

ELECTRIC RAILWAY JOURNAL



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have tested*

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The AERA and St. Louis

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It is particularly appropriate at the present time, that the American Electric Railway Association should meet in St. Louis, “The Old City with the New Spirit.”

The Electric Railway Industry is showing a new spirit, as evidenced by the following:

1. 282,000,000 dollars have been invested in new equipment.
2. Since the last Mid-Winter Dinner 31 receiverships have been terminated.
3. The Economical one-man, two-man car for train operation has been firmly established.
4. A marked increase of electric railway freight haulage has been made.

The use of the gas bus as an auxiliary service has been materially increased.

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East Pittsburgh, Pa.

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



Westinghouse

ELECTRIC RAILWAY JOURNAL

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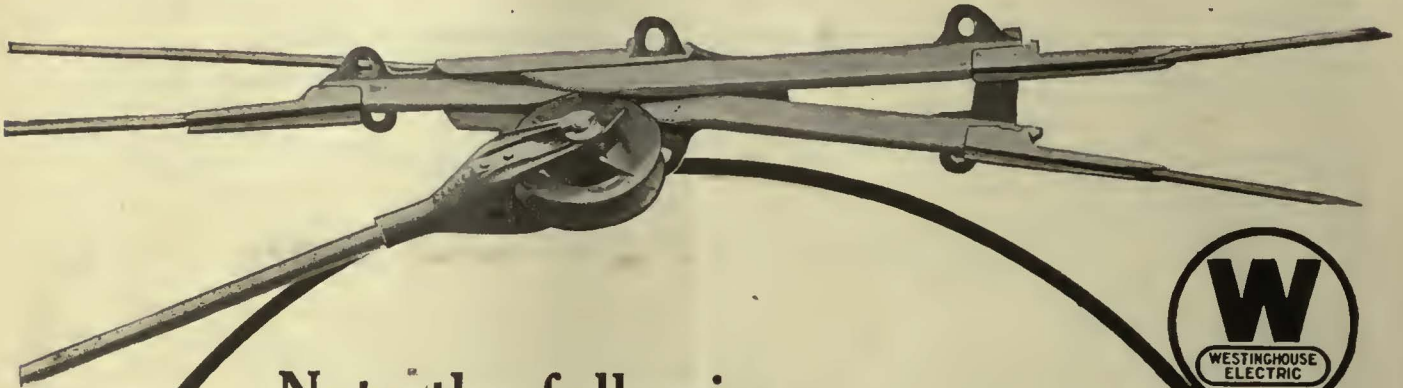
Is It as Bad as That?

THE editor of a nationally known magazine was recently slapped on the back by an ardent subscriber who told him most enthusiastically that every article and story in his last issue interested him keenly. The editor's comment was, "Great Scott! Was it as bad as that?" for his reaction was that if everything in the paper interested one person there was not the proper variety. This is the true philosophy of magazine building.

Of course it is not possible to maintain the same "balance" in a paper that presents the news of an industry as it is in a literary magazine. For instance, next week the ELECTRIC RAILWAY JOURNAL will feature a report of the Midyear Meeting of the American Electric Railway Association. This will be the most important news of the week, and as such will be given precedence, even though it disturbs the usual "balance" of material in the issue.

A New Trolley Frog

Westinghouse CF with Bayonet Approach



Note the following:

CF Frogs can be installed and replaced without the use of any tool, except a line tool and pliers.

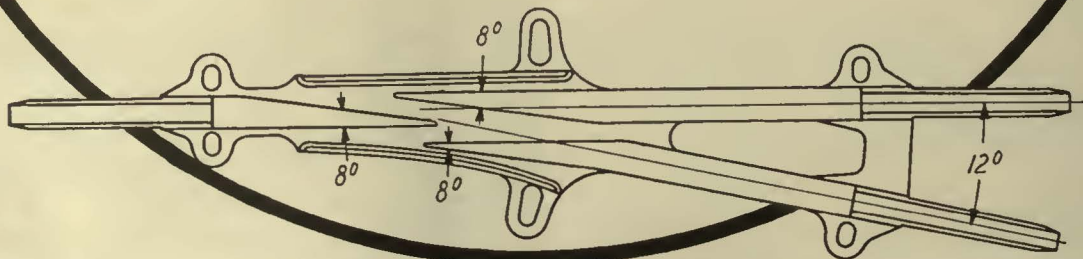
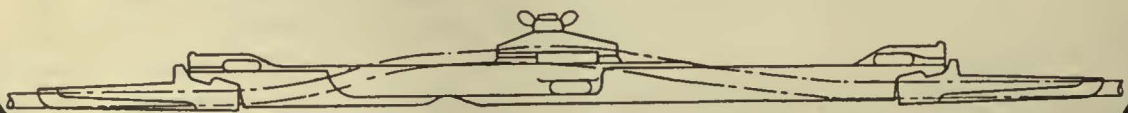
The frog can be placed close enough to the switch-point so as to avoid any trolley-wire wear.

The trolley-wheel contact, during the entire travel, is on the ridges of the frog. This gives longer life to both the frog and the trolley wheel.

The approaches are extra long and flexible, and are quickly installed.

The bridge is low, making the bend in the trolley wire extremely small.

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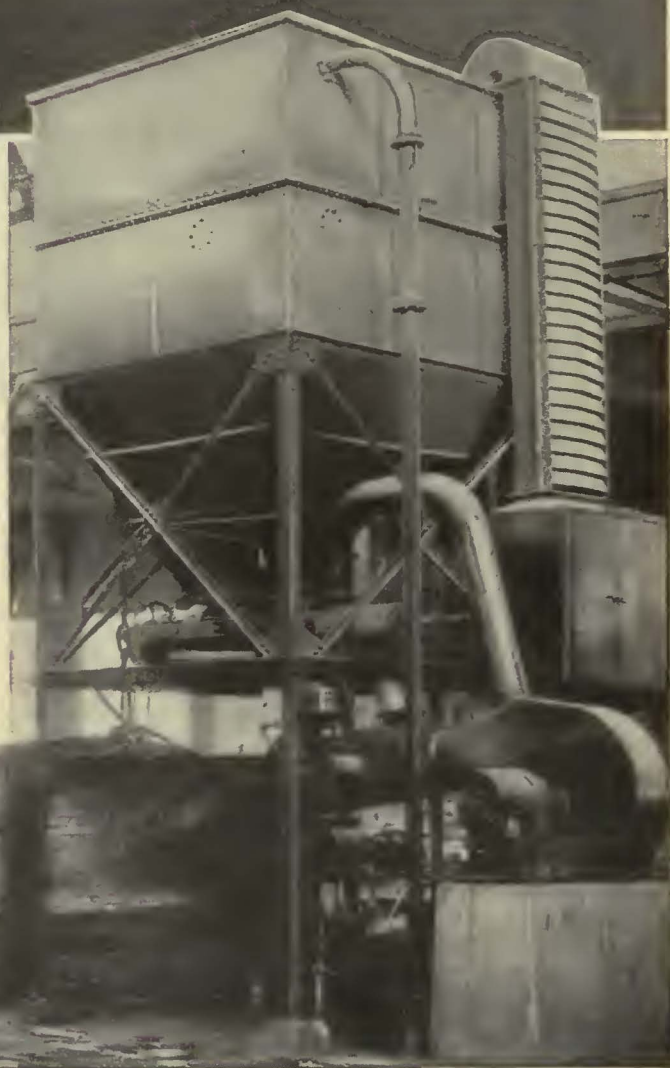


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Once Is Not Enough

The *Electric Railway Journal* cannot be expected to run an editorial more than once. But the following, published February 16, deserves more than one appearance. Here it is:

“It Pays To Lay Out Maintenance Work In Advance

It stands to reason that much more can be accomplished by a given expenditure of time and effort when the work is carefully laid out in advance and is conducted along a logical plan of procedure. Sad to relate, this practice is not followed on all electric railway properties. As one maintenance engineer remarked to the writer, “Why worry and waste effort before you know that anything is wrong?”

One large Eastern property followed this haphazard practice for years, and not until it had passed through a receivership and a reorganization was the fallacy of the procedure recognized. Nevertheless, that much can be accomplished along these lines is well shown in the article by Frank B. Walker elsewhere in this issue.

Much of the gain is not from the improved equipment alone, but from the careful planning of the season's work well ahead of time, so that each machine could be in use for the longest period possible, and the men could be kept working steadily. This meant that a smaller amount of equipment had to be purchased and a smaller force hired. With the smaller number of men to train, of course they attained expertness and were able to do more and better work. The gain to the company has been very considerable, not only in cost but in performance, and through that, in improved public esteem.”

The property referred to is the Eastern Massachusetts Street Railway. The work laid out was the rehabilitation of 680 miles of track. The equipment used included 9 Ajax Welders, 24 Universal Grinders and 10 Reciprocating Grinders.

Are your plans made? Is your equipment ready? Have you a set of our Bulletins?

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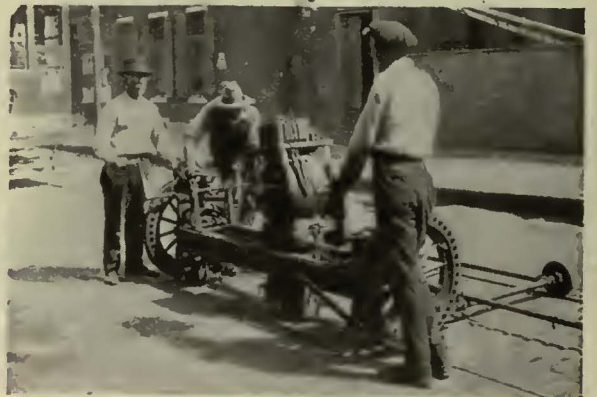
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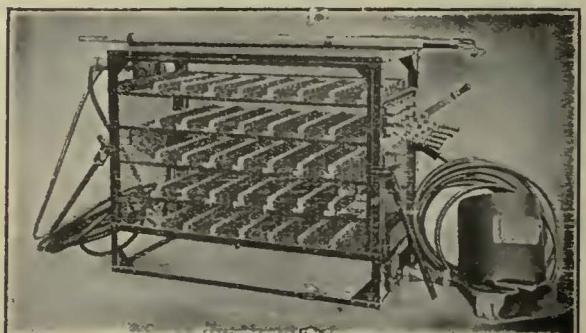
“Universal” Rotary Track Grinder



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*When we say
'Renewable'
we mean it has been done!*

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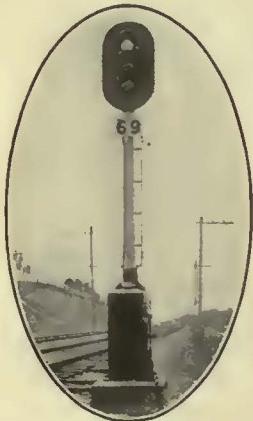
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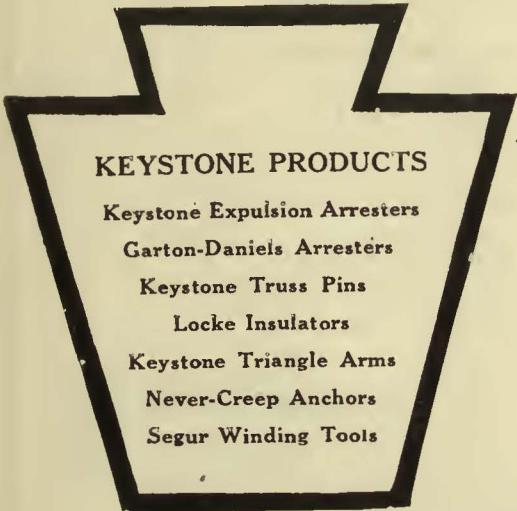
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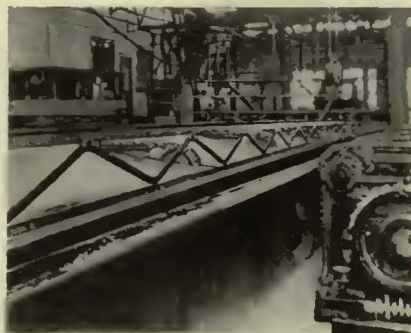
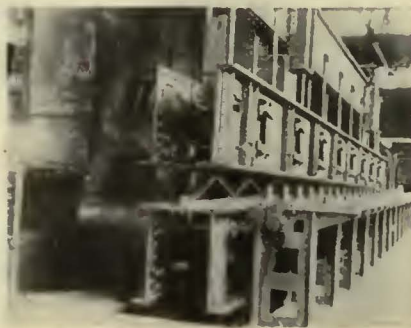
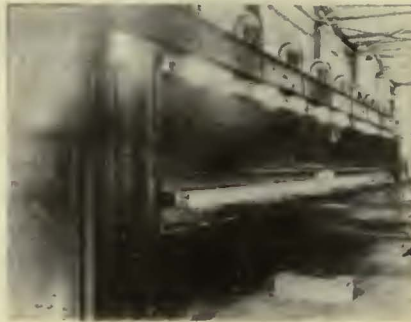
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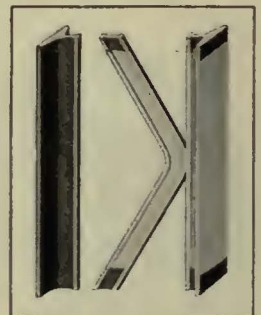
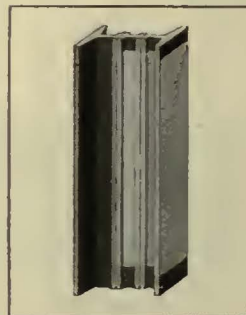
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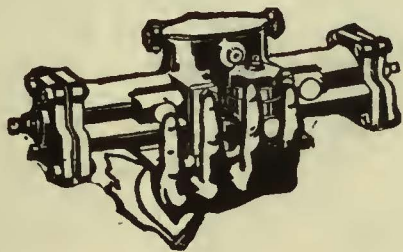
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After Expanded



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A properly equipped plant, with ample facilities, and staffed by men trained in their particular job. These, plus years of costly experiment and development, are our investments.

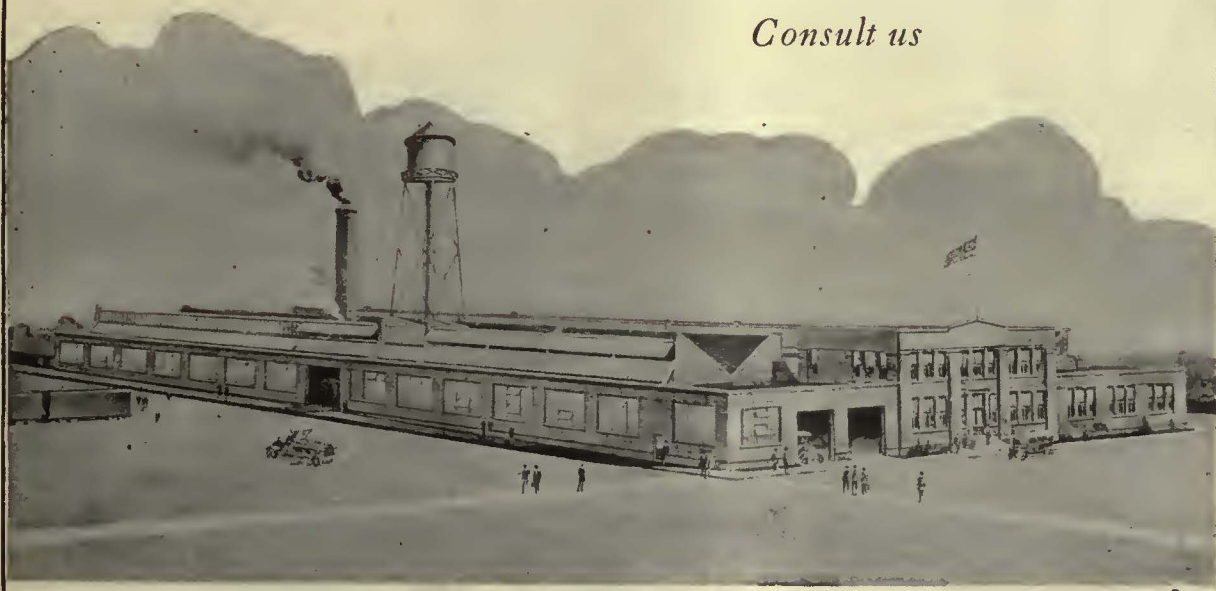
Why not profit by the manufacturing economy and perfection which these assets make possible? Instead of attempting to make your own equipment, in shops already busy with more important maintenance work.

