nieuwenhuis; "Parallel vs. Radial Axles for Cars," by Jean Castaing. Abstracts of other papers will appear in subsequent issues.

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Coming—An Article on Pittsburgh's New Experimental Cars

McGraw-Hill Publishing Company, Inc., Tenth Ave. at 36th St., New York, N. Y.

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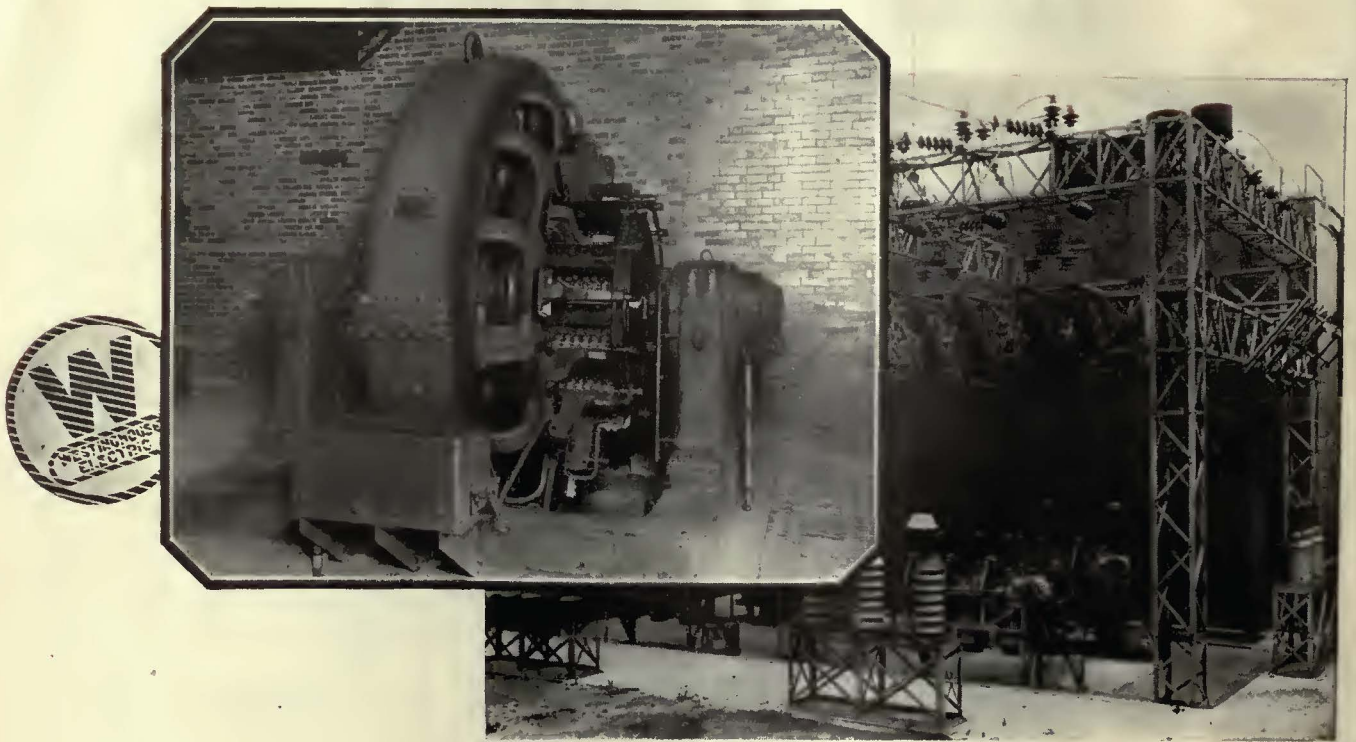
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1928



Indianapolis Street Railway Now *buys* its power—

TO completely change over from 25-cycle generated power to 60-cycle purchased power is truly a major undertaking. That is exactly what the Indianapolis Street Railway Company did—and successfully, too—when it started upon an extensive program to increase the operating efficiency of its lines.

After making a complete survey of conditions, requirements and various types of apparatus, nine Westinghouse 1500 kw. shunt-wound synchronous converters, with transformers and automatic switching, were selected for this important

project—a noteworthy tribute to the performance records of Westinghouse equipment.

There are five automatic substations, comprising two single units, two double units and one three-unit station. Since the first station opened on May 15, 1927, unfaltering service has characterized every phase of operation. The entire installation is another exemplification of Westinghouse engineering service—engineering based on close association with the industry, on constant research, and on properly designed and applied equipment.

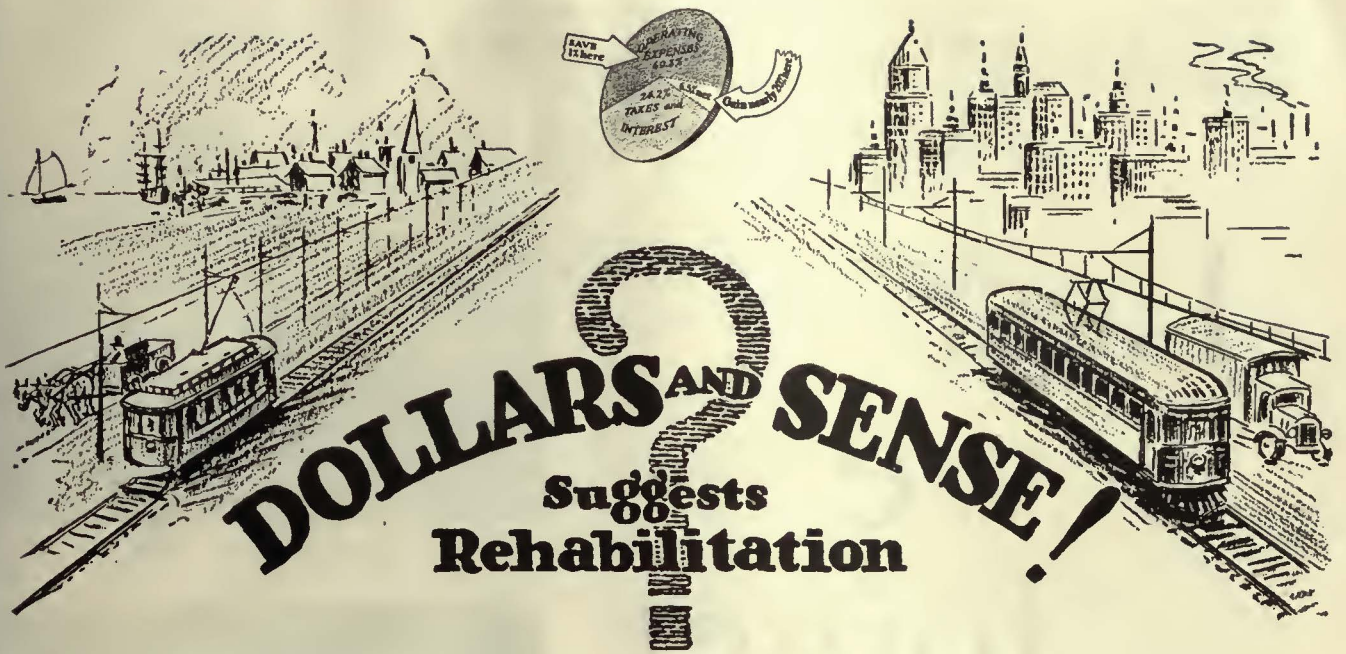
Westinghouse Electric & Manufacturing Company
East Pittsburgh Pennsylvania

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



Westinghouse

X98107



DOLLARS AND SENSE!

Suggests
Rehabilitation

Is the Overhead Built Years Ago Filling the Requirements of Today?

DIRECT suspension still has its proper place in city and low-speed service. Where increased speeds and heavier current collection are involved, engineers have always recognized the advantages of catenary construction. For this class of operation, slack wire is out of the question, and even the best maintained direct suspension is far from ideal.

Catenary construction assures perfect alignment. It does away with vibration, pounding and arcing. Dewirements are eliminated. And it is not too expensive! Savings in maintenance soon offset the increased first cost.

The Ohio Brass Company does not contemplate "selling" catenary construction to properties not yet ready for it. Our engineers are available to investigate your operations and to inspect existing overhead. They will give you the facts on catenary advantages. They will suggest proper design for your conditions. They will offer estimates of cost and probable savings. The decision will be yours.

"Is your overhead, built years ago, filling the requirements of today?" If this question is in your mind, ask for O-B recommendations.

Only a few typical examples of O-B Catenary Materials can be shown here. O-B fits the equipment to the requirements.

Ohio Brass Company, Mansfield, Ohio
Canadian Ohio Brass Co., Limited
Niagara Falls, Canada
823L



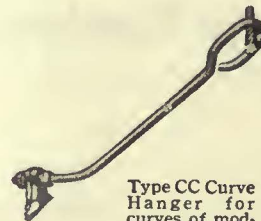
Type CT Catenary Hanger, for pantograph operation. Page 634, Cat. 20.



Catenary messenger insulator pin. Made in 2 sizes. Page 624, Cat. 20.



One piece duplex catenary clip for suspending contact wire from messenger cable. Slips over messenger and clamps on trolley. Page 642, Cat. 20.



Type CC Curve Hanger for curves of moderate degree. Page 636, Cat. 20.



Type CS Catenary Hanger, for wheel operation. Page 633, Cat. 20.

Ohio Brass Co.

NEW YORK CHICAGO PHILADELPHIA  PITTSBURGH ATLANTA CLEVELAND ST. LOUIS SAN FRANCISCO LOS ANGELES

PORCELAIN INSULATORS
LINE MATERIALS
RAIL BONDS
CAR EQUIPMENT
MINING MATERIALS
VALVES

BETTER RAIL, BETTER TRANSPORTATION

Lest we forget

“Many are prone to forget that the foundation of good service is good track.”

WILLIAM L. BUTLER

*Vice President—Cincinnati,
Hamilton & Dayton Rys.*

Railway Trackwork Co.

3132-48 East Thompson Street, Philadelphia

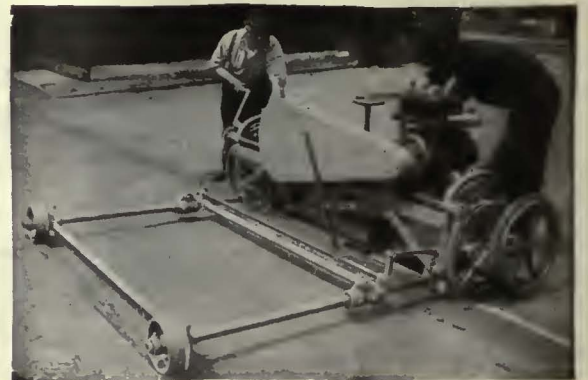
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⊕ 2332



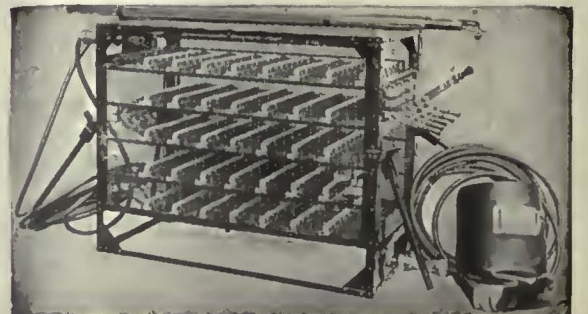
Eureka Radial Rail Grinder



Vulcan Rail Grinder



Reciprocating Track Grinder



"Ajax" Electric Arc Welder

BETTER RAIL, BETTER TRANSPORTATION

TO PUT YOUR 1928 TRACK PROGRAM ON A PRODUCTION BASIS—

—ask yourself these questions

1. *Construction operations:*

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

2. *Parts and materials:*

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

3. *Time:*

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

4. *Design of materials:*

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

5. *Design of Track:*

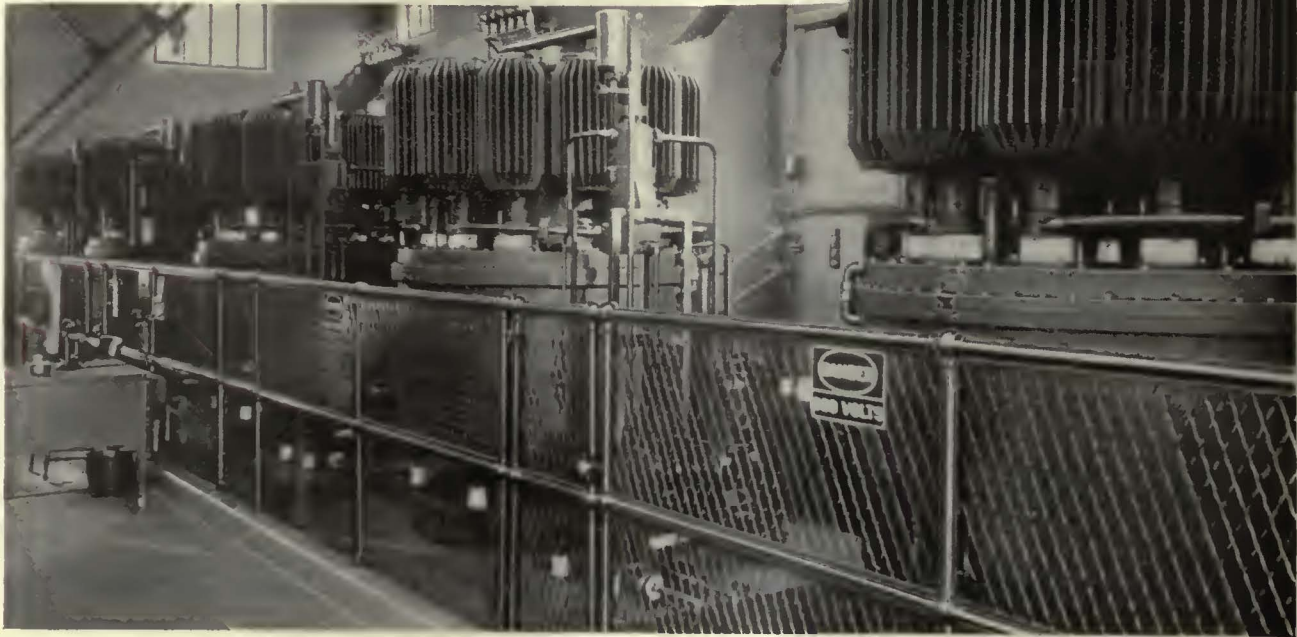
- (a) Does the track design meet the requirements of higher quality and lower costs by economizing material and labor?
- (b) Does the design adapt itself to the complete use of labor saving machines?
- (c) Has the design immediately available labor saving equipment for all operations?

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

THE INTERNATIONAL STEEL TIE CO.
Cleveland, Ohio

STEEL TWIN TIE TRACK THE BASE OF MODERNIZATION

Bridgeport's New Substation is largest of its kind in the United States



A-B-B Rectifiers carry entire traction load of city of 165,000!

THE responsibility of providing un-interrupted current supply for the continuous operation of all Connecticut Company trolleys in Bridgeport is carried by A-B-B Mercury-Arc Power Rectifiers.

This substation comprises five units of 2,000 amps. each, delivering power at 600 Volts. To date, it is the largest rectifier installation in the United States.

In the realignment of the company's power system, an obsolete generating plant was eliminated and arrangements were made for purchasing 13,000 Volt, 3 Phase, 60 Cycle power from the Devon Plant of the Connecticut Light & Power Company.

An additional A-B-B Rectifier substation arranged for automatic operation and consisting of two units similar to the above in capacity was installed at Stratford, a nearby town.

The Bridgeport substation handles the highly variable load of a traction property,

the momentary overload capacity of the station being 15,000 amps. In addition to their ability to do this, Mercury-Arc Power Rectifiers of A-B-B design also possess high efficiency, low maintenance cost, and freedom from the necessity for heavy foundations. The rectifier equipment with its ability to operate on either 25 or 60 cycles a.c. offers an advantage over rotary converter equipment.

Thousands of kilowatts capacity of A-B-B Mercury-Arc Power Rectifiers are now giving this kind of service at many points in the United States and Canada. We will gladly provide literature or information on this type of conversion equipment or will arrange for inspection trips to the nearest A-B-B Rectifier installation.

American Brown Boveri Electric Corporation
Camden, New Jersey

AMERICAN BROWN BOVERI

Golden Glow



Prestige and Service!

These two factors go hand in hand. For better service will quickly build up prestige.

And good lighting plays an all-important part in providing better service and in making the modern car more attractive, more business-like, more profitable.

Send for our latest pamphlets to learn about the business-building possibilities of Golden Glow Headlights.

Home office and plant at 17th & Cambria Sts., PHILADELPHIA; District offices at 111 N. Canal St., CHICAGO; 50 Church St., NEW YORK; Bessemer Bldg., Pittsburgh; 88 Broad St., Boston; General Motors Bldg., Detroit; 316 N. Washington Ave., Scranton; Canadian Agents, Lyman Tube & Supply Company, Ltd., Montreal, Toronto, Vancouver.

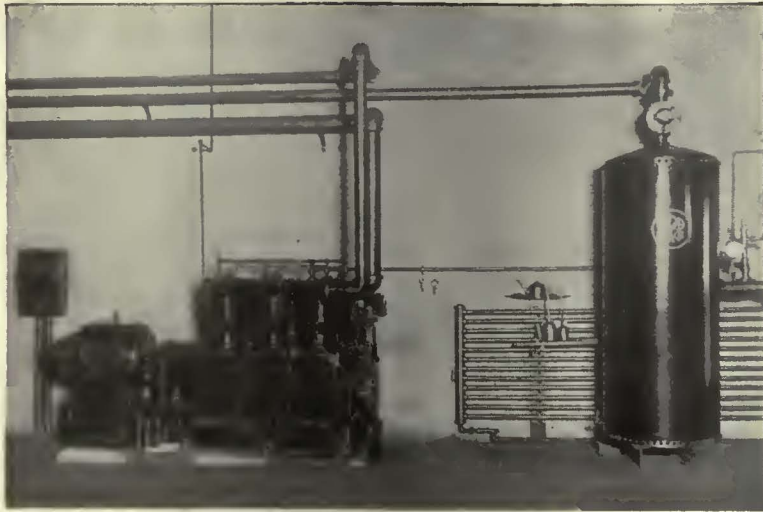
All types of Golden Glow Railway Headlights may be fitted with refracting lenses, as illustrated.

ELECTRIC SERVICE SUPPLIES Co.

MANUFACTURER OF RAILWAY, POWER

AND INDUSTRIAL ELECTRICAL MATERIAL





AIR COMPRESSORS

A type and size suitable for every purpose
 . . . pneumatic shop tools . . . car barns
 . . . power plants.

Compact . . . self-contained . . . easy to
 install . . . durable . . . reliable . . .
 economical . . . automatically controlled
 to save power.

Their distinctive features are explained in
 our Descriptive Catalogues which may be
 had for the asking. Write our nearest dis-
 trict office.

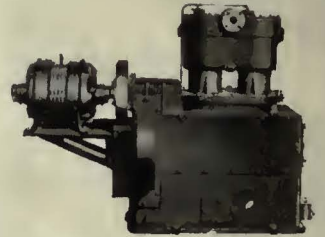
WESTINGHOUSE TRACTION BRAKE CO.

General Office and Works, Wilmerding, Pa.

WESTINGHOUSE-NATIONAL
Air Compressors
 "QUALITY MACHINES FOR QUALITY SERVICE"



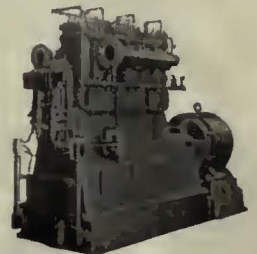
Type "N" compressor, 12 to 60
 cu.ft. displacement.



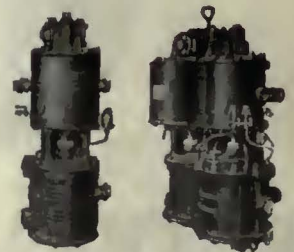
2V Type Compressor—75 to 150
 cu.ft. displacement.



3VS Type Compressor—208 to 468
 cu.ft. displacement.



3VD Type Compressor—550 to 700
 cu.ft. displacement.



Steam Driven Types—35 to 150
 cu.ft. displacement.

Challenge to the Rail Chiefs

AMERICA
is now a
two-car country

TODAY the American family is discovering that a second or third car is not only a convenience but an economy.



This costly broadside flashes across the expanse of America's newspaper pages. It may or *may not* be true—
What will be your answer?

ask STEWART

ask WOOD

ask PINKL

The ANS



ST. LOUIS PUBLIC SERVICE COMPANY

Twin Coach

bu

ask KUHRTS

ask BUFFEE

ask BLIN

ask ALEXANDER

ask GREENLAND

WER

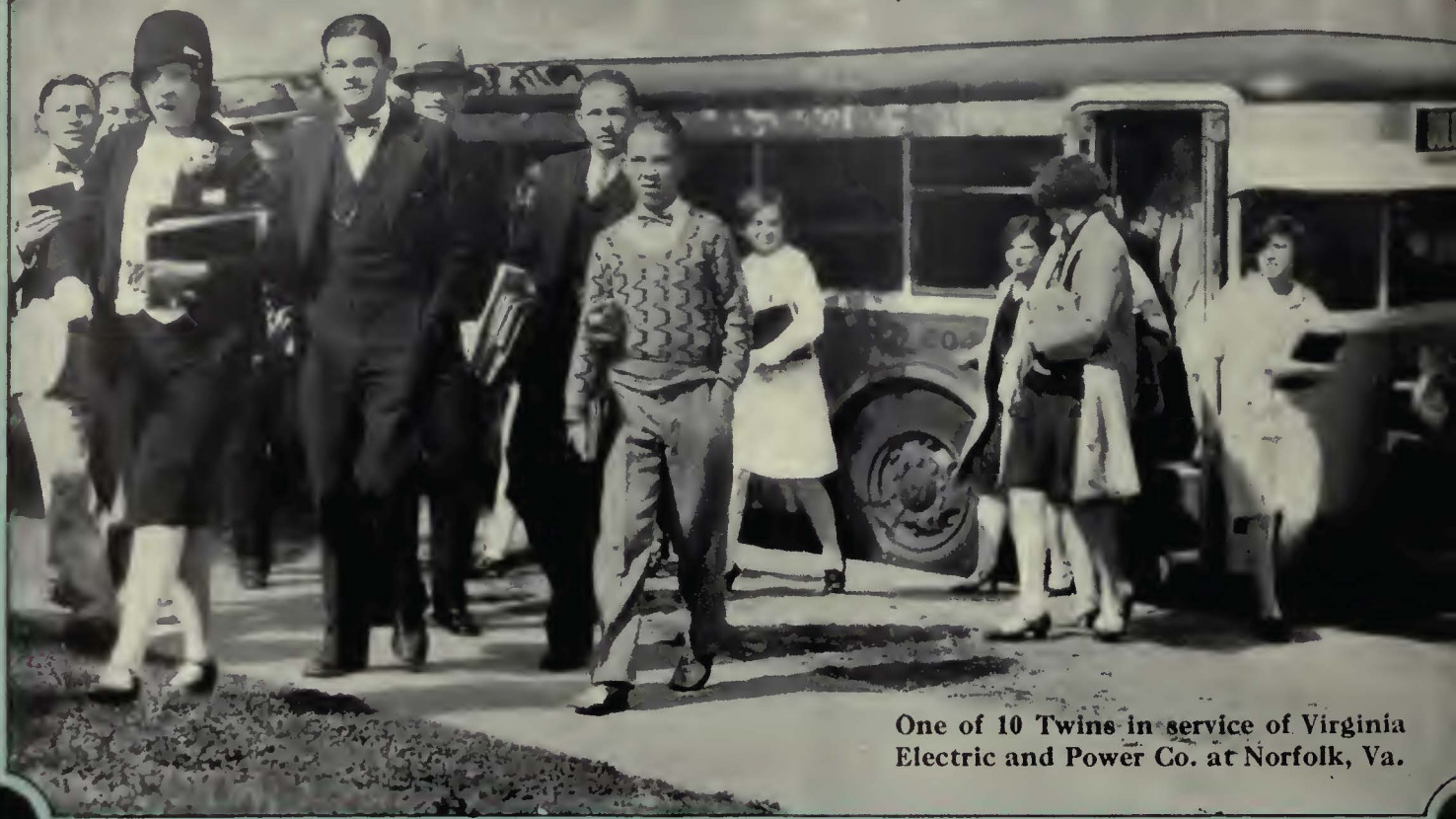


Frank R. Fageol

ask RICHARDSON

ask FITZGERALD

Prepare Now!



One of 10 Twins in service of Virginia Electric and Power Co. at Norfolk, Va.

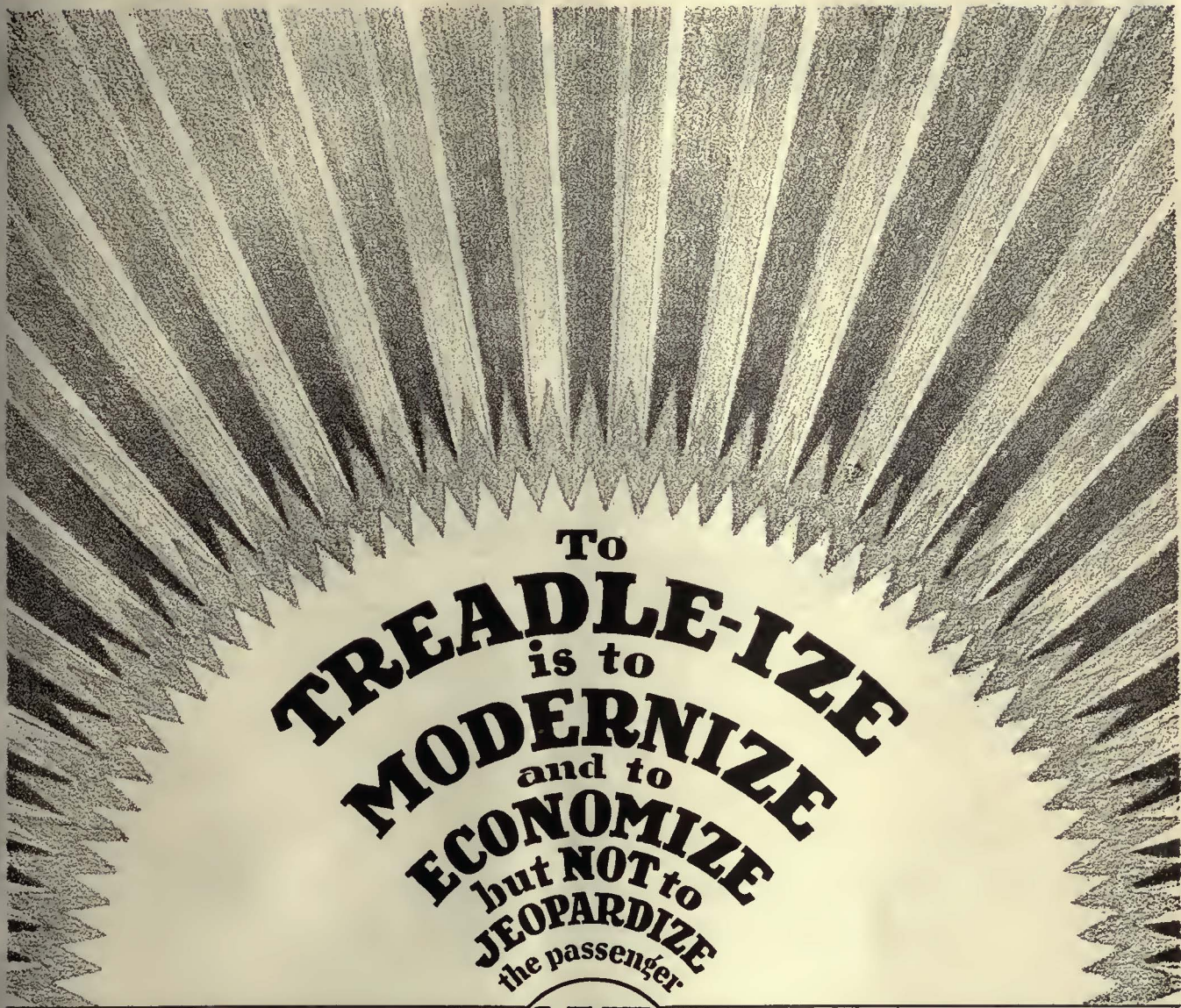
to meet the transportation
Tastes of the men and
women of *Tomorrow*

MONTHLY SALES BULLETIN

~~\$2,000,000~~ invested in Twin Coaches in 9 months

\$2,500,000 invested in Twin Coaches in 10 months





ECONOMY



WITH SAFETY

NATIONAL PNEUMATIC COMPANY

Executive Office: Graybar Building, New York

General Works: Rahway, New Jersey

CHICAGO
518 McCormick Building

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

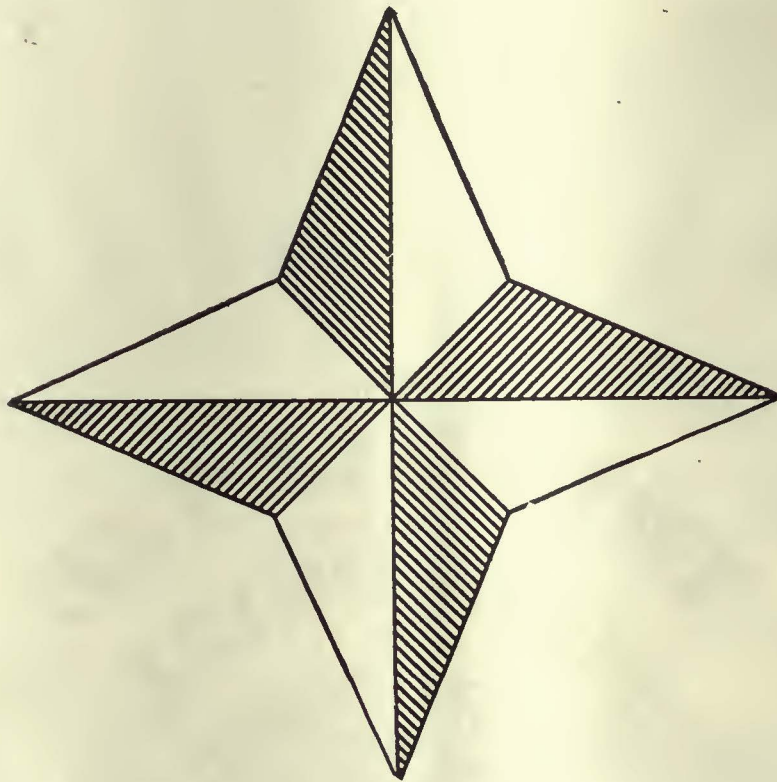
PHILADELPHIA
1010 Colonial Trust Building

CONSTANTLY



BETTER

You are willing, of course



It is a fact that increased revenue and reduced costs follow in the wake of:

“speed with safety”

“capacity with comfort”

“lightweight with strength”

“beauty with low cost”

The Four Cardinal Points in Cincinnati Construction

to deal frankly with fact?

A close scrutiny of the electric cars you send out to serve your fare payers—and to win and hold their good opinion—will reveal an array of facts that demand frank dealing.

To make your study of present equipment constructive we suggest a comparison with Cincinnati BALANCED LIGHTWEIGHT cars. Will a fresh coat of paint compete successfully with “Beauty at Low Cost?” Will towering accident reserve funds win over “Speed with Safety and Cincinnati Duplex Air-Magnetic Braking Equipment?”

Will the cost of operating heavy cars or maintaining excessively light ones prove less expensive than “Lightweight with Strength?”

Will the standards your present cars set compare favorably with “Capacity with Comfort?”

We suggest that you establish the facts and deal frankly with them. It pays to be frank.

CINCINNATI CAR COMPANY
CINCINNATI, OHIO

CINCINNATI
BALANCED
LIGHTWEIGHT **CARS**

— still a step ahead of the modern trend!



Why Not Invest

In A Sure Thing

Dayton Tie Track

If Dayton Tie Track cost twice as much as ordinary track the investment might look too big, even considering its long life.

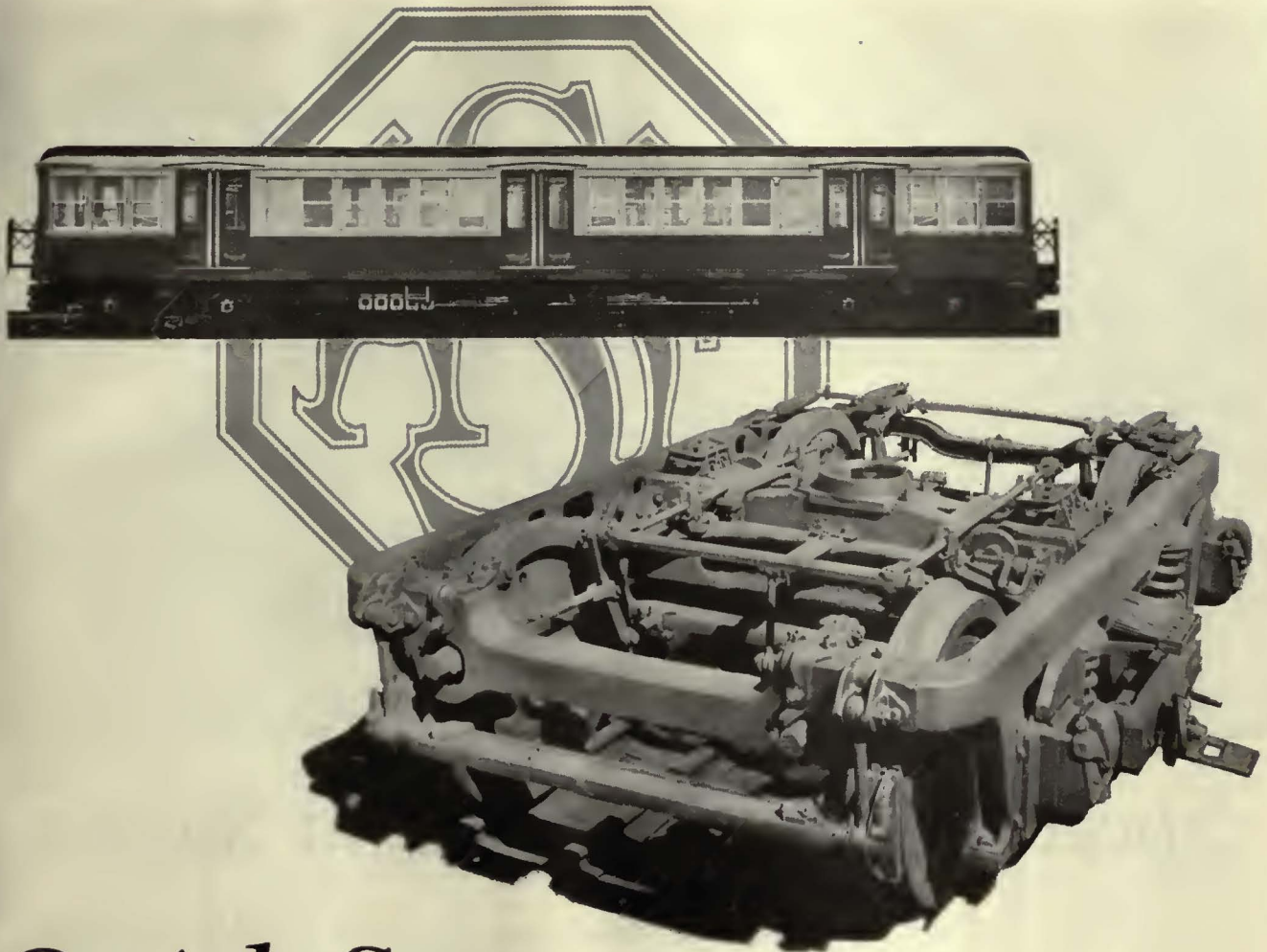
But, due to economies in concrete, etc., it actually costs less—it has been laid for \$8 per lineal foot—including tearing up of old pavement, rails, concrete, ties, and relaying new pavement.

The scientific construction of the Tie makes it immune to forces which ordinarily destroy track.

We can *show* you Dayton Tie Track is a sure thing.

The Dayton Mechanical Tie Co.