The "home talent" idea has long been proven a fallacy. Buy from a reputable specialist—it pays.

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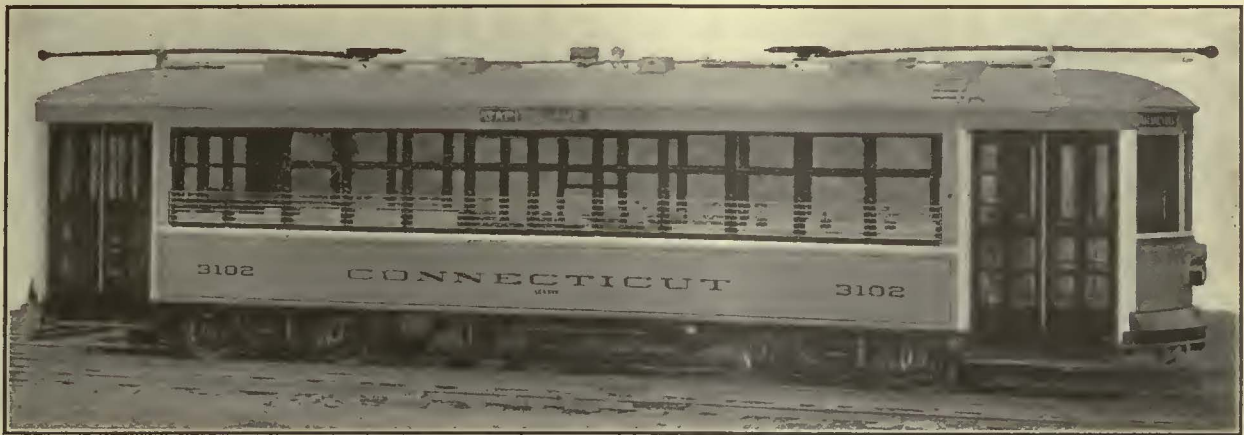
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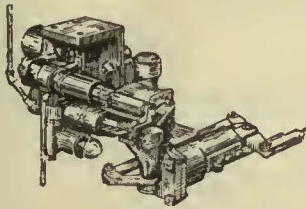




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these with the VARIABLE LOAD BRAKE



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LOAD BRAKE**

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

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

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“SHELBY” Seamless Steel Trolley Poles are cold drawn from a selected grade of basic open-hearth steel of about 0.17 per cent carbon, low in phosphorus and sulphur.

“SHELBY” Poles are manufactured by the seamless process—from a solid billet—with no weld or brazed joint to weaken its strength.

“SHELBY” Poles are finished to size and taper desired by cold-drawing.

Prior to the last cold drawing operation, they are given a special heat-treatment which leaves the grain of the steel in the finest condition.

The result is a pole of maximum strength and elasticity with minimum weight.

Perhaps you have never thoroughly looked into the trolley pole question. If not, write us. Our experience, covering many years, is at your command.

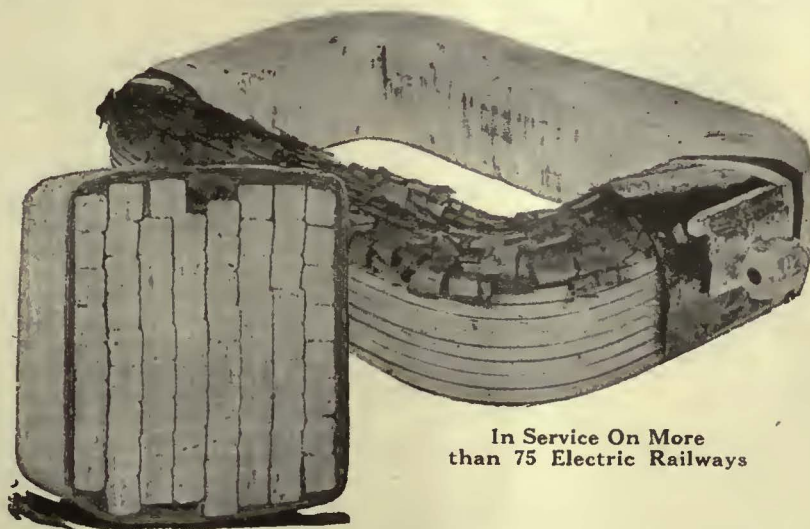
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The permanent insulating qualities of Aluminum Field Coils largely eliminate roasting, shorting and grounding of fields.

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For extreme heat conditions coils are wrapped with asbestos, thus being fireproof.

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UNA

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Continuous—Unchanged Rail Steel



THE rail ends under mutual compression—the gap between rail ends eliminated—the car wheels passing from rail to rail without impact, without the possibility of the cold flow of metal into the gap; that's the fundamental principle of the mechanical set-up of the UNA Joint.

Then the welding to maintain the mechanical structure and to supply the necessary 100% electrical characteristics.

In the UNA Welding Process no excessive heat is applied to the running surface of the rail—the same original steel structure remains throughout the rail—no more wear at the joint than at any other part of the rail—a joint with the life of the rail itself.

The UNA Joint is easily intalled at a low

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Ease of installation and low cost apply equally well to the small property with a limited number of joints as well as to the large property with hundreds of joints.

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Rail Welding and Bonding Co., Cleveland, Ohio

Manufacturers of

UNA RAIL BONDS

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This organization is always in a position to start shipment of Northern White or Western Red Cedar poles from its concentrating or distributing yards the day your order is received. Ample stocks are always on hand to meet all requirements.

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Light, Durable and Strong

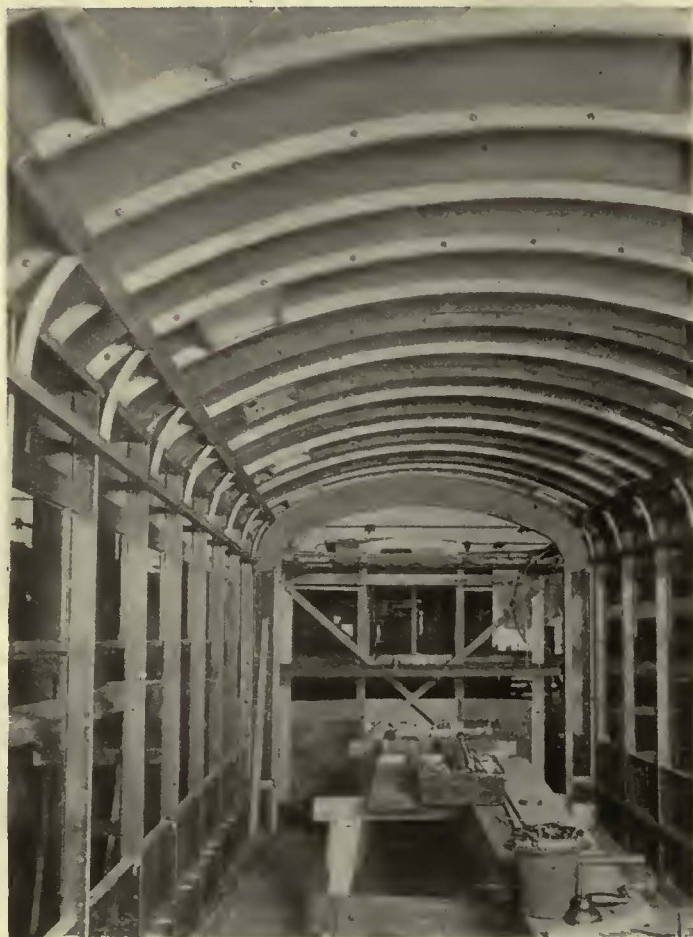
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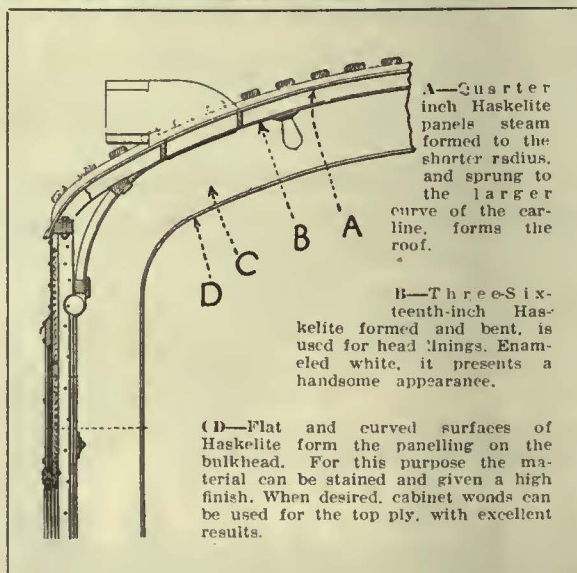
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no sacrifice
of strength*

Combining lightness with great strength it is especially adapted to use on roofs and linings. It will easily support the weight of several men, with no danger of leaks or breakage. It can be applied in three to five sections, moulded to the proper shape, thus saving at least 50% in labor of placing. Joints in the roof are reduced in number, with corresponding reduction in possible leaks. In a lighter weight, it is admirably adapted to use as head linings. Its surface takes high finish very easily and either in the natural wood or enamel it adds much to the attractiveness of the car interior. Climate, moisture and temperature do not effect it, and it presents greater resistance to indentation or rupture than solid wood or other ply material.

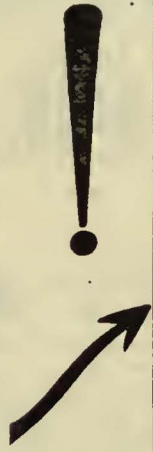
Plymetl, which is Haskelite with a steel surface, is gaining favor as a material for side panels on cars and buses. It, like Haskelite is easily worked, is enduring and possesses great strength. Send today for complete data on the application and properties of this interesting material.



HASKELITE MANUFACTURING CORPORATION
Chamber of Commerce Building, CHICAGO, ILL.



Street
Railway
Officials
**READ
THIS**



Garcia & Diaz asked the Cleveland Railway Company what they thought of the Universal Crane. Here is their answer.

Every street railway in the country can save money on construction and repair work by using these motor truck mounted cranes. Let us explain. Write for Bulletin 22-J.

THE CLEVELAND RAILWAY COMPANY

MAINTENANCE OF WAY
CHAS. H. CLARK, CHIEF HARNA BUILDING

CLEVELAND May 11, 1923.

Garcia & Diaz,
16 Pearl Street,
New York City.

Gentlemen:

I have your letter of May 3rd regarding Universal Crane which we are using, and would say that this crane is the best on the market in the shape of a crane mounted on an automobile truck.

We have had this crane for two years and we have had practically no repairs, and I could recommend it to anybody having use for a crane, mounted on an automobile truck, for such loads as this machine is capable of handling. Their descriptive matter which they furnish is true in every particular.

I am well acquainted with the members of the firm, and anything they may tell you regarding the workings of their machine I can vouch for.

Yours very truly,
(Signed) C. H. CLARK,
Engineer Maintenance of Way.

CHC:M

The UNIVERSAL CRANE CO.
1168 Swetland Bldg., Cleveland, Ohio
Branch Offices in Principal Cities





These three photographs show the Detroit type "Z," 67 passenger double deck coach with semi-enclosed top. This feature is of tremendous importance, the arrangement being such that top deck passengers have all the advantages of a full enclosure with none of the drawbacks.

YELLOW

Built to

All successful merchandising is based on furnishing goods for which there is a definite demand. Transportation is no exception, as every electric railway man well knows.

In the successful operation of coaches to supplement electric railway service, passenger comfort, passenger safety and passenger convenience are of prime importance if public favor is to be gained and held. In addition to these qualifications, the design must be such that there will be minimum maintenance cost. These characteristics must be inherent in the coach.

All of these things are achieved as a result of designing, manufacturing and operating experience for which there is no substitute.

Every detail of Yellow Coach design and construction has been carefully worked out with these essentials in mind. No detail has been omitted which might in some manner enhance public goodwill. Low level wide doorways, generous platforms and their convenient arrangement make for easy entrance and exit; comfortable seats and scientifically designed springs guarantee maximum riding qualities.



Type "Z" double deck chassis.



Here is one of our Yellow Coach models particularly adapted to heavy duty service. There is comfortable seating accommodation for twenty-nine persons. Note the clear view for both driver and passengers. The inside finish is luxurious and the illumination ample. The cushions are deep. There is plenty of leg room.

Extreme care has been taken to obtain the simplest possible electrical control system. The dash cabinet contains all switches, fuses, spare fuses, voltage regulator, reverse current cut-out, ammeter, pilot light, speedometer, clock and oil gauge.



COACH

Sell Rides

Some Recent Orders:

- Philadelphia Rural Transit Company
- Public Service Railway Company
- Detroit Motor Bus Company
- People's Motorbus Company, St. Louis
- Milwaukee Electric Railway & Light Company
- Chicago, North Shore & Milwaukee R.R. Company
- Houston Electric Company
- The Connecticut Company
- Chicago Motor Coach Company

The Yellow Coach Manufacturing Company will gladly supply full details regarding construction, maintenance, etc. It not only designs and manufactures Yellow Coaches but lends active assistance in establishing the most profitable operating system in existence.

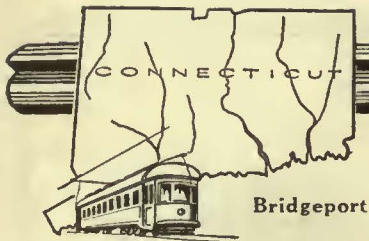
YELLOW COACH MANUFACTURING CO.
Austin and Dickens Aves., CHICAGO



67-passenger double deck Yellow Coach now being built in large numbers for metropolitan service.



A helpful service to the electric railway industry is located at Bridgeport



Bridgeport

Giving the trolley a chance in Philadelphia

Under the direction of Gen. S. D. Butler, Philadelphia's new Director of Safety, the intolerable rush hour congestion prevalent during the last few years is rapidly being relieved.

Exclusion of motor cars from certain streets and establishment of ample safety zones on other thoroughfares coupled with enforcement of laws hitherto dormant has resulted in faster travel time for both motorists and car riders.

Thirty-two years ago, when such congested conditions were undreamed of, Philadelphia's first electric car drew its current from Phono-Electric Wire. The first installation was 6 miles long. Starting on an 8 to 10-minute daytime headway, this wire lasted 21 years. Through all the intervening years of increasing traffic, Philadelphians have ridden under Phono-Electric Wire.

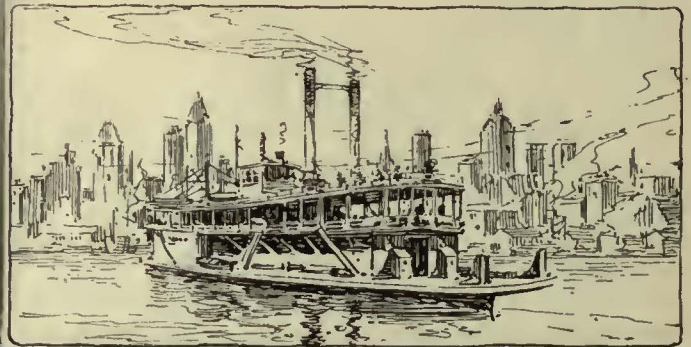
It has never gone back on the record set by the six miles first installed.

"Bridgeport"
BRASS
TRADE CO. MARK
Phono-Electric

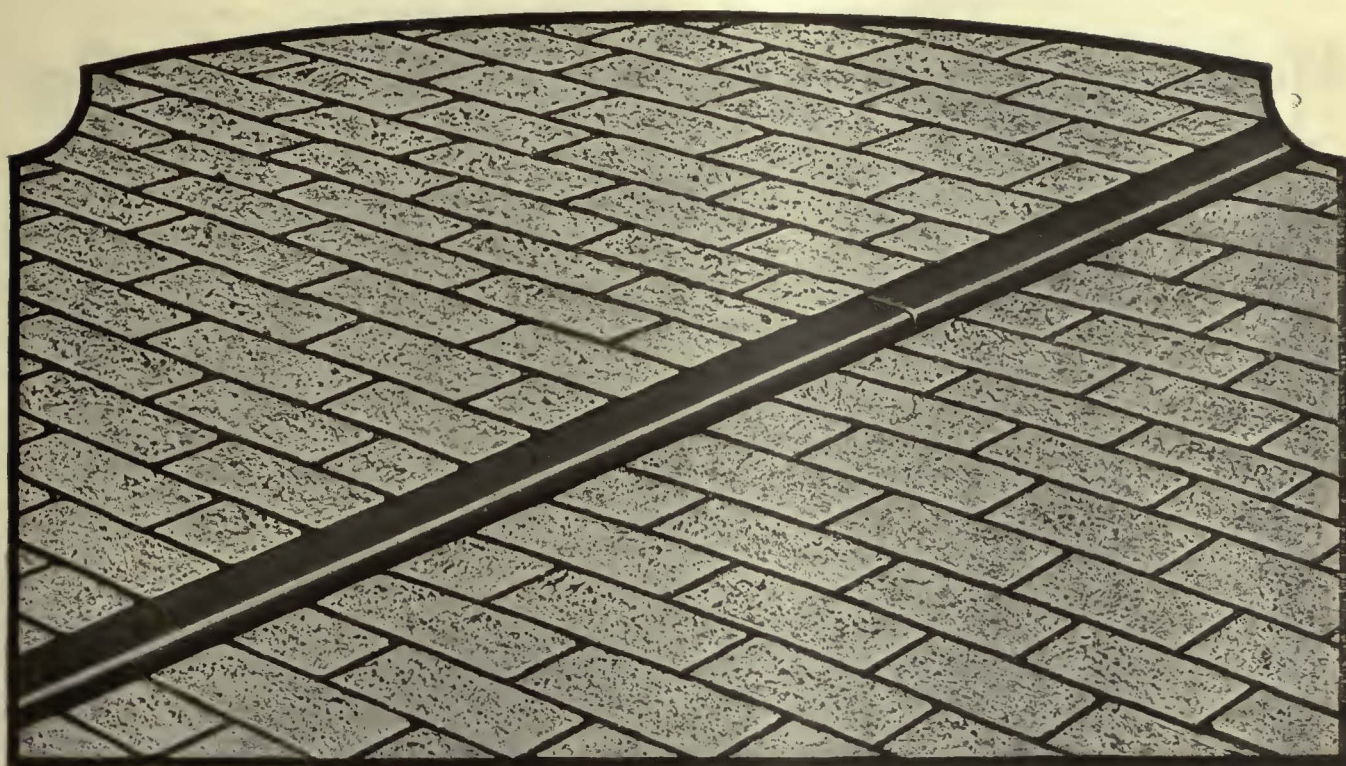
Members of the Copper and Brass Association.

A. E. R. A. Delegates notice!

Such records as the above of Phono-Electric service and durability in Philadelphia are being set in every city where trolleys are operated by progressive companies. St. Louis—the A.E.R.A. Mid-Year-meeting city is another served by Phono-Electric.



Bridgeport
BRASS
Company
BRIDGEPORT, CONNECTICUT



WATER-TIGHT

—yet quickly removable

VITRIFIED paving brick with asphalt filler makes the ideal modern pavement in electric railway service.

The asphalt filler seals the joints and helps to form a water-tight surface which is not cracked by impact, expansion or contraction — no water seeps down to ties and cross-roads.

And when the need comes to replace a rail, a tie or a section of track, the individual bricks are readily removed and as easily relaid with 100% salvage value.

VITRIFIED
Brick
 PAVEMENTS
 OUTLAST THE BONDS

NATIONAL PAVING BRICK MANUFACTURERS ASSOCIATION, ENGINEERS BLDG., CLEVELAND, OHIO

Albion Shale Brick Company
 Albion, Ill.
 Alton Brick Company
 Alton Ill.
 Barr Clay Company
 Streator, Ill.
 Bioghamton Brick Company
 Binghamton, N. Y.
 Cleveland Brick & Clay Company
 Cleveland, Ohio
 Clydesdale Brick & Stone Co.
 Pittsburgh, Pa.
 Coffeyville Vitrified Brick & Tile Co.
 Coffeyville, Kans.
 Col.ewood Shale Brick Company
 Cleveland, Ohio
 Corry Brick & Tile Company
 Corry, Pa.
 Franc's Vitric Brick Company
 Boynton, Okla.

Georgia Vitrified Brick & Clay Co.
 Augusta, Ga.
 Globe Brick Company
 East Liverpool, Ohio.
 Hammond Fire Brick Company
 Fairmont W. Va.
 Hocking Valley Brick Company
 Columbus, Ohio.
 Independence Paving Brick Co.
 Independence, Kans.
 Mack Mfg. Company
 Wheeling, W. Va.
 C. P. Mayer Brick Company
 Bridgeville, Pa.
 Medal Paving Brick Company
 Cleveland, Ohio.
 Metropolis Paving Brick Co.
 Pittsburg, Kansas.

Metropolitan Paving Brick Co.
 Canton, Ohio.
 Mineral Wells Paving Brick Co.
 Mineral Wells, Texas.
 Moberly Paving Brick Company
 Moberly, Mo.
 Murphysboro Paving Brick Co.
 Murphysboro, Ill.
 Patton Clay Mfg. Company
 Patton, Pa.
 Peebles Paving Brick Company
 Portsmouth, Ohio
 Pittsburgh Paving Brick Company
 Pittsburgh, Kansas.
 Purinton Paving Brick Company
 Galesburg, Ill.
 Southern Clay Mfg. Company
 Chattanooga, Tenn.
 Springfield Paving Brick Company
 Springfield, Ill.

Sterling Brick Company
 Olean, N. Y.
 Streator Clay Mfg. Company
 Streator, Ill.
 Thornton Fire Brick Company
 Clarksburg, W. Va.
 Thurber Brick Company
 Ft. Worth, Texas.
 Toronto Fire Clay Company
 Toronto, Ohio
 Trinidad Brick & Tile Company
 Trinidad, Colo.
 Veedersburg Paver Company
 Veedersburg, Ind.
 Western Shale Products Company
 Fort Scott, Kans.
 Westport Paving Brick Company
 Baltimore, Md.

McGuire-Cummings Manufacturing Co.



*Multiple-unit-control double-track passenger car for two-man operation—
Built for Georgia Ry. & Power Co., Atlanta.*

The above shows type of cars built for the Georgia Railway & Power Co. of Atlanta. Succeeding advertisements will feature cars of the following types recently built by us.

- | | |
|--|---|
| <p>1. Light-weight, Double-track Cars
One-man-two-man operation. Built for Des Moines City Railway Co., Des Moines, Iowa.</p> | <p>3. Center Entrance Cars
(Peter Witt type.)
Built for the City of Detroit.</p> |
| <p>2. Safety Cars for One-man Operation
With double doors. Built for Gary Street Railway Co., Gary, Ind.</p> | <p>4. Light-weight Suburban Cars
Built for Chicago & West Towns Railway Co.</p> |

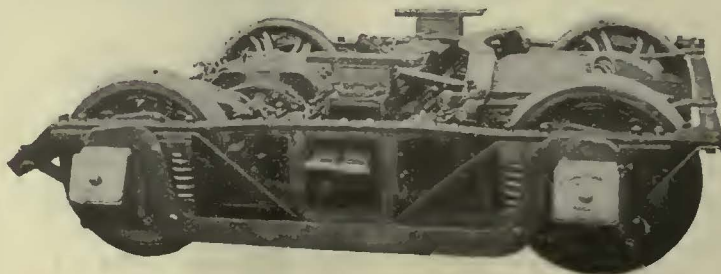
Our engineering department is at your service. We will be pleased to either submit specifications and drawings and to quote prices thereon, or we will submit proposals on specifications furnished.

McGuire-Cummings Manufacturing Co.

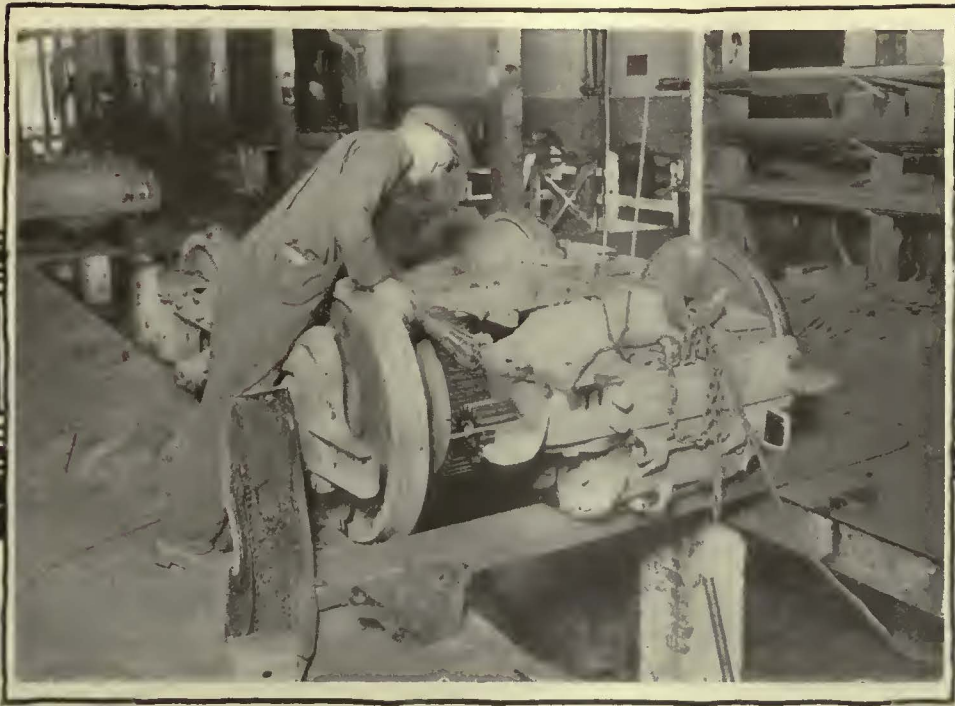
General Offices

111 W. Monroe St., CHICAGO, Ill.

McGuire-Cummings
No. 62 motor truck
for low car body
for city service



Inside hung
brake equalizer
design, 26-inch
wheels



Look into Your Lubrication Costs

The difference in the first cost of Galena Guaranteed Lubricants and the ordinary Refinery products is a very small item—amounting probably to not more than one-tenth of one per cent in the annual maintenance costs.

But the difference in service results secured is a large and important one, as it is a positive factor in determining the amount of other maintenance expenses that greatly exceed the cost of lubricants.

The low co-efficient of friction in Galena Oils is a quality that alone produces a saving in power or fuel costs far greater than this price difference. The reduction of journal and bearing troubles, labor, time losses and depreciation are others that prove their ultimate economy.

The formal recording of the purchase price of oil is by no means a record of lubrication costs. When cars are shopped, time lost, or labor required to correct conditions plainly due to lubrication trouble, charge the expense to its proper account—LUBRICATION.

Galena Oils and Service are invaluable to the Electric Railway that is working to secure improved operating conditions. For years they have been demonstrating the fact that Galena lubrication requires only an equitable service comparison to register its matchless efficiency and economy to the satisfaction of any road. A survey of your property entails no obligation.



Galena-Signal Oil Company

New York

Franklin, Pa.

Chicago

and offices in principal cities



When Service depends on vital, wearing parts



**Are you insured
with G-E Renewals?**

When you purchase G-E Renewal Parts you do more than buy so much electrical or mechanical materials. You invest in the facilities which have built quality into your G-E investment. You take advantage of our interest in seeing that this quality is maintained for maximum service.

Original quality can be maintained only by renewing worn parts with duplicates. G-E renewal parts embody the same research, the same engineering, and the same care in manufacture and test as your original equipment. They provide operating insurance well worth the cost.

As an additional service, G-E Renewal Parts Catalogs help you to get just what you want when you need it. Be sure you have your copy near at hand.

Use
your
C G-E
Catalogs



General Electric Company
Schenectady, N. Y.

Sales Offices in all Large Cities



GENERAL ELECTRIC

New York, March 1, 1924

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

Published by McGraw-Hill Company, Inc.

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

Volume 68
Number 9

Akron's 5-Cent Rubber Bubble Bursts

THE cars are running again in Akron—at a higher rate of fare. Of course it was tempting, and it did appeal to the imagination, to set out to make Akron the first motorized city. But it takes more than a supply of rubber close at hand to make a satisfactory transportation system. It takes equipment, organization and experience. This the people of Akron now know. They also know that while it might have seemed to point to greater prosperity for Akron to start the movement toward motorizing its local transportation system, inasmuch as its prosperity is so largely bound up in the market for rubber tires, actually it was disastrous to the prosperity of the city to be without local railway service.

This is not to say that the contest waged in Akron proved that buses could not supply the local transportation. There was no test of the bus. There has never been a real test of the bus in any of the cities where there has been a cessation of railway operation. The thing that has been demonstrated in Akron, as in these other instances, is that no responsible party can be found who will sign up to motorize the city at a 5-cent fare, or at a fare as low as the offer of the railway. Only those poor innocents with ample ambition but little knowledge of the transportation business and no financial capacity have been available as ready signatories to a 5-cent or near 5-cent contract.

Enough such examples have now been afforded so that it would seem that in the future public officials and public, if willing to be guided by the experience of other cities, will realize that motorization, so far as it is economic and practicable, must come as an orderly, gradual process. It cannot come overnight by kicking the traction company out of the community, even though there be the disposition to ignore the contribution of the railway in building up the city. It cannot come by setting out to destroy the capital in the railway which was invested in good faith to provide a public service.

Motorization can best come, in so far as it truly adds in a sound way to the transit facilities of a city, by permitting this development to take place in the hands of the one organization experienced in transportation work—the local railway company, and by urging such development. That is what had been started by the Northern Ohio Traction & Light Company in Akron. And as soon as the company is given a definite and fair basis on which to work, it plans to extend materially its use of buses. Thus, the quickest way for Akron to realize its ambition, as far as motors can do the job, is to leave the matter in the hands of the N. O. T. & L. and give that company a square deal.

So it comes about that Akron's rubber bubble has burst.

Outlook for Settlement at Phoenix Improved

PHOENIX, ARIZ., has now decided to go slow. Disgruntled at its local street railway, the first thought was to abrogate the franchise and try to arrange for municipal ownership with private operation. In fact, a committee of citizens appointed by the Mayor recommended this procedure. Now the measure to instruct the City Attorney to proceed to abrogate the company's franchise has been tabled and if the Mayor has his way an independent engineer will be engaged to study the situation and report upon the facts.

A very wise decision is this of Phoenix. In the present state of public opinion over the dispute of the city with the railway about paving, it would probably be difficult to convince the city that it has been enjoying a good thing, but it has. In fact, as to its railway service, Phoenix has been subsidized for years. The owners of the property have never received any dividends. At their expense the residents of Phoenix have continued to ride on a 5-cent fare in a city of only 30,000 inhabitants with 40 miles of paved streets, and in a county where there are 275 miles of paved highway, with a registration of 14,000 private automobiles and 365 days of fine weather every year. These are all facts, except that the 365 days of fine weather is Phoenix's boast. However, even an approximation of this boast adds to the railway's dilemma. The peculiar thing about this situation and others similar to it is that the very persons who in the mass continue indefinitely to accept without a blush a service for which the producer does not receive even the cost would be the first to resent the imputation of charity behind a subsidy handed to them individually.

More Evidence that Salaries Need Adjustment in Electric Railway Field

IT IS difficult to get a true comparison between the salaries paid college men in the electric railway field and those in other industries. Figures of this sort, being personal and confidential in their nature, are not ordinarily available. Recently, however, an organization composed solely of those men who attained the highest rank in college in the electrical courses conducted an investigation of the salaries paid its members in different branches of the electrical industry.

The figures published show the salary range for men out of college two, five and ten years, divided into fourteen classifications of work. The average of salaries for the electric railway men with two years of experience was seventh in the list. Thus it was just an average figure for the whole field. The six classifications paying better salaries at this period, in their order are jobbing, government work, miscella-

neous, telephone manufacturing, small electric manufacturing and telephone operating.

But when the graduate has been out five years the electric railway men have fallen to the bottom of the list, being passed by those engaged in large central station work, large and medium sized electric manufacturing, small central station work, miscellaneous manufacturing, contracting, and even teaching. At the end of ten years there could be no further drop in rank, since the bottom had been reached five years before, but the discrepancy between salaries increased, there being a considerably lower average salary for the electric railway man than for the teacher.