DAYTON, OHIO



Quick Stops

For High Speed Subway Service

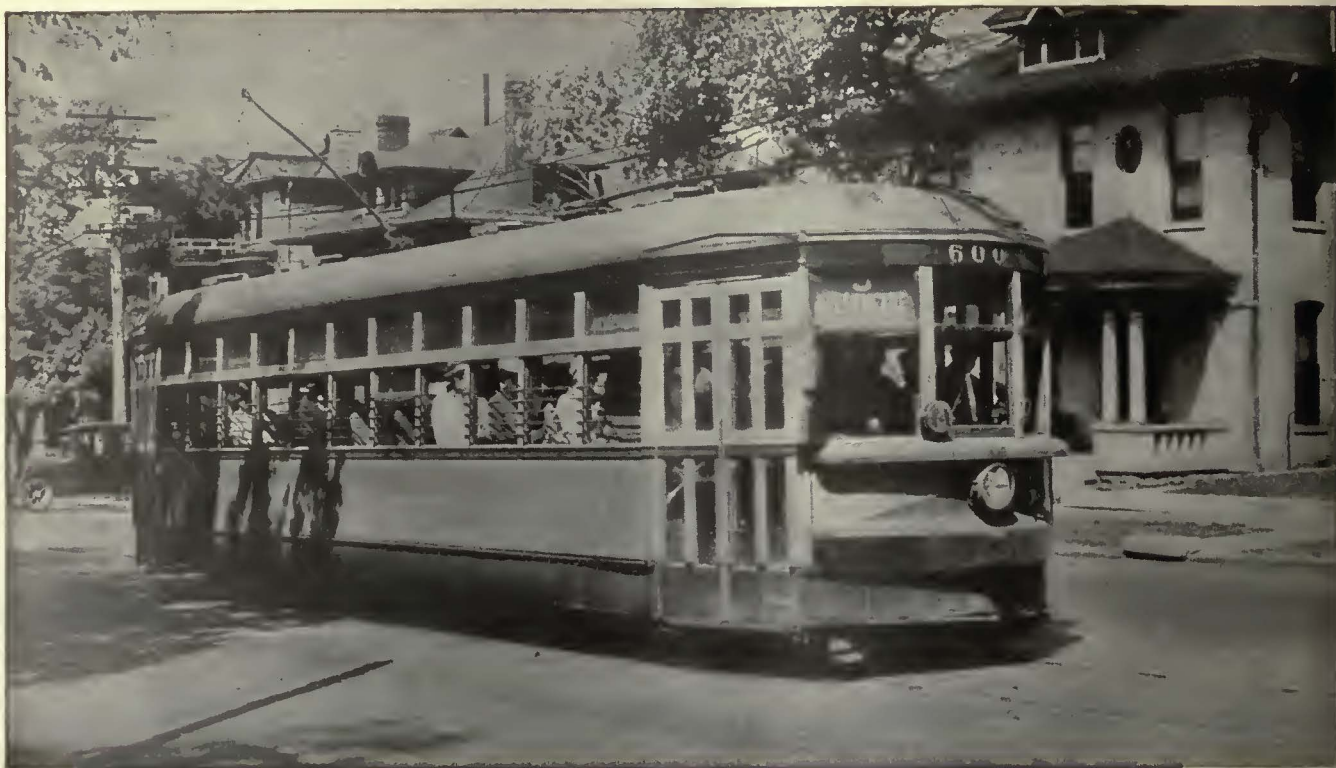
☐ Fast subway service requires quick retardation as well as rapid acceleration. ☐ Running time can be cut substantially by increasing the braking effect through the use of Clasp Brakes. ☐ Simplex Trailer Truck Clasp Brakes use two brake shoes per wheel, thus doubling the braking area insuring short smooth stops. ☐ Balancing the heavy braking forces on opposite sides of the wheel has many advantages.

1. Less journal, journal box and pedestal wear.
2. Permits wheels to follow freely track irregularities.
3. Divides energy absorption between two shoes; reducing heating effect
4. Reduced frequency of brake shoe replacement lessens maintenance costs.
5. A balanced, efficient brake.

AMERICAN STEEL FOUNDRIES

NEW YORK CHICAGO ST. LOUIS

Simplex Clasp Brake for Multiple Unit Trailer Trucks



Speeding Transportation Safely

When transportation conditions impel shorter headway between cars to reduce waiting time of patrons . . . quicker brake applications to reduce time consumed in making stops . . . rapid interchange of passengers to cut down standing time . . . prompt release of brakes to permit quick get-away . . . THEN the Safety Car Control Equipment will help speed up the service while maintaining the basic element of safety.

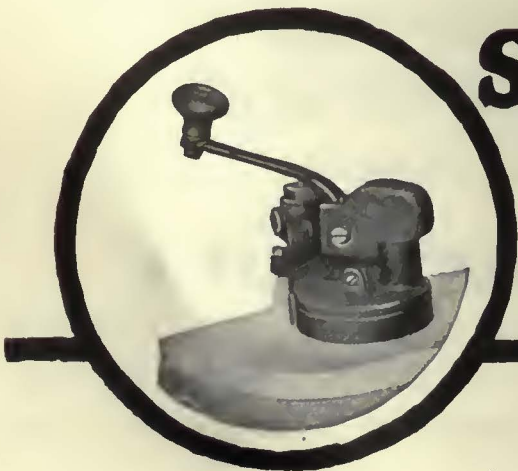
This is the modern equipment for modern cars.

The illustration shows one of the ten modern light weight cars now being used by the Nashville Railway and Light Company. Each car bears the name of a distinguished Tennessean. All of these cars are themselves rendering distinguished service because they by nature have the common name of SAFETY CAR.

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

Postal and Telegraphic Address:
WILMERDING, PA.

CHICAGO SAN FRANCISCO NEW YORK WASHINGTON PITTSBURGH





Nothing costs so much
as a rail joint
that costs a little less —



Price is a deception which often blinds intelligent men to real value.

Above is shown a rail joint,—low, cupped and battered. There are two alternatives before you—either to repair it by one of several more or less common expedients—or to eliminate that joint as a source of trouble for good and all.

It's a little cheaper (the first time) merely to patch it up. It costs a little less—to start with. But experience shows it usually has to be done again in a few months. And then again!

At the left you see the job which may perhaps cost a trifle more at the start. A job which never needs to be done again during the life-time of the rail. A 'Thermit' job!

Ask yourself which policy is truly the "cheapest."



METAL & THERMIT CORPORATION

120 BROADWAY, NEW YORK, N.Y.

PITTSBURGH

CHICAGO

BOSTON

SOUTH SAN FRANCISCO

TORONTO

Completely Automatic— The Cincinnati Street Railway Power System

Nineteen automatic substations having a total capacity of 29,200 kilowatts and operated, without a single attendant, by the Cincinnati Street Railway Company, will form the largest completely automatic trolley-power system in the world.

The supervisor, in his office, can perform any important governing operation at

all of the substations. Operating conditions are indicated by colored lights and remote-metering instruments.

This system, designed by the Cincinnati Street Railway Company in conjunction with General Electric engineers, is an outstanding development in street-railway practice.



The Colerain substation of the Cincinnati Street Railway Company. Below is a map of the complete system.



GENERAL ELECTRIC

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

Electric Railway Journal

McGraw-Hill Publishing Co., Inc.
JAMES H. MCGRAW, President

Consolidation of
Street Railway Journal and
Electric Railway Review

CHARLES GORDON
Editor

Volume 71

New York, Saturday, May 26, 1928

Number 21

Before and After the "Take-Off"

JUST a year ago a glorious flight aroused public consciousness to the possibilities of general travel via the air. Since then that young pioneer whose exploits have fired the imagination of the entire world has repeatedly risked life itself in an effort to make his dreams come true. Now comes the startling expression of faith in his vision contained in the announcement from the Pennsylvania Railroad of its plan for a train-airplane service between New York and Los Angeles.

However fantastic the idea of spending week-ends in Paris may be, passenger airplane service between the Atlantic and Pacific coasts appears a certainty, and with the execution of such comprehensive plans the inter-urban or bus will have a part to play. Testimony of this fact is seen in the necessity for the purchase by the Detroit Municipal Railway of another bus to maintain its hourly schedule for the accommodation of passengers traveling the route of the Stout Air Services, Inc., on the regularly routed planes between Detroit and Cleveland. For the past year the Department of Street Railways has been supplying a de luxe coach service between the hotel district and the Ford Airport, but the increased volume of traffic incident in part to the recent all-American Aircraft Show and the regular aerial routes over the city emphasize the need that will come for an alliance between local transportation and the flying industry. The developments now being recorded almost daily in aviation are merely harbingers of the much greater things likely to come out of "An Unforgettable Lesson from the Sky."

Space Demands Exceed All Expectations

WHEN the convention exhibit committee met on May 16, it faced the assignment of 102,170 sq.ft. of space for the Cleveland show, Sept. 22 to 28. This demand at so early a date, representing 176 exhibitors, exceeds all expectations, according to Fred C. J. Dell, director of exhibits. The figures are exclusive of track space for car exhibits for which the applications of two manufacturers, and two operating properties, respectively, have been received.

These data are especially encouraging as a reflection of the steady growth which has characterized this phase of the association's work, since conventions were the order of the day. For instance: in nine exhibit years, space requirements have grown from 57,329 sq.ft. in 1916 to 116,634 last year; the number of exhibitors from 125 to 293, respectively.

Co-operation between manufacturers and exhibit committees is, of course, responsible for this growth. This co-operation should be recognized to the fullest extent. Here arises an important phase of the whole situation.

The best way the industry can show its appreciation is to see that key men are present to study every exhibit. Last year there was a notable display by the manufacturers of shop tools. Unquestionably what they had to offer was of inestimable benefit to the men who actually use this equipment. The men who saw the exhibit went back to their properties with a new slant on things mechanical. It is hoped that this year their number will be doubled. These are the men who spend maintenance money wisely or unwisely, depending on how well they are informed regarding new devices for increasing efficiency. They should get their information first hand, and the exhibit is one of the best places to get it. What applies to them is equally applicable to men in other branches of the service and to other phases of the exhibit.

Action on Merger Proposal in Washington Postponed

CALMER councils were in evidence in Washington at the close of the public hearings on the plan for merging the local railway and bus companies. True, the Senate District of Columbia committee will appoint a sub-committee to go into the question during the summer, but the proposal now has back of it the prestige of the declaration of the House District of Columbia committee to the effect that "the best interests of the district would be served by the consolidation." Doubt among the legislators appears to center around the valuation proposal, but it would seem that the zealots have been pretty well put to rout who tend to look upon any business proposal of magnitude as a deep and dark conspiracy.

As the *Washington Post* pointed out, no uncontrolled monopoly can be acquired in the national capital. The development of regulatory machinery long ago dissipated that bogey of self-appointed public champions—not only in Washington but in the country generally. In Washington there is a double check. Congress has exclusive legislative jurisdiction over the district. Fares can be regulated by the Public Utilities Commission, subject always to the overruling jurisdiction of Congress and the courts. If the people of Washington should ever be subjected to attempted extortion by any public utility, they could quickly obtain protection. Excessive railway and bus fares would be especially easy to combat.

Some of the technical aspects of the merger have already been the subject of comment in this paper. In the matter of valuation alone, the public stands to gain greatly, since the figure of \$50,000,000, proposed as acceptable to the companies, is about \$12,000,000 less than might have been secured under "due process of law." There are many other concessions on the part of the companies that make the merger desirable in the

public interest. Certainly it will pave the way for efficient and reliable service at the lowest possible fare.

If what the public wants is not good service at reasonable cost, then it would be idle to attempt to define what it wants, for no sensible citizen asks or expects good service at a cost that would not yield the public servant reasonable compensation. It follows obviously that the consolidation of transportation agencies under a single management properly supervised by public agencies will produce better service, particularly where co-ordination of facilities is contemplated. Incidentally, it might be remarked that the contemplated change in name to the Capital Transit Company is in line with other recent changes of the kind intended to convey more clearly the disposition of the electric railways to engage in any and all forms of mass transportation and even in certain classes of individual service as well.

The merger is in line with public convenience and necessity. It is needed now more by the public than by the companies, even though they favor it. The companies concerned having reached an agreement after making generous concessions for the general good under which the public would have benefited materially, it is too bad that further delay is to be encountered by the decision to postpone final action on the matter.

Fancy Retreats Before Fact in Kansas City

OUT of the school of practical experience with buses dating back to the fall of 1925 the Kansas City Railways has evolved a set of maxims which are reflected in the terms of the new bus franchise just granted to the company. Its plea has been heeded that trunk line fares be made 15 cents, based upon the cost of the service rendered. How many other points have been allowed which were made by the company in its recent report to the Council is not plain at this writing, but the facts contained in that document and the principles advocated are of the greatest interest to the industry.

Based on its experience, the company maintained that the bus system as a whole should be self-supporting; that the trunk lines should be routed to give the most direct and the quickest service between the residential and business districts; that feeder service should provide crosstown connections and give transportation to sections remote from existing facilities where the population has grown sufficiently to justify it; that night service, and in some instances non-rush hour service, should not be required on feeder lines; that transportation should be supplied where there is a need for transportation and not for the interests of business centers or real estate developments; that wherever street car facilities exist they should be intensively developed and wasteful duplication not required and that the bus franchise or permit should be kept elastic to meet changing requirements as experience increases.

It was on the very score of the experimental nature of bus operation in Kansas City that the original franchise was limited to three years. Even now the company in its report sees the future in terms so uncertain that it suggested the new operating grant be made for a term not exceeding five years. Not that the company has any doubts about the bus. Far from it. But it does recognize from experience that trunk line service providing a seat for every passenger in buses equipped with pneumatic tires cannot be rendered for a 10-cent

fare except at an actual operating loss. It is conceded that operation over the hilly routes of Kansas City is necessarily more expensive than in flat, level cities. In Kansas City the longest trunk line is 6.6 miles. The longest feeder is 5.48 miles. Each of the other feeders is less than 3 miles, and the shortest only 1.23 miles. There is one express line charging a 25-cent fare, four trunk lines at 10 cents and six feeders at 10 cents. The trunk line service comes nearer to paying operating costs than do the feeder lines.

The Kansas City management has utilized its past experience with buses to determine policies for the future. It now holds most firmly to the idea that losses from bus feeder lines should be met, if possible, from such profits as the trunk lines can earn on a proper basis of fare. It rightly says there is no equity in accommodating the 3 per cent who use the bus service at the expense of the 97 per cent who use the street cars. It is anxious to do full justice by the bus. Were that not so, it would not have made the plea that it be not "strait jacketed" in its use of the bus. The principles which it advocated as the basis for the successful application of buses in city service constitute a bill of rights for that vehicle as it is now constituted. They could hardly have been put more succinctly. That Kansas City's findings support *ELECTRIC RAILWAY JOURNAL's* contentions regarding the bus is incidental. The truly significant thing is that they indicate that those bus enthusiasts who have been obsessed with the idea of making the automotive vehicle merely a street car on rubber tires and limiting it to street car rates have been standing in the way of really sound development and expansion. Fancy must retreat before fact.

Loose Talk About the New York 7-Cent Fare Case

DECISION of the United States Supreme Court to set a date early in its fall term to hear the New York 7-cent fare case shows the importance with which the court regards this case. The order staying the collection of the increased fare is logical in view of the early day set for trial and the plea of the city that it had no authority to provide a bond to indemnify the company if the increased fare should be held valid.

Politicians are making the most of this stay, which is no indication at all of the opinion of the court as to the merits of the higher fare. They have also made a great many foolish remarks during the past two weeks about the decision of the statutory court in favor of the 7-cent fare. Thus, a New York senator in Congress criticized the view taken by the court of the intent of contract No. 3, and is reported to have said, "It will be a serious thing when the 6,000,000 people of New York refuse to pay the 7-cent fare which the Interborough may attempt to collect as a result of this outrageous decision." In the meantime, many politicians at home have bewailed in public the hardship which 4 cents a day additional fare will cause to the average workingman who has to use the I.R.T. system. All this shows the hysteria produced by long intrusion of politics into transportation affairs in New York.

Those who fear the dire effect on the populace of an increase in fare should realize that there were no riots in Chicago or Philadelphia when the fare went up to 7 cents,

or in Boston when it was increased to 10, or because of increases in any of the many other American cities where fares have been raised. The public may not welcome increases in living cost, but the more thoughtful in New York will know that this increase is the only practicable way by which they will get more and better rapid transit service. As for the cry about the increase in fare being an undue burden on some deserving wage earners, it is pure political bunkum. Transportation cost is only a small item in the living costs of even the most humble worker, and transportation is the only item which is at pre-war levels in New York. One needs only to observe the number of automobiles that are jammed into every available parking niche around the average industrial plant to realize how freely the "free corn" class of politician has called upon his imagination in conjuring up a picture of social disorder resulting from a fare increase of 4 cents a day.

As to the question of the intent of contract No. 3, it is necessary only to recall the situation in March, 1913. The Interborough was then in a prosperous condition and certainly would not have jeopardized this position if it had thought the contract unremunerative. There is nothing to indicate the city representatives had any different view or knew that a World War was coming within a year or so which would double operating and construction costs. In other words the intent of the contract was very clearly expressed in the statement of the statutory court that "There is no evidence that the Legislature," in the rapid transit act of 1912 under which contract No. 3 was authorized, "intended to burden the city with an exorbitant fare or the company with a non-compensatory rate."

Final grant by the federal courts of a 7-cent fare should be of as much benefit to the city as to the company. It will make immediate service improvements possible and future extensions more probable. On its part, the company might well emphasize these gains which will come to the city from a reasonable fare.

Group Meetings a Constructive Force

WHEN 52 men attend a series of meetings such as that held by the way and structures division of the American Electric Railway Engineering Association in Atlanta recently, it approaches the status of a convention of track men. Instead of holding sessions of the special committees at various times, followed by a meeting of the standing committee of way and structures, as many as possible of these meetings were grouped together in one week.

Everybody who attended was enthusiastic about the plan. That much of interest was added by the entertainment features arranged by the Georgia Railway & Power Company was a matter of comment. These features, however, did not interfere with the attendance at and the interest in the meetings, as may be seen from the report published in this paper on May 19. Discussion of the various subjects was participated in by all of those present, the voting of course being confined to the committee members. It is certain that the concentration of effort not only saved time for the delegates, many of whom are on more than one committee, but resulted in a more logical treatment of the problems involved.

The success of this meeting indicates the possibility

of similar meetings of the other divisions of the Engineering Association. If the plan can be worked out to bring together such groups, it would seem that time should be available for discussion of current problems. A plan of this kind has been proposed to the officers of the Association and has been under consideration by the chairmen of the several divisions. An additional proposal is that the members of a division interchange operating cost data and make these records a subject of discussion at one of the divisional meetings.

In this latter respect the plan approaches that of the Association of Equipment Men, Southern Properties. It is significant that the success of this latter body and the unqualified endorsement given it by the officials of these properties, has stimulated the formation of a new group, the Association of Electric Railway Equipment men, Middle Atlantic States, within the past week. There is every reason to believe that such groups, preferably under the leadership of the Engineering Association, can be a great force in improving operating and maintenance practices of electric railways the country over.

Uniform Traffic Ordinance Desirable

VALUABLE suggestions for improvement of traffic regulation are contained in the proposed model municipal traffic ordinance recently prepared by a special committee of the National Conference on Street and Highway Safety. A summary of its provisions was given in an article published in this paper for May 12, page 771. A number of these, which directly affect the operation of street cars and buses, are of particular interest to electric railway men. Moreover, anything which tends to improve general conditions will result in substantial benefit to the transportation companies.

Two desirable advantages may be expected to follow the adoption of this model ordinance. In the first place, wider knowledge of traffic regulations received from greater uniformity will undoubtedly promote better observation of these regulations.

This is a matter of growing importance, because today, more and more people are traveling considerable distances by automobile and passing through towns where they are unfamiliar with traffic rules. If the rules are approximately the same as those to which they are accustomed at home, fewer violations will occur.

In the second place, this model ordinance endeavors to select and apply the best features of more than 100 traffic ordinances studied by the Committee. The recommendation concerning the establishment of safety zones at street car stops, forbidding other vehicles to drive through such zones and discouraging the use of the track area by vehicular traffic, certainly will meet with the approval of railway men. Experience where such regulations are enforced indicates that good results for all traffic will follow from their general adoption.

A draft of the proposed ordinance has been prepared in printed form and is now being distributed by the committee. At present this draft is merely tentative. Comments and suggestions are invited from everyone interested in this suggestion. All suggestions received before June 10 will receive the careful attention of the committee. Such modification as may seem desirable will then be incorporated and the ordinance formally submitted for approval to the National Conference on Street and Highway Safety.



The new Grove Street garage. Space is available to extend the present unit in two directions

Worcester Builds for Adequate Maintenance

COMPLETION of the Grove Street carhouse and garage in Worcester, Mass., marks another important step in a series of major physical improvements. These make up the rehabilitation program of the Worcester Consolidated Street Railway and the Springfield Street Railway, which have received attention from time to time in the pages of *ELECTRIC RAILWAY JOURNAL*.

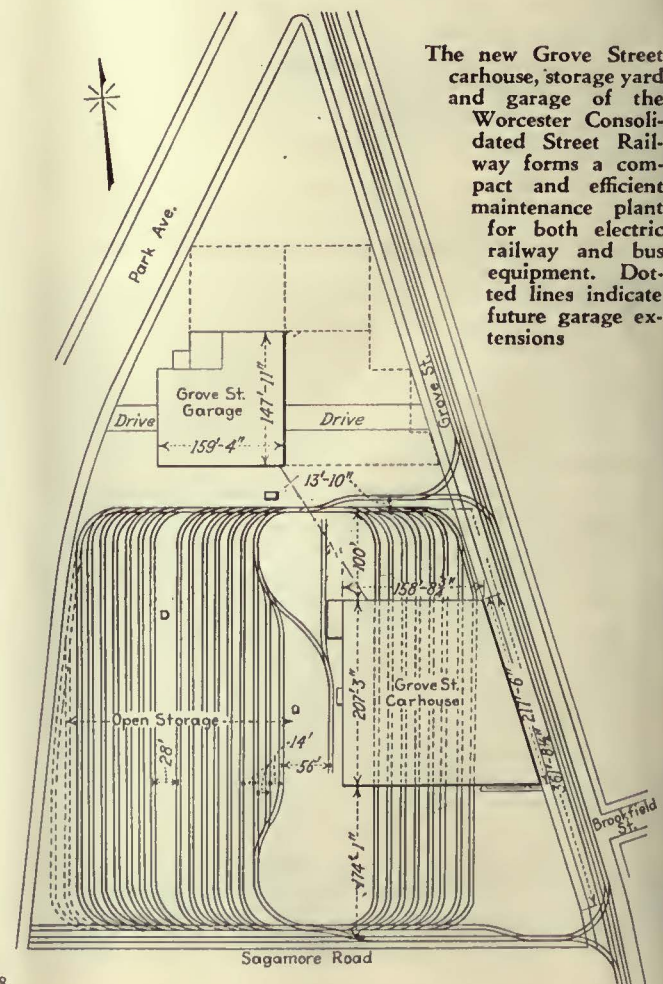
Development of the experimental worm drive car in Springfield, which was described in the March 26, 1927, issue, directed the attention of the entire industry to this pioneering work by a comparatively small property. Later, in the Oct. 1, 1927, issue there was an article on the 100 new cars which were subsequently purchased for Springfield and Worcester. More recently, in the April 14, 1928, issue, progress in the rehabilitation of track and other physical property in Springfield was reported. Concurrently with these major rehabilitation steps there were recorded a series of great bonfires to which were relegated the old equipment no longer suited to meet present-day transportation requirements.

NEW BUILDING HAS AMPLE CAPACITY

The Grove Street improvement now provides Worcester with a new carhouse and garage, with ample outdoor storage track and space for garage extensions. By grouping both the carhouse and garage on a single plot, it has been possible to utilize a common heating plant and to avoid duplication of compressed air and other service facilities. The carhouse has capacity for all the cars in the Worcester district and replaces old buildings at Market Street and Gates Lane. Some 203 passenger cars are to be operated from this point. The new garage, with capacity for 50 buses, represents only about one-fourth of the final possible development. Space for extension on the east will provide for 50 more buses, and permissible development on the north will house 75 to 100 additional. There is also room for future extension of

the carhouse to the south, which would accommodate sixteen additional cars.

An accompanying illustration shows the general arrangement of the Grove Street plant with carhouse,

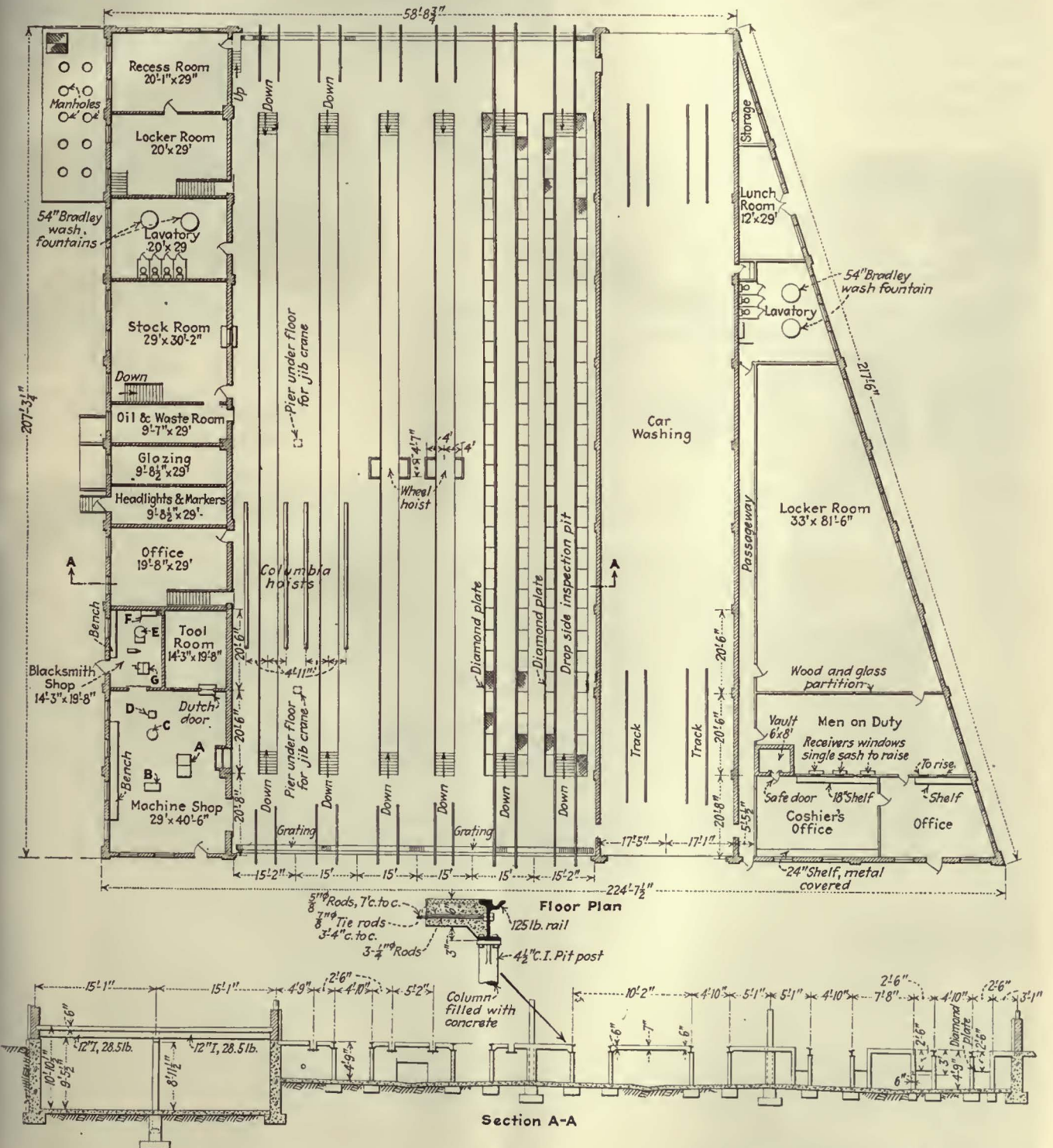


The new Grove Street carhouse, storage yard and garage of the Worcester Consolidated Street Railway forms a compact and efficient maintenance plant for both electric railway and bus equipment. Dotted lines indicate future garage extensions

storage yard and garage, and the contemplated extensions. Both buildings are of modern fireproof construction of red brick with artificial stone trim, steel sash, gypsum roof and with very large skylights giving almost ideal natural illumination. The floor area of the garage, 20,000 sq. ft., is the maximum which the state will allow in a class A garage. The trusses have a span of 105 ft., giving an unobstructed floor. Motor-operated, push-button-controlled Kinnear doors are installed in both buildings. Complete sprinkler systems of the "wet" type are provided. Pipes for air at 200 lb. pressure, gas, hot water, cold water and vacuum for cleaning purposes

are carried underground between the two buildings, thus concentrating service equipment for these several facilities at one place in the carhouse.

The general arrangement of the carhouse is similar to that of the Hooker Street carhouse in Springfield which was built a number of years ago. The size and shape of the lot permitted a track layout giving convenient storage facilities for a maximum number of cars. The building provides track, shops and pits for inspection and running repairs and a large wash bay. Cars entering on the north track are assigned to a position either in the storage yard at the west of the carhouse or



Car inspection, wheel changes and running repairs are made at this carhouse

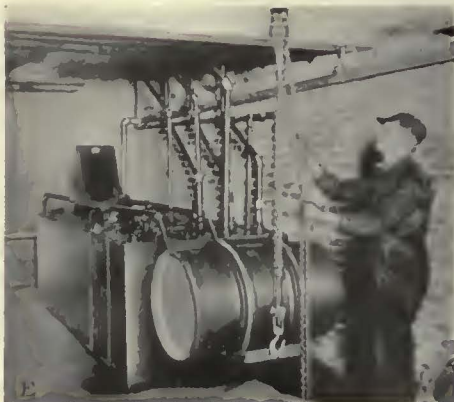
All Worcester cars are now operated from this carhouse. Equipment indicated includes A, saw table; B, motor-driven hack saw; C, drill press; D, grinder; E, forge; F, fan; G, bending machine.

are run around and into the building from the south. Cars leave the building from the north end, establishing continuous movement between the yard and the several carhouse bays without switching or interference.

A total of 425,000 passenger car-miles per month are operated from this house. At present the base schedule from Grove Street calls for 76 cars with 94 scheduled extras, making a total of 170. The building will hold from 32 to 40 cars, depending on how closely they are spaced. The outdoor storage section west of the building will accommodate 144 cars, and the tracks at the north and south end will store 24 additional. This makes a total capacity of 200 cars, or 208 if the carhouse itself is closely filled. By placing cars on curves, north-and-south lead-in tracks, spur track to the coal bunker, etc., many additional cars can be stored.



**Convenient Facilities
Are Found
Throughout This
Modern Carhouse**



A—Well lighted and drained wash bay.

B—Oil pump room and waste treating equipment.

C—Wheel storage room in basement. Opening at right leads to wheel hoists in pits. Note monorail on ceiling for handling wheels.

D—View taken under carhouse floor showing open pit construction. Note ample drainage facilities, space heaters in background and near center of illustration.

E—Oil storage tanks and harrel hoist in basement under oil room.



Bracket hoist on carhouse west wall for handling oil and wheels from spur track to pits leading to storage rooms in basement

The carhouse building is divided into four principal bays. On the east side, in the triangular section adjacent to Grove Street, are the several rooms devoted to the activities of the transportation department. These include a cashier's office and offices for the receivers and the dispatcher. There is a large room for the men awaiting their runs, which is equipped with tables, schedule racks and chairs. A locker room and toilet, with

Bradley wash fountains and an electric hand drier, adjoins the men's room. There is also a lunch room and telephone booths.

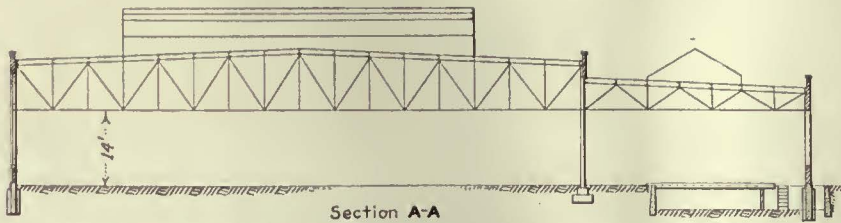
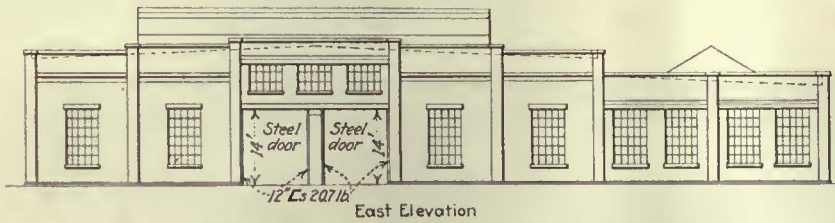
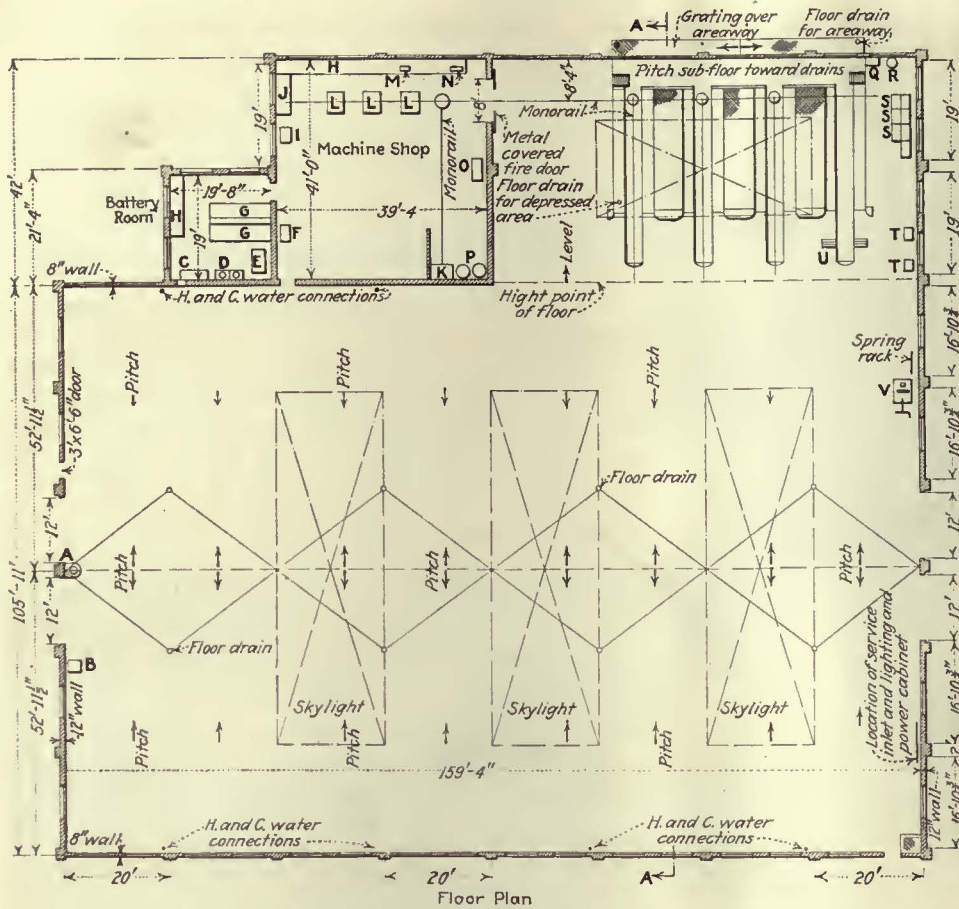
Adjoining the quarters for the transportation department is the car-washing bay which has two tracks with ample capacity for four cars each. In this bay there are numerous hot and cold water outlets and adequate drainage facilities. The hot water is supplied through a loop system of piping, and the concrete floor slopes sharply toward the several drains.

Next to the wash bay is the main section of the carhouse devoted to running repairs and inspection. Six tracks in this bay are supported on $4\frac{1}{2}$ -in. Lally columns to form an open pit below the entire carhouse floor. Two of the pits have side trenches to facilitate truck inspection, etc. These side pits are floored with diamond steel plates and the sides are open so that they drain readily and may be easily cleaned. The drainage of all pits was laid out so that they might be kept dry during wet weather. Between each pair of pits there is a wide drainage trench with ample sewer connections.

Facilities for hoisting and handling of heavy parts in this section of the building are indicated in an accompanying drawing. On the two west tracks adjoining the machine shop and store room there are two Columbia car hoists. Two jib cranes with 3-ton electric hoists and an overhead I-beam trolley are so located as to facilitate the handling of heavy parts or material between the repair track, the machine shop and store room. In line with the wheel storage room described later, and below the level of the carhouse floor, there are two pit wheel hoists arranged with removable rail sections in the carhouse track so that wheel changes may be made rapidly.



General interior view of Grove Street carhouse inspection bay. Note drop side inspection pit, Columbia car hoist and jib crane



Capacity for 50 buses is provided in the new garage

It has a floor area of 20,000 sq.ft. A well-equipped repair shop and a conveniently arranged depressed section for bus inspection and overhaul are special features of interest. Some of the equipment includes, A, Bowser nozzle controlled gas pump; B, gas meter in fill pipe; C, battery wash tank; D, acid crocks; E, constant potential battery charger; F, Elmco ignition test stand; G, battery charging

rack; H, work bench; I, Relio grinder; J, large Wadell bearing outfit; K, solution tank; L heavy-duty motor overhaul stands; M, Reamo bench reamer; N, bench grinder; O, 60-ton Manley press; P, McKee cleaning outfit; Q, Alemite grease compressor; R, transmission oil pressure tank; S, oil storage tanks; T, brakelining machine; U, Cowdrey brake tester; V, spring assembly vise.

Along the west side a section approximately 30 ft. wide and running the full length of the building, approximately 207 ft. long, has been divided for shop, office and store room facilities. Beginning at the south end, there is one 29x40-ft. 6-in. machine shop, then a blacksmith shop and tool room, an office for the master mechanic, store rooms for headlights and markers, glass, oil and waste; a 29x30-ft. stock room, lavatory and toilet for mechanical employees and large locker and

vacuum pump, separators for the vacuum cleaning system (one for ordinary service and the other for taking care of soot, etc., when cleaning the boiler tubes) and a hot water boiler for supplying the carhouse and garage. Returned steam from the heating system is used to supplement the main hot-water heater.

In addition to the heavy materials store room in the basement there are spaces for oil storage and wheel storage. An areaway extending out from the building within

recess rooms at the north end. For a distance of 144 ft. from the north end there is an excavated section which houses the boiler room, a basement store room for heavy or bulky parts, an oil storage room and space for wheel storage.

Between the boiler room and the basement store room are a heavy-duty, 65-cu.-ft.-capacity, 200-lb. National Brake & Electric Company air compressor and a Spencer vacuum cleaner pump. These serve both the carhouse and the garage. The switchboard here controls all 500-volt direct current; 500-volt three-phase, 60-cycle alternating current, and 110-220 volts, three-wire alternating current for light and power.

Two boilers furnish steam for heating the carhouse and garage. Standard radiators and steam coils are in most of the small rooms and offices. Throughout the carhouse and garage, unit-type base heaters with fans are located at points to give uniform heat distribution. The use of these unit-type heaters for keeping the carhouse pits at a comfortable temperature is particularly interesting and has worked very satisfactorily. There is a series of gratings in the carhouse floor just inside the Kinnear doors, and in the pit below these gratings are the unit heaters. The fans on the heaters draw cold air down from around the doors and force it through the unit-heater steam coils out into the pit. These heaters at either end of the pit are supplemented by additional heaters placed at intervals under the carhouse floor between pits. With this arrangement the pits are kept dry and warm even in cold weather.

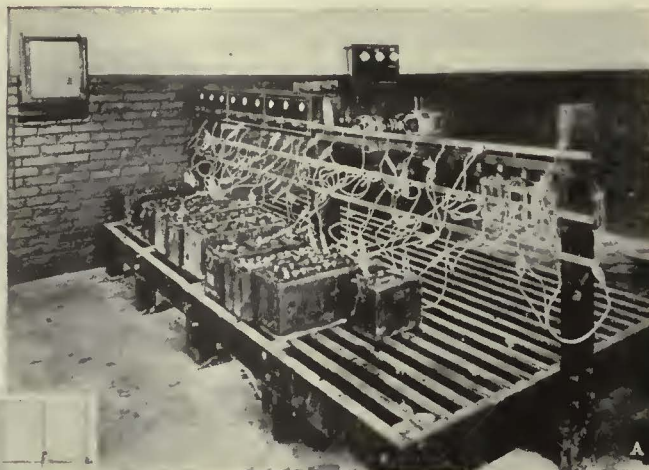
In the boiler room there are ample coal bins, ash-handling hoists, hot water circulating pumps, a sump pump, return

convenient reach of a spur track from the car storage yard, is served by a jib crane with electric hoists mounted on the building, as shown in the illustration. This gives a convenient means for handling oil barrels or car wheels from a supply car to the basement pit leading into either the oil storage room or the wheel room.

Bowser oil storage tanks in this basement room connect with pumps in the oil treating room immediately above. A barrel hoist permits oil to be conveniently poured into the storage tank. In the pump room above is an S. F. Bowser waste treating plant adjacent to the oil pumps.

The wheel storage room is served by an outside pit from the same jib crane and 1-ton Shepard electric hoist that serves the adjacent oil room pit. Within the wheel store room is an overhead monorail with a hoist. Wheels may be picked up from the floor of the store room and carried by the monorail through an opening in the foundation wall into the pit space under the main carhouse floor. At this point they are set on rails on the pit floor and can be rolled directly to the jacks where they are lifted into position in the truck on cars setting on the pit

In the northwest corner of the garage building are the repair shop, 39x41 ft., and the battery room, about 19 ft. square. An 8-ft. fire door from the repair shop into the garage leads directly to the depressed floor area in the northeast corner of the building where bus inspection and overhaul work are done. The depressed section is approximately 4 ft. 6 in. deep. Overhead runways



Modern bus maintenance facilities feature the new Worcester garage

A—Battery charging room with special rack for holding batteries. Against the wall behind is the constant potential motor-generator charging unit.

B—Oil storage tanks, Alemite grease pump, and transmission oil pressure tank in northeast corner of garage—adjacent to pit section. Note design of end stops on bus runways over pits in left foreground.

C—Elmco starter and ignition testing equipment in bus shop.

track above. The lift is accomplished by hydraulic pit hoists and removable sections of rail.

The Grove Street plant is primarily a carhouse and only necessary running repairs are made there. All major overhauling and any large machine jobs are done at the Market Street shops, where ample machine facilities are available. Only limited machine equipment, including a motor-driven grinder, small drill press, motor hack-saw and a saw table, together with a single forge, bending machine, benches and suitable hand tools are installed in the carhouse.

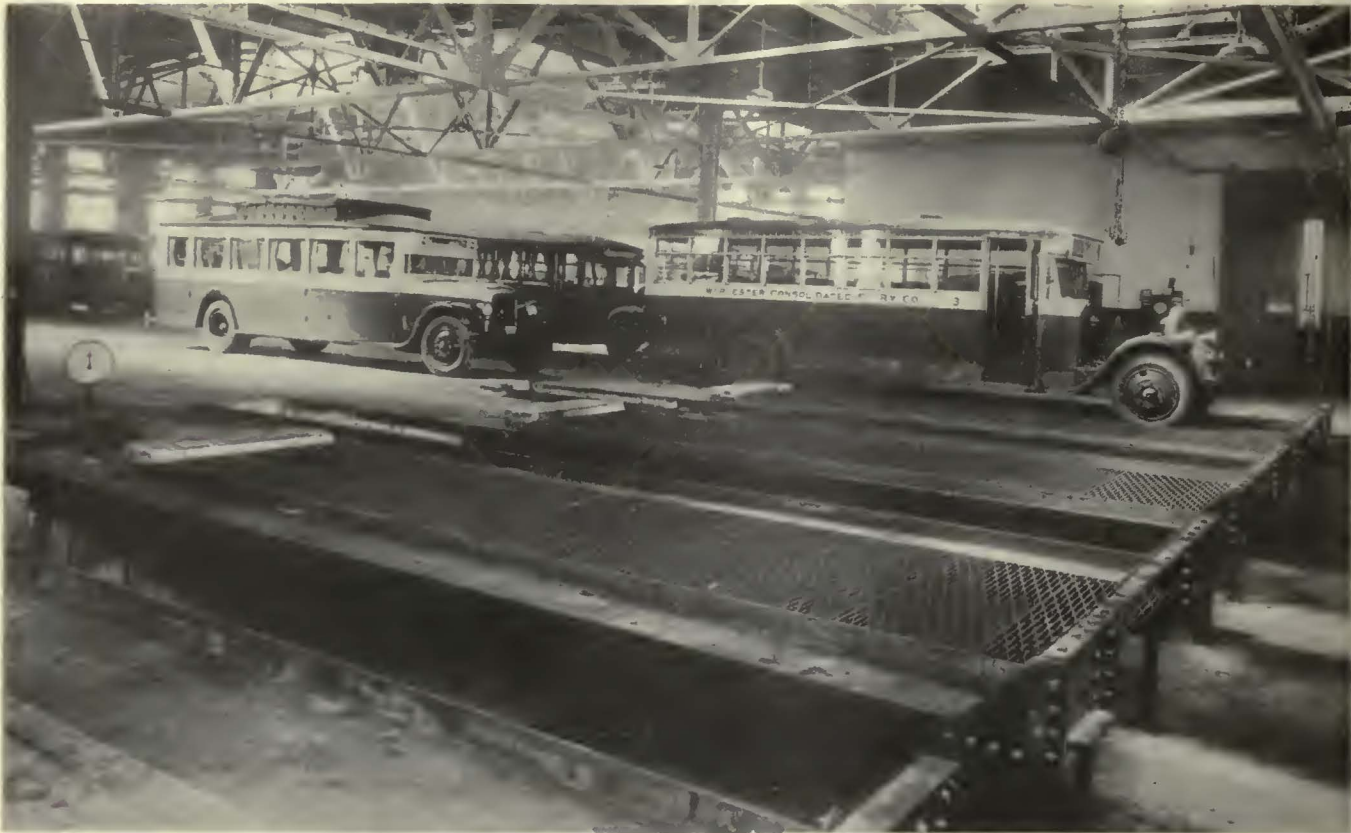
An illumination intensity of at least 9 foot-candles is obtained throughout the carhouse. This is intensified by the white color all walls and ceilings are painted. The carhouse is wired for the three-wire system at 110-220 volts, 60 cycles.

While the garage has a total capacity of only 50 buses, at present 23 vehicles are operated from it, and all the major overhauling and repairing on some 55 buses are taken care of. The total bus mileage operated is approximately 200,000 per month.

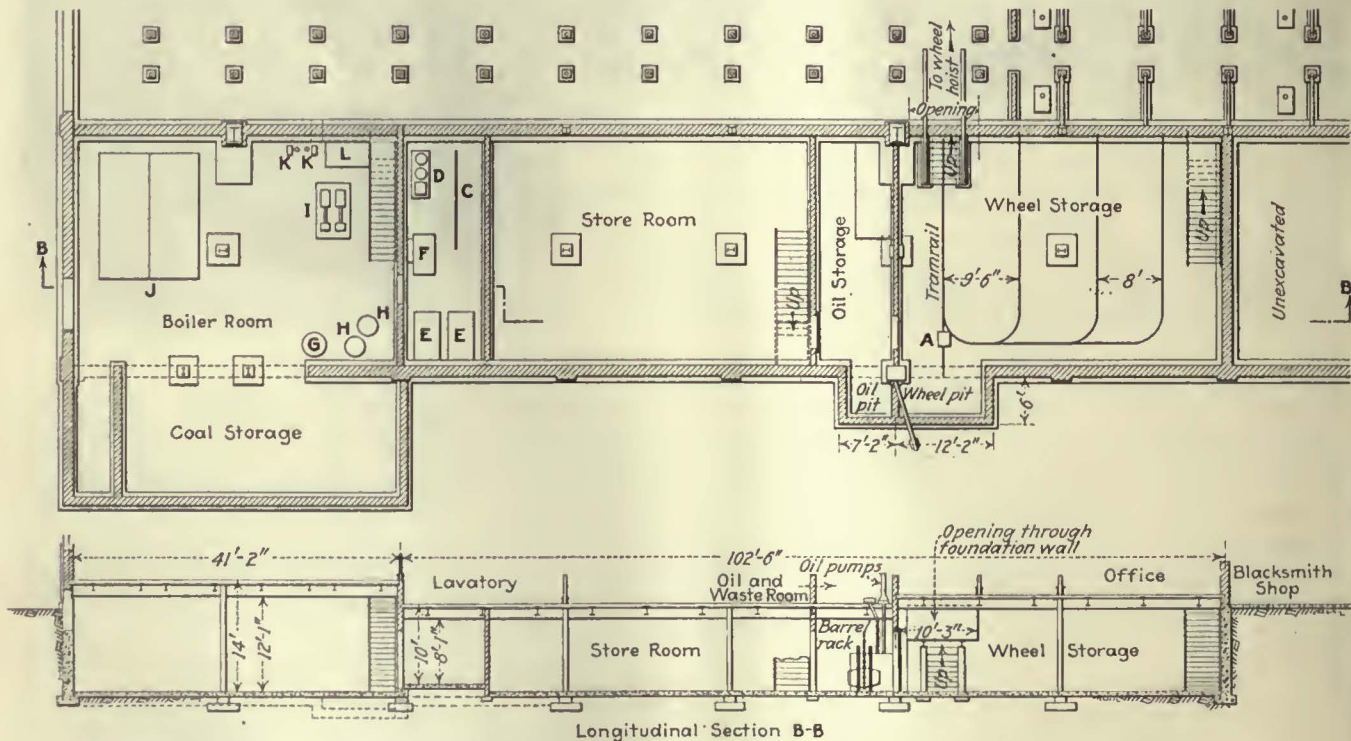
give space for four buses, and the remainder of the floor is covered with subway grating so as to give ample ventilation. Beyond the bus runway there is room for a long work bench on the depressed level to which stairs on either side give convenient access. Alemite grease and transmission oil are piped directly from a grease compressor and an oil pressure tank to outlets at several points in the open pit section from which buses may be lubricated conveniently.

The first runway on the east side of the pit section is used for mileage inspection. A Cowdrey brake tester is set flush with the garage floor so that bus brakes can be tested while other inspections are being made. The pits are served by a monorail running across the entire depressed section and communicating with the repair shop so that motors and other heavy parts may be moved directly between the pits and the shop.

Along the east wall on the garage floor level and adjacent to the inspection pits are the oil storage tanks and a brakelining machine. Here also there is a rack for springs and a spring assembly vise.



A depressed area in the garage, with subway grilles between bus runways forms a convenient open pit. At the extreme left is a Cowdrey brake tester set flush with the garage floor



A basement section along the west side of the carhouse provides space for boiler room, heavy stores, oil and wheel storage

The basement equipment includes *A*, electric wheel hoist; *B*, outdoor bracket cranes; *C*, switchboard; *D*, heavy-duty National air compressor; *E*, hot water tanks; *F*, vacuum cleaner; *G*, hot water heater; *H*, vacuum cleaner separators; *I*, return pumps; *J*, boilers; *K*, hot water pumps; *L*, sump and sump pump.

In the repair shop are a 60-ton Manley press, heavy-duty motor-overhaul stands, a Reamo bench reamer, a large Wadell bearing outfit, a Relio wet grinder and an Elmco test stand for starter, ignition and generator overhaul. There is also a McKee outfit for cleaning all parts that are taken off the buses. In the battery room there is a constant potential motor-generator charger set with battery racks having capacities for 36 batteries. In this room there are also work benches, battery wash tanks and acid crocks. Gasoline is stored in a 5,000-gal. underground tank with a Bowser nozzle-control, air-operated gas pump located inside the building between the two entrance doors. An Xacto flow meter on the filling pipe permits a check to be kept on the amount of gasoline received. No provision is made for body work or painting in the garage, as this work will all be done in the main shop at Market Street.

As indicated on an accompanying drawing, the garage floor is pitched to provide drainage to two lines of drains. Along the south wall of the building there are four hot and cold water outlets for washing. Numerous electric outlets along the other walls of the building and at the pits provide convenient connections for hand tools and portable lamps.

Chair Car is Popular in St. Louis

St. Louis Public Service Company is receiving much favorable comment on its trial car using individual bucket type seats

ON MARCH 28 the St. Louis Public Service Company, St. Louis, Mo., introduced to the patrons of the Grand Avenue line a new chair car furnished with 43 individual seats and having other interior improvements. The car ran on this line for four days and then was put in service in successive intervals of two or three days on six other lines. It was operated on a changing schedule so that a great number of people were able to ride in it. Post cards distributed by the conductor were used by many patrons to express their sentiments concerning the car.

The seats are of the individual bucket type and are covered with cane. The edges of the arms and back are bound all around with aluminum strips. The seats are supported by iron pedestals fastened firmly to the floor. They are placed at an angle of 45 deg. to the length and are tipped back slightly. Ample knee room and privacy are afforded by this arrangement. The deep-seat cushions are upholstered in genuine Spanish leather.

Instead of hand straps the car has white-enameled stanchions from floor to roof. The aisle is wider than in the standard type of car and accommodates a larger number of standees. Frosted lamps are used in the car



Privacy is afforded patrons of the St. Louis Public Service Company who use this car

and are so located that the passengers receive the light over their shoulders. A shelf behind the seats and next to the windows is provided for packages.

More than 97 per cent of those who wrote cards gave the new car their unqualified approval. Nearly every correspondent stressed the word "comfort," indicating that this is what patrons appreciate most as riders of the street cars. A great deal of comment was devoted to the soft light which came from the frosted bulbs, making reading a pleasure, while others mentioned a consciousness of respectability of all passengers being separated and riding as individuals. The general trend of sentiment on the many cards received is expressed in a few of the typical replies, appended here:

Very comfortable. Especially good for reading, as the light comes over the shoulder.

I think you should do away with all of your old equipment and place these cars on all your lines and charge a 10-cent fare.

The new car is delightful. Seats very comfortable. Better arrangement for standing space.

This car has all of the comforts of a bus, with better lighting and heating system, and no danger of skidding or turning over.

Better lighting arrangement. With more space in aisles, less chance for crowding and congestion on board. Even standing accommodations are better. Would like to see these cars on all lines in the city.

Very much impressed with this new car. It eliminates crowding in the aisles. Impossible to stumble over patrons' feet. Certainly seems to be another forward step in your rapidly improving service to the public.

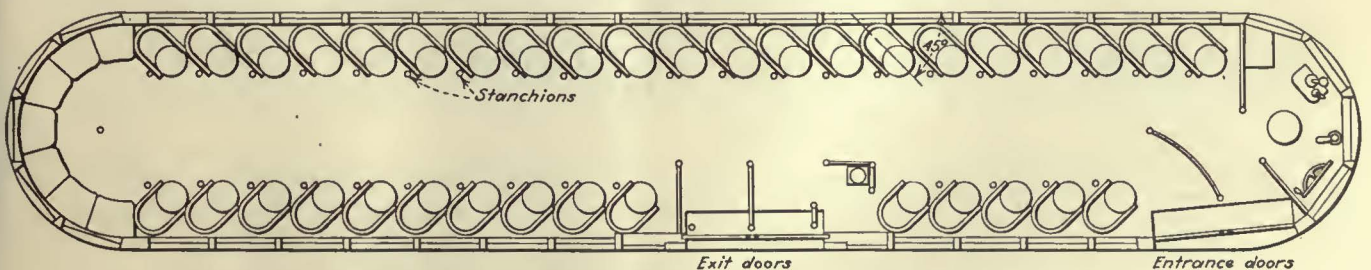
A daring and dangerous innovation in that no one who uses it will ever be content to ride in any other.

On boarding this car my first impression was that I was entering a well-lighted sitting room, full of comfort and good cheer.

Something St. Louis should be proud of. Something different. More sanitary. Not merely riding to get there, but taking a ride for pleasure. I think the individual chairs are great for comfort alone. I could stay in one and read all day with the utmost satisfaction.

I think the new seating arrangement very satisfactory. I was so comfortable that I was loath to leave the car.

Mighty fine. Privacy. Comfort and convenience. If you had cars like these on all your lines, we'd never ride the buses nor drive our own cars to work.



Forty-three individual bucket type seats are provided in the chair car as well as ample aisle room

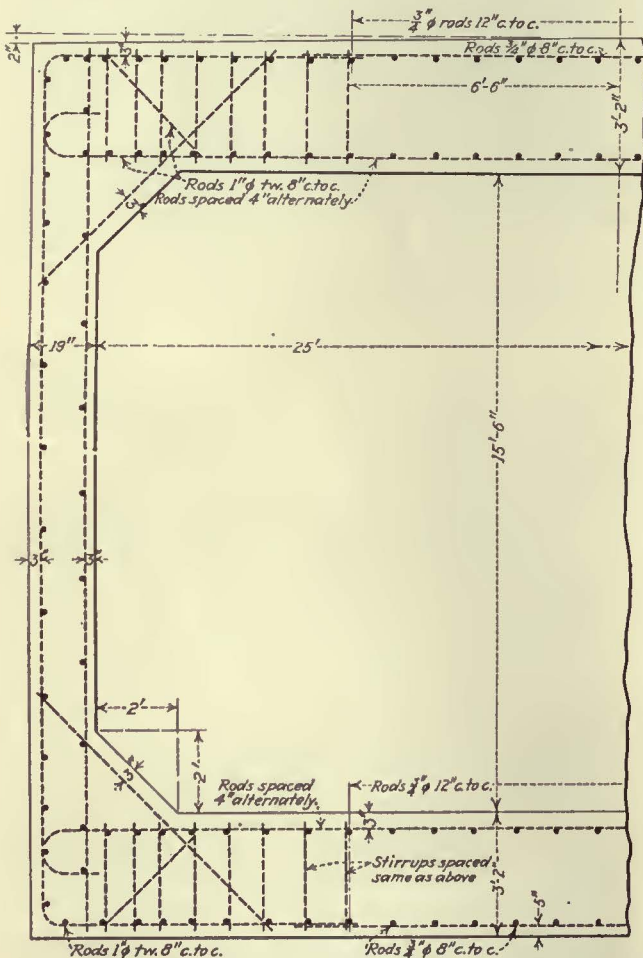
Culvert Built Under Difficulties

By M. R. SUMNER

General Superintendent of Construction Pittsburgh Branch,
Byllesby Engineering & Management Corporation

MORE than usual difficulty was encountered in the replacement of the Girty's Run Culvert across the Millvale carhouse yard of the Pittsburgh Railways. An old rubble stone culvert of rectangular section, 10 ft. wide, 8 ft. high, and roofed with a stone arch, had been in use about 50 years and its weakened condition necessitated its replacement. The floor of the old culvert, originally of 10x16-in. white pine timbers was found to be worn to a 4-in. thickness in some places.

The new concrete culvert has a rectangular frame. While statically indeterminate and rather difficult to design, it permits simple construction, since it obviates the use of piling and permits a symmetrical arrangement



Cross-section of Girty's Run Culvert of Pittsburgh Railways

of the reinforcing steel. As completed, the new culvert is 201 ft. long, 25 ft. wide, and 15 ft. 6 in. high, and is roofed its entire length. The width was specified by an ordinance of Millvale Borough.

The normal flow of Girty's Run was diverted temporarily into a 36-in. sewer by a dam erected about one-quarter mile above the culvert, while water entering below the dam was run through a series of 4-in. pipes laid over the portion under construction. Another dam was built at the river end of the run to keep out back

water. Both of these dams proved insufficient in times of high run-off or high river stages. The upper one could only divert normal flow, and in time of rain excess water delayed construction work. High water in the river washed out the lower dam a number of times where a No. 9 Pulsometer pump cared for normal leakage.

The work was started in July, 1927. High water halted the work from Nov. 25 to Dec. 6, and again from Dec. 12 to 20. The latter flood was the highest recorded in years. These floods necessitated excavation of one 28-ft. section three times, as each time the water filled in the trench.

Excavation was done by a stiff-leg derrick, aided at times by a steam shovel and a gasoline driven crane.



Building a culvert for Pittsburgh railways

In the center background is the old culvert channel, while the walls of the new are clearly shown. Some material remains to be removed before the new culvert is opened to its full width.

The derrick services were limited at certain spots due to interference of the trolley wires in the carhouse yard. An engine foundation of masonry was uncovered that lay between 8 and 10 ft. below the surface and was 10x12 ft. in area, with a depth of 12 ft. This also had to be removed.

The concrete mixer was placed directly over each section as it was poured. The mixer was loaded by batch skips which were filled by hand. The skips were handled by the stiff-leg derrick. The job was handled under the supervision of W. J. Millington of the Pittsburgh branch of the Byllesby Engineering & Management Corporation and cost approximately \$100,000, being somewhat higher than originally anticipated, due to the presence of high water and other delays.

Taxes Doubled in Eight Years

THE single item of taxes and compensation paid the city by the Chicago Rapid Transit Company, operating the elevated lines in Chicago, gives an idea of the way in which operating expenses have increased. For the year 1919 the taxes paid by the company were \$908,057. For the year 1927 the amount was \$1,755,365—almost doubled in eight years.

International Association Meets at Rome

Reports on one-man car operation, track design, radial trucks, fare collection and construction of reservations were presented and discussed. The association was organized in 1885, and the Rome meeting was the 21st in its history

REPORTS have been received of the opening sessions in Rome of the 1928 Convention of the Union Internationale de Tramways de Chemins de fer d'Intérêt local et de Transport Publics Automobiles. The last convention of this association was held in Barcelona in 1926.

The first meeting of the Rome Convention was held in the Senate Room at the National Capitol in Rome. As the Senate was not in session, this auditorium was placed at the disposal of the association by the Italian government. The convention continued from May 6 to 12. It was followed by a trip through northern Italy, during which the delegates had an opportunity to in-

spect the electric railway systems in Turin and Milan.

The association was organized in 1885, and the meeting this year was the 21st in its history. It was also the first meeting of the association to be held since the war at which delegates from Germany and Austria have been present. The reunion in one association of railway representatives from the former belligerent countries was brought about through the efforts of railway managers from certain of the countries which were neutral during the war, such as Holland and Switzerland.

Abstracts of some of the papers presented at the Rome Convention are published in this issue. Others, with a report of the meeting itself, will appear in later numbers.

Radial-Axle Cars

By CHARLES HARMEL

General Manager, Liège Consolidated Street Railway Company, Liège, Belgium

RADIAL car axles always have had a number of advocates in Europe. The experience with them has been varied. The results of replies received from a questionnaire are given in the accompanying table. The Albrecht truck, at Ruhrort, is used in connection with Cardan drive motors.

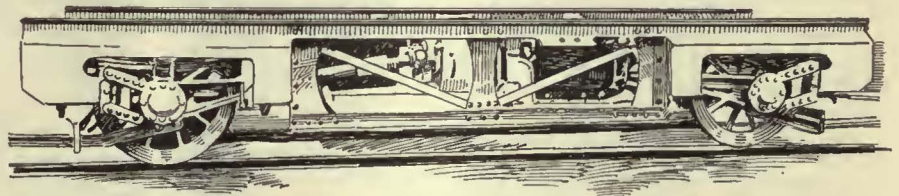
It must not be forgotten that the axles of a moving motor car are subject to the force of propulsion as well as the reaction caused by the contact of the wheel flange and the rail guard. The couple resulting from these forces tends to prevent the axles from taking a radial position on the curve. Even an absolutely free axle will not do so entirely, because as the wheel on the outside of the curve tends to take this position, the reaction from the wheel on the inside of the

curve tends to keep the axle at an angular position.

Efforts of truck designers to produce radial action of car axles on curves may be divided into three classes, depending on the location of the force needed for radiation, namely: (1) if at the center of the axle, (2) outside of the axle toward the ends of the car and (3) be-

tween the axles towards the center of the car. It is the opinion of the author that only those radial axles depending on the third principle will give satisfaction. This principle naturally calls for a three-axle truck. Several of these have been designed. One developed by P. Algrain of the Croyère Company, will be tried on the Brussels system.

Based on the same principle the Wintertur Locomotive Works has built an experimental car, equipped for Cardan drive, in which the motors are mounted on small four-wheel trucks between the two driving axles. This car has been



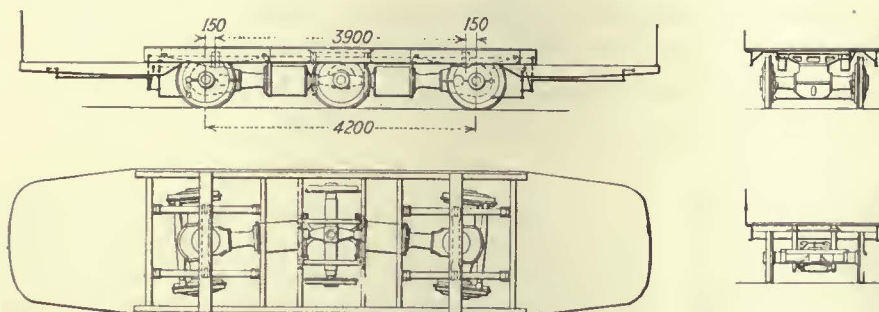
Albrecht-Krupp radial axle truck designed for Cardan drive

SUMMARY OF RADIAL AXLE SITUATION IN EUROPE, BASED ON QUESTIONNAIRE

Name of System	Number of Cars With Radial Axles	System of Radial Axles Used on Motor Cars	Results Obtained	Comments
Paris Surface Lines	8 m.c.	Exterior axle type with two diagonal connections.	Radiation defective, bad effect on track, maintenance costly.	Radial axles will be abandoned in favor of fixed axles.
Bordeaux	114 t.c. 9 cars	Delmez system without any connections.	Radiation good, economy of energy shown, less tire wear.	Will standardize on this type.
The Hauge	5 cars	Kamp system, one diagonal connection.	Test being conducted.	.....
Glasgow	2 cars	.....	Test being conducted.	.....
Leeds	200 cars	Central axle type with two connections.	Less wear on tires, better traction.	Will standardize on the radial system.
Basle	82 m.c. 68 t.c.	Link axle system with no connection.	Radiation defective but not much difference in tire wear than with fixed axles.	Expect to abandon.
Geneva	6 cars	.....	No radiation found.	Will abandon.
Liège	6 m.c. 12 t.c.	Kamp system.	Radiation favorable but not perfectly fulfilled.	Will continue trial.
Ruhrort	4 m.c.	Albrecht system with axle support on horizontal arms.	Radiation favorable, economy of energy, less wear.	Will standardize on this system



Early Zurich radial axle truck for Cardan drive



In the latest design for Zurich, a center axle takes the place of a guiding truck. This axle does not carry any weight of the car body. The car is shown on a curve of 17-meter radius

put in experimental service in Zurich (see *ELECTRIC RAILWAY JOURNAL* for Aug. 21, 1926, page 297), and another car is being built for Luxembourg. The Luxembourg car will have a wheelbase (distance between driving axles) of 5 meters (16 ft. 5 in.), while the small interior driving truck carrying two motors, will have a wheelbase of 2 meters (6 ft. 7 in.) This car rounds a curve with a radius of 15 meters (49 ft. 3 in.) The latest design in which the single

axle takes the place of the central truck is shown in the diagram above.

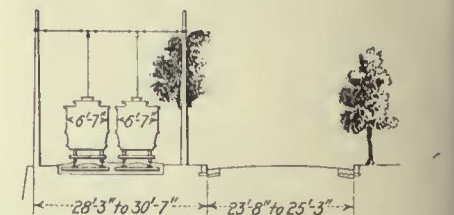
The trial in Zurich has been too short to give any definite results.

In conclusion, it might be said that parallel axles can properly be used on roads not having short radius curves and where the wheel base does not exceed from 10 to 11½ feet. Elsewhere axles which actually radiate are worth considering, providing their maintenance is not too high.

the portion of the street used for vehicular traffic by curbing or other means.

A number of different types of such reservations exist in European cities. Several are reproduced in section in the accompanying small sketches. The first section shows a construction suitable for locations such as along the sides of rivers, canals or steam railroad lines. It is used in Marseilles.

In the second, used on a highway between Paris and Meaux, the tracks are between the sidewalk and the street. This arrangement makes the cars very easy of access from the sidewalk. Some of its disadvantages are: There is greater danger of collisions at cross streets, street vehicles cannot easily reach the sidewalks for loading and unloading, and if track repairs have to be made it is complicated to shunt cars from one track to the other. On the whole, the plan does not help much in increasing the speed of the cars.



Construction used in Marseilles and suitable for routes adjoining a river, canal or steam railroad line

The third section, where the reservation is in the center of the street, shows a better arrangement. It is possible in streets 85 ft. 4 in. wide to leave a space 19 ft. 8 in. for the cars, 18 ft. on each side for vehicular traffic and 14 ft. 9 in. for the sidewalk, but it means that the span poles will have to be placed in the curbs. A better construction, where the width of the street permits, is that shown in the fourth section. It is the plan recommended by the Milan Highway Congress in 1926. With a width of 29 ft. 6 in. for the reservation, it is possible to use center poles and erect loading platforms for the cars on the reservation. A slightly greater width permits the construction used on the Corso Stupinigi in Turin, shown in a view on page 859. Here slow-moving vehicles use the outside highways, and a center highway is reserved for fast-moving vehicles.

From the standpoint of the railway, reservation construction has many advantages, including lower first cost and maintenance for track, lower energy

Electric Railway Construction on City Reservations*

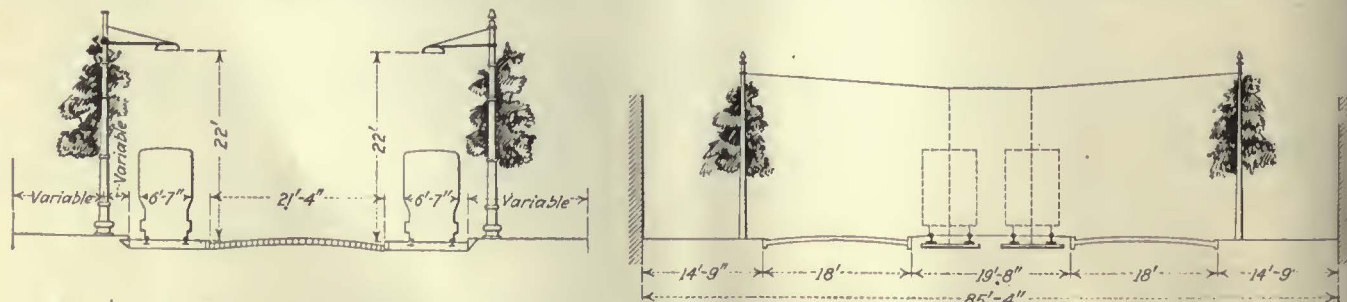
By J. LENARTOWICZ

Assistant Manager Warsaw Tramways, Warsaw, Poland

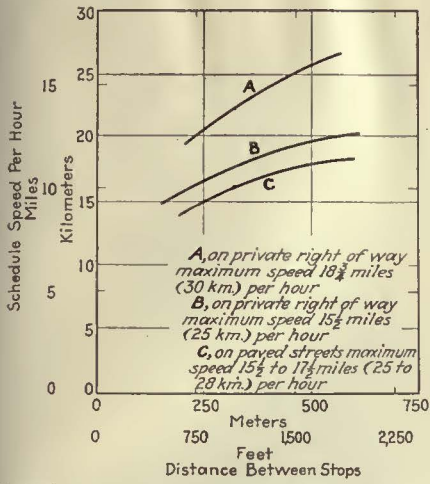
PROVISION for adequate passenger transportation is a necessity in proper city planning understood better now than formerly. In emphasizing this need, reports presented at previous meetings of this association have had an important part. Adequacy in this connection is understood to mean sufficiency both in capacity and in speed. The time which a passenger has to take for travel between his home and his business usually has an important influence on his choice of the locality which he will select for his residence. To care for this transportation, areas added to large cities should be provided

with broad radial avenues as well as belt or crosstown boulevards on which electric cars can operate.

Preferably the track should be laid in a reservation in these streets rather than in the portions of the highway devoted to other traffic. If the latter plan is followed, the car schedule speed can rarely be higher than from 7½ to 8 m.p.h., falling to 5½ m.p.h. in the narrow congested streets in the center of the city. On the other hand, on reservations, a speed of from 12½ to 15 m.p.h. can be obtained between stops. Except at street intersections, such reservations should be separated from



The section at the left shows construction between Paris and Meaux. While car loading is easy, this design has serious disadvantages. A better plan, where space permits, is shown at the right



Relation between maximum and schedule speeds and distances between stops

consumption, higher speed, fewer accidents and less noise. On such routes a schedule speed of 12 m.p.h. should be attained, based on a maximum speed of 15 1/2 m.p.h., stops 1,443 ft. apart and eight seconds in duration, an acceleration rate of 1.4 m.p.h.p.s. and a braking rate of 2.25 m.p.h.p.s. On the Corso Stupinigi in Turin, cars make a schedule speed of 12 1/2 m.p.h., with a maximum speed of 15 1/2 m.p.h. and distance between stops of from 2,300 to 2,600 ft. Other companies operating over reservations report maximum speeds of 18 3/4 m.p.h. The accompanying graph of possible schedule speeds has been compiled by Prof. E. Giese of Berlin, based on seven-second stops, an acceleration rate of 1.7 m.p.h.p.s. and a braking rate of 2.5 m.p.h.p.s.

The speeds obtained on street railway lines in reservations approximate those on rapid transit lines, and while these routes have the disadvantage that they have to conform to the grades of streets and are handicapped by frequent street intersections, they are far less expensive to construct than subways or even elevated railways. Moreover, the cars are much more accessible to passengers. Later, if future development in city growth seems to demand the construc-

tion of rapid transit lines, one can be built as an elevated or subway either above or below the reservation much more economically than if no reservation existed.

To permit the highest rate of speed on reservations, overhead or underground crossings for pedestrians and vehicles should be substituted for grade crossings where possible.

One-Man Car Operation in Holland

By P. M. NIEUWENHUIS
 Manager of Municipal Tramways, Arnhem, Holland

IF THE results with one-man cars have been less satisfactory in Europe than in America the reason has been largely because a lack of capital to purchase new cars has induced many properties to try to use old and unsuitable cars for one-man service. American practice dictates in the one-man car the need for platform doors or gates which can be kept closed when the car is in motion. We have followed this practice in Arnhem, where since January, 1924, one-man cars have supplied all the service. Our first trial was with a car with a capacity for 18 seated and 14 standing passengers, with entrance on the front platform. For larger cars, or those holding 25 seated and 19 standing passengers, front entrance and rear exit are used, with manually operated doors or gates, interlocked with the controller. The arrangement on the rear platform is such that it is impossible for a person to enter from the rear, and we have suffered no trouble from this source. What in effect is a dead-man's handle has been added to the controller, but the spring on the controller handle is held down by a pedal, instead of by a button, as in the American design.

On our city lines we have a flat fare of 10 Holland cents (4 American cents), and the passenger is requested to have the exact amount ready. As fares are paid, the passengers receive receipts which entitle them to transfer to any other line, provided they keep traveling in the same direction. The time limit is indicated on these tickets by a pencil mark. The operator marks up a number of tickets in advance of each trip. On interurban lines zone-fare tickets are used, but as many pas-

sengers on these lines use commutation tickets which simply have to be shown to the operator, fare collections are not complicated. We estimate our savings at 6,000 florins per year per motor car.

Six other cities in Holland use one-man cars, namely Amsterdam with 700,000 inhabitants, Haarlem with 80,000 inhabitants, Groningen with 100,000 inhabitants, Leyden with 60,000 inhabitants, Utrecht with 150,000 inhabitants, and Enschede with 40,000 inhabitants. In most of these, entrance and exit are on the front platform, but only the cars in Amsterdam and Arnhem have separate passages for exit and entrance. Door and step mechanism usually is manual.

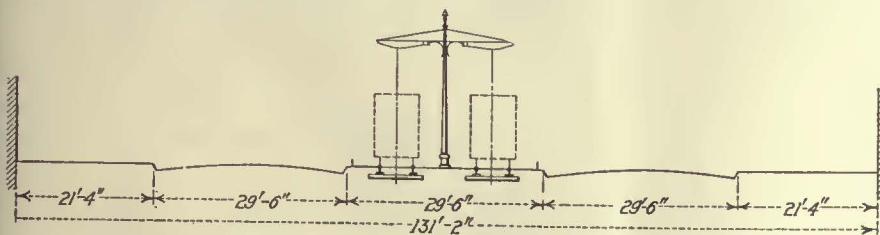
The Amsterdam service was begun in 1924, originally with five cars on a route with a fairly busy service (averaging 24 passengers per car-mile). Fare boxes are used and as in Arnhem the "dead-man's control" pedal is used. The doors and steps are actuated by a 1/2-hp. electric motor carried in the hood and interconnected with the controller. This mechanism operates about 200 times a day, but during four years has caused no trouble. When the brakes are set a red lamp lights in front of the operator and burns as long as the brake circuit is closed. Another red lamp on the platform lights when a passenger presses a push button and remains burning until the exit door is opened. Smoking is allowed on the rear platform. The front of the car carries a sign that the car is run by one man. Amsterdam has now about 100 one-man cars in service.