The salary for the railway man, in other words, increases less rapidly on the average than that of any of the other groups. From an average of \$2,100 at two years out of college, it grows only to \$2,450 after five years and \$3,050 after ten years—an increase of about \$100 a year. The teacher, on the other hand, averages \$1,850 at two years, \$2,550 at five years and \$3,350 at ten years, or nearly \$190 a year increase. At the other end of the scale are the jobbers, who average \$2,850 with two years of experience, \$3,700 with five years and \$4,750 with ten years—not quite \$240 a year advance. So the teacher whose salary is generally looked on as exceptionally low, actually gets a salary 10 per cent higher after ten years experience than the electric railway man does.

When cold statistics of this sort are published it does not make a pleasant picture for the railway industry to contemplate. While the figures apply specifically to electrical men only, it is believed that it is typical of the groups of trained men in various lines of electric railway work. What inducement is there, then, for the man with a good technical training to spend the best, the most productive years of his life for a pittance, while his classmates in all other lines of the business forge ahead of him?

If the industry is to progress it must attract to its support men who can supply the needed knowledge and virility demanded by the extremely difficult problems of modern transportation. And to do that these trained men must be paid salaries commensurate with the importance and exacting nature of the work. They must have an opportunity to progress at least on a par with those who have picked other lines of endeavor. Until this is made true the electric railway field cannot hope to get its share of the best talent, particularly when such definite information as that quoted is being circulated in college circles.

And the industry suffers accordingly.

A Change in Feeling in Regard to Snow

TEN years, even five years ago, a snow storm meant to most electric railway companies only additional expense and often loss of traffic. Not only did the snow have to be removed, but teams would find the tracks the only part of the street that was cleared, and their slow progress delayed car movements. Owing to the tediousness of travel, shoppers and others not obliged to take the cars would remain at home.

The present extensive use of private automobiles has changed all this. Following a snow storm many automobile owners leave their cars in the garage because the snow in the streets makes automobile driving difficult and disagreeable, and the snow piles at the sides of

the streets limit parking space. The effect on street railway travel is noticeable; in fact, the net gain from additional passengers in many cases undoubtedly far exceeds the cost of snow removal. Railway men in the New England States say they have had substantially less riding this winter than last on account of the open winter.

This again is an illustration of the essential character of the railway transportation in any community. Whenever other means of travel fell down, the people turn to the trolley. Not only is the street car, with its comparatively powerful motors, well fitted to make its way through the streets when conditions are bad, but the organization behind it stands ready to fight the elements in a way that individuals acting singly cannot attempt. This is one of the points that should be given consideration when an attempt is made to evaluate electric railway transportation in comparison with its competitors.

Judas Had the Decency to Hang Himself

A YEAR ago last August, during the strike of the employees of the International Railway, a train on that company's Niagara Falls high-speed line ran into a section of track destroyed by dynamite. One car of the three-car train left the track and turned over on its side. Fifty persons were injured. Suspicion fell on members of the Amalgamated Association. Now, more than a year and a half later, convictions have been secured before a Federal judge on the technical charge of transporting dynamite in interstate commerce, and sentences of one year in jail and a nominal fine have been imposed on each of four of the men alleged to have been connected with the case. The case was brought in the Federal court under the technical charge of violation of an interstate commerce provision because it was the judgment of those charged with the prosecution that a jury in the local courts could not be depended upon to render a verdict in accord with the evidence. On the same basis, shortly, more of the men alleged to have had a hand in the Buffalo dynamiting will go to trial on the same basis.

This very briefly is an outline of the news facts connected with the case. They will bear careful consideration. Entirely aside from the merits of the controversy between the railway and its men, it represents another sad chapter in the history of trade unionism that places Buffalo beside the outrage at Herrin and the dynamiting of the Los Angeles *Times*. If ever men "sold out" their union associates these men at Buffalo did so. If there is such a thing as trust in unionism then these men betrayed it. They were no less offending in their way than was Judas Iscariot, who sold his Saviour for thirty pieces of silver. Judas had the decency to go hang himself. But the Buffalo criminals who have so far been convicted have appealed their cases to a higher court in an effort to stay their absurdly mild penalty. In passing sentence, of course, the court was confined in the degree of severity of punishment which it could impose by the limitations of the technical charge on which the men were arraigned. It is impossible to fathom the feeling of the court, but it does not seem unreasonable to think that perhaps the judge had in mind the classic lines:

O pardon me, thou bleeding piece of earth,
That I am meek and gentle with these butchers.

Semi-Automatic Substation at Concord

The 500-Kw. Unit Needs Only to Be Started in the Morning—It Operates Without Attention and Shuts Itself Down Automatically at Night—The Installation Is an Improvement Over an Earlier One of Smaller Capacity Destroyed by Fire

A NEW type of semi-automatic substation has been installed by the Concord Electric Railways, Concord, N. H. This station has been worked out to obtain all possible automatic features that could be obtained at a minimum cost, without going to the expense of installing full automatic equipment.

In the *ELECTRIC RAILWAY JOURNAL* of Feb. 4, 1922, page 184, an account was given of the automatic substation equipment at that time recently installed by the railway, emphasis being laid upon the labor-saving features of the two substation layouts then completed. On Dec. 4, 1922, the West Concord automatic substation was destroyed by fire, and the company at once began to study the question of replacement. J. B. Crawford, superintendent, was convinced that any new installation should be designed as such from the ground up, housed in a fireproof structure with as much outdoor equipment as good practice would allow, and possessing the more important features which experience with the South Main Street substation and the one destroyed had shown to be desirable. As a result an entirely new substation has been built at West Concord, and provision made there for suitable interconnection with the lines of the Concord Electric Company, the local central-station organization, as well as for semi-automatic service in the supply of energy to the railway.

The new substation, shown in the illustrations, has a rating of 500 kw. instead of the 300 kw. of the former installation. It is adjacent to an old steam plant which housed the earlier equipment, the steam installation still being held in reserve in case of a serious power shortage at the Franklin hydro-electric plant of the railway, or inability to secure adequate power from the local central station. All the high-tension equipment is located outdoors. The substation building, which is only 24 ft. by 22 ft. in plan, is of brick, with a concrete floor and wireglass windows. The windows are also provided with heavy screening to protect them from missiles, the substation being in a semi-rural location. One of the pictures shows a side view of the property, with incoming transmission lines, and another shows the lightning arrester equipment, which is of the oxide film type and was furnished by the General Electric Company.

The company's facilities for operation and maintenance supervision, coupled with lower first cost, led to the choice of a semi-automatic equipment for West Concord. The building houses a 500-kw. Westinghouse rotary converter and switchboard. The automatic apparatus was supplied by the Automatic Reclosing Circuit-Breaker Company, Columbus, Ohio. The converter delivers 600-volt direct current to the trolley system, and the unit runs at 1,200 r.p.m. The cost of the new substation, exclusive of the transformer bank and interconnection with the Concord Electric Company, was about \$40,000.

The scheme of connections at West Concord is indicated in the single-line connection drawing. As out-



Front and Side of New Semi-Automatic Substation at Concord, N. H.

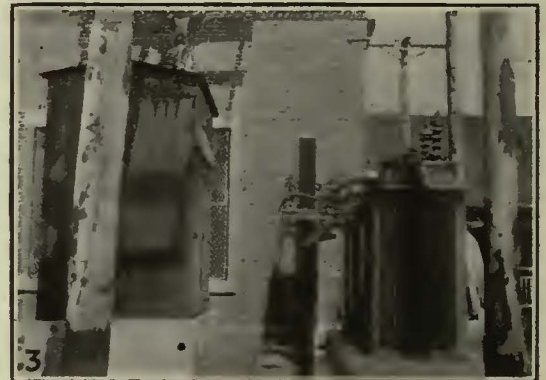
lined in the previous article, the major source of energy supply is at Franklin, 19 miles north of the city of Concord. Two 22,000-volt, three-phase lines pass the West Concord substation, and from each of these a tap is taken through disconnecting knife switches to an outdoor bus structure in the substation yard. A tap to the lightning arresters is taken off each branch circuit, and after passing through choke coils the two branch lines are brought together into a common overhead bus with disconnecting switches in each phase between the coils and the bus. One three-phase connection is then made through disconnecting switches to the railway equipment and one to the Concord Electric Company interconnection apparatus.

The railway service equipment includes a 22,000-volt oil circuit-breaker mounted in an inclosure on a concrete foundation, just outside the substation building, and a bank of three 167-kva. transformers which reduce the potential to 432 volts. The secondaries of these transformers are connected by a three-phase underground line with the switchboard and rotary converter inside the building. The detailed scheme of wiring is indicated in the larger line diagram.

The switchboard for railway service consists of five panels. From left to right these are assigned to the following uses: Starting, alternating-current side of



No. 1. The automatic switching equipment is shown at the tops of the switchboard panels.



No. 2. The dimensions of this 500-kw. converter are smaller than those of the 300-kw. unit it replaced.

No. 3. The transformer bank is shown at the right; at the left is a housing for the high-tension circuit breakers.

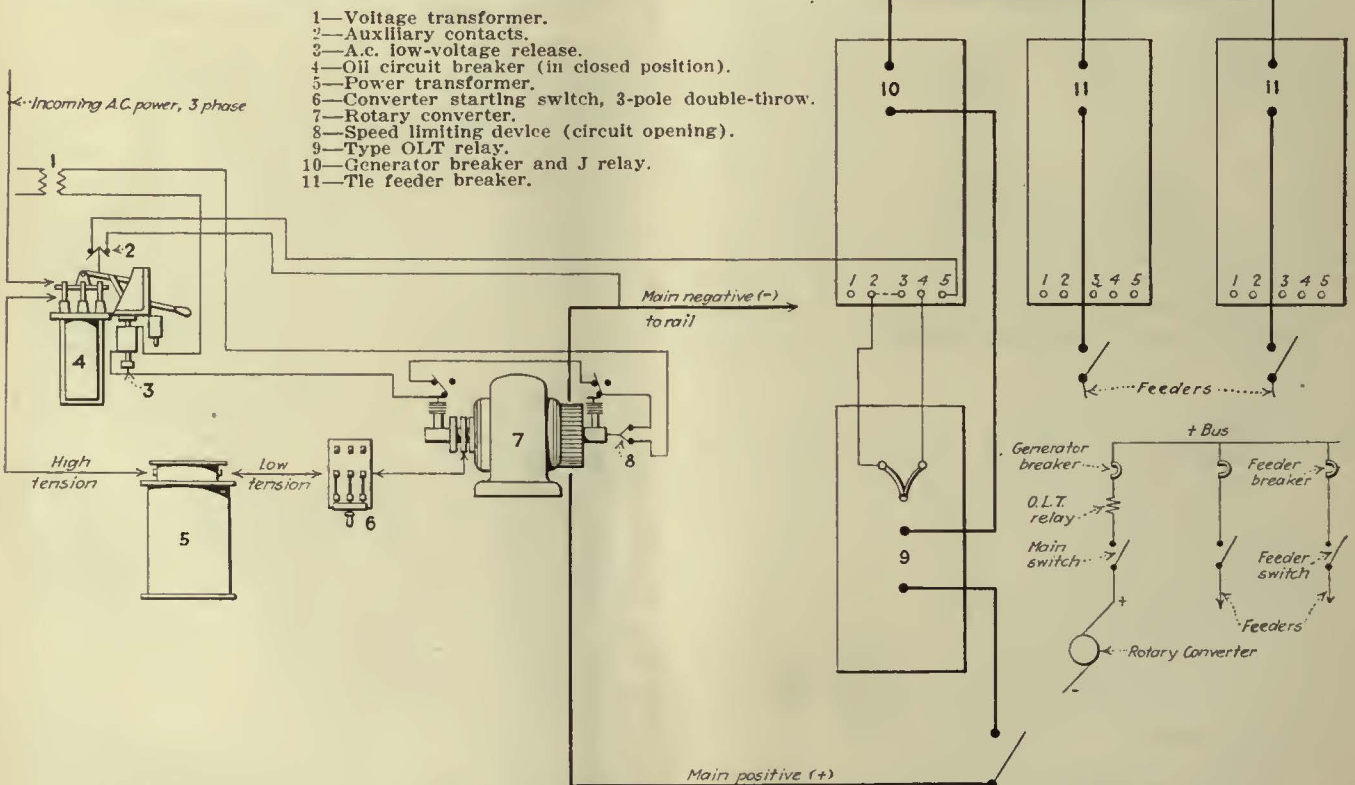
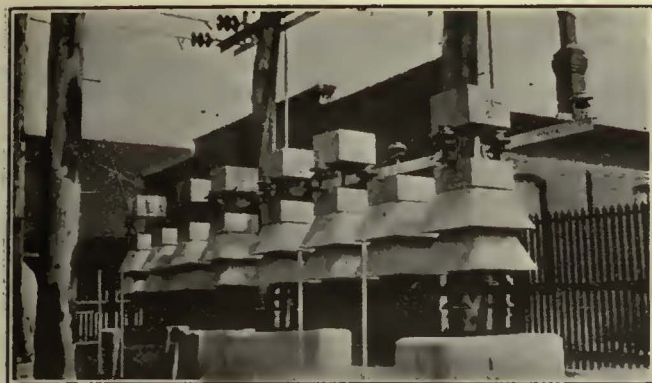


Diagram of Connections of the West Concord Substation. A Schematic Diagram of the D.C. Connections Is Shown in the Insert at Lower Right



The Lightning Arresters Are Connected to the 22,000-Volt Lines

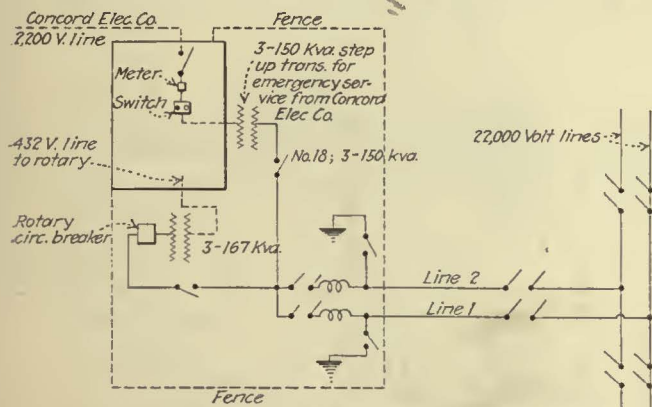
rotary, direct-current side of rotary, and two feeders. The starting panel carries a watt-hour meter, starting and running switch, and reversing switch for changing the polarity of the rotary. The alternating-current rotary panel carries a reactive-factor meter, ammeter, Anderson time switch for cutting off the substation at a predetermined hour of night after the day's run, a handle for manual working of the 22,000-volt circuit-breaker when necessary (with bell-crank lever running outdoors) and two time-element overload relays which close the circuit through the 22,000-volt breaker trip coil in case of protracted overload. The breaker is of the solenoid-operated type.

AUTOMATIC RELAYS CONTROL BREAKER

The direct-current panel for the rotary contains a volt-meter, ammeter, positive and negative knife switches, field rheostat handle and an automatic reclosing circuit breaker. This breaker is equipped with an automatic reset reverse-current relay and a type OLT long time interval overload relay, whose function is to allow a high setting of the breaker for instantaneous overload, while at the same time it protects the generating unit against prolonged excessive overload. The reverse-current relay protects the generator unit against reversal of current and allows the unit to be connected automatically to the bus when the correct polarity has been restored.

This breaker is also interlocked with the a.c. side through auxiliary contacts on the a.c. oil circuit breaker so that in case this is tripped, due to excessive overload, phase failure, no voltage, operation of the time clock, overspeed, or operation of the bearing thermostat, the d.c. side will be disconnected from the bus.

Each feeder panel contains a single-pole knife switch,



One-Line Circuit Diagram, Showing Interconnection of Railway and Central Station Power Supply Systems

ammeter and automatic reclosing circuit breaker. In case of outside short circuit the feeder breakers remain open until a definite time cycle has elapsed and will not again close until the excessive overload or short circuit has been removed.