After some trial with entrance and exit in front, the exit in Amsterdam was changed to the rear, and the rear platforms were supplied with turnstiles to prevent unauthorized entrance. The city authorities took a hostile position to them, however, on the ground that they would impede rapid exit from a car in an accident, and the turnstiles were given up.

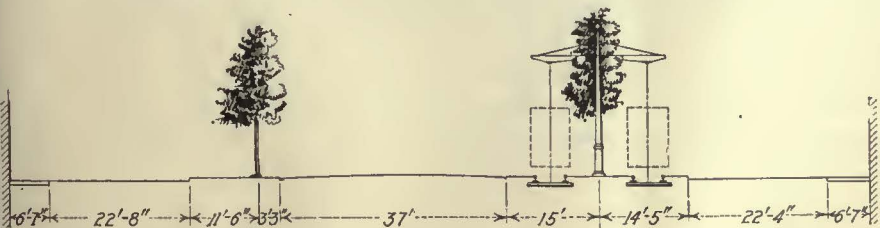
Tickets are issued by an automatic ticket-issuing machine.

There has been no reduction in schedule speed with one-man car operation. In fact, we found one-man cars have higher schedule speed than the former two-man cars.

Similar satisfactory results have followed one-man operation of motor buses in Holland. The principal points in the success of one-man car and bus operation is to adopt equipment which will enable the public to board and alight from cars quickly, to teach them to do so, and to secure the co-operation of the personnel.



This center arrangement of tracks was indorsed by the 1926 Milan Highway Congress



On the Corso Stupinigi, in Turin, the outside highways are for slow-moving vehicles and the center for fast-moving vehicles

Parallel Versus Radial Axles for Cars

By JEAN CASTAING,
Chief Engineer of Rolling Stock, S. T. C. R. P.
(Paris Surface Railway and Bus Lines)

PROPER car body and truck design has been the subject of a number of reports presented to this Association. This year a questionnaire was sent out on the use of parallel and radial axles, and 26 companies replied. This report discusses the relative merits of parallel and radial axles. Another report gives data on recent designs of radial trucks.

The number of cars owned by the 26 companies which replied to the questionnaire is given in the accompanying table.

TABLE I—SHOWING CLASSIFICATION OF ALL CARS OF THE 26 COMPANIES REPLYING TO THE QUESTIONNAIRE

	Motor Cars	Trail Cars
Cars with four wheels and parallel axles	6,437	3,376
Cars with four wheels and radial axles	897	40
Cars with eight wheels and double trucks	1,056	727
Totals	8,390	4,510

As will be seen, the cars with radial axles make up only 10.7 per cent of the motor car group and 9 per cent of the trail car group.

Omitting consideration in this total of double-deck cars, whose use has been almost completely given up on the continent of Europe, the motor cars in this table range in capacity from 30 to 70 passengers and the trail cars from 30 to 80 passengers. The width of the cars varies from 6 ft. 4½ in. to 7 ft. 3 in. The over-all length of the motor cars varies from 25 ft. 3 in. to 45 ft. 10 in. and that of the trail cars from 20 ft. 4 in. to 41 ft. 4 in. With very few exceptions the minimum curve radius on the lines replying to the questionnaire is not less than 49 ft. 2 in. (15 meters). The problem presented then is how to get cars varying in length from 20 ft. to 45 ft. around curves with a 50-ft. radius, with a gage of from 4 ft. 8½ in. to 4 ft. 8¼ in.

The rule for a long time on this subject has been that single-truck cars, whose wheelbase does not exceed 10 ft., should operate easily around a curve whose radius is not less than 50 ft., and that cars whose wheelbase is not less than a third of their over-all length will run without nosing or teetering.

To avoid excessive wheel and rail wear as well as energy consumption on curves, efforts have been made to design radial axles which would be satisfactory, but though this effort has

been going on almost since the birth of electric traction, the table shows that of the companies replying to the questionnaire only about 10 per cent have their rolling stock so equipped. The writer hopes to show that for most conditions, on lines which have no curves with a shorter radius than 59 ft. (18 meters), single trucks with non-radiating axles are entirely practicable, notably on cars from 20 ft. to 30 ft. in length, and even up to 36 ft. in length.

The motor cars listed in the table can be divided into three groups as follows: (1) Cars without trucks but with motors connected to the axles by nose suspension; (2) cars on independent trucks and motors with nose suspension; (3) cars without trucks and with motors entirely spring supported. Each of these groups may further be divided into cars equipped with pendulum-action journal boxes (like the Peckham) which permit a slight lateral movement of the car body, and those cars which are not so equipped.

PARALLEL AXLES USED ON ROADS WITH A VARIETY OF CONDITIONS

From the replies submitted to the questionnaire, those from six representative properties operating four-wheel cars with parallel axles were selected. The wheelbases on these cars vary from 9 ft. 2 in. to 12 ft. 6 in., yet they operate without noticeable wear of the wheels and rails or consumption of energy about curves varying in radius from 50 to 66 ft. If this is possible on the properties mentioned, it would seem as if on the few properties out of the 26 reporting which feel they must have radial axles, the trouble must be due to improperly designed rail grooves or wheel flanges or both. The proper design can be determined. [The report then gives a geometrical treatment of the subject, recommends various wheel-flange sections for different rail sections and various lengths of wheelbase and wheel diameter, and presents an account of an experimental truck developed in Paris to confirm the conclusions reached theoretically as to the desirability of parallel axles. This part of the report is followed by a mathematical discussion of the action of various designs of radial-axle cars on curves, to show that the effect of the forces

to which these cars are subjected is to compel one or both of the axles to take a non-radial position.—Eds.]

Companies which have tried radial axles but have given them up include properties in Basle and Geneva, Switzerland, Nuremberg, Germany, and Paris, France. Only two of the companies replying, that at Leeds, England, and Bordeaux, France, definitely prefer cars with radial axles.

The principal charges against parallel axles are greater rail and wheel wear and greater energy consumption on curves. Unfortunately, there is no evidence on rail wear, and that on wheel wear in the replies to the questionnaire is very inconclusive. Nuremberg and Paris estimate wheel wear at 25 per cent less with parallel than with radial axles, Bordeaux puts the figure at 30 per cent, while Leeds, one of the advocates of radial axles, finds no material difference in this respect.

TESTS MADE IN PARIS

There is also some difference in evidence on energy consumption, but on this point figures are available on four different types of equipment on the same property, namely the Paris Surface Lines. Four types of cars were tested, namely: type L, with four wheels, Cardan drive and no truck; type G, with a single truck and nose suspended motors; type B, with two maximum traction trucks, and a car with two radial axles, known as type A.B.M. The three cars first mentioned had parallel axles. The accompanying table gives the energy consumption, etc., of these cars operated without trailers. From this table it will be seen that car L has the lowest energy consumption per tonne-kilometer and lowest average tractive effort per tonne, and that in kilowatt hours per tonne-kilometer the radial axle car showed the greatest energy consumption. Tests were also made with the same cars hauling trailers and they finished in the same order as before. Still another test was made with the type G car, equipped first with parallel and then with radial axles. The radial axles were connected by a lever and springs in various ways and also were operated without any such guides, but in no combination was the energy consumption so low as when the axles were kept permanently in a parallel position.

In conclusion, then, where the wheelbase does not exceed one-fifth of the minimum curve radius, parallel axles appear more desirable. With a minimum curve radius of from 59 to 66 ft. cars up to 33 ft. to 36 ft. in length are practicable. Where such cars do not weigh more than 44,000 lb. they can be carried on four wheels, yet not exceed the desirable limit of 11,000 lb. (5 metric tons) per wheel. For heavier cars, as well as for high-speed interurban service, double trucks are necessary. In either case, full spring-supported motors, with braking on the armature shafts, should be used, as on the type L car in Paris.

TABLE II—TESTS ON PARIS SURFACE LINES WITH DIFFERENT TYPES OF EQUIPMENT

	Type L, Parallel Axles without Truck	Type G, Parallel Axles with Truck	Type B, Two Max. traction Trucks	Type ABM, Radial Axles
	Weight during test, kg.	13,150	15,200	16,750	13,380
Wheelbase, meters.	3.6	3.6	1.51	3.8
Kw.-hr. per car km.	0.361	0.433	0.521	0.459
Watt hours per tonne-km.	27.5	28.5	31.15	34.1
Tractive effort in kg.	132.6	159.2	191.7	169.1
Average tractive effort per tonne.	10.09	10.48	11.45	12.55

Railway Weather Bureau Aids Snow Fighting

Third Avenue Railway successfully operates a department to forecast storms. Finds it valuable in maintenance

DEMONSTRATION that a private weather bureau can be an invaluable aid to street railway operation, has been obtained during the past four years by officials of the Third Avenue Railway System, New York City. The bureau was started with a cheap aneroid barometer. A vane was rigged up on the top of the company's building. Next a box showing the main and intermediate points of the compass was located in the office of the transportation department. This was hooked with the weather vane by an eight-sector commutator, so that as the weather vane rotated it flashed lights designated as North, South, East, West, etc. From the bureau's inception, accurate observations have been kept every hour during every snow storm. They consisted of barometer and thermometer readings and data as to the direction of the wind.

According to Mr. Thompson, it took only two or three storms to demonstrate clearly that they usually travel in about the same direction, and that changes of wind bring about the same effect each time. There are exceptions, however, in the nature of freak disturbances to which the United States Weather Bureau has given the name of "dumb-bell storms."

In these incidents, two storms are traveling parallel so that the low pressure areas are overlapping from time to time. In such circumstances the observer is likely to be misled by the strange antics of the barometer. Among all the storms, which have been studied by the Third Avenue Railway's bureau, however, there have been only three that did not run true to form.

Observations made during four years show that whenever there is a snow storm, the barometer indicates when the center of it is approaching the locality where observations are being made. The bureau, by means of its weather vane and barometer, in connection with the daily maps issued by the United States Weather Bureau, which show low and high pressure areas in the country and their degree, is able to tell whether or not New York is in the path of the center of a storm. This is one of the outstanding advantages of the bureau and one that has saved the Third Avenue system not only a considerable monetary loss but nervous strain on the part of operating heads.

Experience of the Third Avenue shows that when the barometer begins to rise and the wind to shift from northeast toward the east and the southeast, it is invariably followed by a warm spell. If the barometer keeps on falling and the wind shifts from the northeast to the east, and on to the southeast, this is almost an infallible sign of rain. Under either of these conditions it is perfectly safe to leave a considerable fall of snow on the ground because rain or the warm spell will do the work of many men in removing snow.

On the other hand, if the wind is backing from the northeast to north and on to the northwest, if any snow is left on the ground it is certain to freeze. This means that the railway must clean up as quickly and thoroughly as possible after the storm because whatever is left on the ground will present a serious problem.

Probably the principal advantage of the company's bureau is that it enables transportation heads to predict the duration of a storm. When this is known, a comprehensive idea is gained in the matter of handling equipment. If the storm is to be short, and equipment has not suffered any severe strain, it appears safe to keep it on the road, so that a clean-up can be made as soon as it stops snowing. If, on the other hand, there are indications of a disturbance of considerable length, equipment is pulled in and measures taken to put it in shape for a long job.

THE BUREAU HAS PROVED ITS WORTH

When the bureau was first started it was accepted with a measure of skepticism, yet, according to officials, there has not been a storm in the last two or three years that has not resulted in many calls from other departments for information as to the state of the barometer.

The barometer, however, is not accepted as infallible; the experts have recourse to the U. S. Weather Bureau's predictions, which are furnished twice daily for publication in the press. This information is made up for the morning papers at 10 o'clock in the evening and at 10 a.m. the following day for the afternoon papers. When there is a change in the data, the government bureau in New York has always helped the Third Avenue weather department, by giving revised predictions.

As soon as means will permit it is proposed to add to the equipment an instrument to measure the velocity of the wind. This will be of great assistance in foretelling the probability of drifts.

Up to date the bureau equipment has cost less than \$300, and its installation has resulted in a great improvement in service during and after snow storms. There also has been an appreciable saving in maintenance costs.

A Popular Street Car!

CONSTRUCTION has just been completed of two experimental cars of similar types for the Pittsburgh Railways. These cars were designed with the object of improving service and providing greater attractiveness to the public. The company considers these cars an improvement of vital importance in meeting automobile competition. An article telling of the salient features and the innovations on these cars will appear in an early issue. Watch for it!

Advance Publicity Brings Large Vote

MUCH interest was shown in the recent balloting on a few lines of the St. Louis Public Service Company, St. Louis, Mo., to determine whether the rear entrance pay-as-you-enter system or the front entrance pay-as-you-leave system was preferred. The final results showed that on 949 cars a total of 303,000 votes were cast, a number representing a comparatively high proportion of the riders. The interest was not confined, however, to the day of the vote. Newspapers published advance stories and comments, and many discussions were engaged in by employees and customers.

Three days before the vote was taken, brightly colored

To Our Patrons

Which Do You Prefer?

Front Entrance on this car
or
Rear Entrance, as we used to have.

A vote will be taken February 27th.
Ballots and boxes will be in this car.

ST. LOUIS PUBLIC SERVICE COMPANY

This notice was placed in all the cars on the line where the entrance change was being considered, three days before the vote was taken

notices were posted in all the cars where the change was being considered. These notified the patrons when the vote was to be taken, and clearly stated the issue. On the day of the balloting, the notices were covered by new ones requesting that the riders vote on the question and giving instructions on how to secure the ballots and where to deposit them. The ballots, one of which is shown in an accompanying illustration, gave a full explanation of the two entrance systems and provided a convenient means to cast a vote.

When the patron boarded the car on the front end he was handed a ballot by the motorman and this was deposited in the ballot box at the rear door when he left

If

you prefer Rear Entrance, the } *Just tear off this corner*

old method of boarding this car }

If

you prefer Front Entrance, as } *Just tear off this corner*

now in effect on this car }

(See other side for explanation)

The voter indicated the type of entrance he preferred by merely tearing off the proper corner of the ballot. Detailed information was given on the opposite side

the car. The final count showed 63 per cent in favor of the rear entrance, the system formerly used, and 37 per cent in favor of the front entrance. Plans were immediately made by the company to put the change into effect.

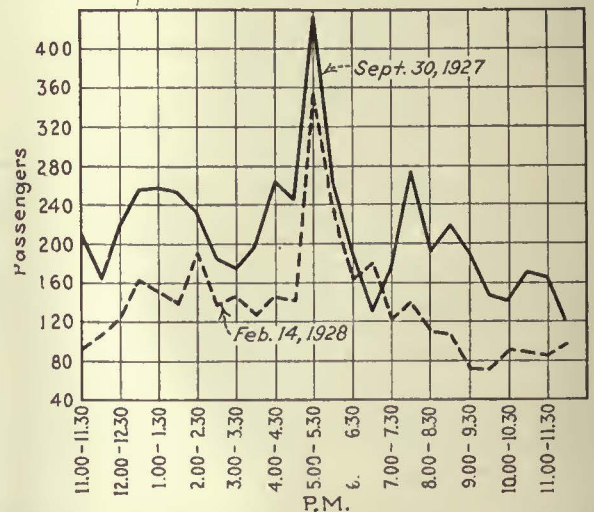
Surface Lines Shows Interesting Movie

"SAFE HIGHWAYS" is the subject of a new motion picture film produced by the Chicago Surface Lines for presentation in schools and before civic and community clubs and other non-theatrical audiences. This picture treats the entire traffic problem from the standpoint of safety. Since most traffic accidents result from the operation of automobiles, the picture undertakes to teach the automobile driver and the general public safe practices. The scenes in the picture illustrate the danger of pulling away from the parking space at the curb without looking to see what is coming, passing a street car on the wrong side, passing a loading street car where there is no loading zone, trying to beat the automatic signal by crossing the street on the yellow light and several other dangerous practices.

The pedestrian sees the danger of alighting from a street car without looking, in walking back of the car into the opposite lane of traffic and in crossing the street without due caution. For the children there are scenes cautioning them against stepping into the street while traffic is passing, playing in the street or stealing a ride by hooking on behind a wagon or truck.

This is the fourth picture produced by the Chicago Surface Lines in the past three years. The experience with earlier pictures convinced the management that there is no better way to drive home a lesson.

Checks Indicate Jitney Decrease



The two curves indicate a decided decrease in the number of passengers carried by jitneys on Jefferson Avenue, Detroit

CHECKS made on Sept. 30, 1927, and Feb. 14, 1928, with respect to jitneys in service on Jefferson Avenue, Detroit, indicate a decided decrease both in the number of passengers carried and the corresponding number of jitneys in service. The checks, made by the traffic division of the Department of Street Railways, covered a thirteen-hour period, from 11 a.m. to 12 o'clock midnight and show passengers by half hours. It is believed that the decrease has been caused by the express trolley and local bus service instituted on Jefferson Avenue.

Maintenance Methods *and* Devices

Keeping Motor Fields in Good Condition*

By R. T. CHILES

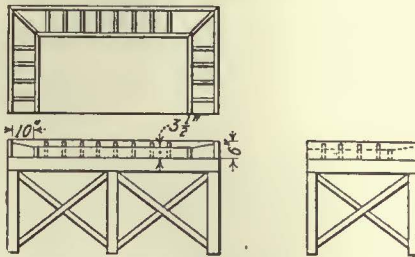
Master Mechanic Cumberland County Power & Light Company, Portland, Me.

CAREFUL attention to motor fields has been one of the most profitable maintenance practices of the Cumberland County Power & Light Company. During the year 1926 there was but one field failure for every 428,658 motor-miles operated. Of these failures 70 per cent occurred during February and March, when snow and rain increased the number of failures.

Cars are overhauled on an average of once in three years, or on a 125,000-car-mile basis. At this time motors are removed from the trucks and the fields are removed from the motor cases and sent to the field room, where they are tested, the insulation is examined and if found to be baked it is removed and new insulation is applied. The fields are then heated and submerged in a tank of air-drying P.&B. insulating paint, where they remain one hour and are then removed for drying. A second coat is applied with a brush, and this is allowed to dry, after which the terminals are cleaned carefully. After fields are put in the motor cases they are given another coat of paint. Lead wires are examined carefully to insure good connections and fields are tested for polarity and grounds before the armature is installed. The fields are also cleaned and painted every time it is necessary to remove an armature.

Work Bench With Material Racks

PRODUCTION has been increased and maintenance expense decreased by an improvement which has been added to the work benches in the shop of the New York & Harlem Railroad, New York City. This consists of a number of bins on top and around the sides of the bench. These bins are 6 in. high in back, 3½ in. high in front and 10 in. wide. They are



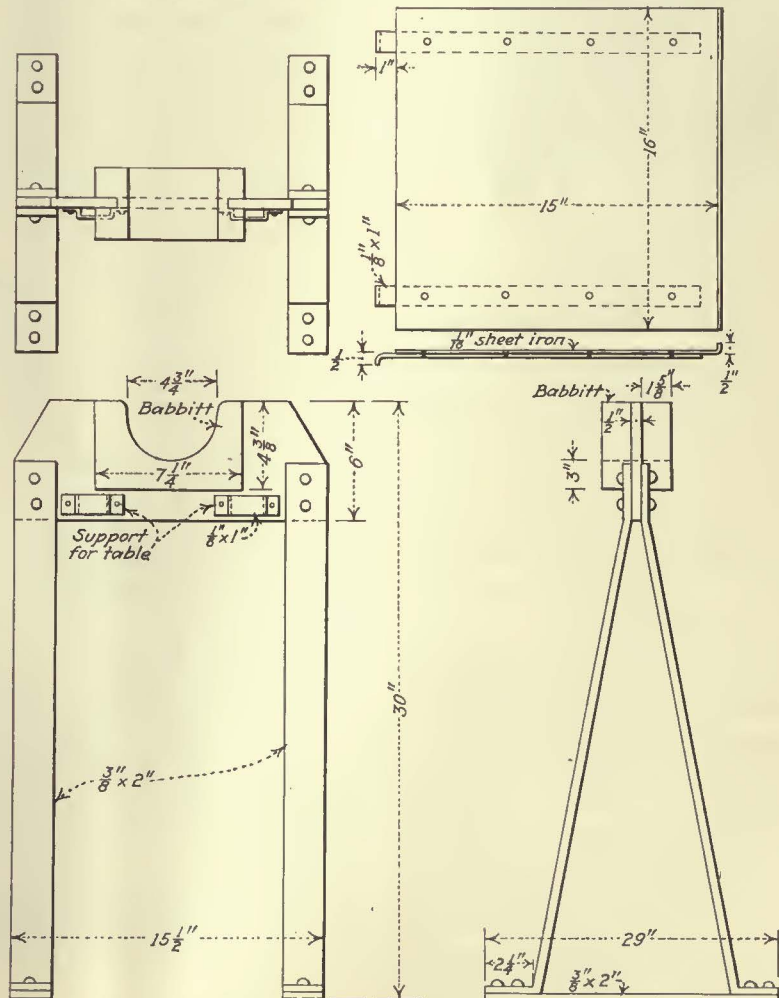
Material racks added to bench increase production

made of ¾-in. lumber. The inside dimensions are of various sizes in order to accommodate the different sizes and shapes of material necessary for the repair work. These benches were flat previously and the material was scattered around on top, which resulted in some being lost. With the new arrangement the assorted material is stored in these bins and it is within easy reach of the

mechanic. These bins have eliminated the loss of material and the workman's time in going for it.

Babbitted Bearing Armature Stands

BABBITTED bearings instead of rollers are used in the winding stands in the armature room of the New York, Westchester & Boston Railroad, Westchester, N. Y. These stands are of novel design. The uprights and bottom plates are made of ¾x2-in. bar, riveted to a ½x6-in. plate at the top. The bearings are made of solid babbitt molded on the top plate. The shaft-bearing surface is 4¼x3¼ in. All parts are riveted with ½-in. rivets. Slight lubrication of the surface of the babbitt makes rotation of the armature easy. The top cross-



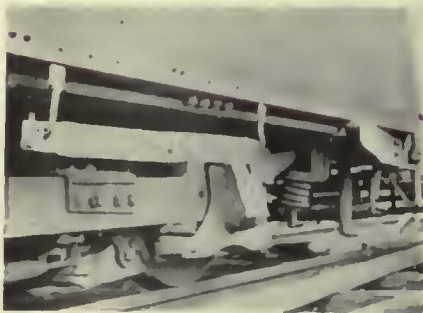
At left, armature stand with babbitted bearings. Above, at right, table for attaching to stand

*Submitted in ELECTRIC RAILWAY JOURNAL Prize Contest

members have clips for the support of a small table made of No. 16 sheet steel. The table is supported by $\frac{1}{2}$ x1-in. brackets.

Numbering Drawbars by Welding

POSSIBILITY of serious service interruption always is present unless the proper coupling facilities are available. The Jamaica Central Railways, Jamaica, N. Y., operates several types of cars, on all of which drawbars are carried on hooks fastened to the side sill. The coupling link centers are all alike

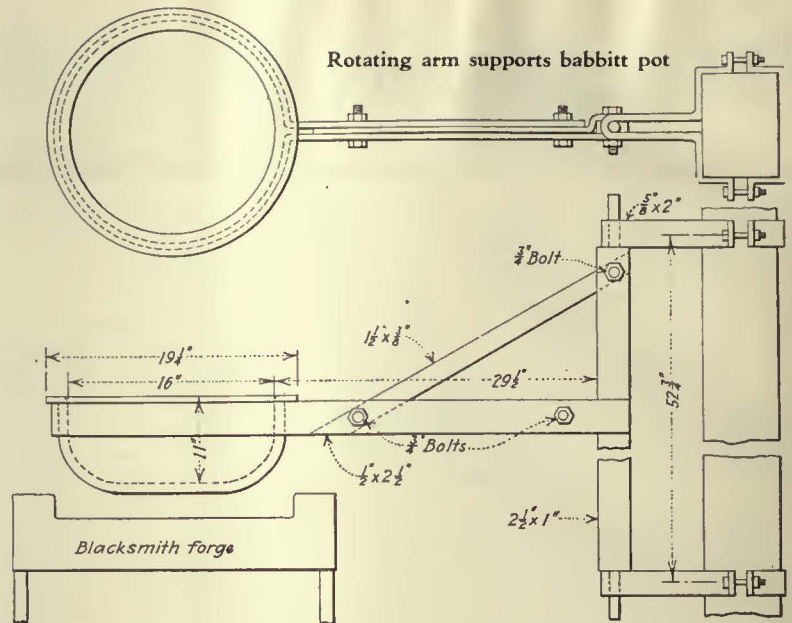


Car numbers are welded on the drawbars

but the shape is slightly different for each type of car. Trouble has been experienced in the past with drawbars being interchanged on the various types of cars. To eliminate this trouble the number of the car to which it belongs is welded on the flat surface of the drawbar. The cars are checked daily and if any drawbars have been interchanged it is evident. Some of these cars operate over tracks belonging to other companies, and when drawbars have gone astray it has been difficult to distinguish them. With the new idea it is very easy to identify them.

Blacksmith Forge Heats Babbitt

WHERE the shop floor space is limited the forging and babbitting work can be performed in the same section. The Manhattan & Queens Traction Corporation, Long Island City, N. Y., has found this arrangement economical. Here the babbitt is heated over the blacksmith fire. To accomplish this result and eliminate the handling of the babbitt heating pot it was necessary to design and build a special structure. This consists of a gaff $58\frac{1}{2}$ in. long and a boom $48\frac{1}{2}$ in. long, both being made of $1 \times 2\frac{1}{2}$ -in. material. Each end of the gaff, for a length of 4 in., is



rounded and fits into two $\frac{5}{8}$ x2-in. brackets clamped to a column of the building. This arrangement provides for a 180-deg. circular movement of the boom. The end of the boom is clamped around the babbitt pot under the flange. A $1\frac{1}{2}$ x $\frac{3}{8}$ -in. diagonal brace fastened to the boom and gaff provides additional strength and prevents flexure of the parts. All parts are bolted together with $\frac{3}{4}$ -in. bolts. With this arrangement the babbitt pot can be swung over the fire or rotated out of the way when not required.

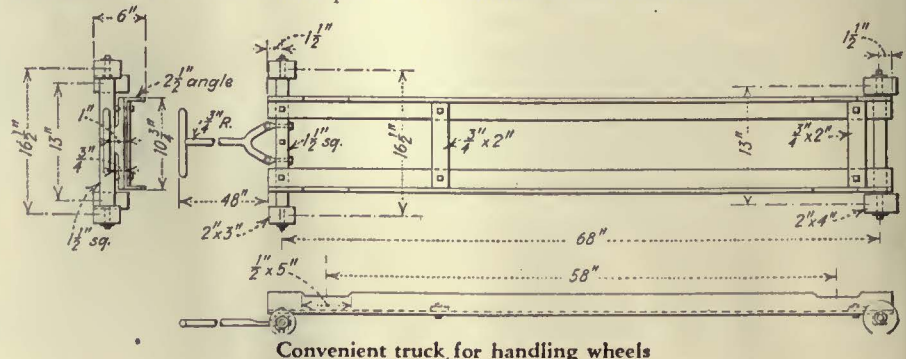
Hand Truck to Transport Wheels

SOME railway systems have one or more inspection houses at some distance from the shop and it is found advantageous to change wheels during the inspection period. Very often the carhouses are not equipped with a traveling crane or telfer for handling the wheels from their place of storage to the point of installation. Some means must be provided for transporting the wheels. A short I-beam equipped with a chain hoist is installed over the wheel pit in the

inspection shop of the New York & Harlem Railroad, New York City. Due to the layout of the building the wheels are stored at some distance from the hoist. When the carhouse is filled with cars some means must be provided for transporting the wheels along the floor to the wheel pit. This is done by a hand truck designed and constructed in the shop for this purpose. It consists of two $2\frac{1}{2}$ -in. angles, 71 in. long, spaced $10\frac{1}{4}$ in. apart and tied together with $\frac{3}{4}$ x2-in. straps. Each angle is provided with two $\frac{1}{2}$ x5-in. notches spaced 58 in. centers for the support of the wheels during transportation.

A $1\frac{1}{2}$ -in. square axle in the rear end of these angles carries two 4x2-in. steel wheels spaced on 13-in. centers. The front end has a 1x2-in. bolster to which is fastened a $1\frac{1}{2}$ -in. square axle. They are held together with a $\frac{3}{4}$ -in. king pin. This axle is equipped with two 3x2-in. steel wheels spaced $16\frac{1}{2}$ in. centers. The height of the truck above the floor is 6 in. A 4-ft. handle made from $\frac{3}{4}$ -in. round iron provides for easy movement.

This truck has been found very serviceable and provides a means for handling both the old and new wheels under all conditions.



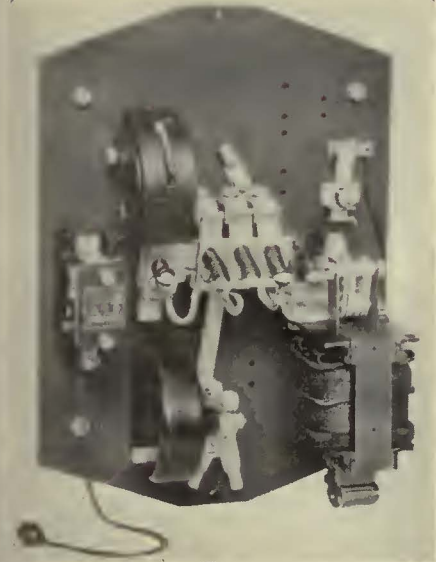
Convenient truck for handling wheels

New Equipment Available

Starters for D.-C. Motors

DIRECT - CURRENT motor starters for general purposes, forming a complete new line, have been introduced by the General Electric Company, Schenectady, N. Y. These starters are designed to provide definite-time acceleration for constant and adjustable-speed motors, and are divided into five types bearing the designations CR-4065, CR-4066, CR-4166, CR-4068 and CR-4168. A principal advantage is that, despite a reduction in size, the number of accelerating points has been increased. An improved appearance is secured by the use of drawn-shell inclosing cases.

The CR-4065 starter is a constant-speed type for general purpose appli-



Typical starter with cover removed

cations, and the CR-4066 is similar with the addition of dynamic braking. The CR-4166 is an adjustable-speed type with dynamic braking and full-field features. The CR-4068 is a constant-speed type, reversing, with dynamic braking. The CR-4168 is an adjustable-speed type, reversing, with dynamic braking and full-field features.

The cover of the inclosing case hooks over two pins at the top of the box, the bottom being held by a screw. This is in accordance with the Underwriters' requirements.

On those starters with dynamic braking a small relay with its contacts connected in the pick-up circuit prevents the solenoid from being re-energized until the motor has come

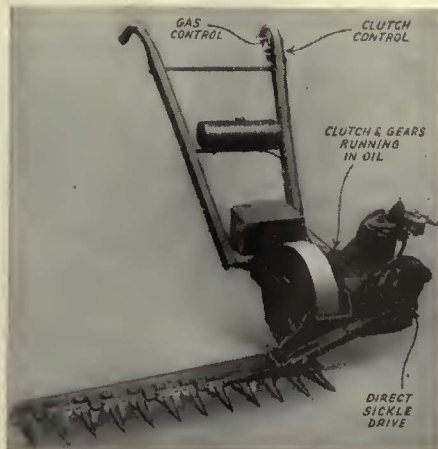


Mechanism of starter removed from case

to rest. Thermal overload protection is obtained by means of single-coil relays able to stand high in-rush currents. These relays operate only in extreme conditions and serve as a warning to the operator that the motor or wiring requires attention.

Gasoline Engine-Driven Mower

FOR CUTTING high grass and weeds along the right-of-way of electric railways a gasoline engine-driven mowing machine has been placed on the market by the Rawls Manufacturing Company, Streator, Ill. A four-cycle engine furnishes power for propelling and operating



New type engine-driven mowing machine

the cutter bar of the machine. Particular attention has been given to balancing so that the mower can be guided easily around any obstruction. It can be tilted for cutting up or down slopes and as it pivots on one wheel sharp corners can be turned easily.

The mower is propelled by a direct-gear traction-drive to the wheel with the cutter bar connected directly to a power take-off by means of pitman rod and balanced crank pin.

Automatic Tire Inflator

PREDETERMINED tire pressure may be maintained by an automatic tire-pressure inflator announced by the Yellow Jack-It Manufacturing Company, Chicago, Ill. The de-



New device for automatically maintaining tire pressure

vice is built on the air-compressor principle and requires no adjustments or oiling.

The construction includes a hardened cam mounted on the wheel spindle underneath the hub plate; a roller mounted on the end of a piston which follows the cam, and suitable connection to the tire valve. When the roller reaches the cam peak the air compression stroke is completed. At each revolution of the wheel air is forced past the intake valve into the inner tube. A check valve is provided which is set for the air pressure specified for the tire. When the pressure is up to the required amount the check valve functions and carries off the surplus air through the exhaust.

Proper tire pressure is maintained while the vehicle is in motion, and when the vehicle stops if there is a loss of air due to a slow leak or puncture which is insufficient to cause a flat tire the automatic inflator begins to function as soon as the car starts.

Association Activities

Midwest Association Announces Program

PRACTICALLY all phases of electric railway operation will be discussed at the annual meeting of the Midwest Electric Railway Association, June 4-6, in the Baltimore Hotel, Kansas City, Mo. According to the program, registration will begin at 9 o'clock Monday morning and the regular sessions at 10 a.m. Following is the three-day program of the association, as announced:

MONDAY, JUNE 4, 1928
BEGINNING 10 A.M.

"Welcome to Kansas City," by Hon. Albert I. Beach, mayor of Kansas City, Mo.
Response, by Powell C. Groner, president Kansas City Public Service Company.
"The City Manager Plan," by Hon. H. F. McElroy, city manager Kansas City, Mo.
"Present-Day Conditions and Tendencies of the Electric Railways," by R. P. Woods, president Kansas City, Clay County & St. Joseph Railroad.
Round-table Luncheons: Transportation Section. Mechanical Section.

AFTERNOON SESSION
BEGINNING 2:15 P.M.

"Modern Track Construction," by A. E. Harvey, superintendent of construction Kansas City Public Service Company.
"Power Conservation," by L. E. Gould, president Economy Electric Devices Company, Chicago, Ill.
"Co-ordinated Car and Bus Operation," by D. A. Scanlon, general superintendent Northern Ohio Traction Company, Akron, Ohio.
"Treadle Operation and Its Effect on One-Man Service," by R. L. Frehse, sales engineer National Pneumatic Company, Chicago, Ill.
Annual Banquet—Baltimore Hotel, beginning 7 p.m.

TUESDAY, JUNE 5, 1928
BEGINNING 10 A.M.

"Relation of Equipment to Car Speeds," by R. L. Hermann, transportation division manager Westinghouse Electric & Manufacturing Company, St. Louis, Mo.
"Electric Railway Advertising," by E. E. Soules, manager publicity department Illinois Traction System, Peoria, Ill.
"Organized Safety and the Electric Railways," by F. C. Lynch, director Kansas City Safety Council.
Luncheon and inspection trip to shops of Kansas City Public Service Company.

AFTERNOON SESSION
BEGINNING 2:15 P.M.

"Are You Abreast of the Times?" by J. C. Thirlwall, transportation engineer General Electric Company, Schenectady, N. Y.
"Modern Car Construction," by J. M. Bosenbury, equipment engineer Illinois Power & Light Company, Chicago, Ill.
"Worm-Drive Truck Development," by William Bonn, sales representative Timken-Detroit Axle Company, Chicago, Ill.

WEDNESDAY, JUNE 6, 1928
BEGINNING 9:30 A.M.

Reports of committees.
Unfinished business.
New Business.
Election and installation of officers.
Bus trip inspection of rehabilitation work in progress in Kansas City Public Service Company property.

The service betterment committee of the American Electric Railway Transportation and Traffic Association will hold a meeting in conjunction with the Midwest Association at 10 a.m. on Monday, June 4.

Ladies are specially invited to attend the meeting. Ample provision has been made for their entertainment. Representatives of supply companies and local

electric railways will provide the convention entertainment, as follows:

MONDAY, JUNE 4

Bridge luncheon for ladies, Blue Hills Country Club.
Banquet. Entertainment and dancing.

TUESDAY, JUNE 5

Luncheon for ladies, Kansas City Athletic Club, followed by Gray Line sight-seeing tour of Kansas City.
Reception for visiting delegates, Baltimore Hotel.
Carnival Dance, roof garden, Kansas City Athletic Club.

WEDNESDAY, JUNE 6

Al Fresco Picnic, Motor Country Club. Buses leave Baltimore Hotel for 11-mile trip to club where there will be a steak picnic, golf, bridge and dancing.

Selfishness and Misunderstanding Are Hindering Safety Work*

BY E. K. EASTHAM

Safety Director St. Louis Public Service Company

PREVENTION of traffic accidents is difficult because it is inter-related with so many diverse and otherwise unrelated interests and factors, some important and others not, yet all considered vitally important. This diversity is the essential difference between the prevention of traffic accidents and the prevention of industrial accidents. Within factories the management has a large measure of control and influence. It is a comparatively simple matter to get their own employees together in groups and sell them on accident prevention. Accidents in their own plants have a personal application, and for this reason the employees are willing to listen and discuss plans to remove dangers.

It is about equally simple for the management of a transportation system to secure a large measure of care on the part of its employees in handling street cars or driving buses. The requirements to produce those results are: first, complete honesty on the part of the management—that is, conducting a safety campaign without ulterior design and with a complete willingness to do its part; second, to have a well-organized plant and one under capable leadership, and third, to give the safety leader the position in the organization he deserves.

The safety department should be independent and in a position to make its recommendations and argue them through to a final conclusion before the impartial tribunal of the general man-

ager, for the reason that accident prevention is a plain duty owed by every public or quasi-public utility to its employees and to the public at large.

PUBLIC UTILITY MEN SHOULD BE SPOKESMEN OF THEIR PATRONS

The best means of reaching the general public in matters of accident prevention is a local safety council, where such is available, because it is a disinterested organization in which the public has confidence. Next comes my conviction that greater educational results can be achieved with the children than with any other group. Then I would urge that public utility men become more and more the spokesmen of their patrons, the great mass which seldom has an opportunity to make known its wishes. Be their spokesman, put your influence behind measures designed to give the pedestrians an even break with the drivers of automobiles. Help the street car passenger to get on and off safely by insisting that other vehicles be required to stop back of the street car when it is receiving or discharging passengers. By all means, be represented at every gathering where matters of public or traffic safety are to be discussed or decided, and don't be afraid to stand up and be counted. Automobile associations are always there in force. Shall we be too busy in our offices or too penny wise to make our own force felt, to make the rights and safety of our patrons respected?

In the complexity of the problem lies the difficulty. We are met first by the fact that inextricably interwoven with the accident problem is the whole ques-

*Abstract of a paper presented before the Electric Railway and Public Utilities session of the Central States Safety Congress, held at Kansas City, Mo., April 23-26, 1923.

tion of traffic in general; that the flow of all kinds of traffic—pedestrian, motor vehicle, freight, street car, bus, delivery, mail—is the life of any community. In seeking a broad plan we encounter the perplexing details of parking, of one-way streets, of police control, of automatic signals, of safety zones, of street-widening projects, of staggered loads for peak periods, of the routing of through traffic, of boulevard stops, of rapid transit and all the rest of the "57" multiplied varieties of suggested remedies, panaceas and cure-alls.

SELFISHNESS IS CRUX OF PROBLEM

The main trouble encountered when a real traffic expert starts out to bring order out of chaos, to prepare a comprehensive plan for the solution of traffic problems, is that he at once runs up against a more or less impregnable wall of opposition based 90 per cent on selfishness and 10 per cent on misunderstanding. The 10 per cent of misunderstanding can be corrected by a campaign of education, but the 90 per cent of selfishness is the crux and core of the whole problem. We have the very common spectacle of merchants objecting to no-parking ordinances because they fear it will drive some trade away. They fail to realize that in urging the use of the already overcrowded streets for the storage of dead vehicles they are helping to strangle the free movement of traffic which is the blood of the community business life. They further fail to realize that in catering to the automobile trade exclusively, they are placing serious obstacles before the vast bulk of their trade which uses street cars, buses and other vehicles of public conveyance.

Besides the selfish merchant we have the politician, whose main thought concerns itself with votes and who is swayed much more by any local interest he believes controls votes than by any consideration for the community good and safety as a whole. We have the individual in countless forms and manifestations who brays at every regulation which he believes encroaches on his free-born American right to do as he pleases without reference to the rights of the other fellow. We have those real estate men, those property owners who object to well-thought-out zoning projects. We have local and territorial improvement and business associations who object to any comprehensive plan of betterment which they think will bring more advantage to other sections than to theirs. We have the automobile associations which from time to time oppose safety measures and regulations because some liability, some duty, some regulation, is sought to be imposed on the drivers of motor vehicles commensurate with the hazards brought into being solely by the motor vehicle.

ACCIDENTS ARE RARELY BROUGHT HOME TO US

Offhand, one would think that the instinct of self-preservation would operate as a powerful check to these other forms of selfishness where any matter directly affecting safety of life and limb was in-

olved. It does not act as a check because of the widely diffused character of traffic accidents. The total of deaths, injuries and property damage is staggering, yet in the immensity and complexity of city life it is seldom that any of these deaths or serious injuries are brought home to us.

Inter-related as it is, the boundaries of accident prevention become co-extensive with man's every effort to substitute some measure of humanitarianism and of altruism for an undisputed reign of selfishness. Every effort made in any right cause will indirectly bring closer

to fruition the cause of accident prevention. Every friend cheered, every injustice righted, every vote against governmental corruption, every effort against business trickery, every helping hand extended to those less fortunate, brings nearer the day when the causes of accidents will cease.

Middle Atlantic Equipment Men Organize

ELECTRIC railway equipment men anxious to further improve their methods and practices, believing that intercourse between several properties in the same general locality is one of the best methods to accomplish this, met in Baltimore, Md., on May 16, 1928, and formed the Association of Electric Railway Equipment Men of the Middle Atlantic States.

Those present were C. O. Brooks, master mechanic Scranton Railway, Scranton, Pa.; D. E. Frame, master mechanic Delaware Electric Power Company, Wilmington, Del.; R. H. Dagleish, chief engineer Capital Traction Company, Washington, D. C.; E. L. Green, master mechanic York Railways, York, Pa.; C. E. Keefer, master mechanic Altoona & Logan Valley Electric Company, Altoona, Pa.; E. L. Kelly, chief engineer Newport News & Hampton Railway, Hampton, Va.; W. H. McCarty, master mechanic Capital Traction Company, Washington, D. C.; J. A. Mellor, master mechanic Washington, Baltimore & Annapolis Railroad, Odenton, Md.; A. F. Rexroth, master mechanic Harrisburg Railways, Harrisburg, Pa.; R. D. Voshall, superintendent of equipment Washington Railway & Electric Company, Washington, D. C.; A. T. Clark, superintendent rolling stock and shops United Railways & Electric Company of Baltimore, Md., and H. A. Leonhauser, assistant superintendent rolling stock and shops United Railways & Electric Company of Baltimore, Md.

After discussion of the need and desire for forming an association of this character a constitution and by-laws were presented and adopted. A paper was read by Mr. Voshall on maintenance of street railway motors. After the paper was read, a lively discussion of many of its interesting features was engaged in.

After luncheon an inspection of the shops of the United Railways & Electric Company was made. The subject of comparison of performance of each company by "pull-ins" or "failures" was gone into very thoroughly and finally it was decided to use the basis of "pull-ins" for comparison.

It was decided to have the next meeting in November at Hampton, Va., the Newport News & Hampton Railway to be the host.

The following officers were elected: President, A. T. Clark; vice-president, E. L. Green; secretary-treasurer, W. H. McCarty; directors—for one year, A. F. Rexroth; for two years, E. L. Kelly; for three years, D. E. Frame.

COMING MEETINGS OF

Electric Railway and Allied Associations

May 28-31—National Association Purchasing Agents, annual convention and exhibit, American Royal Building, Kansas City, Mo.

June 4-6—Midwest Electric Railway Association, Hotel Baltimore, Kansas City, Mo.

June 4-8—National Electric Light Association, Atlantic City, N. J.

June 6-8—Canadian Electric Railway Association, annual convention and exhibit, Toronto, Canada.

June 12-13—American Wood Preservers' Association, Chattanooga, Tenn.

June 14-15—New York Electric Railway Association, Half Moon Hotel, Coney Island, N. Y.

June 20-27—American Railway Association, Div. 5—Mechanical, annual convention and exhibit, Atlantic City, N. J.

June 21-22—American Railway Association, Motor Transport Division, Atlantic City, N. J.

June 21-22—Wisconsin Utilities Association, Accounting Section, Hotel Pfister, Milwaukee, Wis.

June 28-29—Central Electric Railway Association, Cedar Point, Ohio.

July 8-12—Public Utilities Advertising Association and International Advertising Exposition, Detroit, Mich.

July 13—A.E.R.A. Executive Committee on Yacht "Florida," New York, N. Y.

July 18-20—American Society of Civil Engineers, annual convention, Buffalo, N. Y.

July 19-21—Pacific Claim Agents' Association, annual convention, San Diego, Cal.

July 25-27—Electric Railway Association of Equipment Men, Southern Properties, Cincinnati, Ohio.

July 27-28—Central Electric Railway Accountants' Association, Detroit, Mich.

Aug. 16-17—Wisconsin Utilities Association, Transportation Section, Sheboygan, Wis.

SEPT. 22-28, 1928

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

New Englanders Banquet at Boston

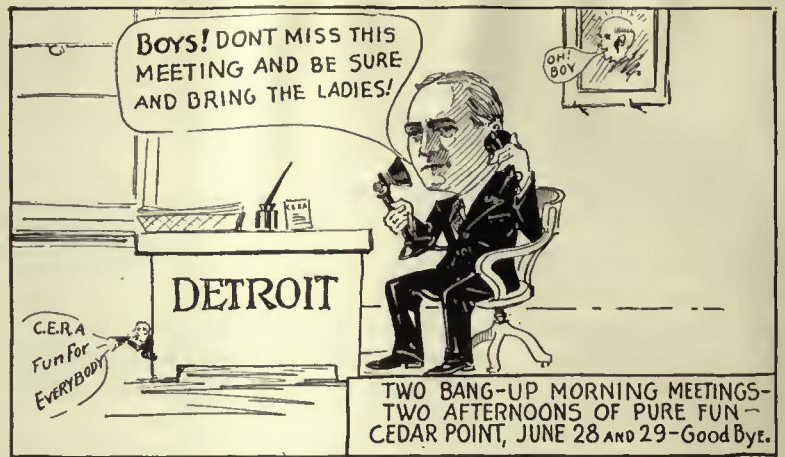
FOUR HUNDRED members and guests of the New England Street Railway Club celebrated the 28th annual banquet of the organization on Thursday of this week at the Copley-Plaza Hotel, Boston, the speakers being Lieutenant-Governor Frank G. Allen of Massachusetts; Robert B. Stearns, retiring president; Walter C. Slade, vice-president United Electric Railways, Providence, R. I.; president-elect Honorable Ralph S. Bauer, Mayor of Lynn, Mass., and T. A. Kenney, vice-president Hodenpyl, Hardy & Company, New York. Alonzo R. Williams, general manager United Electric Railways, Providence, was toastmaster.

Lieutenant-Governor Allen spoke optimistically regarding the future of New England industry, pointing out that whereas heavy losses have been encountered in certain fields within the last few years, the industries of the Northeast are gaining in diversity and magnitude. Mayor Bauer urged transportation men to get rid of the inferiority complex in their business and to emphasize the extent to which the prosperity of the modern city depends on railroad and railway lines as the only practicable means of handling mass transportation.

Mr. Kenney commended the work of the public utilities information bureaus of the country in striving to acquaint the public with the facts about the utility industry and paid a warm tribute to the New England Bureau in particular for its well-directed activities under S. T. MacQuarrie. He sounded a warning note against the tendency of the government to encroach further and further upon business. He briefly called attention to the increased economic inconveniences and risks which the electric railway industry faces as a result of the Interstate Commerce Commission's attitude upon depreciation accounting and certain provisions of the Transportation Act hearing upon taxation. Ordinary electric railways should be distinguished from common carriers doing a considerable interstate freight business, the speaker said, and provision should be made under which the railways can be taxed in some proportion to their net earnings, thus enabling poor years to be offset by good ones.

The following additional officers were elected: Vice-Presidents, H. M. Steward, Boston, Mass.; J. K. Pufferford, New Haven, Conn.; J. B. Crawford, Concord, N. H.; D. G. Clark, Burlington, Vt.; Edward M. Graham, Bangor, Me.; Alonzo R. Williams, Providence, R. I.; Secretary, John W. Belling, Boston; Treasurer, Fred F. Stockwell, Cambridge, Mass., and Executive Committee, George E. Haggas, Portland, Me.; Howard F. Whitney, Worcester, Mass.; C. B. Pierce, New Bedford, Mass.; H. S. Day, Providence, R. I.; George Acker, Boston, Mass.; A. J. Boardman and J. P. Alexander, Boston. Frank B. Walker was chairman of the banquet committee.

C.E.R.A. Promises Rousing Summer Meeting



"Fun for everybody," says C.E.R.A. program committee

EXTREME efforts are being made by the program and hotel and arrangements committees to make the summer meeting of the Central Electric Railway Association at Cedar Point, Iowa, Thursday and Friday, June 28 and 29, an outstanding event, according to W. S. Rodgers, president. There will be two morning business sessions filled with discussions of inter-

esting topics pertaining to the industry.

The entertainment features will be ample for the entire family. In addition a wide variety of sports is available at Cedar Point.

The accompanying cartoon is a sample of those being sent out to members, stressing "Fun for Everybody" and calling attention to various features of the program.

American Association News

Purchases and Stores and Stores Accounting

JOINT meetings of the committee on purchases and stores of the Engineering Association and the committee on stores accounting of the Accountants' Association were held at Association headquarters, New York, on May 18 and 19. Aside from the regular work of the committees, considerable time was given to the discussion and planning of an elaborate convention program and the following tentative program was adopted:

MONDAY, SEPT. 24—2:30 P.M. TO 5 P.M.

Address of welcome by R. H. Dalgleish, president A.E.R.E.A.

"Standard Packages," by W. E. Scott.

"Purchasing from the Manufacturers' Standpoint," by B. W. Forkner.

"Inactive Stock," by A. S. Duncan.

"Relation of Purchasing to the Stores Department," by A. L. Fischer.

"Handling Supplies for Buses," by W. S. Stackpole.

TUESDAY, SEPT. 25—LUNCHEON
CONFERENCE

"What Would Be a Fair Measure of the Cost of Handling Materials and Supplies," by C. A. Harris.

WEDNESDAY, SEPT. 26

Joint annual report by the chairman.

"The Cost of Controlling the Investment in Material and Supplies and the Distribution of That Cost," by W. P. McArdle.

"Pricing Problems," by R. A. Weston.

It is planned to include in the com-

mittee's exhibit a delinescope picturization of storekeeping practices and exhibits bearing on the question of unit piling, standard packages and other storeroom methods.

Members of the committees attending the meetings were J. Y. Bayliss, R. A. Weston, W. J. Walker, W. S. Stackpole, A. L. Fischer, A. S. Duncan, E. A. Murphy, J. Fleming, W. E. Scott, B. W. Forkner, A. A. Ordway, W. P. McArdle and C. A. Harris.

Preliminary Announcement on Brady Medals

AUTHORIZATION by Nicholas F. Brady to award the Anthony N. Brady Memorial Medals for the year ended Dec. 31, 1927, "for achievement in safety and sanitation by electric railway organizations of the United States" is announced by the American Museum of Safety. As in the past, the award will be made jointly under the auspices of the American Electric Railway Association and the American Museum of Safety.

The committee on conditions, composed of men from within the industry, has been giving all factors entering into this competition additional careful study in the light of the results of last year. Definite decision on the conditions covering the contest for the year 1927 will be reached at an early date. It is hoped to have the printed conditions forwarded to all contestants early in June.

News of the Industry

Fare Stay in New York

Interborough case to be heard by Supreme Court on Oct. 2. City not required to post bond

The Supreme Court of the United States on May 21 granted the stay sought by the city of New York and the Transit Commission and prevented the 7-cent fare from going into effect on the Interborough lines in New York City at least until the case is reviewed in the high court next fall. Under the ruling of the Supreme Court the injunction granted by the lower court, which would prevent any interference with the collection of a 7-cent fare, cannot become operative until after the case is retried on appeal.

CHIEF JUSTICE TAFT READ THE ORDER

Chief Justice Taft announced the decision of the court briefly, saying that after considering the application for the stay of the injunction pending an appeal to the Supreme Court it was ordered that the stay be granted and that the injunction not become operative until after that appeal had been heard. The court also announced that it would hear the appeal of the city on Tuesday, Oct. 2.

The order of the court in the case was as follows:

Upon consideration of the motion of the appellants for a stay of the order granting an interlocutory injunction, from which this appeal is taken, and for the advancement of this cause for an early hearing, it is ordered that the operating of the order of the District Court, May 10, 1928, granting an interlocutory injunction in this cause be stayed and remain inoperative pending the hearing and determination by this court of the present appeal, and that this cause be advanced and set down for hearing in this court on Oct. 2, 1928.

The supreme bench heard the arguments on the city's petition for a stay of the injunction granted by the statutory court on May 14, when Charles L. Craig and Samuel Untermyer laid their case before the court and William L. Ransom argued against the petition.

CONTENTION OF CITY COUNSEL

Nothing in the decision indicated whether the counter proposal of the counsel for the city and commission to file a stipulation in the lower courts should be carried out. Counsel had offered to file a stipulation which would permit the \$5,700,000 in preferentials which it is estimated will be due and payable to the city this year, to be set aside in a special account so that, if the courts in the final decision should grant the 7-cent fare, the company might be reimbursed for any losses it might have suffered by the maintenance of the 5-cent fare while the case is being tried.

Counsel contended that the city has

no power to post the bond required and that there was no way under the law by which the city's money could be offered as security to indemnify the company for its losses.

In their arguments, Mr. Untermyer and Mr. Craig stressed the injustice of the terms imposed by the statutory court and the impossibility of meeting them. Mr. Ransom, in his reply, characterized the decision rendered by the statutory court as "the most clarifying document on the transit situation that had ever been written."

\$15,000 and No More Responsibility in Paris

The Council of Paris, Ill., has relieved the Central Illinois Traction Company, subsidiary of the Central Illinois Public Service Company, of further responsibility and obligation under its 50-year franchise, dated Aug. 1, 1910. A payment of \$15,000 cash for the release was made by the company, which agreed to remove all poles, wires, tracks and ties, except those on Main Street.

30,000,000 Miles Without an Accident

5,441 men in employ of Chicago Surface Lines had spotless records for year recently ended. Beautiful trophy awarded by Mr. Richardson to Lincoln division men at banquet

MOTORMEN and conductors of the Chicago Surface Lines were the guests of honor of officials of the company at a banquet held in the Stevens Hotel, Chicago, May 4, in celebration of the fact that 5,441 employees did not have a single accident in service during the fiscal year ending Jan. 31, and that the total number of accidents was 12½ per cent less than the total in 1926. Guy A. Richardson, vice-president and general manager, pointed out that the motormen among the no-accident group had operated their cars for a total of 30,000,000 car-miles without an accident of any kind.

Approximately 70 per cent of the motormen and 54 per cent of the conductors who had no accidents, he declared, had been in the company's service for more than ten years. In extolling the records made by the men, Mr. Richardson urged the same strict requirements of mental and physical ca-

capacity for automobile drivers as must be met by Surface Lines employees.

Each man was presented with a bronze insignia to be worn on the lapel of his uniform during the year. One of the features of the celebration was the awarding of a handsome trophy in the form of a sterling silver model of the actual size of the latest type Surface Lines car to the Lincoln Avenue car depot, which made the best accident prevention record on the system last year.

Mr. Richardson characterized the meeting as unusual in the annals of the Surface Lines. Indeed, it was. In the past the system of the company used in keeping accident records tended toward focusing attention on the few men who were in trouble rather than on the many who were satisfactorily performing their daily duties and formed the backbone of efficient and safe service. Beginning with 1927, this plan was changed with the avowed intention of being able properly to give credit where credit is due. Since a banquet hall large enough to serve the entire group was not obtainable, it became necessary to devise a plan for selection of as many as could be accommodated, so the group on the evening of May 3 was invited on the basis of seniority.

Mr. Richardson said the fact that approximately 60 per cent of the 5,441 clear accident record men have a service record in excess of ten years demonstrated conclusively that judgment and ability to operate cars successfully under the trying street conditions faced each day, came from years of experience in the school of hard knocks and that it could not be acquired overnight. In other words, successful operation in service such as that supplied by the Chicago Surface Lines depended on those who are devoting their lives to it rather

Farewell to the Wooden Car in Boston

THE last wooden car on the rapid transit lines of the Boston Elevated Railway, Boston, Mass., was retired from service on March 27, 1928. The wooden cars which have been retired have now been all replaced by steel cars, the last cars on the order for 100 having been received recently. The rapid transit lines have also placed in service the entire lot of 60 new steel cars ordered for the Dorchester rapid transit extension. Thus there are now in operation a total of 160 new steel rapid transit cars involving an investment of \$3,700,000.

than to the type that is here today and gone tomorrow.

An analysis of seniority of trainmen who have not had a chargeable accident during the year ending Jan. 31, 1928, showed:

	Total Number	More Than 25 Years	More Than 20 Years	More Than 15 Years	More Than 10 Years	Less Than 10 Years
Motormen	1,747	307	638	988	1,221	526
Per cent.....	100	17.57	36.52	56.55	69.89	30.11
Conductors.....	3,694	430	850	1,361	2,005	1,689
Per cent.....	100	11.64	23.01	36.84	54.28	45.72
Totals.....	5,441	737	1,488	2,249	3,126	2,215
Per cent.....	100	13.55	27.35	43.17	59.29	40.71

Last year cars of the company operated more than 136,000,000 car-miles. The number of 100 per cent motormen was 1,747, or approximately one-fourth of the total motormen. It can readily be computed then that this group of motormen operated on the streets of Chicago more than 30,000,000 car-miles in 1927 without accident—a performance, in Mr. Richardson's judgment, never equaled.

As indicated previously each no-accident trainman has been presented with a one-year safety button in bronze as a small token of the management's appreciation of his efforts in accident prevention. The Accident Prevention Advisory Council which, with Mr. Pasche, has charge of the plans and policies in this regard, advise that it is planning a different button for each additional year of freedom from accident, as follows:

- One year..... Bronze
- Two years..... Silver car on bronze
- Three years..... Solid silver
- Four years..... Gold car on silver
- Fifth year..... Solid gold button

The whole organization has been bending its energies to the reduction of accidents and for the last three or four years the need of accident prevention has been stressed more than ever before. As a result the accidents on the system last year were reduced 6,500 in number, or 12½ per cent, over the previous year. The total number of car-miles per accident last year was better than any year since 1923, and during that time there has been a 50 per cent increase in regis-

tered automobiles in Chicago. Incidentally there was an increase of 17 per cent in car-miles run per accident, comparing 1927 with 1926. Last year there were 5,700 fewer collisions with vehicles than during the previous year, in spite

of an increase of 19,200 vehicles registered in Chicago than in 1926. The recession of that amount represented more than 18 per cent in that one class of accident, and was a further testimonial to the outstanding merit of the motormen. There was a reduction of 14 per cent in fatalities, of 27 per cent in collisions of cars and 65 per cent in those brushed from steps.

Lighting and boarding accidents dropped off 5½ per cent, a credit to the men on both ends of the car, but there was an increase of 36 per cent in persons thrown by quick starting and stopping—something the motormen were reminded by Mr. Richardson they should bear closely in mind as a type of accident that is running in the wrong direction. Mr. Richardson said:

The whole trend of train service operation last year was in the right direction in accident prevention, in courtesy and all those other attributes that spell service in the broad way that we mean it.

I am rather inclined to believe that a great many people outside of our industry are beginning to think in the terms of accident prevention, undoubtedly brought about by the systematic work that is being done in the schools, shops and businesses all over the nation. This is borne out by the reports of many electric railways for the past year showing a marked reduction in accidents over the previous year. Our aviator friends say the public are becoming air-minded. I think we might well say that they are becoming accident-minded. This added to concerted attention to the causes of accidents in our business and the

effective work that you and the others in our organization have been doing has produced the excellent record of last year.

When we see the astounding figures compiled at the end of each year as to the fatalities and injuries caused by automobiles it makes us wonder whether the tide will ever turn and what, if anything, could cause it to do so. Until laws are passed in this state, as they have been in many states, making it necessary for all drivers of automobiles to pass a reasonable physical and metal test as to their ability to operate these high-speed, high-powered vehicles, it would seem that we may expect little along that line. You all know the strict requirements necessary to qualify you to perform the work of running cars on this system and I know you would think the management derelict in its duty if it permitted any man with a major physical or mental defect to operate its equipment over the busy streets of our city, yet men of this type are driving automobiles.

At the outset in our work of accident prevention we felt that if we could save a single life or major injury our efforts would be worth while. To have our own people killed and injured by being crushed between cars seemed an outstanding carelessness that should be completely eliminated. It may interest you to know that in 1927 none of our employees was killed by this form of accident while in 1923, when we started this campaign, four trainmen had been killed; one in 1924; three in 1925 and one in 1926. This would indicate that our endeavors along this line have not been in vain.

It is surprising how far-reaching accident prevention work is. At practically every meeting of our operating heads or of the staff many of the subjects relating to accident prevention are discussed. All of these discussions and conferences bring a better understanding of the problem we are facing and with the meetings of the safety committees and co-operation between all groups on the system we are beginning to show real results in this direction.

Many departments besides transportation are making enviable records. Their activities do not usually involve the public directly to the same extent as the train services do, but they prevent injury to themselves and to their fellow employees.

Only by good team work throughout the organization can we satisfactorily make progress in accident prevention or in any other constructive effort to improve the



5,441 trainmen of the Chicago Surface Lines were eligible for the accident prevention banquet at the Hotel Stevens on May 3, but it was possible to accommodate only a quarter of this number in the mammoth grand ball room

operation and service, and I want you men gathered here tonight to know how much the management appreciates the whole-hearted support and co-operation it has had from the entire force. Your 100 per cent record in accident prevention work last year makes you the outstanding examples of efficient electric railway operators.

As a climax to his address Mr. Richardson gave the signal to unveil the silver speed trophy represented by a miniature modern Chicago Surface Lines car, awarding it to the Lincoln Avenue carhouse as the winner. Superintendent Hays of Lincoln, in receiving the award, expressed his gratitude and the gratitude of the men serving under him. In presenting the trophy to Mr. Hays, Mr. Richardson said:

For the past two years all depots have been engaged in friendly rivalry in the matter of accident prevention on a system of credit and debits worked out by the Advisory Council. The first year's award went to North Avenue, but little did they realize when they accepted their 1926 trophy that over to the east of them the members of another group of determined men had been grooming themselves for 1927 to the extent that they stepped into first place in the first month and while sorely pressed once or twice were never forced from that position throughout the year. Individual effort is essential as the base of any endeavor. This has been repeatedly brought out before this evening, but team work of the whole group making this effort is vital to any organization such as ours in producing a finished result. The best team work in 1927 in accident prevention was under Mr. Hays' and Mr. Zage's leadership at Lincoln. They finished first, while Lawndale and Blue Island under Mr. Maguire and Mr. Eigelsbach finished scarcely two points behind Lincoln.

The Advisory Council this year prepared a surprise for all of us in the trophy that is to be awarded for last year's accomplishment. They advise that this trophy is to be held by the depot winning it for the year following, and that when any depot has won it three times it will then remain at that depot permanently. I had heard vague rumors of what the trophy was to be but had no conception that the master silversmiths at Marshall Field's could produce anything so beautiful as this silver replica of our most modern type of street car.

Mr. Hays, I am proud to have the honor of awarding the accident prevention trophy for 1927 to you as the representative of your efficient team mates of the Lincoln carhouse.

Would Prevent Interference With Piedmont Extension

Counsel for the Piedmont & Northern Railway, Charlotte, N. C., has filed in the United States District Court at Greenville, a petition for an injunction against the Interstate Commerce Commission to prevent its interference with the company in extending its line from Spartanburg to Gastonia and from Charlotte to Winston-Salem. The petition asked that the court set aside and declare null and void the recent decision of the commission that the road cannot extend its line in the directions desired. In its decision the commission held that the proposed line was not a public necessity.

Columbus Legislation Under Fire

A request to veto legislation passed by the City Council of Columbus, Ohio, on May 14, making all streets with car tracks main thoroughfares, has been made of Mayor Thomas by the Columbus Automobile Club. The ordinance also raises the speed limit of street cars from 20 m.p.h., to 25 m.p.h. Mayor Thomas declared that he had not signed the legislation, but gave it his verbal approval.

These ordinances supplemented a previous ordinance passed on April 16, authorizing the Columbus Railway, Power & Light Company to adopt the skip-stop system. That ordinance, which became effective on May 16, has been accepted by C. C. Slater, general manager of the Columbus Railway, Power & Light Company, but will not be put into effect until the other two ordinances become effective. Mr. Slater said that it would be necessary to change car schedules, rearrange car stop signs and work out other plans before the company could comply with the ordinance. All the present car stop signs will be taken down repainted and then relocated nearer the center of the street where they will be more visible.

Passage of the stop-street ordinance was opposed by Councilman Worley.

Lower Fares on Pacific Electric Lines

Fare reductions on Los Angeles lines of the Pacific Electric Railway affecting regular riders between zones one and two, one and four, and also a reduction in local fares in the Hollywood territory, were authorized May 15 by the California Railroad Commission effective upon one day's notice by the company. The new fares are the result of an agreement between representatives of the city of Los Angeles and the Pacific Electric Railway reached in an informal conference with the Railroad Commission at San Francisco.

The order provides for the sale of tickets to regular riders at a 5-cent fare between zones one and two, in the form of a twenty-ride book, good for 60 days, and carrying full transfer privileges within those two zones. A new cash fare of 5 cents is made effective on the Hollywood Boulevard and Santa Monica Boulevard lines between Crescent Junction and Vermont Avenue. This fare carries full transfer privileges to intersecting lines and will provide a 5-cent local fare between the business and residential districts of the Hollywood territory. Regular riders in the West Hollywood and South Pasadena districts are given the benefit of a 10-cent fare to and from Los Angeles by purchase of a twenty-ride book, good for 60 days with full transfer privileges.

In announcing the new fares the commission stated that since April 7, 1928, when an order establishing a series of experimental fares for the Pacific Electric Railway System was handed down, a careful check has been made day by

day. It has been represented to the commission that the fares between the first and second zones and between portions of the third and fourth were such that in view of competitive and other conditions, they would decrease rather than increase patronage and revenue to the company. Representatives of the city and the railway confirmed these results.

Bills Fail at Special Session of the Illinois Legislature

The railway bills presented in the special session of the Illinois General Assembly by the Chicago City Council have been shelved and there will be no legislation of the kind before the next regular session of the assembly in January, 1929.

The special session met on May 15 on the call of Governor Small to consider "Home Rule" and other bills enabling the City Council of Chicago to grant franchises to the railway system for a fixed period of more than 20 years. From the first there was a feeling that nothing could be accomplished at this session owing to the fact that Governor Small, who called it, had just been defeated for nomination in the Republican primary and Mayor Thompson, his political ally, had been rebuked by an overwhelming vote in Chicago against the Governor and the Mayor's whole slate.

In moving to postpone consideration of the bills indefinitely, Representative Elmer J. Schnackenberg, Chicago, declared that the special session "was born in uncertainty, clothed in mystery and viewed with suspicion by the press and the public."

It seemed likely that the General Assembly would complete its work before May 26 and adjourn after creating a special committee to study the situation in Chicago and report back to the next regular session of that body.

St. Louis Agreement Forwarded to Commission

The formal stipulation entered into by the executive committee of the St. Louis Public Service Company, St. Louis, Mo., the executive committee of the Local Amalgamated Association and the city of St. Louis, through City Counselor Muench, providing for arbitration of the wage dispute was formally forwarded to the Missouri Public Service Commission on May 21. The State body will decide the issues and fix a new rate of fare in St. Louis and St. Louis County sufficient to provide funds needed to pay any increase in wages granted to the workers.

In the meantime attorneys for the company and the union have prepared data for submission to the commission. Under the terms of the agreement between the company and the union the present wage scale and working agreement will continue in effect until the state commission hands down its decision.

Hearings Continue on Chicago Elevated Increase

Efforts of the Chicago Rapid Transit Company to obtain a flat 10-cent fare and to abolish its present \$1.25 weekly pass and three-for-a-quarter ticket rate received another set back on May 16 when the Illinois Commerce Commission continued the hearing on its application until Sept. 11. The initial hearing was held on April 26. Decision to postpone the hearings was in the form of an answer to the motion of John G. Drennan, assistant corporation counsel of Chicago, to exclude the valuation presented by the company on the ground that the railway based its demand for a fare increase on a valuation that was eight years old and consequently, erroneous. Mr. Drennan argued that the company must show present value, which he believed to be considerably higher. The reason given for the denial was that the commission was making an appraisal on its own account and, to exclude that presented by the elevated lines would prevent its introducing as evidence the results of its own inquiry.

Harry J. Dumbaugh, attorney for the company, declared that the railway would complete a new appraisal by June 12 and protested any further delay. He claimed that such delay meant a loss to the company of approximately \$200,000 a month; that the company now was running behind at the rate of \$7,000 a day at the present rates. He said a new valuation of the "L" properties could be made by the company's engineers within 30 days.

Reduced Wages Accepted by Gloversville Employees

Trainmen of the Fonda, Johnstown & Gloversville Railroad, Gloversville, N. Y., accepted a 6 per cent reduction in wages, effective May 1. The new scale is to continue in force for a period of six months, after which time the old scale will be restored. Before automobile and bus competition summer traffic on this railway amounted to very near capacity business. Now the summer traffic is considerably lighter than the winter traffic.

Passes Increase Business on Alliance Line

Extensive use of weekly passes over the entire division has increased total revenue approximately 8 per cent so far this year compared with corresponding months of 1927, according to officials of the Stark Electric Railroad, Alliance, Ohio. During four weeks of April, 1927, the Stark Electric issued 3,119 passes for \$2,809. Reports for the four weeks of April, 1928, show that 4,119 passes were sold for \$4,014, an increase of 1,000 passes and more than \$1,200 in revenue.

The Stark Electric has a variety of passes in the cities it serves, between smaller communities and cities, and to shops and schools along the division.

One of the most popular is the weekly pass in Alliance, sold for 70 cents. The increase in the use of the weekly passes has not affected Sunday all-day passes. Business in the Sunday pass shows a steady gain so far this year.

Taking Testimony in Ottawa

Hearings are being conducted before the Board of Railway Commissioners on the application of the Ottawa Electric Railway, Ottawa, Ont., for an 8-cent cash fare. The present fare is 5 cents. Testimony of Robert M. Feustel, expert engaged by the city of Ottawa, at the hearing on May 4, favored the railway cars as the only quick and efficient means of handling passenger traffic. He complimented the company on maintaining its car mileage despite the falling off in the number of car rides.

Pay of Shop Men in Cleveland Boosted

An increase of \$85,000 a year in the shop payroll of the Cleveland Railway, Cleveland, Ohio, as a result of a new classification of positions and increases in pay, was announced recently by Joseph H. Alexander, president. A rise of a few cents an hour was awarded most of the shop workers, the highest being 7 cents an hour. The pay adjustments were made, according to Mr. Alexander, as a result of a change in the shop week from a 54-hour to a 44-hour basis. This amounted practically to a 20 per cent reduction in pay. The new rates are retroactive to May 1.

A 2-cent an hour increase was recently granted to trainmen and motor coach operators.

More Parleys in Poughkeepsie

The Common Council of Poughkeepsie, N. Y., has appointed a committee to meet with the highway committee of the Board of Supervisors, and the representatives of the Poughkeepsie City & Wappingers Falls Electric Railway to discuss the problem of removing the tracks of the railway in Market Street and in the South Road to the falls. The position of the company is that the rails cannot be removed unless, for instance, the line to Wappingers Falls is purchased by the County of Dutchess for the new state road. A representative of the city has explained that an agreement of this kind would not necessarily have any connection with the paving debt due the city, but expressed the belief that any agreement with the county may turn out to depend upon a settlement of the paving debt matter with the city. This spokesman said:

We strongly desire the removal of the tracks; we believe in the preservation of trees on the South Road—we think that buses would be better than trolley cars on the Wappingers and South Side lines—and we therefore urge that the city appoint a committee to see what can be done before it is too late.

Utility Inquiry May Aid States in Regulation, President Believes

President Coolidge believes that the Federal Trade Commission's investigation into the activities of the public utility companies may bring out facts which would call for legislation by Congress, although such information as the President has received so far with regard to the commission's inquiry makes it appear to him that the question is one for state action rather than for the federal government. This was stated officially on May 18. As expressed by the *United States Daily* President Coolidge's views are as follows:

But little information is in the President's possession relative to the investigation now being made by the Federal Trade Commission concerning power companies.

President Coolidge had talks more than a year ago with Professor Ripley of Harvard University, who had written several magazine articles regarding the organization of electric power concerns, and such thought as the President gave the subject at that time led the President to believe that the affair was entirely a matter of state action as distinguished from action by the federal government.

The investigation by the Federal Trade Commission now in progress may reveal perhaps in the President's opinion facts that will be helpful to state commissions in administering the powers for the regulation and control of electric power companies, and the commission may develop some facts that would call for national legislation.

Court Claims Waived for Omaha Franchise

So that there will be no interference in the negotiations concerning a new electric railway franchise to be voted upon next fall by the people of Omaha, Neb., all pending court claims and disputes regarding the present franchise of the Omaha & Council Bluffs Street Railway have by mutual consent been waived. This is in compliance with the suggestion of President Shannahan made to the City Commission. Mr. Shannahan told the Council that the company appreciated the willingness of the city to negotiate for a new franchise; that the company was anxious for a full discussion and exchange of opinion on all the provisions, and that it desired the public to be fully informed on all phases of the company's needs and the city's rights. If the voters grant a new franchise the company officials are willing to forego any rights that may exist to a permanent and perpetual franchise to operate cars in Omaha. At City Corporation Counsel Van Dusen's request, the company executed a written waiver of claims to franchise rights arising from operation of cars after May 22.

A ten-year lease on 6,300 sq. ft. of space in the Union State Bank Building, Omaha, was taken recently by the company and it will use the entire fifth floor and a part of the sixth. The lease becomes operative on June 1. The company has occupied its present quarters for 27 years.

Cause for Pause in Cleveland

Officials of the Cleveland suburb of East Cleveland claimed at the fare arbitration hearings concluded during the week ended May 19 that they are getting too much service from the Cleveland Railway. They asserted that more service than East Clevelanders require is put on the Euclid Avenue line for the convenience of Cleveland riders, and they voiced objections to paying the cost of that part of the service which they say is unnecessary.

This was one of two principal arguments advanced by East Cleveland against paying a higher rate of fare than the Cleveland rate. The other main argument was based on alleged wasteful and inefficient routing of a number of Cleveland car lines. Such routing tends to make the Cleveland rate of fare higher than it really ought to be, through no fault of East Cleveland. For many years the Cleveland Council has refused to consider the re-routing of the car lines on a more efficient plan.

The arbitrators, Ed. Doty, Charles M. Buss and Charles Higley, have the right to fix the East Cleveland rate of fare for the next five years. Briefs will be submitted within ten days and a decision is expected shortly thereafter. The Cleveland Railway contends that the East Cleveland fare should be 3 cents higher than the rate in Cleveland proper.