OPERATING COST LOW

The only attention required is starting the substation in the morning and regular inspection of the equipment. One maintainer starts the unit at 4.45 a.m., and the installation operates until midnight, when the Anderson time switch cuts it off. The total cost of inspection and operation is about \$800 per year. The substation was placed in service in June, 1923, and has given entire satisfaction since.

The substation is wired for direct-current series lighting and for emergency lighting from a.c. multiple service. A bank of three 150-kva. transformers stepping up from 2,300 to 22,000 volts is provided outside the substation building for the interconnection between the Concord Electric Company and the Franklin-Concord transmission lines, with a General Electric oil circuit breaker, watt-hour meter and disconnecting switch mounted inside the building. A 500,000-circ.mil 600-volt direct-current railway feeder passes through the substation, and a knife switch mounted outdoors provides means of by-passing this substation if it is desired to work upon the interior equipment. It is of interest to note that the new rotary converter is only about one-third the size of the former 300-kw. unit, and will withstand a 50 per cent overload for two hours.

Trolley Guides in Portland, Ore.

A GREAT many cities indicate their different routes by letters or numerals carried on the dashboard, hood or other conspicuous place. The Portland Railway, Light & Power Company, Portland, Ore., goes a step further and publishes a twelve-page pocket folder showing the routes taken by the different lines, so marked, with a statement of the times that the first car and the last car of that route leave the terminals. The form in which the information about a single line is published is reproduced below.

A very brief reference to this guide was published in the issue of this paper for Feb. 2, but by a typo-

RC

ROSE CITY—Outbound—From Fifth and Washington Streets via Washington Street, Second Street, Burnside Street, Burnside Bridge, East Burnside Street, East 10th Street, East Davis Street, Sandy Boulevard to East 82nd Street.

Inbound—Return same route to Burnside Street to Fifth Street to Washington Street.

First car leaves—Fifth and Washington.....	5:59 A.M.
82nd and Sandy Blvd.....	5:30 A.M.
Last car leaves—Fifth and Washington.....	12:30 A.M.
82nd and Sandy Blvd.....	12:01 A.M.
Owl car leaves—Fifth and Washington.....	1:30 A.M.
	and hourly
82nd and Sandy Blvd.....	2:01 A.M.
	and hourly

graphical error the name of the city was given as Portland, Me., instead of Portland, Ore. The Portland Railway, Light & Power Company gives these guides to passengers on request and they are supplied from ticket offices, agencies, information bureaus, hotels, etc. The guide has been found to be a business getter.



The Influence of American Practice Is Seen in This Swiss Motor Car



This Seating Arrangement Is Used Because the Car Is Only 7 Ft. 2 In. Wide

Larger Motor Cars for Zürich

An Important Feature in Construction Is Continued Use of Aluminum Panels—They Are Used for Train Service with Light-Weight Trailers

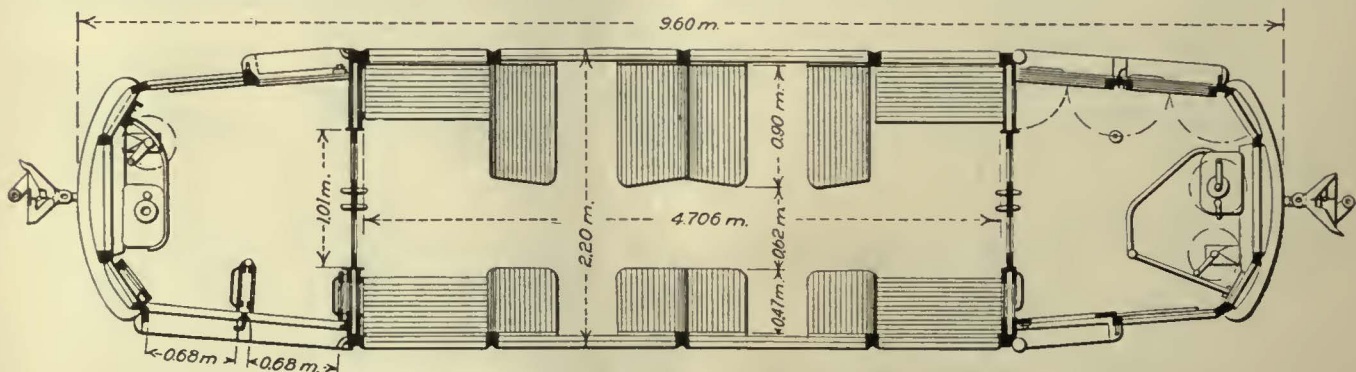
THE Municipal Tramways of Zürich, Switzerland, serving an industrial population of some 215,000 persons, has recently added twenty motor cars, eighteen trailers and six rebuilt open summer cars to its equipment. The motor cars are of particular interest as showing the most recent development in Continental practice.

Although double-truck cars were considered impracticable for Zürich track and passenger-interchange conditions, the length of the car body proper was extended from 4.16 m. (13 ft. 7 in.) to 4.7 m. (15 ft. 5 in.) and the width enlarged from 2 m. (6 ft. 6 in.) to 2.2 m. (7 ft. 2 in.). The latter change made possible the first use of the cross-seats to the extent of a double seat on one side and a single seat on the other. The platforms and vestibules have been tapered American style, following the management's previous use of this construction on its Forch suburban railway. Separate exit and entrance is now provided at the rear by means of double-folding doors, while a sliding door at the motorman's end provides for front exit. The body has end doors of sliding type. The over-all length of the car over vestibules is 9.58 m. (28 ft. 1 in.) and over couplers, etc., 9.6 m. (31 ft. 6 in.).

The car interior has twenty seats, but only four standee spaces. On the other hand, the official standee spaces on front and rear platforms are ten and eleven respectively. Thus, the legal carrying capacity of the car is forty-five passengers, twenty seated and twenty-five standing. The preceding (1915) type motor car had a total capacity of but thirty-five passengers.

The entire body length is taken up by only four fixed sash, but ventilation is provided by means of six narrow hinged sash above these stationary windows. Each vestibule is provided with a hinged sash for regulation by the motorman, according to weather conditions. Each vestibule also has a louver ventilator on each side of the signal light above the hinged sash. The car roof is also provided with two louver ventilators which operate in connection with the auxiliary hinged side sash mentioned.

The framework of the car is of oak, ash and pitch-pine, and the general finish in ash, oak and elm. The panels, however, are of aluminum in accordance with the management's standard practice since 1910. The body panels are 2 mm. (0.0786 in.) and the platform sheathing, 3 mm. (0.1181 in.) thick. The advantages found in practice are given as: (a) Easier maintenance, as in restoring bent portions; (b) less repainting than sheet steel; (c) less weight. Oxidation can be kept to a negligible amount if all contact surfaces between the sheathing and the posts are first well covered with oil paint.



Floor Plan of the Zürich Motor Car

The motor-car body is carried on the truck through four leaf springs. The wheelbase is 2.6 m. (8 ft. 6 in.) instead of 2 m. (6 ft. 6 in.), as in the previous design. Among the up-to-date features are ball-bearing journals and automatic couplers with which the electric braking of motor and trailer is included. The two motors are rated at 60 hp. each at 500 volts, and 66 hp. each at 550 volts. The gear ratio is 1 to 4.8 and the car-wheel diameter, 860 mm. (33.8 in.). The controllers have six series positions, four parallel positions and six additional positions for the four electro-magnetic track brakes. Both the resistors and the circuit-breaker are mounted on the roof. Bow trolley collectors are used, as is customary in Zürich practice.

The total weight of a motor car is 12,800 kg. (28,300 lb.), of which the two motors alone contribute 2,700 kg. (5,960 lb.).

Of the eighteen trailers, nine are of the same width and with the same door arrangements as the new motor cars. These cars have sixteen seats and official space for twenty-six instead of twenty-two standees. They weigh 5,200 kg. (11,440 lb.) complete. Automatic couplers with electrical contacts for the brake system are used.

It may be of interest to add that while part of the electrical installation was made at the railway shops and part at the car builders' plants, the work in both cases was done by the personnel of the railway.

Important Points in Traffic Control

An Analysis of Four Important Points in Traffic Control with Their Effect on Street Congestion—Suggestions Are Made for Practical Relief

By J. Rowland Bibbins

Consulting Engineer, Washington, D. C.

IN THE ELECTRIC RAILWAY JOURNAL of Feb. 23 the broader aspects of the so-called "traffic problem" were discussed by the writer. But certain phases of the program suggested will justify much further research, along technical and economic lines, than they have received in the past. These are:

1. Increase in traffic signal control efficiency in relation to track and roadway capacity, especially at master control or key crossings.

2. Developing track capacity at electric railway downtown terminals to the fullest extent, speeding up terminal operations and providing for expansion of the terminal district and service.

3. Economic design of roadways, both in cross-section and alignment, and their economic use for maximum efficiency of the whole thoroughfare system, including transit, traffic and combined purposes.

4. Perfecting routing and operating methods, so as to forestall uneconomic competition, through betterment of rail service.

It has become quite apparent to the writer, after considerable study, that these factors are closely interdependent. This is one reason why adequate results as a whole have not been achieved in our city-congested districts because, as a rule, only one part of the problem has been considered, and this not always in a very scientific manner.

TRAFFIC SIGNAL CONTROL EFFICIENCY

Of this group, traffic signal control is perhaps of first importance. Too often the policemen on the corner, not the president of the company, determine the schedules on which the railway system will be run. Detailed time-studies indicate that today a very large amount of crossing time is lost due to the unscientific application of signal control. Moreover, this delay is cumulative, both as to cars and traffic, and mounts in lost time and money into colossal figures. Several points are involved:

(a) The duration or length of the signal cycle. This is most important and should vary according to the time of day and pressure of traffic movement.

(b) Relative distribution of time between stop and

go signal—in proportion to the traffic needs in each direction.

(c) A preparatory signal. This is desirable but seldom used.

(d) Relativity of main line and cross traffic movement.

This last determines whether the master control of a long street or of a given traffic area can be properly carried out from one key point. Curiously enough, "Main Street" traffic is usually supposed to be largely *through* movement, but a traffic survey often shows the contrary, i.e., that "Main Street" is simply a *clearing street* for transverse traffic and not through traffic. In that case it should be signaled just like any terminal intersection and not as a trunk line. In some of the block signal installations in this country this incorrect assumption has led to such great confusion that the fixed block system as applied to the through artery had to be abandoned at times, although retained at the key point.

There is much to be gained by the study of the variable versus fixed signal system. For some reason, almost all of the block signal systems that have been installed have been placed on an arbitrary fixed period basis running through the day (9 a.m. to 9 p.m.) regardless of the traffic, the weather, the day of the week or the season, and particularly of the varying amount of cross traffic. The result is needless waste of street capacity and unnecessary delay to all traffic during many hours of the day. It is only necessary to observe, in cases of this kind, what a large proportion of the signals are held open after all traffic has passed (i.e., with an idle crossing), waiting for the clock to tick for the next signal change. This is most unscientific. Street car schedules cannot contain so much lost motion. Why should traffic?

A general guide to good signal control should be the minimum of rigidity, whether by block signal, semaphore or hand control. In fact, it is curious to observe how the rigid semaphore system has fastened itself onto our police regulations, and it only too often occurs

TABLE SHOWING COMPARATIVE EFFICIENCY OF THREE-PART AND TWO-PART CYCLE

	Three-Part Cycle, Length Two Minutes or Thirty per Hour			Two-Part Cycle, Length One and a Half Minutes or Forty per Hour			
	For Cars	For N.-S. Vehicles	For E.-W. Vehicles	For all N.-S. Traffic	Equivalent Number of N.-S. Passes*	For all E.-W. Traffic	Equivalent Number of E.-W. Passes*
Length in seconds for movement.....	30	45	45	45		45	
Average number of unit passes per movement.....	4.37	27.4	26.7	1.34 cars and 20.5 vehicles	25.9	1.93 cars and 20.1 vehicles	27.8
Equivalent number of unit passes per minute of	8.74	35.6	35.7	1.8 cars and 27.4 vehicles	34.6	2.56 cars and 26.8 vehicles	37.0

* Based on an equivalent of four autos to one car.

that semaphores are installed long before they are justified. It has been demonstrated that even fairly heavy traffic will clear itself automatically and only needs a restraining hand to prevent tangles. Permissive hand control, even when semaphores are used, greatly facilitates turning movements, especially permissive right hand turns. The fixed signal intervals of the automatic "lighthouse" signal are correspondingly subject to criticism in some important locations as they exhibit no intelligence in apportioning signal periods to

tion as well as to traffic can hardly be overestimated.

The accompanying graph shows a time study at a heavy intersection along a ten-block "Main Street" with block signal system supposed to be operated in synchronism but actually operated independent of the master-control towers. The graph shows the actual number of seconds required for each signal and the number of vehicles passed through that signal in each direction. The master signal is arranged on a cycle of two minutes, divided as follows: Thirty seconds for all cars to move, all traffic stop; forty-five seconds for north-south traffic only, all cars stop; forty-five seconds for all east-west traffic only, all cars stop. Yet it will be noticed that at the crossing shown in the diagrams the north-south traffic ranges from seven to thirty-seven vehicles per signal, but also that the signals vary from thirty-five to sixty-five seconds. Similar great variations are shown in the case of east-west traffic. Further, the time taken to pass five cars varied from twenty seconds to forty-two seconds, and for seven cars, fifteen seconds to fifty-two seconds. This variation indicates the wide range of traffic conditions actually encountered and how important it is to leave room for a certain amount of flexibility and intelligence in the signal control according to conditions.

But the most important point is this, that a signal of thirty-five seconds can pass vehicle movement up to thirty vehicles per signal. On the other hand a time interval of thirty-five seconds was used to pass as low as seven vehicles per signal. Similarly in east-west traffic thirty seconds should pass perhaps thirty-five vehicles, but the same signal period was used for ten only. Here is a great wastage of street capacity in the present signal application.

Fixed signals are too long for light traffic and maybe too short for maximum traffic. In this illustration all traffic on the street is held up every two minutes, street cars for ninety seconds and vehicle traffic for seventy-five-second intervals; that is to say, thirty cycles per hour. To demonstrate the wastefulness of these long intervals, this traffic was recast on the assumption of forty cycles per hour (instead of thirty) in a straight two-part signal (instead of a three-part) with the cars moving at the same time with the vehicles in the same direction. The result was that the average equivalent total traffic per cycle, including car movement or per minute of street opening, was actually no greater than with the longer cycle shown in the diagrams, excluding car movement. This is shown in the table above.

How important is this element of variability is indicated by the following figures, showing actual traffic movement per signal, with varying durations of periods of observation:

	Motors	Cars per Signal
Average rush hours 4 to 6 p.m.....	50	4.4
Maximum sixty-minute rush period.....	54	4.5
Maximum thirty-minute rush period.....	63	4.9
Maximum fifteen-minute rush period.....	78	5.7
Maximum five-minute rush period.....	94	8.0

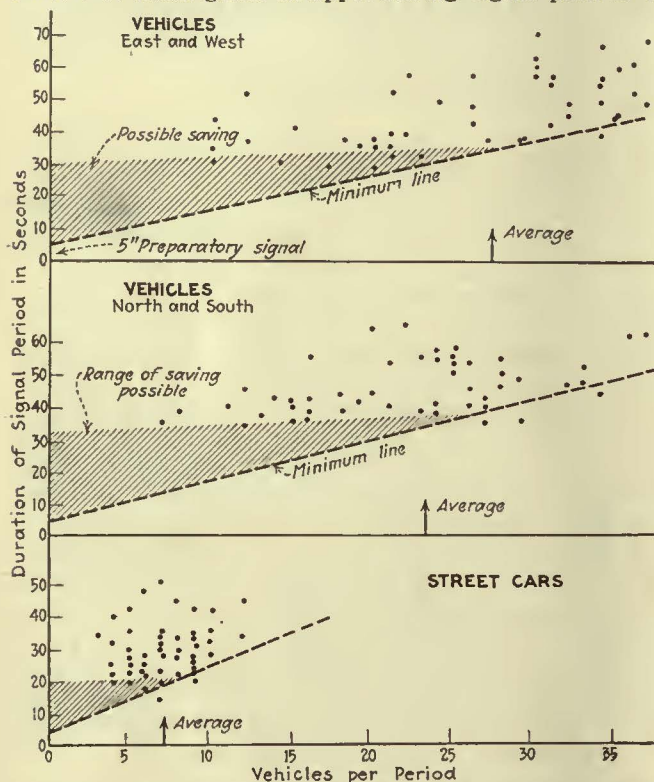


Fig. 1—Time Study of Variable Signal Control

Dots indicate actual motor and car traffic observed for varying length of signals according to street conditions. A fixed master control traffic signal on the same street a few blocks away divides the traffic movement there into three periods: Forty-five seconds for north-south vehicle movement, forty-five seconds for east-west vehicle movement and thirty seconds for surface car movement, making a two-minute cycle. But note how small a proportion of the actual traffic this fixed signal a few blocks away actually affects.

the demands of traffic. Some, however have the variable feature, i.e., may be adjusted by hand or by distant control.