Ten-Cent Rate in Lorain Rejected

A proposal to increase car rates in Lorain, Ohio, to 10 cents, was rejected May 15 by the streets and sidewalks committee of the City Council. The Lorain Street Railway offered the Council a 7-cent rate for one year and a 10-cent rate for the next five years. The present city fare is 5 cents.

The Council committee has proposed a 7-cent rate for five years but railway officials will not consider it, according to F. W. Coen, head of the Lake Shore Electric Railway.

Electric Railway Issue of "Safety"

The March-April, 1928, number of *Safety*, published by the American Museum of Safety, is the electric railway issue, containing a full discussion of the Anthony N. Brady awards. The issue contains 64 pages, with 30 illustrations.

Savannah Appeal Unopposed

An appeal by the Savannah Electric & Power Company, Savannah, Ga., for increased fares was heard unopposed recently by the Georgia Public Service Commission. The company asked for a straight 10-cent cash fare unit instead of the 7-cent fare now in effect and proposed to sell six tickets for 50 cents; twenty school tickets for \$1 and 24 children's tickets for \$1. The school tickets would be available only during school hours, while the children's tickets

would be used only by children between the ages of six and twelve, inclusive. The present zone system of fares would be retained under the new schedule, while transfer would continue to be universal.

Officials of the company stated that the present 7-cent fare, established in 1920, does not yield a fair return on the investment and that a deficit of \$1,765,701 had been accumulated during the period between 1921 and 1927.

"Let's Go" in Louisville

"Let's Go!" a six-page magazine published "Each Week for Everybody" by the Louisville Railway, Louisville, Ky., made its initial appearance with a Derby Day edition containing special information about the Derby, together with the schedule of railway service for Derby Day. Copies were distributed on the city cars and several thousand copies were sent to railroad stations and hotels and to the Louisville Convention and Publicity League for distribution to Derby Day visitors. The new publication has as its purpose the entertaining and information of the street car riding public.

A Philosopher on the Interurban

PROGRESS does not always mean a net gain for every one.

Here is one effect of the automobile on my habits and convenience: For three years I was able to travel to and from my office and my farm in an interurban street car. I always had a seat and the roadbed was so smooth that I could read newspapers, magazines and books. In the two hours I spent on the car each day I was able to go through a vast amount of print.

Former patrons of the line drove to work in their own automobiles in increasing numbers each year. Then a bus line came into competition with the electric line. The income of the railway company was deduced to the vanishing point, and the line was discontinued.

The buses are dirty and riding in them is tortuous, so I am now compelled to drive. Traffic is so congested at the hours I am on the road that I have to give my entire attention to the task. I lose two hours of reading six days a week, and two hours of hard work are added to my day's grind. Further, the cost of transportation is at least \$1.25 more each day and this covers only parking, gasoline, tires and oil.

Private cars, buses and electric railways are all admirable accessories to civilization, but until each has finally found its proper place some of us are actually worse off than we were twenty years ago.—William Feather in the *Philadelphia Public Ledger*.

Wage Plea in Fort Wayne Denied

Operators of the Indiana Service Corporation at Fort Wayne, Ind., have lost their plea for increased wages by action of the Public Service Commission in deciding the wage dispute in favor of the company. Members of the commission said they felt the employees were entitled to more pay, but had found that the company's earnings would not permit an increase now. The attitude of the employees and company in submitting the dispute to the commission for arbitration was commended by the commission. Employees wanted the scale of 41 cents to 50 cents an hour increased to 65 to 70 cents an hour.

Portland's Advertisements in Folder Form

Into a saddle-stitched folder 19x24 in. thirteen transportation problems as advertised in the newspapers of Portland, Ore., by the Portland Electric Power Company, are reproduced from a series dealing with the daily mass transportation of the city. From copy institutional in aim the succeeding messages cover the bus developments by the company, its safety record, "services" by the salesmen and arguments for the trolley versus the private car. The advertisements are in the nature of a justification for the faith of the 250,000 people who rely on the Portland Electric Power Company to take them to their destinations daily.

Board of Control Suggested at Kansas City, Kan.

An ordinance creating a board of control, to be composed of the entire board of city commissioners of Kansas City, Kan., and to have supervision of all street car and bus transportation within the city, has been prepared by the legal department at the request of Commissioner F. LeRoy Cooke.

It provides the board be empowered to make and enforce orders for necessary extensions and additions to the railway system and that the Kansas City Public Service Company be prohibited from making any changes without the consent of the board.

Powell C. Groner, president of the company, has pointed out that the company has no franchise and that it must route its cars so far as possible to comply with the transportation needs of the greatest number of riders.

Perpetual Franchise Hearing in Denver Set

The city of Denver, Col., through its attorney, Thomas H. Gibson, appeared before the United States Supreme Court on May 11 and asked that its case against the Denver Tramway, locked with the Supreme Court on appeal, be put over. The court then named July 9 as the date for hearing the plea against lower court's ruling sustaining the claim of the railway to a perpetual franchise.

Recommends Adoption of Rerouting Plan in Seattle

Immediate adoption of the rerouting plan proposed nearly two years ago by Clark R. Jackson, superintendent of public utilities, has been recommended by the Seattle Municipal Railway committee of the Municipal League, after a study of the railway system in Seattle, Wash., extending over several months. The Jackson plan calls for turning at Pike Street of Broadway, Eastlake and other cars from the north and east, which now make the Jackson Street loop. The committee declares that savings ranging between \$300,000 and \$400,000 annually could be effected by following this plan. When it was originally presented to Mayor Bertha K. Landes the plan was shelved after bitter opposition had been voiced by property owners in the older downtown section of the city.

D. W. Henderson, superintendent of railways, is opposed to the plan, which resulted, he said, when it was partly attempted two years ago, in a loss of revenue, although there was a saving in expenses.

The report outlines among the advantages of the Jackson line, the following: Fewer car hours; saving time of cars, men and power; release of many cars so that they could be made over into one-man cars, and shorter runs.

The Jackson plan of reducing service on First, Second and Third Avenues has been approved in principle by the Peter Witt report and by the report made by a representative of the Westinghouse Company, the committee adds. In view of the general approval given the plan, and the immediate needs of the system the committee recommends that the rerouting be put in effect in advance of such other changes as may be recommended later.

Bus Co-ordination in Florence

Four bus lines are now in operation by the municipal street railway system of Florence, Italy. These lines extend through those zones where tram lines do not reach. Gasoline buses formerly were used but the motive power has now been changed to current from storage batteries.

Electric Railways in Japan

The Imperial Government Railways of Japan spent approximately 12,016,119 yen (the yen is about 47 cents) for electrical equipment during 1927, by improving electric railway lines, extending generating facilities and building electric substations, according to a recent report. During the year, twelve locomotives and 89 tram cars were purchased from foreign countries.

There are 230 privately owned railways in Japan, comprising 2,917 miles. These railways are classified as follows: Steam, 1,317 miles; electric, 1,497 miles; steam and electric, 73 miles, gasoline, 30 miles.

Foreign News

Street Car Wins in Colombia

Narrow streets, rough pavements, public safety, and cost of installation were the factors which caused the Empresas Publicas Municipales, Medellin, Colombia, to decide to retain and improve the street railway system instead of substituting trackless trolleys.

The streets of Medellin are very narrow and are paved with rounded stones laid on top of the tamped earth. The Empresas, after due consideration of both methods of transportation, felt that its passengers would be more comfortable in street cars and also that, because of the narrow streets, a trolley confined to a given lane would be less dangerous to public life and property than the trackless trolleys.

The present street railway system of Medellin consists of eight lines, with two more projected, and its rolling stock consists of 34 Birney type safety cars with eight more on order. Within a year it is expected to increase the equipment to about 50 cars.

Railway Electrification in Silesia

Electrical operation has recently been started on the Breslau-Konigsvelt line, thus connecting the Silesian mountain railway, Gorlitz - Laban - Hirschberg-Konigsvelt, to the provincial capital and completing the electrification of this system. The conversion started in 1911, but the work on the first portions could not be finished before the end of the war and on account of great difficulties had to be continued on small sections, each of which was eventually opened for public service. The completion of this electrification makes the Silesian railway system, which is 351 km. in total length, second in Germany

to the Bavarian system only, both as to length and importance. It controls the main share of the tourist traffic in the Iser and Riesengebirge mountains as well as the Glatz mountain district of Silesia, and also provides for the extensive coal transport from the Lower Silesian colliery district.

Current for operating the railway system is derived from the Mittelsteine, county of Glatz, central station, owned by the state railway, where coal obtained in connection with clay working is used as fuel, at half the cost of ordinary locomotive coal. The current thus generated is supplied at a tension of 80,000 volts to various converter stations, where it is stepped down to 15,000 volts.

New Cars for Edinburgh

Expenditure of £31,000 for the purchase of new rolling stock has been approved by the Tramways Committee of Edinburgh, Scotland. Twelve new cars will be purchased soon, at an estimated cost of £1,800 each. The additional cars are required to meet increased traffic which is expected as a result of a substantial reduction in fares.

Bus Development in Germany

The German Post Office Department is one of the largest operators of motor buses in Germany. While the primary function of the department is to carry mail and packages, it finds there is economy in purchasing motor vehicles which can also transport passengers. On April 1, 1927, it had 1,504 bus routes in operation over a total length of 16,650 miles. The number of passengers carried during the first eleven months in 1926 was 23,100,000.

New Electric Railway Completed in Spain

Between Puertollano and Conquista, Spain, a new electric narrow-gage railway, 34 miles long, has been completed recently by the Sociedad Minera Penarroja. It forms an extension of the existing line between Penarroja and Puertollano, and is mainly intended for freight transport. Power is supplied from the steam-operated generating stations belonging to the company at Penarroja and Puertollano.

New Traffic Scheme for Manchester

Plans for the improvement of rapid passenger transit facilities in Manchester, England, and regions beyond, are being considered by the municipal authorities. Henry Mattinson, general manager and engineer of the Corporation Tramways, has suggested two comparatively short underground railways crossing the city at right angles, with an interchange station at the point of their intersection in the center of the city, and with interchange stations at all the main-line railway terminals. At their suburban ends these underground lines would come to the surface and form physical junctions with the existing steam suburban railways. To insure through running the suburban railways would have to be electrified.

Buses to Be Installed in Norway

Street car lines are to be gradually replaced by bus lines in Bergen, the second largest city in Norway, according to a recent decision of the Board of Aldermen of that city. Bergen has a population of about 100,000.

Recent Bus Developments

Trolley Bus Application Made in Salt Lake City

The City Commission of Salt Lake City, Utah, has granted an amended franchise to the Utah Light & Traction Company which permits the operation of trolley buses over all its existing lines within the city. Application has been filed by the company with the Public Utilities Commission of Utah for permission to operate trolley buses specifically over what is known as its Fourth East car line.

If this permission is granted ten buses will be ordered, and it is anticipated that operation on this line will commence about July 15. The trolley buses on this line will be operated on Main Street from North Temple or South Temple to Seventh South Street, east to Fourth East Street, and south 21st South Street, in accordance with the franchise.

The proposed route is about 4 miles long and serves a district that is well built up. The new line is to be so routed that cars over it will traverse the heart of the business district to the State Capitol.

Cleveland Suburb to Have Buses

Authorization was given by the City Council of Cleveland, Ohio, recently for the Cleveland Railway to operate three coach lines in Rocky River village, a suburb 8 miles from the center of Cleveland and separated from Cleveland by the city of Lakewood. The original ordinance drawn in the Council specified a 10-cent fare with free transfers to city car lines in Lakewood. Street Railway Commissioner C. M. Ballou pointed out that this would simply add to the losses on the Lakewood lines. Accordingly the ordinance was amended to permit transfers between the bus lines but not between the buses and street cars.

At present no buses are available, but the company next month will have twelve which are now used in chartered school service.

Property in South Bend Sold

Operation of the South Bend Motor Bus Company by a group of five men, including two officials of the Chicago, South Bend & Northern Indiana Railway was taken over on May 15. The purchasers of the bus company's stock are R. R. Smith, receiver for the railway; George R. Green, general superintendent; Alfred E. Dietrich, New York City; A. L. Kitselman, Muncie, and A. H. Plumb, Emporia, Kan.

Directors in the company are R. R. Smith, president and treasurer; George R. Green, vice-president and secretary, and O. A. Small.

Arrangements are being made for the

exchange of transfers between the bus and the electric railway lines.

Mr. Smith said that purchase of the bus line as individuals was based on the confidence in the future of South Bend and in the industrial expansion particularly in the western part of the city served by the bus line. The South Bend Motor Bus Company recently started service to the rapidly growing Belleville industrial district in the west part of the city.

Knoxville Company Rejects Demands of City

The City Council of Knoxville, Tenn., has passed a franchise granting the Knoxville Rapid Transit Company the right to operate nine bus lines as outlined by city planners. This ordinance must pass second reading and lie over seventeen days. The Rapid Transit

Company then will ask the state commission for its approval of the franchise.

General Cates for the Knoxville Power & Light Company, in a prepared statement, outlined his company's offer to operate buses and to stand half the cost of Kingston pike track changes. He said:

We are advised that the laws of the state prohibit unnecessary duplication of public utility operations and property, the result of which usually, if not always, comes to be borne by the consumers or patrons of the utilities.

In taking action the Council rejected Power-Light's reply to an ultimatum the Council bus committee placed before the company containing four demands: first, that the company relocate at its own expense its Kingston pike line, and maintain paving on the line after the city paved it; second, to change all other tracks as recommended in the Bartholomew transit survey; third, give free bus transfers, or vice versa; fourth, grant 5-cent fare to school children.

The company has explained at length the economic and other reasons which make it impossible for it to accede to these demands.

New Terms in Kansas City

Fares 15 cents on trunk lines under ordinance just passed. \$563,450 deficit after more than two years of operation. Company's memorandum to Council an interesting study

THE Council of Kansas City, Mo., on the night of May 21 granted a new motor coach permit to the Kansas City Public Service Company by a vote of eight to one. The plan of operation that was approved was about as first submitted. It provides for five trunk lines, one crosstown line and six feeders. The trunk line fare is increased from 10 to 15 cents, but the crosstown fare remains at 10 cents.

SERVICE GIVEN SINCE 1925

The present bus system in Kansas City was installed in the fall of 1925 in response to an apparent public demand for such facilities. Service was begun under the terms of an ordinance dated April 7, 1925, and expiring June 7, 1928. It was recognized at the time that the institution charged with the responsibility of furnishing city-wide public transportation was the logical one to supply this additional service and should be required to co-ordinate bus service with its existing facilities. It was admitted that competition was unsound and undesirable, and if bus service was to be considered, that feeder and crosstown service was an essential which could best be supplied by the railway company.

Due to the uncertainty surrounding bus transportation, a short term was specified until experience under actual operating conditions should determine what was best for the company, the car and bus riders, and the city. The

franchise provided that a seat be guaranteed every passenger and that pneumatic tires be used.

On March 30, 1928, the railway, through President Powell C. Groner, submitted to the Council a report and suggestions covering the present operation of buses and proposed rerouting and rearrangement of the system. This contained the operating figures for the two full years operation, 1926-1927, and estimates for the rearranged system based on experience and believed to be a very close forecast. Attention was called to the fact that the trend of expense will be upward, rather than downward, inasmuch as it might not be possible to renew a very favorable tire contract and that since buses have been in constant service their maintenance expense will increase.

It was suggested that on some lines night service be eliminated, and on some both night and non-rush day service to avoid expense out of all proportion to the patronage.

SERVICE ONLY WHERE LOGICAL

An effort was made in presenting the new proposal to lay out routes which would furnish service where logical or needed, and at the same time furnish revenues which would permit the system to exist. There are several places where service has been requested, but in the company's opinion these districts have not yet reached the point in population where bus service, unless on some sub-

LINES OPERATED UNDER OLD FRANCHISE

TRUNK LINE SERVICE		One Way Mileage
Route		
No. 1 Northeast line.....		5.01
No. 2 Benton-Linwood line.....		6.09
No. 3 Armour-Paseo line.....		6.60
No. 4 Warwick line.....		6.18
No. 5 Express line.....		7.15
FEEDER SERVICE		
No. 6 Blue Valley line.....		3.00
No. 7 Leeds line.....		2.57
No. 8 Thirty-ninth Street line.....		5.48
No. 9 South Troost line.....		3.00
*No. 10 Forty-third Street line.....		1.23
*No. 11 Rosedale line.....		1.40

*These two lines have only been in operation a short time, No. 11 being on a 60-day trial by agreement. Trunk lines—10-cent fare. Transfers to and from 39th Street crosstown line on payment of 5 cents. Express line—25-cent fare; 19¢-cent ticket fare good in non-rush period only. No transfers. Feeder lines—10-cent fare with transfer to street cars. Thirty-ninth Street line—10-cent fare with transfer to street cars. 5-cent transfer to intersecting bus lines.

Total number of buses owned:	
Double-deck.....	18
Large single-deck.....	40
Express buses.....	5
Small single-deck.....	6
Total.....	69
Average number of buses operated daily.....	60
Total investment in bus and garage equipment, exclusive of garages.....	\$740,981
	1922 1927

Number passenger-miles operated in Missouri, excluding Rosedales and 43rd Street lines and special sight-seeing and chartered bus service....	2,456,560	2,606,824
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sidy basis, should be considered. The company said at that time:

These suggestions are submitted on the assumption that the Council will favor a continuation of bus service and that such continuance will serve the public interests and is desired by the people of the city. However, these suggestions should not in any manner be construed as an attempt to forecast the determination by the Council or the public as to whether or not bus service is desired after expiration of the present franchise in the coming June, or to preclude a full consideration of that question.

While the suggestions have been prepared after ample study and are believed to be sound, an actual test is necessary finally to determine that question. We therefore recommend that the rearranged system be given a fair trial for a reasonable period under some form of temporary or revocable license or permit, pending final determination.

Bus service in Kansas City falls into two classifications, namely trunk line service run direct from residential sections downtown, following the general course of railway lines and serving approximately the same territory; and feeder service, which consists of feeder and crosstown lines with transfer privileges, supplying transportation to outlying and unserved sections and connecting through paralleling street car lines.

As the company saw it, the operation of buses had demonstrated:

1. That Kansas City presents operating difficulties which bus and tire manufacturers have not experienced previously and which necessarily make operation more expensive than in flat, level cities.
2. That feeder lines entail a heavier loss than anticipated and that especially in non-rush and night hours these facilities are not needed nor used.
3. That trunk lines come much nearer to paying operating expenses than do the feeder lines.

4. That trunk line bus service creates very little new business and that at least 90 per cent of such patronage is taken from the street cars.

5. That, determined by carrying capacity and lack of short riding, 47th Street is about as far south as trunk line service should be operated.

6. That trunk line service guaranteeing a seat for every passenger and with pneumatic tires cannot be furnished for a 10-cent fare, except at an actual operating loss.

OPERATING RESULTS

The entire bus system has been operated at a heavy loss since its inception. Statistics of revenue passengers and transfer passengers, together with average fare data, for both Missouri and Kansas, follow:

Year	Revenue Passengers	Transfer Passengers	Average Fare
1926.....	5,571,003	987,531	\$0.0950
1927.....	5,219,703	691,390	0.0977

Note—The above includes 396,147 revenue and 405,626 transfer passengers carried on the Argentine, Kansas City, Kan., line, which was discontinued in November, 1926.

Operating expenses, revenues and deficit for all operations both Missouri and Kansas:

to sections remote from existing facilities where the population has grown sufficiently to justify it.

4. That night service, and in some cases non-rush hour service, should not be required on feeder lines.

5. That transportation service should be supplied where there is a need for transportation and not for the purpose of business centers or real estate developments.

6. That where street car facilities exist they should be used and duplicate service not required.

7. That the new franchise or permit should be for a period not exceeding five years.

8. That bus service should be kept elastic so as to meet requirements as they arise.

The fare suggested for trunk lines was 15 cents, with free transfers from trunk lines to intersecting crosstown

street car lines north of 31st Street and a 5-cent transfer to all intersecting crosstown bus lines. For feeder lines it

DEFICIT WITHOUT INTEREST CHARGES

Year	Revenues	Operating Expenses and Taxes	Depreciation	Deficit
1926.....	\$627,356	\$788,883	\$88,154	\$249,681
1927.....	594,073	646,324	86,674	138,925

DEFICIT WITH INTEREST CHARGES

Year	Revenues	Operating Expenses Taxes—Depreciation	Interest	Deficit
1926.....	\$627,356	\$877,038	\$70,108	\$319,790
1927.....	594,073	732,999	71,278	210,204

The total bus deficit from installation to Dec. 31, 1927, was \$617,645. Note—The large reduction in operating expenses in 1927 was largely due to a favorable tire contract which expires in 1928 and which there is no assurance of renewing.

These figures are for all operations both in Kansas and Missouri, including special bus service, advertising privileges, the Argentine, Kansas City, Kan., line discontinued in November, 1926, and the 43rd Street and south Rosedale lines added in December, 1927.

The losses incurred in furnishing bus service necessarily have to be made up by the railway lines, already faced with a 17 per cent decrease in revenue since 1922, and a decrease continuing at a rate of about 5 per cent per annum.

The comparison between 1922 and 1927 shows the seriousness of the situation facing the company:

Year	Revenue Passengers Carried	Per Cent Decrease	Passenger Receipts	Per Cent Decrease	Car-Miles 1,000	Per Cent Increase Car Service
1922.....	136,076,541	.....	\$10,213,928	.....	184	.....
1927.....	113,542,693	16.56	8,484,611	16.93	214	16.3

The company suggested that these considerations were essential if a continuation of bus service at the expiration of the franchise seemed desirable:

1. That the bus system as a whole should be self-supporting.
2. That the trunk lines should be routed to give the most direct and the quickest service between the residential and business districts.
3. That feeder service should provide crosstown facilities and give transportation

was suggested that the fare continue as at present at 10-cents with free transfers to intersecting or connecting street car lines or crosstown bus lines. The fare suggested for the 39th Street crosstown was 10 cents as at present, with free transfers to intersecting or connecting railway lines and with transfers to intersecting trunk lines upon payment of 5 cents.

The opinion was advanced by the company that 15 cents was not too much for a trunk line bus ride, based upon its cost and the service rendered. All the territory in which there is trunk-line bus service is served by railway lines

and passengers have a choice of service.

It was contended by the company that transfers should not be given to or from trunk lines, except that the railway was prepared to give free transfers from trunk lines to intersecting crosstown car lines north of 31st Street. These trunk lines are in addition to existing facilities, as every district reached by them is served by car lines. They are operated to supply a demand for a high-class, seat-for-every passenger service,

and cannot meet transfer requirements. The idea was that feeder lines should feed primarily to car lines, not bus lines. Street cars are provided with sufficient capacity for all transferring passengers. There is no intent or purpose to supplant them or cripple them by taking passengers from their territory except where the fare secured makes it reasonable so to do.

The routes that were proposed were laid out to form insofar as possible to the principles outlined in the company's proposal and represented an effort to provide trunk line bus service through heavily populated territories, to supply a demand for luxury service and also by feeder and crosstown service to meet the transportation needs of the city.

ESTIMATED FINANCIAL RESULTS

The results of operation under the proposed plan were estimated for a year. On the trunk lines a 10 per cent decrease in riding was estimated as the result of an increased fare. The average revenues for the feeder lines were taken with the exception of 39th Street and South Troost, where no changes were made. Actual operating expenses were set up, based upon the present equipment and the kind to be placed upon each line.

From the foregoing it is apparent that the proposed plan will not make the bus system self supporting. This is due to the large amount of feeder mileage. It is very doubtful if for years

STATEMENT OF BUS OPERATION OF KANSAS CITY PUBLIC SERVICE COMPANY FROM INSTALLATION TO DEC. 31, 1927, MISSOURI OPERATIONS ONLY

	1925	1926	1927	Total to Dec. 31, 1927
Passenger revenue.....	\$124,742	\$570,963	\$577,483	\$1,273,189
Special bus revenue.....	751	4,601	14,102	19,455
Advertising.....			2,487	2,487
Total revenue.....	\$125,494	\$575,564	\$594,073	\$1,295,132
Maintenance and operating expense				
Way and structures.....	\$6,068	\$5,537	\$9,366	\$20,973
Equipment.....	33,195	197,908	177,340	408,444
Total maintenance.....	\$39,264	\$203,446	\$186,707	\$429,417
Conducting transportation.....	97,061	417,602	375,400	890,064
Traffic.....	4,715	4,853	4,262	13,831
General and miscellaneous.....	13,920	57,444	40,701	112,066
Injuria and damages.....	5,553	24,875	26,648	57,076
Total operating expense and maintenance.....	\$160,515	\$708,221	\$633,719	\$1,502,457
Depreciation.....	14,075	80,511	86,674	181,261
Taxes.....	2,071	12,265	12,604	26,941
Interest on investment (8 per cent of actual costs)...	8,684	52,625	59,278	120,588
Garage rental.....	3,333	12,000	12,000	27,333
Total maintenance, operating taxes and fixed charges.....	\$188,680	\$865,624	\$804,277	\$1,858,582
Deficit.....	\$63,186	\$290,059	\$210,204	\$563,450

Interest charges are based on actual cost of buses and garage equipment only, and do not include the garage building and real estate or materials and supplies in store.

illogical and unfair, and economically unsound, to require the railway patron to bear the loss of providing a preferred and more luxurious service to a comparatively small number. The demand from a considerable number for downtown transportation affording more luxury and guaranteeing a seat for every passenger should be met, but those availing themselves of such service should pay its cost. There was no equity in giving 3 per cent of the total passengers

to offset the bus losses. On that account it was suggested feeder line fares remain as at present and that trunk line fares be increased to meet the cost of the service.

BUS STILL IN ITS INFANCY

The company believes bus transportation is still in its infancy and may be considered in the experimental stage, and expressed the opinion that the grant either be in the nature of revocable permits or for a period of not more than five years. This would give sufficient stability to justify the investment and not unduly tie the hands of the city or the company. It was suggested that before any definite franchise or operating agreements are entered into, the lines proposed by the company should be put to the test of actual experience for a short time, under a temporary or revocable form of license or permit.

Since the bus is ideally adapted by its very mobility to meet the shifts in conditions and population, the company recommended that, in the working out of this problem, the company be not "strait-jacketed" by hard and fast provisions as to routes and service which might shortly become entirely out of date, but that a reasonable latitude be allowed for shifting existing lines and extending or curtailing operation as conditions from time to time justify.

ESTIMATE OF RESULTS UNDER OPERATION AS PROPOSED

No.	Miles	Revenues	Operating Expenses, Depreciation, Taxes and Interest	Profit or Deficit*
1. Linwood-Benton.....	359,557	\$147,274	\$134,491	\$12,782
2. Armour-Paseo.....	335,294	140,219	125,415	14,803
3. Warwick.....	456,553	123,451	133,582	*10,134
4. Broadway.....	399,900	108,132	119,501	*11,360
5. Chestnut.....	240,365	29,156	64,693	*35,538
6. Van Brunt.....	201,770	24,474	54,307	*29,837
7. 39th Street.....	312,060	62,755	92,997	*30,242
8. 43rd Street.....	30,690	3,722	6,747	* 3,024
9. South Troost.....	165,780	17,622	36,458	*18,835
10. Oak Street.....	98,655	11,966	26,553	*14,586
11. 63rd Street.....	92,780	11,254	20,402	* 9,148
12. South Rosedale.....	55,880	6,778	12,288	* 5,509
Total.....	2,749,284	\$686,810	\$827,438	*\$140,628

ESTIMATE OF RESULTS UNDER FULL EIGHTEEN-HOUR OPERATION

All routes.....	Miles	Revenues	Operating Expenses, Depreciation, Taxes and Interest	Profit or Deficit*
	2,911,450	\$724,246	\$902,969	*\$178,723

\$38,095 will be saved by reducing or eliminating service in the hours not used.

Compared with present operations:

	Miles
Present mileage yearly.....	2,606,824
Proposed mileage yearly.....	2,749,284
Deficit for 1927.....	\$210,204
Deficit as estimated.....	\$140,628
Deficit with eighteen-hour service on all lines.....	\$178,723

New Plans in Springfield

Plans are being made by the Springfield Street Railway, Springfield, Mass., to use buses for private parties on special trips to Boston, New York, Providence, and other points. General Manager Flanders aims to go strenuously after this type of business with the early arrival of six new buses. Co-operation with the Worcester Consolidated Street Railway's bus division in this type of service is under consideration.

The Springfield company is also arranging for bus substitution on the Bucham Bend line.

these feeders will pay operating costs, and it is certain the losses incurred in this operation will never be recouped.

In elucidating the general principles covering bus operation which it advanced, the company held that the large losses resulting from feeder lines should be met, if possible, by such profits as the trunk lines on a proper fare basis can earn. Its idea was that it was

service at the expense of the 97 per cent who use street cars. In the face of constantly declining revenues it was apparent that if the street cars were continually called upon to carry the burden of bus losses, as well as non-paying car lines, the company's resources would be drained and its credit impaired. The result would inevitably be either decreased service or an increase in fare

Financial and Corporate

Holding Company Issue Offered

Details of financing of Allied Power & Light Corporation under which Stevens & Wood-Hodenpyl, Hardy merge

Bonbright & Company, New York, is offering for subscription at \$105 a share and accrued dividends from May 15 first preferred stock, \$5 series, of no par value of the Allied Power & Light Corporation, each share of preferred being accompanied by one share of common. As noted in the *ELECTRIC RAILWAY JOURNAL* for May 12, page 785, Allied Power has contracted to acquire the business, assets and contracts of Hodenpyl, Hardy & Company, Inc., and the entire capital stock of Stevens & Wood, Inc., together with substantial stock interests in Commonwealth Power Corporation, Penn-Ohio Edison Company, Northern Ohio Power Company and other power and light systems.

The new company, either directly or through others, will act in a supervisory capacity for a number of power and light companies and will supply engineering, supervisory and financial assistance in connection with the development and operation of these companies and the construction of additions to their properties. It will take a financial interest in electric power and light and other companies through the purchase of their securities and will be prepared to supply the necessary capital and direction for the re-organization or consolidation of properties of the aforementioned character. It will also furnish engineering services and do general construction work.

The proceeds from the sale of the first preferred stock, together with the proceeds from the sale of preference stock and common stock, will be used to acquire interests previously described and for general corporate purposes.

Based on the earnings of Hodenpyl, Hardy & Company, Inc., for 1927, excluding dividends and interest received, and on the earnings of Stevens & Wood, Inc., for 1927, and adding dividends at the rates paid during the twelve months ending May 1, 1928, on stocks acquired by the corporation and interest on cash to be presently realized at the rate of 4½ per cent per annum, the annual net income after expenses and taxes is computed to be not less than \$1,500,000, or more than twice the annual dividend requirement on the 150,000 shares of first preferred stock.

This first preferred stock will be followed by 100,000 shares of preference stock, \$3 series, and 1,250,000 shares of common stock. Upon the completion of this financing the securities owned by the corporation, at present market prices, together with cash in its treasury, will amount to more than \$25,000,000.

B. C. Cobb is chairman of the board of the new company and R. P. Stevens is the president. The board of directors is composed of B. C. Cobb, J. T. Harrington, vice-president of Penn-Ohio Edison Company; Jacob Hekma, vice-president of Commonwealth Power Corporation; Alfred L. Loomis, vice-president of Bonbright & Company, Inc.; Horace S. Scarritt, vice-president of Bonbright & Company, Inc.; Ray P. Stevens, president of Allied Power & Light Corporation, and Landon K. Thorne, president of Bonbright & Company, Inc.

Stock Increase Proposed at Philadelphia

A special meeting of the stockholders of the Philadelphia Rapid Transit Company, Philadelphia, Pa., will be held on June 18 for approval or disapproval of an increase of stock.

The proposed increase amounts to \$5,000,000 preferred. City Council approved the issue on March 22, making the authorized capital \$65,000,000.

Proceeds from the sale of \$5,000,000 additional preferred will be used to relocate the Market Street subway tracks under City Hall, for a bus terminal on Locust Street and for a garage terminal near the northern end of the Broad Street subway.

Net of Detroit Municipal Lower

Net income of the Detroit Municipal Railway, Detroit, Mich., in April was \$25,225 after taxes, charges and sinking fund had been deducted, comparing with \$75,206 in April, 1927. For the first four months this year net income totaled \$346,914 against \$589,808 during a similar period the previous year.

Far from Being Moribund

THE electric railway systems in our cities remain vital necessities. They will for years to come, probably always, have a real place to fill. As the parking problem becomes more and more acute and the traffic congestion becomes greater we may expect the facilities of our street transportation systems to be subjected to an even greater strain. The tendency of an increasing number of people who work in the downtown districts to live as far as possible from the noise, the dirt and the confusion has unquestionably been a big factor in supplying traffic for the street cars. Transportation, under modern conditions, becomes all the time a more vital phase of our social and economic life. Assuredly the street car systems are far from being "moribund industries." — *Nashville Tennessean*.

Stock of Pennsylvania Company Offered

Reinhart & Bennet, New York, are offering at \$47.50 for each share, to yield 7.37 per cent, cumulative preferred stock of the Lackawanna & Wyoming Valley Railroad. The par value is \$50 per share. The company owns properties in Scranton and in Wilkesbarre, Pa., adjacent to the business centers of each city.

Another Power Property for Maryland Interurban

With the approval of the Public Service Commission the Chesapeake Bay Power Company, a subsidiary of the Washington, Baltimore & Annapolis Electric Railway, Baltimore, Md., has bought the Severna Company, which supplies current to Severna Park and other settlements in Anne Arundel County. With the acquisition of the Severna Company the Chesapeake Bay Power Company, controlling interest in which, as well as in the railroad, is now held by the Consolidated Gas, Electric Light & Power Company, Baltimore, now controls the electrical service for all of Anne Arundel County, Prince Georges County as far as Laurel and part of Montgomery County, under an agreement with the Potomac Electric Power Company, Washington, D. C.

Successor in British Columbia

As a result of the purchase of control of the British Columbia Electric Railway, Vancouver, B. C., Canada, by Holt, Gundy, Nesbitt, Thomson and Rothermere interests the name will be changed to British Columbia Power Corporation. Offering is being made in Canada and England by Wood, Gundy & Company and Nesbitt, Thomson & Company of 1,000,000 shares of class A stock of the new company at \$60 a share, with bonus of one class B share for each four shares of A purchased. Class A shares are preferred as to dividends up to \$2 a share. The directors include Sir Herbert Holt, Lord Rothermere, A. J. Nesbitt, J. H. Gundy, J. B. Woodyatt and S. Godin, Jr., representing the new interests. George Kidd of Vancouver will be president. The new company has a Canadian charter.

Segregation Before Delaware & Hudson Holders

Further progress in the plans for segregation of the activities of the Delaware & Hudson Company, New York, is indicated in the announcement that a special stockholders' meeting has been called for June 26.

The purpose of this meeting is to have stockholders authorize the board of managers, at any time not later than May 8, 1931, "to transfer to a new corporation to be organized under the railroad law of the state of New York any or all of the railroad properties

and stock of subsidiary properties, boat lines, electric railways, motor bus lines and hotels except any stock interest in any company engaged in the anthracite industry."

The consideration, it is explained, will be "in cash or in stock, bonds or other securities of the purchasing company, as the managers may approve."

Thus, the D. & H. proposal is to make

the present company a holding concern to own all stock issues of the railroad and anthracite company. By this means the railroad will obtain all legal powers of a railroad organized under the general railroad act of New York, whereas heretofore the D. & H. as a railroad has been limited to powers conferred by its charter of 1823 and subsequent amendatory acts.

More Passengers on Main Line

North Shore report for 1927 shows operating revenues increased over 1926 but Skokie Valley charges lowered net income. Freight business satisfactory

IN HIS message to the stockholders Britton I. Budd, president of the Chicago, North Shore & Milwaukee Railroad, Highwood, Ill., stated that the business of the company for the year 1927 was the largest in volume in the history of the railroad. Gross operating revenue of \$7,829,592 compares with \$7,568,361 for 1926. On this point he says:

Although the increase is not as great as was expected from the showing made in the early part of the year nevertheless there is reason for gratification in the fact that an increase was shown in a year when the general business of the country showed a falling off from that of the previous year.

The gross income after deducting operating expenses and taxes was \$1,794,405 in 1927, a decrease of \$19,886 from the previous year. The net income was \$496,044 compared with \$731,427 in 1926. These facts were also disclosed in the annual report for the year ended Dec. 31, 1927. The decrease in the net income was due to the increased fixed charges under a full year's operation of the Skokie Valley Route. In the previous year the interest charges on the capital invested in the new railroad were not charged against operation until the opening of the line in June, 1926.

Along the entire 23 miles of road new municipalities have been created or corporate limits of old-established towns and villages have been extended. Practically the entire territory adjacent to the railroad is now within the corporate limits of cities and villages. This suburban area, brought by the new line within a few minutes' ride of the business center of Chicago, embraces thousands of acres of highly desirable home sites, capable when fully settled of housing a large population. With the completion during the year of arrangements with the steam railroads for the interchange of cars, a profitable carload freight business is being developed.

At the beginning of the year passenger rates were on the basis of 3 cents a mile. After application to the Interstate Commerce Commission, authority was granted to increase interstate rates to 3.6 cents a mile in March, 1927. The intrastate rates remained at 3 cents a mile, but on a further application to the Interstate Commerce Commission an order was issued Dec. 12,

1927, directing the company to increase its intrastate rates to 3.6 cents a mile. This order was made effective on Jan. 15, 1928. The increase in interstate passenger rates placed the company in a position to participate in through inter-line passenger traffic with steam railroads. As a result arrangements were perfected through which travelers may purchase tickets at North Shore stations for any part of the United States, Canada and Mexico over any railroad.