Generally speaking, the shortest possible interval in the long run yields the greatest street capacity. A speed-time curve of traffic in platoons running one block each would indicate about twenty-five seconds between start and stop; two blocks, forty-five seconds. Thus, a skip-stop platoon system, assuming equal cross traffic, would call for a one-and-a-half-minute cycle along the "Main Street," or perhaps only one minute with light cross traffic. Yet we find block signal cycles ranging from two to three minutes duration. The seriousness of this cumulative delay to street car opera-

The study of signaling is highly complicated, even more so that in railroading, due to the many uncertain factors. But one thing seems certain—that more flexibility and exercise of judgment are needed if the traffic of the central district is to be speeded up rather than slowed down.

Perhaps less regulation, rather than more, would be advantageous, as proved in the case of an important intersection in Washington, once badly congested. The policeman fell sick and nobody was available to replace him. The traffic promptly cleared itself, and he has been replaced by some well-placed permanent guide curbs in the street. It seems especially unfortunate that the use of the fixed synchronous block signals should be suggested for use in various cities because these have helped Fifth Avenue, New York, where conditions are unique. The installation of such an elaborate signal system should not be made until comprehensive traffic surveys and time studies have been made to determine the characteristics and needs. Then the system should be designed to meet those needs and not for conditions in some distant city.

DEVELOPMENT OF DOWNTOWN TERMINAL CAPACITY

The cumulative effect upon the operation of street railways of all the natural and artificial congestion just described is well indicated in the second graph, showing the actual minutes transit time by 150 cars looping in the downtown district at various times between 4 p.m. and 6 p.m. It will be noted that the looping time at 4:15 averaged about twelve-and-a-half minutes, at 5:20 twenty-two-and-a-half minutes, at 6 o'clock thirteen minutes. Some of this lost time is of course due to street car interferences in special work and additional time required for loading, etc. But the major proportion of it clearly occurs from traffic congestion and signals. The average trip running time of the system between termini is only about forty minutes. Thus, with the average haul, if a passenger boards these loop cars inbound to obtain a seat, more than half of his trip home is consumed in the loop. This twelve-and-a-half minutes lost time is the real point of attack. And it is easy to see when a two-minute signal cycle is imposed upon the system along the main clearing streets how this loss of time accumulates before cars can escape from the controlled area.

In developing terminal track capacity, the same type of time study should be made before elaborate or radical changes in routing and operations are put into effect. These involve the relative number of car interferences under various routing schemes, the effect of non-clearance curves, open and closed loops, proper distribution rather than concentration of loading points, standardizing of rolling stock and tractive capacity so far as possible on given lines, location of special work, segregation between railway and motor streets, and of course the effect of the signal system. Such studies on a large system for various routing plans in the terminal district have shown variations of from 100 to 200 per cent in actual track capacity at the critical point, which of course determines the minimum headway of a trunk line.

These traffic observations and surveys indicate this important point—that unless simplification of routing, ease of riding from one part of the city to the other and speed of transit can be secured there is no other way in which to forestall uneconomic competition with the railway system and the growing use of private motor cars

in rush hours, especially in crosstown service. For the motor car, even if excluded through more and more rigid regulation from downtown streets, will discover by-pass routes and thus secure what is most desired, speed. Too much effort has been expended in the past on "verboten" regulations and too little upon studies of fundamental corrective measures.

ECONOMIC DESIGN AND USE OF ROADWAYS

It is a sad commentary on civic understanding and ingenuity that in a recent traffic survey of the entire central district of a large city the writer found an actual traffic efficiency of the outlet streets during maximum rush hours, outbound, of only 25 per cent of the full capacity of these roadways (even assuming solid parking along the curbs). City authorities and even railway men still recommend the decimal system of

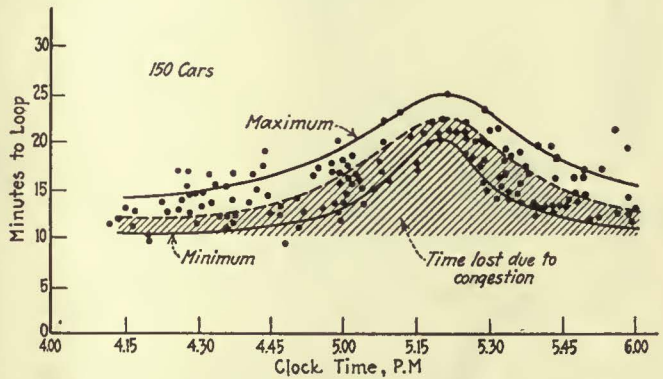


Fig. 2—Time Study of Rush Hour Transit Time Through the Loop District

This chart shows what "congestion" means in lost car-hours. Dots indicate the actual round trip time to complete terminal loops non-rush and rush respectively. The area of the "hump" converted into lost dollars, passenger time and patronage would seem to justify improvement measures.

street width, notwithstanding that decimal widths have little or no relation to the traffic needs of the roadway.

There are certain minimum widths required for various traffic lines. Obviously it is a waste of money to rebuild or widen streets unless it is possible to jump from a four-line to a six-line roadway, for example. The only exception would be to secure a five-line roadway either where one-way operation cannot be avoided or with shifting center lines, morning and evening. Taking the land values and incidental damages at only \$1 per square foot, auto streets will cost for land from \$70,000 to more than \$110,000 per mile to widen the roadway to the next higher stage necessary to secure any increased capacity at all, and trucking streets will cost from \$90,000 to \$130,000. With reconstruction and paving these figures might amount to four or five times those given. And the unit figure quoted is of course very low. If the full traffic width is not secured, the cost of the change is of course practically lost.

Every main thoroughfare has a different character, use and traffic demand factor, and requires special design at various points. Especially is this true on street railway thoroughfares where surface loading stations have become almost imperative, not only to speed up car loading and reduce street accidents but also to keep traffic moving in streams instead of blocks. The low traffic efficiency above cited was found to be due not only to the rambling of motors all over the streets but mostly to the fact that the city has paid no attention to the reconditioning of the majority of these outlet streets, all of which were 90 ft. wide or over. The

trouble was not all downtown, but fundamentally rested upon the defective thoroughfare plan of the city, which in most cases can be readily corrected.

Why are not more engineering and high-class railroading put into the traffic problem? The plain result of negligence in this particular case is this—that through this downtown district there were actually recorded during the business day one vehicle movement to every two-and-a-half people residing in the entire community, an extraordinary amount of needless cross-town traffic through the center, and an outbound vehicle passenger movement during maximum rush hours approaching that of the street car system. Congestion, poor street design, inefficient traffic operation, complicated street car terminal routing and lack of scien-

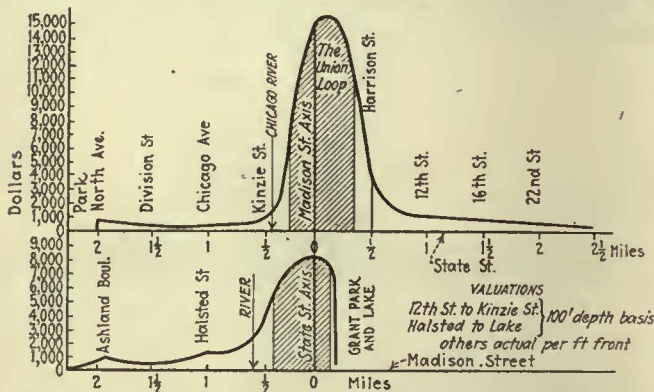


Fig. 3—For the Future Why Not Fill Up the Valleys? Profile of land values along the main axes of a typical large city. If we are "congested" now with perhaps only 30 per cent of the maximum permissible building floor space developed, what will occur with full development? Land values, building heights, local transportation and congestion complete the vicious circle.

tific cartage control in railroad and industrial freight through the loop inevitably results in slowing down the entire system until people turn to private automobiles as their last resource. The writer confidently believes that a scientific attack upon this problem offers the possibility of doubling almost immediately the traffic capacity of the streets of our congested districts.

IMPROVED ROUTING AND OPERATING METHODS

The perfecting of routing and operating methods is the final step in which the street railway industry can contribute a large share toward prompt improvement of the traffic situation. But no such improvement can be hoped for with adherence to obsolete methods, complex terminal routing and undue concentration of terminal movements. It is often helpful to develop alternative routing plans designed to untangle the loop and diffuse business over a larger area so as to be comparable with present or other plans proposed. The comparative car interferences, track density, loading density and transit time will immediately tell the story.

All too often this concentration has been brought about by the insistent demand of powerful real estate and business interests which are alone concerned in maintaining high land and rental values of abutting property. What this means must be clearly evident from the accompanying profile of land values, north-south and east-west, in a great city. Concentrated transportation means high land values, higher buildings, traffic congestion, then more transportation, and the vicious circle is retraced until the ultimate of congestion—stagnation—is reached. Shall we develop our cities along this unscientific method or set to work to devise a scientific plan of transportation based upon facts?

Telephone Dispatching in San Antonio

After an Experience of Ten Years the San Antonio Company Is Strongly in Favor of Telephone Dispatching for City Service—Many Advantages Are Listed

BY WILLIAM W. HOLDEN

Superintendent of Transportation, San Antonio Public Service Company

IN ORDER to give proper supervision of its service at all times of the day and to keep in the closest possible contact with the operation of its cars, the San Antonio Public Service Company has maintained a telephone dispatching system since 1914.

Under this system, the dispatcher is located in the company's office building, and his switchboard is connected directly to telephones located at the terminals of all lines and at all junctions and other intermediate points of importance, especially at crossovers where cars may be required to turn back to fill open spaces in schedules caused by delays.

All motormen and operators regularly call in at the end of the lines. In case a car is delayed and a second car is following close, the crew will call in at an intermediate phone for orders. Minor accidents, delays, and defects in track, overhead, cars, equipment and supplies are reported at the ends of the lines. Major accidents are reported from the first available private or company phone.

The telephone dispatching system has proved itself so effective and economical that it is considered absolutely essential to operation.

A GAIN IN SCHEDULE SPEED IS MADE POSSIBLE

On account of the telephone dispatching, cars can be scheduled at a higher rate of speed, probably as much as 10 per cent higher, because no allowance need be made for such delays as may be called frequent, but not regular. Cars must report to the dispatcher each trip, so that by the omission of a report the dispatcher knows of any delayed cars in sufficient time to take steps to take care of the break in schedule.

As a telephone report, unless it is a special report, requires only about five seconds to transmit, the time for reporting does not affect schedules. Then, too, a trainman will be more conscientious about being exactly on his schedule time when he knows that the fact of his arrival at a definite point is being recorded.

If schedules are slow enough or have sufficient layovers to allow for the worst conditions that frequently occur, it requires additional cars, and if some of the delays provided for do not occur, the service is too slow to be attractive. It is therefore more economical to provide for as fast a schedule as can be maintained on the average and to provide a quick and effective means of correcting the service when delays occur.

INSPECTION SERVICE MADE MORE EFFICIENT

By the use of the telephone, the effectiveness of the supervision of inspectors is greatly improved and the cost of supervision reduced by at least one-half. The experience of inspectors on a line where there is no telephone dispatching is that they must station themselves at some location to check the cars as they pass. If something goes wrong, they do not know it until cars fail to show up. Then they do not know what is wrong or

where it is, but must start a search for the trouble. After finding the trouble, they are usually so busy getting the trouble remedied that they cannot give attention to resuming service with other cars available that are not in trouble. And even after the trouble is cleared, it is difficult for them to get in touch with all of the cars in time to get normal service restored promptly.

With the telephone dispatching, every line inspector keeps in touch with the dispatcher so that the dispatcher can get him very promptly. The inspector, knowing the dispatcher will notify him of trouble, can give his full attention to instructing and assisting the men on the line. When trouble occurs, he learns of it much sooner, and when he does learn, he has complete information. When he arrives at the location, he can give his entire attention to clearing up the trouble, because he knows that if he gets the cars moving the dispatcher will take care of the work of restoring the schedule. With the telephone dispatching, if the trouble is serious, several inspectors may be sent from other lines, who would never have known of the trouble in any other way.

Supervision, thus economically controlled, can be handled with fewer inspectors because one inspector can handle several lines in the same territory.

If an inspector were assigned to each line in San Antonio, it would require thirty-five inspectors, on nine-hour shifts, not including any general inspectors in the downtown district. With the telephone dispatching, the work has been so combined that we are using only nine regular line inspectors, including downtown inspectors, plus three dispatchers, and the cost of telephones is equivalent to the salary of only one inspector, so that there is an equivalent of thirteen inspectors with telephone dispatching, against thirty-five inspectors required to do the same work without the telephone dispatching.

PROMPT EMERGENCY WORK IS POSSIBLE

Reporting to the dispatcher is a mechanic, who is on duty at all times and has a small automobile equipped with minor wrecking tools. He is thus able at short notice to take care of autos stuck on the track as well as minor accidents to and breakdowns of defective cars.

A messenger for carrying transfers and change and for relieving conductors of articles found on the cars is also kept on duty at all times in the dispatcher's office for the convenience of crews, and his work is directed by the dispatcher. The two men in this service are trainmen retired from active road service.

A wrecking car is kept at the carhouse for major accidents and can be summoned by telephone. During regular working hours for linemen, the emergency tower wagon and crew are employed at all times in regular work, but they maintain close contact with the dispatcher so that they may be dispatched to trolley breaks without delays. Track and switch repair men maintain contact with the dispatcher for the same purpose.

Before the telephone dispatching was installed, both a line crew and a track trouble man were constantly on duty awaiting emergency calls. The fact that a trainman must call up the office makes it very easy for him to report defects in cars, overhead, track or other equipment. This encourages him to report minor defects in time to save major ones. Otherwise a trainman must remember the defects he has seen and make a special effort to report them after he is off duty. Even the most conscientious man will often be so interested in getting home after his work that he will forget to make such a report, or hope that some one else will.

Reporting accidents to the claim department is one of the most important functions of a trainman. There is no way to estimate the help it is to a claim department to have a definite report on all accidents, no matter how slight, within at least one hour of the time that it occurred and averaging within twenty minutes from the time it occurred. Of course, major accidents, wherever they occur on the system, are reported immediately.

MANY OTHER ADVANTAGES

There are many little ways in which telephone dispatching has proved valuable, such as locating lost children quickly, reporting the loss of valuable articles, answering exaggerated complaints on service, and many other things too numerous to mention.

To sum up the whole situation, the San Antonio Public Service Company feels that telephone dispatching gives that close personal touch to the control of its car operation that is necessary to efficient management. The company learns of troubles in time to take action. It is convinced, after ten years of operation, that telephone dispatching is necessary for the most efficient and economical operation of street cars.

Interurbans Co-operate with Independent Bus Lines

BOTH the Interstate Public Service Company and the Indianapolis & Cincinnati Traction Company, Indianapolis, Ind., have made contract arrangements with independent bus operators for certain co-ordinated transportation services.

The Indianapolis & Cincinnati Traction Company has two lines out of Indianapolis, one of which terminates at Rushville, Ind., and the other at Greensburg, Ind. Through rates with the interurban line have been established with a bus company operating beyond Rushville to Brookville, a distance of 32 miles. A similar arrangement has been made with a bus company whose line extends approximately 25 miles beyond Greensburg to Versailles.

The joint transportation arrangements were made with the distinct understanding that operation of the buses was to be continued throughout the winter without interruption if physically possible. These two bus lines brought 332 interchanged passengers to the railway during the month of December. The bus lines make connections with the railway and a joint timetable has been issued. Arrangements are also now being negotiated with these bus operators to extend the railway company's freight service to these same points by means of motor trucks.

In making arrangement to thus extend its services the railway selected the best of several bus operators running buses out of Rushville and Greensburg and made a contract terminable on thirty days notice by either party and providing for a settlement of revenues once a month. Both railway and bus operators report the arrangement to be very satisfactory thus far, new business coming to both as a result of the co-ordination.

The Interstate Public Service Company has made arrangements with a truck company to handle electric railway freight between Seymour, a town on the interurban line, and Brownstown, a distance of about 15 miles. A joint through tariff has been issued between points on the truck line and points on the railway line. This is said to be one of the earliest issues of such joint tariff.

Akron's "Rubber Urge" Passes

Street Cars Resumed Operation Feb. 28 Under Better Rate of Fare—Full Statement of Settlement Given—Vote on Permanent Franchise Nov. 4—Entire Controversy Reviewed, with Expressions of Opinion on Necessity for Cars by Various Civic Organizations

AKRON is riding to work again—riding in comfort and with complacency—and riding on street cars. There will be no more guessing for a time at least—if ever—on the part of the local public as to what the next day will bring forth for them in a transportation way, for on Feb. 28 the Northern Ohio Traction & Light Company resumed full service on its railway lines and its bus routes. A month of service with nondescript autos operated by ambidextrous drivers has done more toward restoring the rule of reason than six years of talk. The politicians are penitent and pensive. The public is pleased. Akron has been riding "exclusively" on rubber since Feb. 1, but its ride was not very resilient.

The agreement under which the cars and the buses of the railway were returned to service was reached late on Feb. 27. A temporary franchise has been granted to continue in effect until May 1, 1925, pending negotiation of a permanent grant which will be drawn and submitted to popular vote on Nov. 4. Until Dec. 4 the fare is to be 5 cents with 1 cent additional for a transfer. If the grant is defeated when submitted to the public the fare is to be 6 cents with a free transfer after Dec. 4 and until May 1, 1925.

The company has agreed to keep the paving between its tracks in good repair and to pay the paving costs on West Market and Bowery Streets, and also to pay a portion of the cost of East Exchange Street viaduct. But if the permanent franchise is not granted the city agrees to reimburse the company on all these payments made.

An audit of the company's books is to be made by a reputable firm before Oct. 1 and is to be made public. If the company and city cannot agree on an auditor, one is to be appointed by Federal Judge D. C. Westenhaver of Cleveland.

All buses now operating in competition with the railway are to cease operation within sixty days. The two franchises granted last week to the Mueller Brothers and Zeno Transportation Company are revoked, but both companies will be permitted to operate on the routes over which their buses ran prior to Feb. 1, as these routes are not in competition with the lines of the railway. It is said the city has had all the motorization it wants and no difficulty is anticipated in preparing a new permanent franchise to cover the period after Dec. 4, 1924. There is nothing in the franchise which contemplates a later motorizing of the city after the November election in event of failure of the franchise to pass. In fact the city expressed itself at the conference that no such attempt would be made.

The franchise passed by the Council received the favorable vote of every member and the immediate approval of the Mayor. The franchise is also meeting with the approval of the majority of the public. It revokes the ouster ordinance of Jan. 15 and requires the withdrawal of the 7-cent rate filed by the company with the Ohio Public Utilities Commission Jan. 3.

The company is to make a number of bus extensions and will purchase twenty new buses for the purpose.

Altogether, the company agrees to make expenditures amounting to between \$350,000 and \$400,000 in paving charges, construction and new buses. The agreement in full is printed on page 334.

THE WHOLE STORY IN BRIEF

For six years the Northern Ohio Traction & Light Company has been endeavoring to secure a new contract in Akron, but always that intangible thing called politics has stolen in at the eleventh hour to block progress. Again and again the company has shown the necessity for transportation development in the city and pointed out that real progress along these lines could not be made in view of the uncertainty surrounding the action of the city when the old contract expired. Several times an agreement was reached, and three years ago a service-at-cost franchise was agreed upon, printed and circulated, only to be kicked over by political bosses at the last minute.

It is just twenty-five years ago this month (March) that the city of Akron made a contract with its street railway to carry passengers inside the city limits for a 5-cent cash fare, six tickets for 25 cents, or twenty-five tickets for \$1. The grant was to run until midnight Jan. 31, 1924, with service providing a ten-minute headway from 5 a.m. until 10 p.m., and a twenty-minute headway from 10 p.m. until midnight. The contract, like most others of its kind, provided that the company should pay for paving between the rails and 1 ft. on each side.

In July, 1920, Akron passed an emergency ordinance abolishing the ticket rates for a period of three months. Additional ordinances of a similar nature carried the rate until August, 1922, at which time the question of abolishing the ticket rates for the remaining period of the contract was submitted to a vote of the people. This proposition carried with it the right to operate a new railway line over North Main Street and the establishment of certain additional bus lines, the railway having already established two bus routes. This proposal carried by a vote of three to one. It provided a total of approximately 70 miles of rail lines and 25 miles of bus lines. Free transfers were issued between the rail lines and the bus lines operated by the company.

Approximately 200 street cars, largely of the Peter Witt type, and thirty modern steel-body buses were required to fill the schedules.

The relief granted the company by the city followed the defeat in 1919 of a twenty-five-year franchise, fixing the fare at 6 cents with free transfers. This was known as the Morse-Witmer proposal. It lost by a vote of six to one.

The Northern Ohio Traction & Light Company, which operates the Akron city system, city systems in Canton and Massillon, an interurban line from Cleveland to Uhrichsville, Ohio, a distance of 100 miles, and suburban lines from Akron to Ravenna, 20 miles, and from Akron to Wadsworth, 15 miles. The Akron city railway system is valued in excess of \$7,000,000.

Snapshots from Akron, Taken While Buses Were Attempting to Provide the Local Transportation



No. 1. Little groups like this waited in the bitter cold on many corners during midday for thirty and forty minutes.
 No. 2. A bus from Toledo.
 Nos. 3, 6 and 8. As in other cities when street cars have stopped, Akron has been the scene of operation of such vehicles as these.
 No. 4. Crowding into a bus from Bay City, Mich., on South Main Street, Akron. This bus had no Ohio license during the time it operated.
 No. 5. Two buses of the better type are seen at the intersection in front of the Portage Hotel.

No. 6. A relic carrying a New Jersey license, which found its way to Akron.
 No. 7. Scene at 3:30 in the afternoon in front of the Portage Hotel.
 No. 9. One of the better type buses which came in from an intercity route out of Columbus.
 No. 10. Crowd on Main Street that refused to ride in the jitneys and waited one hour and three minutes for a bus at 3:30 p.m. Jitneys in operation in Akron were chalk marked on the back with a special number as may be seen in this picture.

This briefly presents the historical picture. The recital of these facts just at this point is regarded as essential in order that the reader may best interpret the more recent happenings. These had their setting in an educational campaign started six months ago in which figures were presented showing the actual cost of an Akron car ride to be 5.7 cents, excluding interest and depreciation. At the same time the company asked car riders voluntarily to pay 6 cents for their ride. Thousands responded to the appeal and the public was "sold" on the 6-cent fare.

About this time, the company having failed to get any definite co-operation in its movement for a new contract, a citizens' committee was organized. This committee was made up of 100 citizens representing various civic and improvement associations and women's clubs. The committee selected as its chairman Dr. H. S. MacAyeal, prominent in civic affairs for many years. The committee also named ten representative citizens from every section of the city to assist Dr. MacAyeal in his work of preparing a franchise to be submitted to the company and the city. The committee's work was wholly independent of both interests. Doctor MacAyeal spent several months in study and made a careful audit of the company's books. He visited various cities in the United States comparable in size with Akron and also some Canadian cities. The result was that the committee submitted a proposed franchise in January of this year, which had for its basic principle the Talyer grant now in force in Cleveland. The franchise further provided for the control of the transportation system by an independent board, thus taking the question out of politics. It provided no rate of fare, but suggested a property valuation of approximately \$6,000,000, the construction of several miles of additional railway lines and the establishment of several other bus routes.

The proposition was looked upon favorably by the public and by the company, but the city refused to recognize it in any way. In fact, the Mayor even declined to present it to the Council.

It would now appear that back of the failure to bring about a settlement and adoption of a new contract for the continuation of a combination electric railway and bus transportation system was the desire to make Akron an exclusive bus transportation city, at any cost.

On Jan. 4, the day following notification from the street railway that it had filed with the state utilities commission a "rate of 7 cents cash, four tickets for 25 cents, on the Akron city system," Mayor D. C. Rybolt in a public statement declared he would supply Akron with "the finest bus transportation system in the world by Feb. 1, at a 5-cent fare, with free transfers."

In this connection it should be here stated that the Northern Ohio Traction & Light Company, through A. C. Blinn, vice-president and general manager, notified the Mayor and the City Council by letter on Jan. 3 that it had filed the proposed rate that day with the commission, as required by law. He added:

"We are very desirous of negotiating with the city for a new franchise, and the filing of these rates is in no wise intended to mean that the company is not willing at all times to negotiate for a contract determining rates and other conditions under which transportation may be furnished."

The letter carried a statement showing the company had lost \$80,817 on its Akron city lines in the last year, excluding interest on the investment. Subsequently

the city asked the company to continue operation on a 5-cent fare for a period of ninety days while a settlement was being negotiated. On its part the company offered to continue on a straight 6-cent fare with free transfers. The city rejected this offer and passed an ordinance ousting the company from the streets on Feb. 1, unless it agreed to the city's 5-cent demand within six days. The company immediately notified the city it could not operate on the 5-cent fare with free transfers, as required under the ouster ordinance. The city "stood pat" and the company was forced to abandon both its rail and bus service on Feb. 1.

That ended the first chapter!

Immediately following the passage of the ouster ordinance, H. S. Firestone, president of the Firestone Tire & Rubber Company, published a statement in which he said:

"As to motorizing the city, this can and will be done, to the great advantage of the citizens of Akron. We all realize that progress is only made by hard work and sacrifice, and naturally to make progress in this line we must expect to make some sacrifice until service is properly organized and on an efficient and economical basis. No city in the world should be more willing to make this sacrifice and demonstrate the economical and efficient basis of bus transportation than Akron, as its prosperity is based on the prosperity of highway and motor transportation."

The next day Mayor Rybolt issued a similar statement. He said:

"Akron is the tire capital of the world—if there is any place in the country where bus transportation should be a success it is in Akron. We certainly can afford to give bus transportation a fair try-out. It has proved a success in other cities and the successful operation of buses here will benefit every citizen of Akron, as the progress of the community is linked with the development of the tire industry. It is not only this city but many cities that are watching us. It will mean a great thing for Akron, for the rubber industry and for the automobile industry."

Other political leaders took up the cry, one local member of the State Legislature writing:

"Akron will lead the world as the first large city to completely motorize its passenger transportation service."

So Akron was "completely motorized"!

The first day under fair skies, clean streets and balmy atmosphere "the finest bus transportation system in the world" consisted of fifty-seven (exactly) varieties, mostly dilapidated buses from Plum Island Beach on the east, Saginaw on the north, Toledo on the west and Hicksville, Ohio, on the south. Newspapers ridiculed the attempt and there were pertinent inquiries in the press as to when the 250 double-deck buses the Mayor promised would arrive. Such queries brought a statement from Mayor Rybolt that double-deck buses "would not be feasible, because of Akron's hills." The railway had been saying the same thing for a long time.

For ten days the industrial workers took the situation good naturedly. The cars will soon be running, they said, at a 6-cent fare. Then came a blizzard from the west. Sleet and snow with the temperature near zero and a cutting wind! That was another story. A few additional buses came in, bringing the total to sixty-three. There was much suffering. Councilman Rose made a statement in Council disclosing the fact that 142 cases due to exposure waiting for buses were in the City Hospital. The storm kept gathering.

The Women's Federation called off all night meetings because their members "could not trust the bus service and would not be subject to conditions under which they would be forced to ride." The Central Labor Council adopted a resolution demanding a "return of the street cars on a 6-cent fare." Civic associations followed with like resolutions, as did the Hotel Men's Association, the Clearing House Association and various other associations. Petitions signed by 32,000 voters asked the return of street cars at a 6-cent fare.

Then the retail merchants took a hand. A resolution adopted unanimously by them follows in part:

We believe that Akron should be served by a responsible transportation company, capable of supplying a reasonable service, and one from whom damages can be collected.

We believe that the bus system as now operating is inadequate in regard to the above-mentioned particulars.

We believe further that, pending negotiations which will result in a permanent contract with some reliable transportation company, this city should take steps to allow the Northern Ohio Traction Company to operate its cars and buses at a six-cent (6c.) fare with universal transfers for a reasonable period of time, which will relieve the citizens of Akron from an intolerable situation, and will enable the city administration to enter into negotiations with reputable companies who can furnish the necessary capital, equipment and organization to give Akron the kind of service it requires.

We make this request not alone on account of the serious losses incurred by us as merchants, but because we believe it in the best interests of all the citizens in Akron to have immediate resumption of car service.

In this connection, we would remind you that if this situation is prolonged it will become necessary for us greatly to curtail our expenses, resulting in a hardship for many men and women who may be deprived of employment.

We believe that a permanent contract with some reliable transportation company should and must be entered into, but we do not admit that to do this it is necessary to submit to the disorganized and intolerable condition under which we are now living.

We are unanimously agreed that the cars and buses of the Northern Ohio Traction Company should be allowed to operate immediately, pending negotiations which will lead to a permanent franchise.

The Lloyd Shoe Company was the first to announce in newspaper advertisements that it could not stand the strain. It said:

"We weathered the slump in business; we have weathered many storms, but we cannot weather the losses due to the abandonment of car service. We will sell our stock at cost and quit business."

The Noble-Carney Furniture Company, one of the oldest furniture houses in the city, announced an auction of its stock, saying:

"Women won't come downtown in buses. They constitute 90 per cent of our trade. It's bankruptcy for us if it continues. Twenty-three more days and we will be broke. Business is sick due to 'exposure and lack of nourishment,' due to our transportation problem. The reason is plain."

Other merchants carried advertisements saying:

"We do not ask you to come downtown under present conditions. Telephone us and we will deliver you what you want."

Two days after the merchants acted the Chamber of Commerce addressed the Mayor and the City Council as follows:

In our opinion the welfare of Akron requires a system of transportation probably a combination of electric and bus, reaching every section of the city, on which will be charged one fare with free universal transfers.

After careful investigation, we are confident that no figures based on facts can be produced showing that city-wide transportation can be furnished today with bus or electric line for 5 cents with free universal transfers.

We know that many people in Akron are now paying much more than a 6-cent fare for transportation.

In our judgment, the present experiment will materially retard the increased use of the bus transportation, and will therefore be extremely detrimental to the best interests of Akron and the world's rubber center.

This chamber, therefore, strongly recommends that the City Council take the necessary action to bring immediate resumption of railway service on the basis of a 6-cent cash fare, with universal transfers, under a temporary agreement to last until Dec. 31 of this year, and that it further proceed at once to prepare a franchise for city-wide service, which franchise should be submitted to the people of this city for approval at the earliest possible date.

To all these pleas Mayor Rybolt and seven of the eleven Councilmen turned a deaf ear. They did, however, give some consideration to a new proposal last week from Mr. Blinn for the company. This provided:

1. A 5-cent fare with 1 cent transfer for sixty days.
2. An impartial audit of the company's books during that period.
3. A rate of fare not to exceed 6 cents with free transfer to be in effect until a permanent franchise is agreed upon and adopted by the people, provided an audit discloses that the company is entitled to a higher fare.
4. Elimination of jitneys on all competing rail and bus routes after sixty days.
5. Arbitration on all disputed points.

This offer, however, the Council rejected and passed two bus franchises to become effective in thirty days, one to the Zeno Transportation Company and the other to the Mueller Brothers Transportation Company, both of which have been operating for the last three or four years on routes not in competition with the railway.

This was after Council failed in an attempt to railroad through a bus franchise to the Akron Transportation Company, providing for 5, 6 and 10-cent fares immediately, based on the service-at-cost plan.