Passenger traffic on the main line showed a substantial increase over the previous year, notwithstanding the less favorable business conditions and the fact that in the last four months the railroad had keen motor coach competition between Chicago and Milwaukee. The company carried on its main line a total of 10,865,823 revenue passengers

INCOME ACCOUNT OF CHICAGO NORTH SHORE & MILWAUKEE RAILROAD

Operating revenue:	
Passenger and special car revenue.....	\$6,008,148
Freight and express revenue.....	1,388,051
Miscellaneous revenue.....	433,392
	\$7,829,591
Operating expenses:	
Way and structures.....	\$491,629
Equipment.....	458,172
Power.....	574,469
Conducting transportation.....	2,539,792
Traffic.....	284,327
General and miscellaneous..	1,392,475
	5,740,867
Net revenue from railway operation.....	\$2,088,724
Net auxiliary operating revenue.....	68,477
Net revenues from operations.....	\$2,157,201
Taxes assignable to railway operation...	420,084
Operating income.....	\$1,737,116
Non-operating income.....	57,287
Gross income.....	\$1,794,404
Deductions from gross income.....	1,298,360
Net income.....	\$496,044
Statement of Surplus	
Surplus, Jan. 1, 1927.....	\$919,507
Add sundry adjustments, net.....	163,043
	\$1,082,551
Net income, Jan. 1 to Dec. 31, 1927.....	\$496,044
Profit on sale of real estate....	333,597
	\$829,641
Dividends paid.....	784,083
	45,558
Surplus, Dec. 31, 1927.....	\$1,128,109

in 1927, compared with 10,714,458 in 1926—a gain of 151,365. The increase was a steady growth as there were no outstanding occasions such as the Eucharistic Congress the year before. The total number of passengers carried on all rail and motor coach lines was 19,161,925, compared with 19,461,426 the previous year. The decrease of

Conspectus of Indexes for May, 1928

Compiled for Publication in ELECTRIC RAILWAY JOURNAL by

ALBERT S. RICHEY

Electric Railway Engineer, Worcester, Mass.

	Latest	Month Ago	Year Ago	Since War	
				High	Low
Street Railway Fares*	May 1928 7.62	April 1928 7.61	May 1927 7.44	May 1923 7.62	May 1923 6.88
Electric Railway Materials*	May 1928 140.4	April 1928 140.0	May 1927 144.2	Sept. 1920 247.5	Feb. 1928 139.5
Electric Railway Wages*	May 1928 229.2	April 1928 228.8	May 1927 227.4	Sept. 1920 232	March 1923 206.8
Am. Elec. Ry. Assn. Construction Cost (Elec. Ry.) 1913 = 100	May 1928 202.7	April 1928 201.2	May 1927 201.0	July 1920 256.4	May 1922 167.4
Eng. News-Record Construction Cost (General) 1913 = 100	May 1928 210.0	April 1928 206.4	May 1927 206.8	June 1920 273.8	March 1922 162.0
U. S. Bur. Lab. Stat. Wholesale Commodities† 1926 = 100	April 1928 97.4	March 1928 96.0	April 1927 93.7		
Bradstreet Wholesale Commodities 1913 = 9.21	May 1 1928 13.44	Apr. 1 1928 13.42	May 1 1927 12.44	Feb. 1 1920 20.87	June 1 1921 10.62
U. S. Bur. Lab. Stat. Retail Food 1913 = 100	April 1928 152.1	March 1928 151.4	April 1927 153.6	July 1920 219.2	March 1922 138.7
Nat. Ind. Conf. Bd. Cost of Living 1914 = 100	April 1928 160.8	March 1928 161.1	April 1927 163.7	July 1920 204.5	Aug. 1922 154.5
Steel Unfilled Orders (Million Tons) 1913 = 5.91	Apr. 30 1928 3.872	Mar. 31 1928 4.335	Apr. 30 1927 3.456	July 31 1920 11.118	May 31 1927 3.051
Bank Clearings Outside N. Y. City (Billions)	April 1928 19.00	March 1928 19.72	April 1927 18.55	Oct. 1925 20.47	Feb. 1921 10.43
Business Failures Number	April 1928 1712	March 1928 2007	April 1927 1659	Jan. 1924 2231	Aug. 1925 1353
Liabilities (Millions)	41.14	51.54	56.15	122.95	27.22

*The three index numbers marked with an asterisk are computed by Mr. Richey, as follows: Fares index is average street railway fare in all United States cities with a population of 50,000 or over except New York City, and weighted according to population. Street Railway Materials index is relative average price of materials (including fuel) used in street railway operation and maintenance, weighted according to average use of such materials. Wages index is relative average maximum hourly wage of motormen, conductors and operators on 136 of the largest street and inter-urban railways operated in the United States, weighted according to the number of such men employed on these roads.

†This index is changed to a base of "1926 = 100." That notation replaces the former basis of "1913 = 100." Inasmuch as the bureau has not calculated the index on this new base any further back than January, 1923, no figures are shown in this tabulation for the high and low points since the war. It is planned to compute the index on the new basis as far back as January, 1913. Until such time as the bureau makes public these figures for the earlier years this information will be lacking.

299,501 passengers on the Milwaukee and the Waukegan City Lines, and the motor coaches during the latter months of the year, is accounted for by a general slackening in industrial activities and considerable unemployment.

The company operated 13,746,370 car-miles compared with 13,485,302 the previous year and 1,299,313 bus-miles compared with 1,434,612 miles in 1926. The car-miles operated on the Milwaukee city lines were 477,615 compared with 543,207 the previous year.

FREIGHT TRAFFIC INCREASED—NEW L. C. L. METHOD

A satisfactory feature of the year's operations, was the substantial increase in the freight business. The freight and merchandise despatch business amounted to 843,000 tons, an increase of 186,000 tons over the year 1926. The increase was all in carload freight, a branch of service made possible by operation of the new Skokie Valley route.

During the year the company introduced a new method of handling less than carload freight, which is known as "ferry truck service." This service consists of a door-to-door pickup and delivery in Chicago and Milwaukee. Goods are loaded in a special steel trailer at the warehouse of the shipper and are not touched by hand until unloaded at the door of the consignee. Shipments are handled in equipment developed on the North Shore Line.

New track construction amounting to 16,500 lin. ft. was completed during the year. The new trackage mainly consists of sidetracks into industrial yards to increase facilities for handling carload freight.

CONCESSION PRIVILEGES VALUABLE

Concessions operated by the company in various stations produced a gross revenue for the year of \$586,351, compared with \$545,453 the previous year and net income of \$68,934 for the year.

The "Better Business Campaign" to enlist the interest and support of employees in procuring new business for the railroad was continued. A total of 16,654 business "tips" was received from 815 employees. These "tips" on business often result in the development of new business.

During the year the company sold \$2,500,000, three-year 5½ per cent gold notes to retire floating indebtedness and reimburse the treasury for expenditures made for additions and betterments. Equipment trust certificates to the amount of \$804,000 were sold for the purchase of fifteen steel passenger cars, two steel dining cars, one steel parlor-observation car, ten steel city cars for service on the Milwaukee City Lines, and two 65-ton combination storage battery and trolley electric locomotives. First and refunding mortgage 6 per cent gold bonds to the amount of \$156,400, and \$92,300 of first and refunding mortgage 5½ per cent gold bonds were acquired through the operation of the sinking fund. During the year \$271,000 in equipment trust certificates were retired.

Holders at Milwaukee Urged to Convert Preferred Stock

Holders of the 7 per cent preferred stock of the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., series of 1921, are being urged to exchange that stock for the 6 per cent issue of the company. There has been no formal call of the 7 per cent stock for retirement, but the holders, many of them patrons of the company, are being reminded that the stock is callable on 30 day's notice on any dividend date at 105 and dividend. The point is made that the 6 per cent issue is not callable except at \$110 a share.

As part of the program of keeping stockholders informed about its affairs, the company has recently reprinted for distribution among them the series of articles "Service First Is Milwaukee's Transportation Slogan," contributed to the issues of the *ELECTRIC RAILWAY JOURNAL* for Feb. 25 and March 3, 1928, by Charles Gordon, the editor.

Drop in Receipts in Kansas City

Electric railway and bus receipts for the Kansas City Public Service Company, Kansas City, Mo., for the period between Jan. 1 and May 6 were \$139,034 less than the receipts for the corresponding period of last year. There was a decrease of 1,444,606 in street car passengers in that period, and an increase of 92,585 in bus passengers. Total business decreased 4.26 per cent.

Value of Trolleys Written Down by Delaware & Hudson

According to the *Wall Street Journal* the Delaware & Hudson Company wrote down the book value of investments in stock of affiliated companies approximately \$7,000,000. This is largely due to a reduction in book value of stock of United Traction Company, Albany, N. Y., from \$12,499,600 to \$7,499,600 and a reduction in book value of stock of the Schenectady Railway from \$2,050,000 to \$1. These adjustments were concurrently debited to profit and loss.

The Delaware & Hudson Company and New York State Railways, controlled by the New York Central, own equally the 41,000 shares of Schenectady Railway common stock. United Traction Company's stock, consisting of 125,000 shares, is owned entirely by the Delaware & Hudson. This company controls the Hudson Valley Railway.

Increased Valuation of Peoples Company in Indianapolis

The Indiana board of tax commissioners has increased by \$86,000 the valuation of the Peoples Motor Coach Company, Indianapolis, Ind., a subsidiary of the Indianapolis Street Railway. Its valuation has been fixed at \$200,000 for tax purposes for 1928. The increase was made in spite of a representation by the railway officials that the

value of the company's plant, less depreciation from original cost at the rate of 30 per cent a year on bus equipment, was barely \$72,300. When the railway officials were seeking to buy the coach company for \$500,000 some months ago, experts testified before the commission for the company that a 15 per cent annual depreciation charge was adequate and finally gained commission and court approval to make the purchase. The Peoples Motor Coach Company reported a net income of approximately \$14,000 for 1927, about \$50,000 lower than the railway officials anticipated when they made the purchase.

Action on Washington Merger Postponed

Action on the plan to merge the Capital Traction Company, the Washington Rapid Transit Company and the railway lines of the Washington Railway & Electric Company, Washington, D. C., was laid aside definitely until the next session of Congress when the Senate District committee decided on May 22 to appoint a subcommittee to go into the question during the summer.

The committee instructed Chairman Capper to prepare a resolution, to be introduced in the Senate immediately, asking for a special fund of \$10,000 with which to employ experts to assist the subcommittee in its study of the merger agreement. It was indicated that this inquiry will revolve principally around the valuation, which has been placed at \$50,000,000 in the merger agreement.

Senator James Couzens, Republican, of Michigan, is not a member of the District committee, but was invited to the meeting on May 22 at the suggestion of Senator Vandenberg, because of the experience he had as Mayor of Detroit in dealing with electric railway problems.

The merger resolution, authorizing the railways to consolidate in accordance with the terms of the agreement worked out, was reported favorably by the House District committee more than a week ago.

\$129,754 Net in Buffalo for Quarter

A substantial improvement was made by the International Railway, Buffalo, N. Y., for the three months ended March 31. Operating revenue was \$2,804,621 compared with \$2,706,384 for a similar period last year. This improvement, with a decrease of \$147,000 in operation and taxes and an increase of more than \$7,000 in non-operating income, brought the gross income to \$489,782. After deduction of fixed charges there remains a net income of \$129,754 compared with a deficit of \$123,167 over a similar period in 1927.

The consolidated statement bears a footnote that the 1927 figures include an amortization charge of \$83,182. With the approval of the Public Service Commission this charge has been discontinued, effective Jan. 1, 1928.

Personal Items

W. H. Burke President of Southwestern Association

W. H. Burke, district manager of the Stone & Webster properties in the Southwestern district, was elected president of the Southwestern Public Service Association at the meeting in Dallas May 2 to May 5. In Texas, Louisiana, New Mexico and Mexico Mr. Burke is well known. In 1925 he was appointed manager of the Northern Texas Traction Company of Fort Worth and the Tarrant County Traction Company. Previous to that connection he had been with the Houghton County Traction Company. He has been identified with the Stone & Webster organization for many years, entering the statistical department of



W. H. Burke

the Boston office in 1910. Later he served in Dallas.

For a while he left Stone & Webster management to go to Milwaukee and assume the position of manager of the light and power operations of the Milwaukee Electric Railway & Light Company. In 1915 he was back in the Boston office of Stone & Webster as assistant to M. M. Phinney, who was vice-president of Stone & Webster Management Association. His next move was to Keokuk, Iowa, with the Stone & Webster organization.

Mr. Burke was born in Maine. He was graduated from the University of Maine in 1906. After his graduation he spent about two years with various companies in New York and Pennsylvania on power house and substation operation and maintenance.

C. C. Phares in New Post at Akron

C. C. Phares, formerly foreman at the Brittain carhouse of the Akron property, has just been appointed to the superintendency of the Akron garages of the Northern Ohio Power & Light Company.

Mr. Phares was born at Gilman, W. Va. After he left school Mr. Phares was in the lumber business for eight or ten years. He was a member of the 54th Artillery from Boston in the World War, and was over seas for six months. When he returned to Akron he entered the employ of the International Harvester Company, and served that company more than nine years as a foreman.

For two years prior to his recent appointment he was in charge of maintenance for the Zeno Transportation Company, now included in the system of the Northern Ohio Power & Light Company.

P. J. Farrell Named to I.C.C.

President Coolidge has sent to the Senate for approval the name of Patrick J. Farrell for appointment to the Interstate Commerce Commission. The nomination is regarded as being based on his long and successful service with the commission. Mr. Farrell has been arguing cases before the Supreme Court for the commission for twenty years.

Mr. Farrell was born in Stanstead, Quebec, in 1861. He received his formal education at Wells River and Newport, Vt., but private study was his chief means of advancement. In 1880 he was a clerk for the Connecticut & Passumpsic River Railroad at Newport, Vt., later filling the positions of train dispatcher, station agent and passenger train conductor for the road. He began to study law in 1884 and was admitted to the bar and became a railway postal clerk in 1887. He resigned as chief clerk of the Railway Mail Service with headquarters at Boston in 1889 and formed a law partnership with C. A. Prouty, who later became an Interstate Commerce Commissioner.

Mr. Farrell became treasurer of the Orleans Trust Company when it was organized at Newport in 1891. He was the commission's first chief examiner and as head of the law division held the office of solicitor for several years. He was appointed chief counsel in charge of all legal matters, including those of the Bureau of Valuation, in 1918.

Mr. Farrell would succeed John J. Esch, now serving under a recess appointment.

PATRICK H. MOYNIHAN, since 1921 a member of the Illinois Commerce Commission, was appointed chairman of that body May 10 by Governor Len Small, succeeding David H. Jackson, who resigned April 25 at the request of the state executive.

RAY BAUMGARDNER has become director of public information for the Central and Southwest Public Utilities Company. In this work he succeeds the late George McQuaid.

J. P. Griffin Honored by Southwestern Association

James P. Griffin, vice-president in charge of all operations, Texas Electric Railway, Dallas, Tex., was elected chairman of the railway section of the Southwestern Public Service Association and vice-president of the association itself at the meeting in Dallas May 2—5. Mr. Griffin went to Dallas 23 years ago with J. F. Strickland as secretary of the Texas Traction Company, then engaged in building an interurban from Dallas to Sherman. The line was put in operation in 1908 and Mr. Griffin served as secretary, general passenger agent and auditor. Four years later he became secretary of the Southern Traction Company, then building the interurban line from Dallas to Waco and Dallas to Corsicana. When these lines were put in operation in October, 1913, Mr. Griffin also served as general passenger agent. Upon the consolidation of the Texas Traction Company and the



James P. Griffin

Southern Traction Company, under the name of the Texas Electric Railway in 1917, Mr. Griffin was elected secretary and general passenger agent, and in 1923 he was elected vice-president. Effective July 1, 1926, he was given the title of active vice-president in charge of all operations. This change became operative upon the resignation of Burr Martin, vice-president and general manager because of ill health.

Mr. Griffin was born at Waxahachie, Tex., in 1881. He was graduated from the high school there in 1900 and took special work at the University of Texas in 1903. His first railway experience was at Waxahachie in the general freight and passenger office of a subsidiary of the Southern Pacific.

THOMAS STANION, who was in charge of public relations with the St. Louis Public Service Company, St. Louis, Mo., has resigned to accept a position with the sales department of the Mutual Benefit Life Insurance Company, New York City. He will be located at 225 Broadway. Mr. Stanion has been associated with the St. Louis utility since the company was formed as the successor to the United Railways.

Men Promoted at Providence Long with Property

R. Roscoe Anderson, Joseph A. Lockhart and James A. Hackett have taken on their new duties with the United Electric Railways, Providence, R. I. The announcement of their appointments was referred to in *ELECTRIC RAILWAY JOURNAL*, issue of April 28, 1928.

Mr. Anderson, who has been promoted to the post of general superintendent of operations, has been superintendent of transportation since 1907. At that time he succeeded Samuel Riddell, who was made general manager of the Chicago, South Bend & Northern Indiana Traction Company. Mr. Anderson entered the service of the Rhode Island Company in 1894 as a clerk, reporting to A. T. Potter, who at that time was general manager of the company but later became vice-president. When Mr. Potter became vice-president Mr. Anderson became chief clerk in the office of the superintendent of transportation. Mr. Anderson was born in Utica, N. Y., 55 years ago. He has lived in Providence practically all his life.

Joseph A. Lockhart, who has taken on the duties of assistant superintendent of transportation, has been an employee of the United Electric Railways for about 23 years. Early in his career he was in charge of the North Main Street carhouse and during the first years of his employment worked in various capacities. Twenty-one years ago he was assigned to the claim department and for fifteen years was assistant to Charles E. Redfern, general claim agent. Before he went to Providence he was division superintendent of the Newport-Fall River Street Railway under E. P. Shaw. This was a small company but Mr. Lockhart's duties were many. In addition to his managerial work he was purchasing agent, had charge of the power station, the track work and the line repairs, the employees of these divisions being subject to his direction.

Mr. Hackett, who becomes supervisor of traffic, has been employed by the United Electric Railways for 39 years, working during that period of time as hill boy, horse-car driver, motorman, inspector, chief inspector and supervisor of traffic. Mr. Hackett has lived in Providence all his life. He was born there on June 13, 1873.

Obituary

ERNEST HATTON, who retired two years ago from the post of general manager and engineer of the Newcastle-on-Tyne Corporation Tramways after 21-years' service, died on April 26. He had rendered notable services in regard to extension of the Newcastle tramways in the starting and carrying on of the large municipal bus undertaking. At one time he took a prominent part in the two British tramway associations' proceedings.

Manufactures and the Markets

A.E.R.A. Exhibit Committee Makes Space Assignments

SPACE was assigned at the meeting in Cleveland, May 16, by the exhibit committee of the American Electric Railway Association to 176 exhibitors for the 47th Annual Convention which will take place in that city, September 22nd to 28th inclusive. An assignment of 102,170 net square feet of space was disposed of, this exclusive of any track space for the display of street cars. The space demand has exceeded all expectations, according to Fred C. J. Dell, director of exhibits.

"The exhibit of the American Electric Railway Association has grown in size each year. Likewise has the association added to its membership roster and convention registration," said Mr. Dell, in commenting on the recent meeting.

A list of the manufacturer member companies which will exhibit, together with the spaces to be occupied follows:

Name	Booth No.
Adams & Westlake Company	604
Ahlberg Bearing Company	605 and 606
Aluminum Company of America	141
American Brake Materials Corporation	277
American Brake Shoe & Foundry company	249
American Brass Company	1 of 205
American Car & Foundry Company	1 of 120
American Car & Foundry Motors Company	618 to 623
American Crucible Products Company	310
American Steel & Wire Company	206
Anacosta Copper Mining Company	1 of 205
Anderson Brake Adjuster Company	232
Areo Company	498 and 499
Art Rattan Works	404
Association of Manufacturers of Chilled Car Wheels	210A
Baldwin Locomotive Works	208A
Beeder Body Company	600 to 603 inclusive
Bendix Brake Company	407
Bethlehem Steel Company	283 to 289 inclusive
Binks Spray Equipment Company	425 and 427
Robert Bosch Magneto Company	617
Bragg-Kliesrath Corporation	406
J. G. Brill Company	1 of 120
Brown-Lipe Gear Company	437
Budd Wheel Company	480
Bus Age	520
Bus Transportation	102
C. G. Spring & Bumper Company	513 and 514
Canadian Cleveland Fare Box Company	665
Philip Carey Company	258 and 260
L. C. Chase & Company	405
Cheatham Electric Switching Device Company	263
Chillingworth Manufacturing Company	616
Chilton Case Journal Company	502
Christensen Air Brake Company	423
Clark Equipment Company	607
Cleveland Fare Box Company	664
Cleveland Frog & Crossing Company	278-279-280
Cleveland Pneumatic Tool Company	452
Collier, Barron G., Inc.	104
Collier Construction Company	311
Consolidated Car Heating Company	118 and 119
Continental Motors Corporation	497
Cowdrey Brake Tester Organization	1 of 663
Crew Levick Company	492
Curtin Howe Corporation	225
Dayton Mechanical Tie Company	257 and 259
De Luxe Products Corporation	454
DeVilbiss Company	500
C. L. Downey Company	666
Eagle-Ottawa Leather Company	1 of 501
C. I. Earll	615
Eberhard Manufacturing Company	627
Eclipse Railway Supply Company	248
Eetnomy Electric Devices Company	Porton of 116

O. M. Edwards Company	671
Electric Railway Improvement Co.	330 and 331
ELECTRIC RAILWAY JOURNAL	101
Electric Service Supplies Company	202 and 203
Electric Traction	103
Erie Malleable Iron Company	625
Federal-Mogul Corporation	519
Feralite Corporation	629
Ferodo & Asbestos, Inc.	421
FitzJohn Manufacturing Company	402 and 403
Four-Way Lock Company	668
Fuller & Sons Manufacturing Co.	424
General Electric Company	113
General Motors Truck Company	412-413-414-415-416-417-418-419
A. Gilbert & Sons Brass Company	679
Glidden Company	449 and 451
Globe Ticket Company	233
W. S. Godwin Company	125
Gold Car Heating & Lighting Co.	234
Graham Brothers	420
Gramm Motors, Inc.	659
Griffin Wheel Company	106
Guide Motor Lamp Company	685
Hale & Kilburn Company	215-216-217
Hannum Manufacturing Company	631
Haskelite Manufacturing Company	401
Hercules Motors Corporation	495
Heywood-Wakefield Company	206A
Hunt-Spiller Manufacturing Co.	408
Hlyatt Roller Bearing Company	633 and 635
Hlynson Westcott & Dunning	332 and 333
Illinois Motive Equipment Co.	121
International Motor Company	440-442-444
International Register Company	127
International Steel Tie Company	300 to 309, inclusive
Irving Iron Works Company	684
Johns-Manville Corporation	411
Johnson Fare Box Company	652
R. F. Johnston Paint Company	123 and 124
Kelton Aurand Manufacturing Co.	426
Lang Body Company	447
Leece-Neville Company	1 of 624
Lorain Steel Company	207 and 208
MacDonald Manufacturing Company	681 and 682
Mack-International Motor Truck Corporation	441-443-445
Mack Motor Truck Company	446
Mack Trucks, Inc.	439
Malleable Screw Products Company	335
Manganese Steel Forge Company	295
Martindale Electric Company	312
Massillon Steel Casting Company	489
Jas. H. Matthews & Company	667
McGill Metal Company	409
Metal & Thermit Corporation	324 to 329, inclusive
Money-Meters, Inc.	122
Nachod & U. S. Signal Co., Inc.	262
National Brake Company, Inc.	610
National Carbon Company	226 and 228
National Cash Register Company	611 and 612
National Malleable & Steel Castings	465
National Pneumatic Company	107-109-111
National Railway Appliance Company	Portion of 117
New Departure Manufacturing Co.	1 of 624
Nichols-Lintern Company	672
Norma-Hoffmann Bearings Corporation	613-614
North East Electric Company	608 and 609
R. D. Nuttall Company	110
Ohio Brass Company	115
Ohmer Fare Register Company	250 to 256, inclusive
Oil Jack Company, Inc.	410
Okonits Callender Cable Company	1 of 219
Okonits Company	1 of 219
Pantasote Company, Inc.	204
Percy Manufacturing Company	223 and 224
Radel Leather Manufacturing Co.	670
Rail Joint Company	209
Railway Age	464
Railway Materials Corporation	291 and 293
Railway Purchases and Stores	669
Railway Track-Work Company	320 to 323, inclusive
Railway Utility Company	313 and 314
H. H. Roberto Company	296

Root Spring Scraper Company.....	315
Ross Gear and Tool Company.....	626
Russell Manufacturing Company.....	429
S K F Industries, Inc.....	218
St. Louis Car Company.....	105
Safety Car Devices Company.....	1 of 108
Safety Equipment Service Company.....	637
Saf-T-Cab Corporation.....	422 and 448
Battley Company.....	126
Peter Smith Heater Company.....	338
Snap-On Wrench Company.....	428
South Bend Lathe Works.....	453 and 455
Standard Steel Works Company.....	207A
Standard Underground Cable Co.....	290
Studebaker Corporation of America.....	474-475-476
Swartwout Company.....	264-266
Texas Company.....	128 and 130
Timken-Detroit Axle Company.....	400
Timken Roller Bearing Company.....	482 and 484
Tool Steel Gear & Pinion Company.....	Portion of 116
Tuco Products Company.....	644
Twin Coach Corporation.....	466 to 473, inclusive
Una Welding & Bending Company.....	336 and 337
Union Metal Manufacturing Co.....	651
Universal Lubricating Company.....	292 and 294
Van Dorn Coupler Company.....	261
Versare Corporation.....	660
Walter Motor Truck Company.....	1 of 663
Waukeaha Motor Company.....	493
Westinghouse Companies.....	114
Westinghouse Electric & Manufacturing Company.....	112
Westinghouse Traction Brake Co.....	1 of 108
William Wharton, Jr., & Company.....	222
Wheel Truing Brake Shoe Company.....	282
White Company.....	653 to 658
Willard Storage Battery Company.....	639
Wilson Imperial Company.....	129
Alan Wood Iron and Steel Company.....	1 of 501
Zenith Detroit Corporation.....	628

The following member companies have made application for track space upon which cars will be shown.

- Cincinnati Car Company
- Cleveland Southwestern Railway & Light Co.
- Illinois Traction System
- St. Louis Car Company

Rubber Institute Organized

Manufacturers of rubber goods in America will be placed on a sound economic basis and the present financial stringency within the industry will be removed if the Rubber Institute, organized in New York City on May 23 by a group of leading manufacturers, achieves its purpose. Gen. Lincoln C. Andrews, former Assistant Secretary of the Treasury in charge of prohibition, will be director general, and every rubber manufacturer in the country has been invited to become a member.

The institute will attempt, it is said, to eliminate overproduction. It will make a study of import laws on crude rubber and trading methods. It also will study scientific manufacturing methods and the means of eliminating waste.

General Andrews is well known among electric railway men. He has been receiver of the New York & Queens County Railway, Long Island City, since 1923. For two years previous he was chief executive officer of the New York Transit Commission. In 1925 he was made assistant secretary of the United States Treasury, succeeding Eliot Washworth, Boston, resigned.

Final Specifications Twin City Cars

Information received subsequent to the publication of specifications on the 25 new cars for the Twin City Rapid Transit Company in the March 31, 1928,

issue of the JOURNAL indicates several revisions of the previously published specifications. The cars are single-end and are equipped with four GE-258K motors. The total weight is 28,038 lb. and is divided: Body 12,100 lb.; trucks, 8,200 lb.; equipment, 7,738 lb. The door engines are furnished by Consolidated Car Heating Company.

Oklahoma Improvements Under Way

Oklahoma Railway, Oklahoma City, Okla., is expending about \$14,000 in improvements on its Seventeenth Street station. Work on its industrial freight line, details of which were given in the March 10 issue of the JOURNAL, to cost approximately \$1,250,000, is progressing rapidly. Construction of a new bus building and shops, south of Exchange Avenue, will be started soon.

Japan Railway to Improve

Japanese Government Railways, Tokyo, Japan, will expend \$85,195,500 during 1928 on railway improvements, including electrification, improvement of stations, installation of heavier rails and work on tunnels. About \$25,780,000 will be spent on the construction of new railway lines.

Twenty-five Articulated Cars for Cleveland

Cleveland Railway, Cleveland, Ohio, will receive in June 25 articulated, three-truck, city-type cars now being built by the G. C. Kuhlman Car Company, Cleveland, Ohio. The cars are for two-man, single-end operation and seat 104 passengers. They are 101 ft. long, 8 ft. 4½ in. wide and weigh 76,080 lb.

The bodies are of the all-steel type with arch roofs. They are finished with an orange and cream color scheme. The interior trim is mahogany and the seating material is leather. The motor resistances are utilized for heating the front section in addition to the standard heating units. Complete specifications are given below.

Weights:	
Car body.....	42,210 lb.
Trucks.....	19,620 lb.
Equipment.....	14,250 lb.
Total.....	76,080 lb.
Bolster centers..... 37 ft. 6 in.	
Length over all.....	101 ft.
Length over body posts.....	88 ft. 2½ in.
Truck wheelbase.....	6 ft. 1 in.
Width over all.....	8 ft. 4½ in.
Height, rail to trolley base.....	10 ft. 10½ in.
Window post spacing.....	29½ in.
Doors.....	Center and end
Air Brakes.....	Westinghouse Traction Brake Company
Armature bearings.....	Plain
Axles.....	Brill
Car signal system.....	Consolidated Car Heating Company
Compressors.....	Westinghouse DH-25
Conduit.....	Duratube
Control.....	HL
Curtain fixtures.....	National Lock Washer Company
Curtain material.....	Fabrikoid
Destination signs.....	Hunter
Door mechanism, Consolidated Car Heating Company	
Doors.....	Folding and sliding
Energy saving device.....	Economy meter
Fare boxes.....	Cleveland
Finish.....	G.M.F.
Floor covering.....	Kass treads in aisles
Gears and pinions.....	Nuttall helical
Glass.....	Protex

Hand brakes.....	Peacock staffless
Heaters, Consolidated Car Heating Company, electric	
Headlights.....	Golden Glow
Headlining.....	Aganote
Interior trim.....	Mahogany
Journal bearings.....	Timken roller
Journal boxes.....	Brill
Lamp fixtures, Dome—Graybar Electric Company	
Motors.....	Six Westinghouse 340-P, inside hung
Painting scheme.....	Orange and cream
Roof material.....	Poplar, canvas covered
Safety devices.....	Safety Car Devices Company
Sash fixtures.....	National Lock Washer Company
Seats.....	Hale-Kilburn
Seat spacing.....	29½ in.
Seating material.....	Cleat leather
Slack adjusters.....	Brill
Steps.....	Stationary
Step treads.....	Kass and treadle door
Trolley catchers.....	Ohio Brass
Trolley base.....	O-B, Feist patent
Trucks wheels.....	Three Brill, 68-E-2
Ventilators.....	Nichols-Lintern, low type
Wheels, type.....	Rolled steel, 26-in. diameter
Wheelguards or fenders.....	H-B type

Osborne Re-elected Chairman of Industrial Board

National Industrial Conference Board at its twelfth annual meeting re-elected Loyal A. Osborne, president of the Westinghouse Electric International Company, as chairman of the board for the ensuing year.

Fred I. Kent, a director of the Bankers Trust Company, was re-elected treasurer of the Conference Board; and the following vice-chairman were elected: Charles Cheney, president of Cheney Brothers, South Manchester, Conn.; Irene du Pont, chairman of the finance committee of E. I. du Pont de Nemours & Company; Wilmington, Del.; Herbert F. Perkins, first vice-president of the International Harvester Company, Chicago, Ill., and George S. Harris, president of the Exposition Cotton Mills, Atlanta, Ga.

The executive committee for the ensuing year will be composed of the following: William D. Baldwin, chairman of Otis Elevator Company, A. Farwell Bemis, chairman of Bemis Brothers Bag Company, Boston, Mass.; Cornelius F. Kelley, president of Anaconda Copper Mining Company; William H. Nichols, Jr., president of General Chemical Company; as well as the officers.

Seattle Specifications Issued

Seattle Municipal Street Railway, Seattle, Wash., has issued specifications on the 100 cars to be purchased from the St. Louis Car Company, as mentioned in the April 28 issue of ELECTRIC RAILWAY JOURNAL.

The cars are to be of the one-man, two-man, single-end type. Each car will be built with straight sides, round ends, arch roof, platform floor on the same level as body floor with 3-in. ramp, open bulkheads, double sash—top sash to be stationary, lower sash to raise—and folding doors at front right and center right.

There are to be eighteen windows on one side of the car and fourteen on the other, all equipped with double sash, top sash to be one continuous length. Each set of doors is to have a 4-ft. 6-in. opening and is to be hung on pipe shaft ball bearing hinges bolted in place. The joining hinges are to be Feist self-

lubricating No. 372 on the center and 373 on the front.

The closed side of the car is to be fitted with fourteen cross seats and one longitudinal seat and the opposite side to be fitted with seven cross seats, one longitudinal seat and one folding conductor seat. The rear is to have two stationary seats and one folding seat.

Specifications for these cars are given; below:

Type of unit	One-man, two-man; motor; passenger city; single end; double truck
Number of seats	58
Bolster centers	26 ft. 2 in.
Length over all	47 ft. 0 in.
Truck wheelbase	5 ft. 4 in.
Width over all	8 ft. 8 in.
Height, rail to trolley base	12 ft. 8 in.
Window post spacing	28½ in.
Body	Semi-steel
Roof	Arch
Doors	Center and end
Air brakes	Westinghouse variable load
Car signal system	Faraday
Conduit	Duraduct
Control	K35-KK
Couplers	Drawbar
Curtain material	Pantasote, pattern X2, color 74
Destination signs	Hunter
Door mechanism	National Pneumatic
Doors	Folding, one center treadle
Energy saving device	Economy meter
Fare boxes	Johnson DM-3
Fenders	H-B life guard and company's standard
Finish	Sherwin-Williams enamel
Floor covering	Wood, aisle grooved
Gears and pinions	Tool Steel
Glass	DSAA
Heaters	Consolidated No. 303
Headlights	One O-B style Z-28645
Interior trim	Mahogany, bronze trimmings
Motors	Four Westinghouse 510-A or G-E 265
Painting scheme	Orange
Roof material	Aspheltite
Sash fixtures	Bronze
Seats	Steel
Seat spacing	28½ in.
Seating material	Leather
Trolley catches	O-B
Trolley base	U.S.-15
Trolley wheel	5 in.
Ventilators	Sixteen, small type
Wheels	Steel, 26 in. diameter

ROLLING STOCK

NORTHERN OHIO POWER & LIGHT COMPANY, Akron, Ohio, has just ordered fifteen more Twin Coaches from the Twin Coach Corporation, Kent, Ohio.

CHICAGO, SOUTH SHORE & SOUTH BEND RAILROAD, Michigan City, Ind., has ordered ten all-steel motor cars from the Standard Steel Car Company, Hammond, Ind. The cars are practically duplicates of the previous fleet put in service last summer.

CINCINNATI STREET RAILWAY, Cincinnati, Ohio, has ordered eight Twin Coaches at an approximate cost of \$90,000.

ILLINOIS CENTRAL RAILROAD, Chicago, Ill., has ordered ten suburban type motor cars and ten trailer cars from the Pullman Car & Manufacturing Company.

BRITISH COLUMBIA ELECTRIC RAILWAY, Vancouver, B. C., Canada, will be asked by the City Council to replace at least part of the present new Westminster Street car system with bus service.

CHICAGO, NORTH SHORE & MILWAUKEE RAILROAD, Chicago, Ill., has received five of the fifteen all-steel cars ordered last fall from the Pullman Car & Manufacturing Corporation.

ST. LOUIS PUBLIC SERVICE COMPANY, St. Louis, Mo., has received four urban

type Twin Coaches and has ordered two more coaches from the Twin Coach Corporation.

WINNIPEG ELECTRIC COMPANY, Winnipeg, Man., Canada, has purchased two more coaches from the Twin Coach Corporation.

CHICAGO, SOUTH SHORE & SOUTH BEND RAILROAD, Michigan City, Ind., has ordered two more 80-ton Baldwin-Westinghouse electric locomotives, to be delivered in the fall.

QUINCY STREET RAILWAY, Quincy, Ill., has been granted a permit to operate buses to Public Square and Soldiers' Home.

ILLINOIS POWER & LIGHT CORPORATION, Chicago, Ill., has purchased four 21 passenger city type Yellow buses.

BROOKLYN CITY RAILROAD, Brooklyn, N. Y., has added four White Model 50-B buses to its fleet.

TRACK AND LINE

STARK ELECTRIC RAILROAD, Alliance, Ohio, is installing an automatic signal system and new portable substations between Canton and Alliance.

PACIFIC ELECTRIC RAILWAY, Los Angeles, Cal., is co-operating with the city of Long Beach in putting through the Pacific Avenue extension. Plans for the underpass of the tracks are now being revised. The cost of the project will be about \$142,000 in which the city, the county and the Pacific Electric will share.

SHOPS AND BUILDINGS

NEW YORK, NEW HAVEN & HARTFORD RAILROAD, New Haven, Conn., has let a contract to Babor-Comeau & Company, New York, for the extension of the facilities at the Van Nest shops, New York City. The work includes a steel and brick structure 106x375 ft. and will cost approximately \$250,000.

PACIFIC ELECTRIC RAILWAY, Los Angeles, Cal., will construct new carhouses just west of Loma Vista Drive between Seventh and Anahaim Streets, Long

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

	May 22, 1928
Metals—New York	
Copper, electrolytic, cents per lb	14.275
Copper wire, cents per lb	16.5
Lead, cents per lb	6.10
Zinc, cents per lb	6.475
Tin, Straits, cents per lb	51.5
Bituminous Coal, f.o.b. Mines	
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons	4.20
Somerset mine run, f.o.b. mines, net tons	1.875
Pittsburgh mine run, Pittsburgh, net tons	1.95
Franklin, Ill., screenings, Chicago, net tons	1.65
Central, Ill., screenings, Chicago, net tons	1.575
Kansas screenings, Kansas City, net tons	2.50
Materials	
Rubber-covered wire, N. Y., No. 14, per 1,000 ft.	5.65
Weatherproof wire base, N. Y., cents per lb.	17.00
Cement, Chicago net prices, without bags	2.05
Linseed oil (5-bbl. lots) N. Y., cents per lb.	10.7
White lead in oil (100-lb. keg), N. Y., cents per lb.	13.75
Turpentine (bbl. lots), N. Y., per gal.	\$0.57

Beach, Cal. This improvement will cost about \$250,000.

TRADE NOTES

H. R. SYKES has been appointed manager of the locomotive division of the Cincinnati Car Company, Cincinnati, Ohio.

WAGNER ELECTRIC CORPORATION, St. Louis, Mo., announces that E. D. Pike, heretofore in charge of Wagner Electric Pacific Coast service operation is now manager of the San Francisco branch sales office.

MANGANESE STEEL FORGE COMPANY announces the removal of its Chicago office from the Old Colony Building to the Builders' Building, La Salle Street and Wacker Drive.

BILLINGS & SPENCER COMPANY, Hartford, Conn., has appointed J. V. Moore, formerly with the Simonds Saw & Steel Company, as its representative in Pennsylvania, Delaware and New Jersey, with headquarters in Huntingdon, Penn.

CURTIN-HOWE CORPORATION, New York, has appointed B. Kuckuck as its chief engineer. Since 1904 he has been working in wood preservation, first with Hulsberg & Company, Berlin, and later in this country in connection with the designing of the Santa Fe treating plant at Somerville, Tex., and with the general introduction of the Rueping process. Since 1918 he has been chief engineer of Gebr. Himmelsback, a wood preserving company in southern Germany.

ADVERTISING LITERATURE

GLOBE-WERNICKE COMPANY, Cincinnati, Ohio, has published a booklet on a system for the filing and indexing of maps, plans, drawings and similar large sheets.

MARTINDALE ELECTRIC COMPANY, Cleveland, Ohio, has issued a folder announcing a 27 per cent average price reduction on Martindale commutator stones.

PARKER APPLIANCE COMPANY, Cleveland, Ohio, has issued a desk folder giving technical data and price list of Parker tube couplings and a bulletin of specifications on installations in buildings and power plants.

GENERAL ELECTRIC COMPANY, Schenectady, N. Y., has issued the following bulletins: 252A on type M control system for railway service, 19D on enclosed magnetic switches, 468A on drum type controllers, 743A on drum controllers, 881 on gas engine driven arc welder, 949 on temperature overload relays, 569A on constant potential arc welding sets, 874 on type WD-200A arc welder, 823A on atomic hydrogen arc welding equipment and 980 on enclosed speed-regulating rheostats.

ELWELL-PARKER ELECTRIC COMPANY, Cleveland, Ohio, has published a catalog describing its outstanding types of electric industrial trucks and tractors.

This
is
the car—



One of the new 125 Peter Witt cars for the Department of Street Railways of the city of Detroit

and
this
is the
brake

Detroit bought—



The
"Peacock"
(Reg. U. S. Pat. Off.)
Staffless

We've mentioned it before but it's worth repeating! And the picture shows that Detroit's Department of Street Railways believes in the Peacock Staffless for 36,000 lb. big capacity city cars. As a hand brake it will develop a braking force practically equal to the air braking and its almost unlimited chain winding capacity assures positive braking under every possible condition.

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

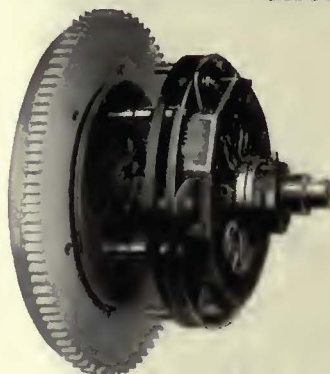
Canadian Representative:
Lyman Tube & Supply Co., Ltd., Montreal, Can.

Stamina

Covering 5,000 miles in less than 4,800 consecutive minutes, a stock model Studebaker Dictator with Long Clutch recently completed another endurance record for stock cars. For nearly 80 hours an average speed of over 63 miles per hour was maintained with the Long Clutch performing satisfactorily all the way.

LONG MANUFACTURING COMPANY
DETROIT MICHIGAN

LONG PRODUCTS
AUTOMOTIVE
RADIATORS
AND CLUTCHES



LONG

The C. S. B. & N. I. R. R.



- ① **Lowers Capital Investment**
- ② **Operates More Equipment**
- ③ **Gives Better Service**

This new Studebaker Street Car Bus was bought as a result of the economy shown by this railway's fleet of 5 Studebakers

With **STUDEBAKERS**

Making 50c Do the Work of a Dollar!

In further support of the evidence this letter contains, Mr. R. R. Smith, Vice President and General Manager of this railway company states: "We selected Studebakers over two years ago following an exhaustive examination made by our engineers of the operating costs of all busses on the market. Studebakers were selected as most economical, both for purchase and operation and the most satisfactory for supplying swift and comfortable transportation.

"We picked 21-passenger busses because this size has proved most satisfactory for supplying frequent, comfortable and prompt service, plus its obvious economical features. Our Studebakers have proved more economical than the heavy type busses previously operated, and *the initial cost is considerably less,** so we can afford to provide a sufficient number of busses to meet peak demands with considerably less invested capital."

*Actually 50% less so that the C. S. B. & N. I. Ry. now makes 50c do what formerly required \$1.00 in buying equipment.

CHICAGO, SOUTH BEND AND NORTHERN INDIANA RAILWAY COMPANY
Studebaker, Newark.

Monday, April 2, 1928

Studebaker Corporation of America,
 Attention Mr. J. L. Engels,
 Commercial Car Division,
 South Bend, Indiana.

Dear Mr. Engels:

After operating the Studebaker street car type bus mounted on the new "75" chassis, for one year, we felt that you would be interested in our opinion regarding the manner in which it has performed and the cost of operation.

We are extremely well pleased with the operation of this bus. It has met every service demand that we have encountered and there is no doubt but that such of its mechanical units is made to withstand the hard usage of city bus service as well as the over-loads which are encountered.

Below I am giving you the entire cost figures on this bus since it has been in service. In explanation of some of these accounts wish to advise that body maintenance covers battery, lights and all expenses to body repairs. Mechanical maintenance includes cost of engine, radiator, brakes or chassis adjustments. Proportion of accounts includes garage expense, such as washing material, small tools, cleaning of garage and incidentals which cannot be charged to any one bus, so consequently are prorated against each bus according to the miles operated.

Mechanical Maintenance	.0112 per mile
Body Maintenance	.0032 "
Gasoline	.0248 "
Engine Oil	.0018 "
Greases	.0008 "
Tires	.0005 "
Washing and Cleaning	.0031 "
Inspection and Oiling	.0031 "
Proportion of Accounts	.0024 "
Total	.0624 "

Miles operated 25,506; miles per gal. of gasoline 5.26; miles per qt. of engine oil 59.87.

Trusting this information may be of value to you, and assuring you that in our opinion the "75" bus chassis is worth a good many more dollars to the operator than its original cost.

Yours very truly,
Geo. P. Green
 General Supt.

CHICAGO, SOUTH BEND AND NORTHERN INDIANA RAILWAY COMPANY



STUDEBAKERS

ARE PROFIT MAKERS

AUTOMATIC highway crossing gates



long considered
hopelessly impractical
ARE NOW AN ACCOMPLISHED FACT
New basic principle makes possible a form of crossing protection always preferred but never before available with triple warning protection light, bell and barrier. Gate arm swings if struck and is lowered gently by gravity. No chance of damage to car or gate. Now in operation on steam and electric lines. *May we send descriptive literature?*
More reliable than manual gates" says one operating officer.

Standard Automatic Signal Corporation, 208 S. La Salle St. CHICAGO
ERJ5-26Gray

Montreal Tramways Company

buys

YELLOW COACHES

six times and

more than doubles its passengers,
increases mileage and profits ~



60 Yellow Coaches ear

High Spots that Point to Steady Growth and Success

- In August, 1925, the Montreal Tramways Company inaugurated motor coach service in the City of Montreal.
- Unusually severe operating conditions were faced from the start—narrow winding streets permitting for the most part but one lane of traffic each way, heavy grades, deep snows, horse drawn traffic and liberal parking habits.
- With few exceptions the type of vehicle selected to buck these conditions and put the operation on a revenue earning basis was Yellow Coaches.
- On December 31, 1925, the company owned 28 motor coaches.
- By the end of 1926, 45 were needed.
- By the end of 1927, the length of bus routes had been extended to 70.41 miles and the equipment expanded to 76 motor coaches, *60 of which were Yellows*.
- And in one year the company increased its motor coach passengers from 5,370,475 in 1926 to 10,728,326 in 1927.
- Since the original shipment of 4 Z-29 passenger Yellow Coaches in June, 1925, Montreal Tramways has reordered Yellow Coaches *six times*.
- From the start earnings have increased, operating expenses reduced, passenger carriage doubled and mileage increased—with Yellow Coaches carrying the bulk of responsibility.
- This year, benefiting by experience, the company is increasing speed and adding to the length of routes without increasing time. Continuous familiarity with Yellow Coaches and the performance rendered by the 60 now in use is bound to set new standards when the 1928 story is written on the cost sheets.

Big PROFITS for *Montreal Tramways*

How the 60 were ordered

1925

June 18, Type Z-29 passenger coach.....	4
November 25, Type Z-29 passenger coach.....	4

1926

February 15, Type Z-29 passenger coach.....	10
March 14, Type Z-29 passenger coach.....	5
October 21, Type Z-29 passenger coach.....	4
October 21, Type Z-29 passenger coach.....	1
October 21, Type X-21 passenger coach.....	6
October 21, Type X-21 passenger coach.....	1
December 20, Type Z-33 passenger coach.....	10

1927

October 19, Type Z-33 passenger coach.....	10
October 19, Type Z-33 passenger coach.....	5
Total.....	<u>60</u>

and what 42 did last year on these routes served exclusively by

YELLOW COACHES

OPERATION OF YELLOW COACHES ON Sherbrooke St. Hubert Outremont ROUTES

	1927	EXPENSES	Per Bus Mile
Total buses assigned to these routes including spare equipment.....	42	Maintenance, Including Depreciation of Equipment — Tools, Machinery and buildings.....	8.39
Type X-21 passenger coach.....	5	Transportation.....	13.76
Type Z-29 passenger coach.....	27	General Expense and Administration.....	2.00
Type Z-33 passenger coach.....	10	Interest.....	2.13
	<u>42</u>	Advertising.....	.17
		TOTAL.....	26.45c
REVENUE		NOTE:—Motor coach operation in Canada, due to taxes, higher cost of material and other factors, is approximately 5c higher per bus mile than in the "States."	
Total passengers carried.....	5,734,616		
Total mileage.....	1,685,838		
Average fare.....	8.58		
Passenger per bus mile.....	3.4		
Revenue per mile.....	29.4		
Misc. revenue per mile.....	.17		
Gross revenue per mile.....	29.57		



Successful Operations are built by **YELLOW COACH** fleets

In Montreal and Toronto; in Washington, D. C., in Portland, Oregon, Danbury, Conn., and scores of other operations strung from coast to coast, Yellow Coaches are building successful operations. Montreal Tramways Company is only one of many who are finding that it pays to repeat on Yellow.

The New 8 million dollar General Motors Truck plant at Pontiac, Michigan, in which are now being built General Motors Trucks, Yellow Taxicabs and Yellow Coaches, testifies to the confidence held by General Motors in the future of commercial transportation; a structure embodying every new and modern improvement in manufacture, test and assembly—built to meet the demands of tomorrow as well as today.

General Motors Truck Company
Pontiac, Michigan

102 YEARS OF MANUFACTURING EXPERIENCE

Rattan car seat webbing may be ordered through any H-W sales office



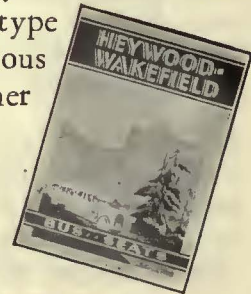
No. 55 P-X

BRINGS PULLMAN COMFORT TO THE INTERURBAN CAR!

THIS beautiful de luxe seat, mounted on our new revolving base, brings to the interurban car all the comfort and convenience of the finest parlor car chair. Deep, spring-filled seat cushions and backs, make this the most luxurious and comfortable car seat made today.

The seat revolves easily by pressing the foot pedal which is handily located on the steel base. The revolving mechanism has been purposely made as simple and as strong as possible so that there is nothing to get out of order. If you are interested in making your interurban cars the finest and most comfortable type in use today, by all means give the 55 P-X, as shown, your serious consideration. The base illustrated will also accommodate other car seats which we make.

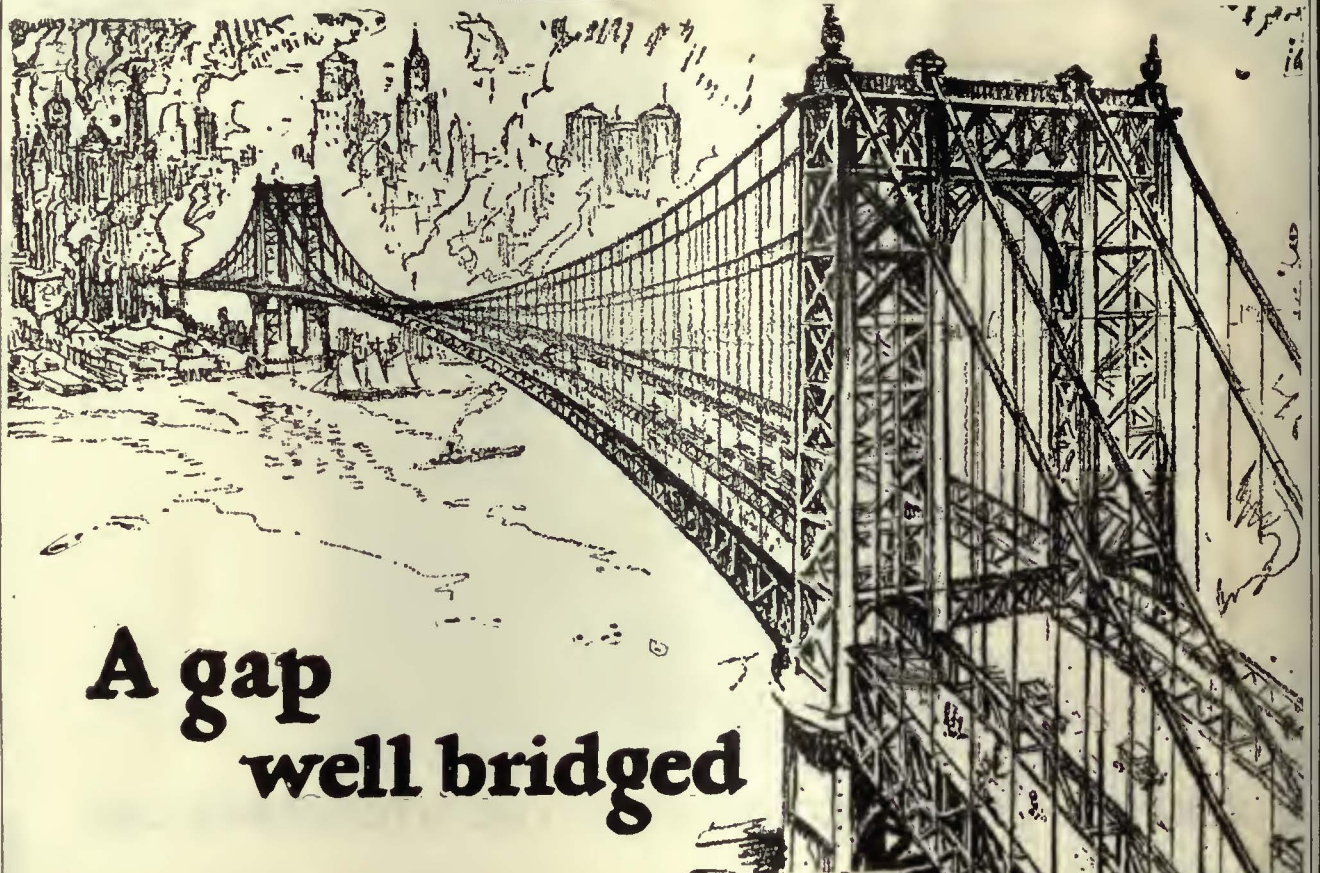
If you have not received a copy of our new Bus Seat Catalogue, write for it.



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

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





A gap well bridged

Suspended high over rivers and canyons, highways of steel and stone successfully overcome great natural obstacles—gaps that hinder progress from one center to another. They are built when the demand for rapid, positive communication becomes imperative.

This paper is a bridge on the highway of business, created by insistant demand for news and ideas. It establishes a direct route—a positive means for the intercommunication of ideas between the scattered branches of your industry.

Being direct, it assures rapid distribution of ideas, a means for keeping abreast of developments. Being a member of the A. B. P., it guarantees you the best, most reliable information both editorially and in the advertisements which it carries.

Take the shortest and best route to up-to-the-minute news. This A. B. P. paper leaves no gap in supplying information which is helpful to you in the conduct of your business.

THE ASSOCIATED BUSINESS PAPERS, Inc.
Executive Offices: 52 Vanderbilt Avenue, New York, N. Y.

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An association of none but qualified publications reaching the principal fields of trade and industry.



Mutual Service

TO the manufacturers and distributors of America and the street railway systems that transport the millions of America's potential buyers, Collier offers a mutual service.

This service has brought the street railway riders in thousands of cities and towns throughout the country to look upon car cards as extremely useful and pleasing features of up-to-date street car service. It has given national and local advertisers a medium thru which they can get their messages to selected territories easily, economically and convincingly.

Our business is one of service—service to the street railway industry, service to America's national and local advertisers, service to the millions of people who daily ride on street cars.



CANDLER BUILDING,
NEW YORK, N. Y.



Combat the Underground Lines Agitation

CHANGING from the ordinary type to fluted steel poles for transmission and distribution lines accomplishes more than just replacement of old style equipment with a new and more efficient type. When you install Union Metal poles on your lines you are creating good will for your company, for these poles present a beautiful and dignified appearance which harmonizes with the architecture of city streets.

Thus the agitation for underground lines can be adequately combated with these poles—for people do not object to wires overhead, they object to the unsightly poles which crowd the curbs of so many cities.

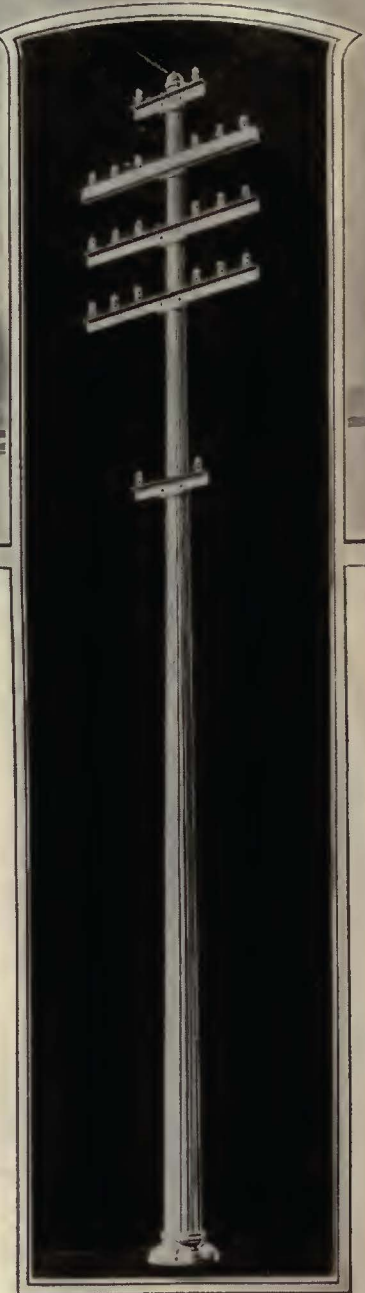
Clean cut, straight and true, Union Metal Fluted Steel Poles possess all the desired engineering advantages. They withstand heavy transverse strains, eliminate ground-line corrosion, are simple to erect and maintain, and can be quickly installed and properly lined up. In every respect, these poles are an outstanding example of the scientific progress of the twentieth century.

Let us help you build good will with your transmission and distribution lines. Complete information will be sent on request.

THE UNION METAL MANUFACTURING CO.

General Offices and Factory, Canton, Ohio

Branches—New York, Chicago, Philadelphia, Cleveland,
Pittsburgh, St. Louis, Los Angeles, San Francisco, Jacksonville.



Typical Union Metal Fluted Steel Pole for transmission and distribution service. The upper picture shows a Union Metal Pole installed in Canton, Ohio. It carries a secondary rack and supports the center suspension traffic signal.

UNION METAL

DISTRIBUTION AND TRANSMISSION POLES



Versare
TRACKLESS
TROLLEYS

for **Salt Lake City**

Utah Light and buys **VERSARE**

The Utah Light & Traction Co., Salt Lake City, has awarded the Versare Corporation a contract for 10 6-wheel Versare Trackless Trolleys.

This order went to Versare because the engineering principles of Versare patented structure were more in line with the type of equipment suitable for the mounting of the high power electrical equipment to be used.

Versare

Traction Co.

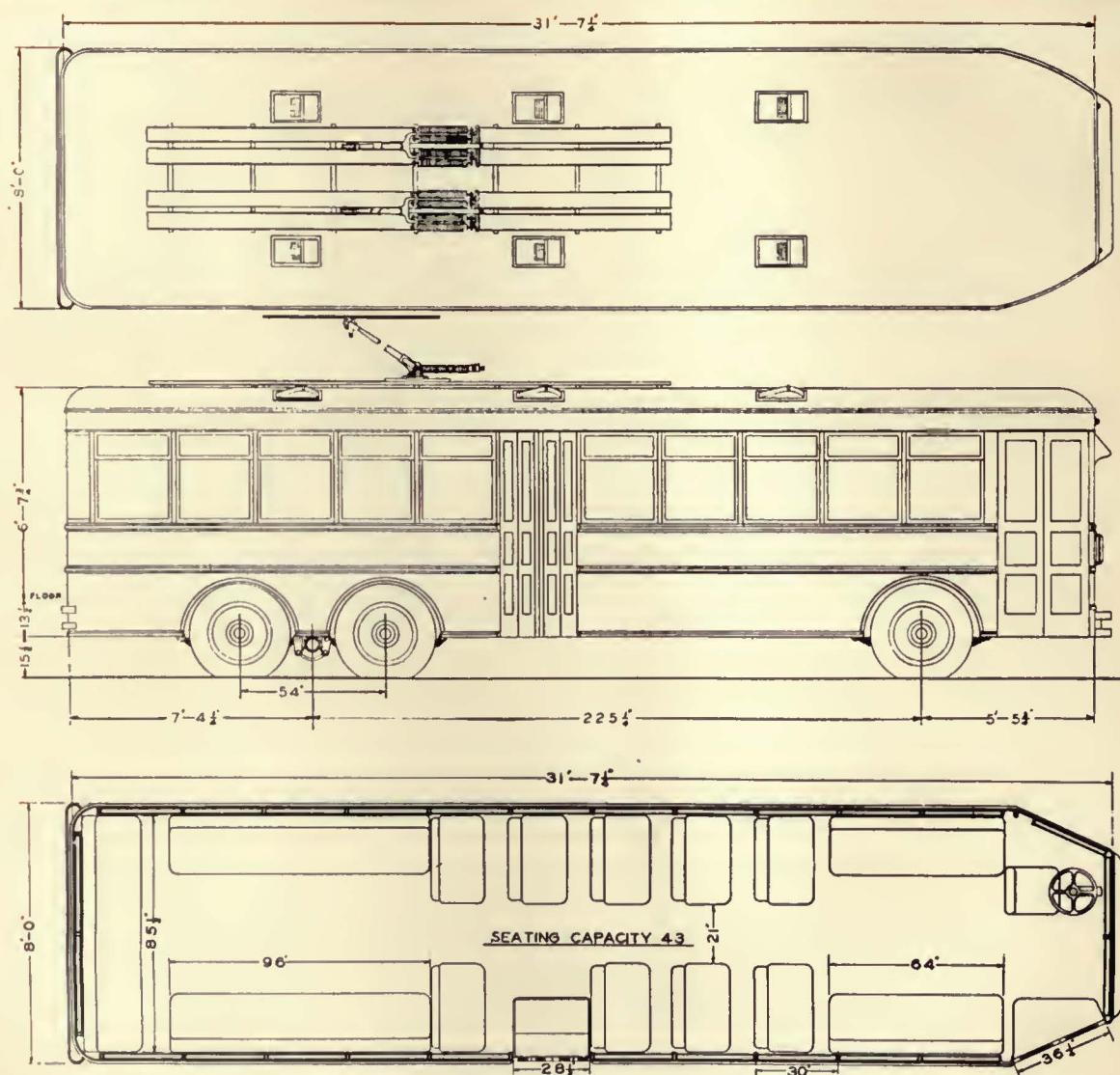
Trackless Trolleys

It is desired these coaches be in operation July 15th, which is entirely practical with this company, as unit construction permits of rapid production.

For those acquainted with Versare construction, it is easily recognizable that the standard 6-wheel Versare gasoline-electric coach is readily adaptable for use as a trackless trolley, with no essential changes of design or equipment.

Versare

Standard Design of Versare Trackless Trolleys



[Versare engineers welcome the opportunity to show electric railway executives the many advantages of Versare Trackless Trolleys]

Versare Corporation
Albany, N. Y.



Looking west on Washington Street at the intersection of Cincinnati Street. Note the excellent condition of the tangentials and the smooth surface of the track area. Carey Elastite Track Insulation was used throughout.

“...a test installation in 1924...
 now standard in all
 track construction”

“IN 1924, we made a test of asphaltic rail filler, installing it on each side of the rails,” said R. E. Standish, Superintendent Maintenance, Peoples Railway, Dayton, Ohio.

“In this way, we became thoroughly sold on this type of track insulation, and it is now included as standard in all our track construction work.

“We use Dayton-Mechanical ties, 100-lb. ARA-A rails, thermit-welded joints, Carey Elastite System of

Track Insulation, brick paving and asphalt filler.”

The Carey Elastite System of Track Insulation, referred to by Mr. Standish, is a preformed asphaltic compound reinforced with asphalt-saturated fibres. It is impervious to moisture, and forms a lastingly shock-absorbing cushion between the rails and paving.

Write for full particulars. If you are planning any track construction work, our representative will be glad to call and tell you all about this efficient material. Write.



The Philip Carey Company
 Lockland, Cincinnati, Ohio

SYSTEM OF TRACK INSULATION



WHAT NEXT FOR YOU IN ELECTRICITY?

If you make yourself thoroughly expert in modern electrical practice, that question answers itself. With an accurate knowledge of what to do, how to do it, and how to get it done, you can forge ahead, step by step, and practically name your own salary.

Make no mistake about it—there are big pay jobs in electricity ready for you when you're ready for them. Thousands of men who have the Croft Library know that to be a fact. The Library itself, on a FREE TRIAL BASIS, will prove it to your own absolute satisfaction.

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A combined reference library and home-study course in practical electricity

In these volumes Croft teaches you electrical practice complete. He takes you in quick, easy steps from the simplest principles to the complete and economical operation of a great central station. He tells you all that he has learned in twenty years of shirtsleeve practice. He teaches you electricity as experts know it and fits you to earn an expert's pay.

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Croft tells you the things you need to know about motors, generators, armatures, commutators, transformers, circuits, current, switchboards, distribution systems—installation, operation and repair of electrical machinery—wiring for light and power—wiring of finished buildings—underwriters' and municipal requirements—how to do a complete job from estimating it to completion—illumination in its every phase—the latest and most improved methods of lighting—lamps and lighting effects, etc.

Free examination no money down—7c a day

Fill in and mail the coupon attached and we will send you the entire set of eight volumes for ten days' Free Examination. We take all the risk—pay all charges. You assume no obligation—you pay nothing unless you decide to keep the books. Then \$1.50 in ten days and the balance at the rate of \$2.00 a month. Send the coupon NOW and see the books for yourself.

keep the books. Then \$1.50 in ten days and the balance at the rate of \$2.00 a month. Send the coupon NOW and see the books for yourself.

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McGraw-Hill Book Co., 370 Seventh Avenue, New York.

Gentlemen:—Please send me the CROFT LIBRARY OF PRACTICAL ELECTRICITY (shipping charges prepaid) for 10 days' free examination. If satisfactory, I will send \$1.50 in ten days and \$2.00 a month until the special price of \$19.50 has been paid. If not wanted I will return them at your expense. (Write plainly and fill in all lines.)

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 City and State.....
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 Occupation E.5-26-28

Some One Wants To Buy

the equipment or machinery that you are not using. This may be occupying valuable space, collecting dust, rust and hard knocks in your shops and yards.

Sell it

before depreciation scraps it.

*The Searchlight Section is helping others—
Let it help you also*

Where other ties
might fail . . . use
Prettyman
Preserved Ties
with Confidence

UNDER the pavement, deep into dank, musty earth, exposed to moisture, termites and fungi . . . What ties could you expose to such conditions, *confident* that many years would not undermine unyielding resistance to merciless mechanical grind? ¶ Several kinds *might* render such service. ¶ The South Carolina Power Co. chose Prettyman Preserved Ties for the job at the left—creosoted in the most complete and modern wood preserving plant on earth.



Creosoted

Railroad Cross-ties; Switch Ties; Bridge Timbers; Construction Timbers; Mine Timbers; Lumber Piling; Poles; Posts and other Forest Products

J.F. Prettyman & Sons
Wood Preserving Plant
Charleston, S. C.



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Railway Supplies and Equipment

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Forgings
Special Machinery and Patterns

Grey Iron and Brass Castings

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The Columbia Machine Works and M. I. Co.
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STEEL PRODUCTS



Steel Axles Steel Springs
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STANDARD STEEL WORKS COMPANY

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Reorganization Operation Management

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Designers of

Garages—Service Buildings—Terminals

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THE P. EDWARD WISH SERVICE

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NEW YORK

Street Railway Inspection
DETECTIVES

131 State St.
BOSTON

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

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
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CHICAGO, Marquette Building
CINCINNATI, Traction Building
CLEVELAND, Guardian Building
DALLAS, TEXAS, Magnolia Building
DENVER, 444 Seventeenth Street
DETROIT, Ford Building
HOUSTON, TEXAS, Electric Building
LOS ANGELES, Central Building
NEW ORLEANS, 344 Camp Street

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The skilled physician counts the beats. You call him in to diagnose the case because he has your confidence as a trained specialist.

Engineering service is likewise a physician—a skillful specialist that puts a steady finger on the pulse of industry and diagnoses the problem. And like the doctor, it prescribes the remedy.

W. H. Sawyer
PRESIDENT

STEVENS & WOOD, Incorporated
Engineers and Constructors
120 Broadway, New York
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A Personalized Service



Double Register
Type R-11

International Registers

Made in single and double types to meet requirements of service. For hand or foot, mechanical or electric operation. Counters, car fittings, conductors' punches.

The International Register Co.
15 South Throop Street, Chicago, Illinois

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.

Efficient Bus Heating with

The N-L Venti-Duct Heater

THE NICHOLS-LINTERN CO.
7960 Lorain Ave. Cleveland, Ohio

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RAMAPO AUTOMATIC RETURN SWITCH STANDS FOR PASSING SIDINGS TEE RAIL SPECIAL WORK

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MANGANESE WORK A SPECIALTY
SALES OFFICES AT ALL WORKS
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from mine to consumer

Rod, Wire and Cable Products
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ANACONDA TROLLEY WIRE

Gets the dirt— leaves the paint

OAKITE contains no soap, grit or harmful ingredient that will affect painted surfaces. Used according to directions it will save time in washing all paint work, enabling bus operators to put buses quickly back in service.

Every bus operator should have a copy of an interesting Oakite booklet we have that contains information on all types of bus cleaning and repair work. A post card request will bring it to you without cost or obligation.

Oakite Service Men, cleaning specialists, are located in the leading industrial centers of the U. S. and Canada

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TRADE MARK REG. U. S. PAT. OFF.

Industrial Cleaning Materials and Methods

ELRECO TUBULAR POLES



COMBINE

Lowest Cost
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Lightest Weight
Greatest Adaptability

Catalog complete with engineering data sent on request.

ELECTRIC RAILWAY EQUIPMENT CO.
CINCINNATI, OHIO
New York City, 30 Church Street



Boyerized Parts:

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| Brake Pins | Spring Post Bushings |
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- W. F. McKenney, 54 First Street, Portland, Oregon.
- J. H. Denton, 1328 Broadway, New York City, N. Y.
- A. W. Arlin, 519 Delta Bldg., Los Angeles, Cal.

Bemis Car Truck Company
Springfield, Mass.

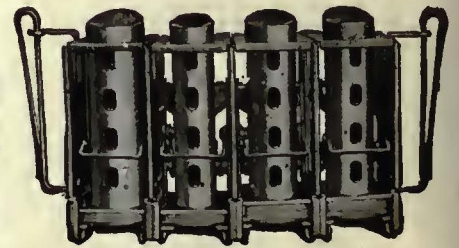
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Johnson Electric Fare Boxes and overhead registers make possible the instantaneous registering and counting of every fare. Revenues are increased 1 1/2 to 5% and the efficiency of one-man operation is materially increased. Over 4000 already in use.

When more than two coins are used as fare, the Type D Johnson Fare Box is the best manually operated registration system. Over 50,000 in use.

Johnson Change-Makers are designed to function with odd fare and metal tickets selling at fractional rates. It is possible to use each barrel separately or in groups to meet local conditions. Each barrel can be adjusted to eject from one to five coins or one to six tickets.



Johnson Fare Box Co.

4619 Ravenswood Ave., Chicago, Ill.

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Can be received at the New York Office of Electric Railway Journal until 10 a. m.



Wednesday

For issue out Saturday

0220

Tisco Manganese Steel Special Trackwork

For

Subway, Elevated and Surface Lines

WM. WHARTON JR. & CO., Inc.
EASTON, PA.

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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).

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Rates for larger spaces, or yearly rates, on request.

Advertising inch is measured vertically on one column, 3 columns—30 inches—to a page.

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SUPERVISOR bureau investigation, broad experience, established successful record street railway and bus transportation; available short notice; best of references. PW-112, Electric Railway Journal, Tenth Ave. at 36th St., New York.

How to dispose of surplus stocks of new replacement and repair parts and materials?

A question of unusual interest to the executives of all electric railways, particularly Purchasing Agents and Storekeepers

Write the Searchlight Department of the *Electric Railway Journal*, 10th Ave. at 36th St., New York, N. Y., if you are interested in working out a plan that will aid in the distribution of this material. Include a general review—on a quantity or value basis—of the material you have.

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MOTORS

130 Westinghouse, Type 514-C.
Fine condition. Low price.

ELECTRIC EQUIPMENT CO.
Commonwealth Bldg., Philadelphia, Pa.

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SPRINKLER CARS

Single and double truck fully equipped. Will sacrifice for immediate sale to legitimate prospect.

FS-113, Electric Railway Journal,
Tenth Ave. at 36th St., New York City

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WANTED TO BUY

One Used Car Body for Freight Hauling Purposes

Must be in good condition, either wood or steel construction, doors in center of car preferred, maximum length 45 ft.

W-110, Electric Railway Journal
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"Opportunity" Advertising:

Think
"SEARCHLIGHT"
First!

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

This index is published as a convenience to the reader. Every care is taken to make it accurate, but *Electric Railway Journal* assumes no responsibility for errors or omissions

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- Air Brakes**
General Electric Co.
Westinghouse Traction Brake Co.
- Anchor, Guy**
Elec. Service Supplies Co.
General Electric Co.
Ohio Brass Co.
Westinghouse E. & M. Co.
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- Automatic Return Switch Stands**
Ramapo Ajax Corp.
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- Axles**
Bemis Car Truck Co.
Bethlehem Steel Co.
Brill Co., The J. G.
Cincinnati Car Co.
Westinghouse E. & M. Co.
- Axles (Front & Rear) Motor Truck & Passenger Cars**
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Ohio Brass Co.
Railway Trackwork Co.
Una Welding & Bonding Co.
Westinghouse E. & M. Co.
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Elec. Ry. Equipment Co.
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Ohio Brass Co.
- Brake Adjusters**
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Cincinnati Car Co.
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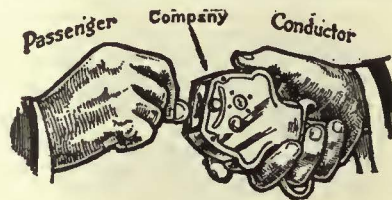
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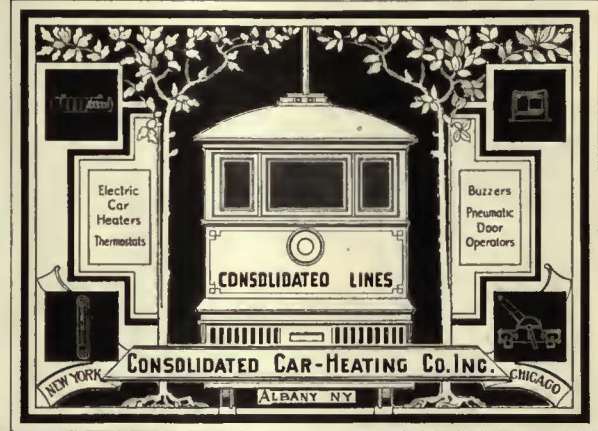
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Table with 4 columns: A, F, L, S. Each column lists company names and page numbers. Includes sections for B, C, D, E, H, I, J, K, M, N, O, P, R, T, U, V, W.

WHAT AND WHERE TO BUY—Continued from pages 46

Large multi-column table listing various categories of electrical and mechanical equipment (e.g., Strain Insulators, Transformers, Turbines, Welding) and the companies that supply them.

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