After the negotiations for the settlement had been concluded H. S. Firestone, one of the leading supporters of Mayor D. C. Rybolt in his motorization plan, said that he had frequently been misquoted as to his position in regard to motorizing Akron and the difficulty that has existed between the city of Akron and the Northern Ohio Traction company. He has explained that he made every effort within his power to have the street cars continue in operation and an amicable adjustment made between the city and the traction company. However, when it became evident that the street cars would discontinue to operate Feb. 1 he felt as a citizen of Akron that it was his duty to use whatever means were at his command to help Firestone employees and other citizens of Akron secure transportation in the crisis and he had 200 Ford cars brought into Akron and offered them to the city or to anyone to operate for the benefit and welfare of the people of Akron. He said: "I never have had and have no intention now, of organizing or financing a transportation company."

Mr. Firestone considers the fundamental basis of the new franchise fair and equitable. In regard to the future of the motor bus Mr. Firestone said:

"I am a firm believer in automotive and highway transportation and expect that buses will replace street cars in response to the growing demand for economy of time and relief from traffic congestion. However, I feel that this should come through properly organized channels such as the traction company and I hope that some amicable and fair basis may be found. Until then, I feel it my duty to be of whatever help I can to give Akron the best transportation under the existing conditions."

Full Text of Ordinance Under Which Northern Ohio Traction & Light Resumed Service in Akron

ORDNANCE No. ——— contracting with the Northern Ohio Traction & Light company for the transportation of persons for hire in electric street railway cars and in motor buses at a fare of five cents (5c.) with one cent (1c.) for transfers, on certain streets of the city of Akron, for the period ending May 1, 1925, and repealing Ordinance No. 55—1924 passed Jan. 15, 1924.

Whereas under Sec. 3, 4 and 5 of Article XVIII of the Constitution of Ohio, municipalities have the right to enter into contracts by ordinance for the service of public utilities, and,

Now, therefore, be it enacted by the Council of the city of Akron:

Sec. 1. That the Northern Ohio Traction & Light Company is hereby granted the right and privilege of operating its street cars in the city of Akron on all of the streets where said company has its rails and tracks now laid.

Allows 5-Cent Fare

Sec. 2. Said the Northern Ohio Traction & Light Company shall be entitled to charge and collect a fare of five cents (5c.) for each passenger carried, and may sell tickets in such lots as it deems advisable at the rate of five cents (5c.) for each ticket. The payment of such cash or ticket fare and the payment of one cent (1c.) for a transfer, when transfer is required, shall entitle the passenger to one continuous ride from any place in the city of Akron on said system to any other place in the city on the lines of the grantee's tracks or buses, provided that but one transfer charge shall be made for a continuous ride; provided further that any transfer issued as herein provided shall be used by the passenger on the next car or bus leaving transfer point after the passenger's arrival at such point, except and provided only that the company shall not be required to issue transfers entitling passengers to ride upon a car or bus substantially to the point of boarding the car or bus upon which the fare was paid or transfer issued; said rate of fare to continue until Dec. 4, 1924.

Sec. 3. Children five years of age or under, when accompanied by an adult, and all policemen and firemen of the city in uniforms, shall be carried free.

To Control Routing

Sec. 4. The motor bus lines as operated by said company on Jan. 1, 1924, shall be continued with the same rate of fare as that for street cars, and the same transfer charge, and the city by and through its Council and the Mayor, shall have the control of the routing of cars and buses and the determination of the transfer points, except that the transfer points and the routes of cars in effect on Jan. 31, 1924, shall continue, unless changed by consent of both parties.

Sec. 5. The schedule and service shall be adequate for the needs of the public, and shall be at least as frequent and as good as the service furnished by said company in the month of January, 1924.

Sec. 6. The company shall install extensions of bus service from the end of the company's present railway lines on Wooster Avenue, westerly on Wooster Avenue to East Avenue, and southerly on East Avenue to West South Street, and on Main Street from Steiner Avenue south to Firestone Boulevard. The easterly terminus of the company's crosstown bus line shall be Martha Avenue and East Market Street, and the westerly terminus of the company's South Maple Street bus line shall be Hawkins Avenue.

Helps With Paving

Sec. 7. The company shall lay new ties and rails and pay in installments as assessed, its proportionate cost of paving on West Market Street between West Street and Marvin Avenue, and on Bowery Street, when and if said streets are improved by the city during the term of this grant and prior to Dec. 4, 1924, the company's part of said paving to be the part between its tracks, the devil strip and twelve inches on the outside of the outer rails, and its reasonable proportion of the cost of the East Exchange Street viaduct, as and when such assessments and installments are payable; provided however, that in the event a permanent grant or franchise is not made by the city of Akron to the company for the right to continue the operation of a street railway and bus system in the city of Akron, on or before the fourth day of November, 1924, and accepted by the company, then the company shall be relieved of any

and all assessments and payments for each and all of said improvements, and the city shall be liable to and shall reimburse the company for all payments which may have been made by the company on any of said improvements. The company shall maintain its tracks and the paving between these tracks in good repair.

Ouster Ordinance Repealed

Sec. 8. Ordinance No. 55—1924, passed on the 15th day of January, 1924, entitled "Ordinance No. 55—1924, requiring the Northern Ohio Traction & Light Company to cease operating its cars on Feb. 1, 1924, and to remove its tracks, etc., unless it notifies the city of its willingness to operate its street cars at said time at a 5-cent rate of fare," be and the same is hereby repealed.

Sec. 9. The city and the company shall immediately begin negotiations for a permanent grant or franchise from the city to the company for street railway and bus service, and if the city desires for the purpose of such agreement, the city may ask an audit and analysis of the company's books pertaining to the operation of street railway and bus service in the city of Akron for the year 1922, 1923 and any succeeding period, and an appraisal of the company's railway and bus property used and useful in its Akron City System, which audit and analysis shall be completed and made public not later than the first day of October, 1924. Such audit, analysis and appraisal to be made by certified public accountants and engineers of recognized standing, to be agreed upon, and if the city and the company are unable to agree, then said accountants and engineers, shall be selected by Federal Judge D. C. Westenhaver, or his successor. Such proposed franchise, if submitted to an election, shall be submitted not later than the November election, 1924.

Six Months Longer

Sec. 10. In the event a permanent grant or franchise does not become effective on or before Nov. 4, 1924, then the company shall, upon the city's request, continue operation of said street railway service and bus service from Dec. 4, 1924, until May 1, 1925, and shall be entitled to charge and collect a reasonable rate of fare to be determined by the audit, analysis and appraisal provided for herein, but not to exceed six cents (6c.) with free universal transfers.

Sec. 11. The city reserves the right to prescribe the form and manner in which the records and accounts of the company relating to its Akron city Street Railway and Bus System shall be kept; and shall have the right to audit, examine, make and keep copies of such records and accounts and to require from said company, detailed reports at any time relating to the finances, operation, management and ownership of said company and its said property; provided however, that the form of accounts which the state public utilities commission may prescribe, if lawfully applicable hereto, shall be controlling insofar as they go, but the council may prescribe more detailed forms and exact more comprehensive reports than is required or stipulated by said state commission.

Assumes Responsibility

Sec. 12. The said company assumes and shall at all times assume full responsibility for the operation of its said cars and buses upon said streets, and it shall save the city harmless against all loss and liability for any and all claims which may arise for injury to persons or property of the company pursuant to this contract.

Sec. 13. All of the terms, conditions and provisions of the charter of the city of Akron relating to franchises and applicable hereto, are and shall be considered as a part of the terms and conditions of this ordinance as if the same were fully written herein, and this ordinance not to be considered as an exclusive franchise.

Right to Purchase

Sec. 14. The city of Akron shall have the right and option, at the end of the third month period, to purchase, or lease the property of said company used or conveniently useful, for the transportation of passengers under this contract, provided the city, not less than one month prior to said date, by ordinance, notifies the company of its desire to make said purchase or lease; and provided further, that the

price to be paid by the city shall exclude all value of this grant, extension or renewal. In case the city desired to make said purchase, the price to be paid by the city to the said company shall be agreed upon between the parties hereto, but in the event of the failure to agree, the said price shall be determined and fixed by arbitrators, to be appointed as follows: Each party (the Council acting for the city) shall choose an arbitrator, and the two thus chosen shall choose a third arbitrator, and upon failure for five days to agree on the third arbitrator, the Federal District Judge, D. C. Westenhaver or his successor, shall appoint said third arbitrator, and said board of arbitrators shall make a valuation of the property of said company used and useful in carrying out this contract, which valuation shall be made within thirty days after they are chosen. The party choosing an arbitrator shall pay the compensation and expenses of said arbitrator, and the compensation of a third arbitrator, together with the expenses of the investigation, shall be borne equally by the parties. Within three months after said value shall have been agreed upon or fixed as aforesaid, the city of Akron shall pay the amount thereof to the company in cash, whereupon the city shall be entitled to have conveyed to it, and shall be given possession of said property.

City to Pay Costs

The City Council may refuse to be bound by the price fixed by the board of arbitrators, in which event the city shall pay the total cost of said arbitration, including the compensation of the arbitrator appointed by the company, and no further proceedings shall be had under said notice to purchase.

In the event the city desires to lease said property, within thirty days after the said rental price shall have been agreed upon or determined by arbitration, as provided herein, the parties shall make a lease, letting to the city said property for the balance of the term of this contract, and binding the city during said term to pay to said company the rental in monthly installments in advance.

Sec. 15. The motor buses put into operation upon the streets of the city on and after Feb. 1, 1924, and any buses now in transit or en route to the city of Akron to be placed in such operation, shall not be permitted to operate for a longer period than sixty days from the passage and approval of this ordinance.

Routing of Buses

If any vehicles carrying passengers for hire, taxicabs excepted, are permitted to operate in the city after April 28, 1924, the same shall be routed by the proper city authority, so as to exclude their operation upon any or all streets occupied by the street railway tracks and street railway bus lines. Nothing herein shall in any way affect the operation of the motor buses which were being operated in the city under Ordinance No. 8357, prior to Feb. 1, 1924. Motor buses as used in this ordinance shall mean vehicles with a seating capacity of ten or more passengers.

Sec. 16. This ordinance shall not become effective unless and until the said Northern Ohio Traction & Light Company shall have withdrawn the rate schedule filed by it with the Public Utilities Commission of Ohio on Jan. 3, 1924, wherein said company declared its intention to charge seven cents (7c.) cash fare, four tickets for a quarter, on or after Feb. 1, 1924, and this ordinance shall not become effective unless the said Northern Ohio Traction & Light Company shall in writing accept the same within one day after the said ordinance shall have been passed and approved, or if not approved by the Mayor, shall have been duly passed over the Mayor's veto, as provided by the charter of the city of Akron.

Contract to be Void

Sec. 17. Upon failure of said company to carry out and comply with all the provisions of the foregoing ordinance as its part, this contract shall be null and void.

Sec. 18. This ordinance shall not be effective until accepted in writing by the Northern Ohio Traction & Light Company within one day after its passage and approval, otherwise the same shall be null and void, and this ordinance shall take effect if accepted, as aforesaid, at the earliest date allowed by law, and shall continue for the period ending May 1, 1925.

Bus Competition Ends at Wheeling

Independent Bus Company and Wild-Cat Operators Competed on Interurban Runs for Two and One-Half Years—Bus Service Finally Suspended Thanksgiving Day—Its Effect on Wheeling Traction Company Analyzed

ONE more chapter has been added to the already long story, and again it has been proved that, in general, local transportation services cannot successfully compete, but that in their nature they must be monopolies and properly co-ordinated.

Buses first appeared in competition with Wheeling Traction cars on March 12, 1921, and last turned their wheels on Nov. 25, 1923. From a maximum of twenty-five buses in operation in the summer of 1921, the competition gradually dwindled down, until but five remained during the last few weeks before a receivership ended the whole demonstration.

The buses started as a result of a chain of circumstances that seemed to invite uninitiated operators to enter the business. Wild-cat jitneys in many parts of the country apparently were doing well. Up to that time neither Ohio nor West Virginia had attempted to regulate bus transportation or protect the existing agencies of travel. The Wheeling Traction Company had made an increase in fares in December, 1920, which, though not large, involved re-zoning of the system and naturally changed the accustomed fare limits of the riders.

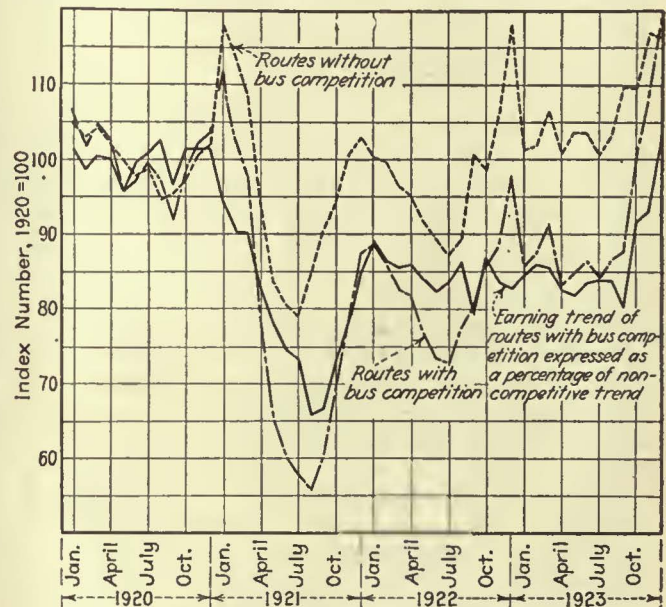
The business depression, which had been creeping upon the country since the summer of 1920, reached Wheeling early in February, 1921, with unusual suddenness. The steel mills promptly shut down and men were thus out of their own work. The buyer's strike which precipitated the slowing down or hesitation in business produced a near panic among the merchants. Automobile and truck dealers in that district particularly were overstocked with equipment and parts and were obliged to find an outlet for their goods. Equipment was therefore offered on very favorable terms. Furthermore, many truck operators who had been making a fair living handling merchandise began to cast about for new business.

It is well understood that the electric railway's business does not fluctuate in such marked manner as the non-utility industries. Although the traction system suffered a loss in revenue of approximately 15 per cent, due directly to the business depression, no material change was made in operating schedules. The reduced riding was not sufficient to be noticeable to the casual observer. The bus promoters and jitney owners did not realize the true conditions and fancied that there was ample business to be had at the rates they proposed to make effective.

Wheeling is the center of an important industrial district. Within a half-hour ride are the principal towns of Benwood, McMechen and Warwood on the West Virginia side of the river, and Bridgeport, Martins Ferry and Bellaire on the Ohio side. The first bus placed in service was sponsored by a resident of Martins Ferry, who owned a garage and had had four years experience as a taxicab operator. The date of starting was March 12, 1921, and one Ultimate machine seating sixteen people was operated between Martins Ferry and

Wheeling at a comparatively low rate of fare. From the standpoint of patronage the venture was an immediate success, and consequently a second Ultimate bus appeared on March 17. Thereupon the Ultimate Bus Company was organized and heralded as a savior of the common people from the "predatory" corporations.

The traction company had been misunderstood by town councils and the public generally in Martins Ferry and Bellaire because of efforts to secure franchises free from the burdensome requirements so common in the early street railway grants. The atmosphere was charged with a feeling of bitterness at the time, and the competition that was offered to rail lines



Index of Trend of Earnings, Wheeling Traction Company, Showing Effect of Bus Competition

was enthusiastically welcomed. Moreover, the bus company offered common stock to the residents of the towns served, and thus the people had the opportunity of participating in the management and expected profits of the business.

OTHER BUS SERVICE STARTED

This apparent success encouraged other bus activities in and around Wheeling. Most of these, however, were of a makeshift character, using light, unsuitable cars. The equipment was inadequate and, with no definitely organized and scheduled routes, the competition between the buses themselves proved very destructive, so that only the strongest operators survived.

The traction company logically protested this uneconomic competition, but could not obtain the necessary protection under the prevailing laws or ordinances. It could not even prevent buses making their runs just ahead of the street cars in order to pick up waiting trolley passengers.

The good roads law of West Virginia, among other

provisions, made it necessary before a bus could be operated over state highways that a certificate of public convenience be secured from the Good Roads Commission. This did not preclude city operation or interstate travel when West Virginia state highways were not used. Thus lines between Wheeling and Ohio points were outside the pale of authority of the Good Roads Commission.

For safety in travel and in order to equalize taxation an ordinance was passed by the city of Wheeling imposing a seat-mile license tax and requiring rear doors, specifying the routes and regulating the stopping points, but it did not prevent competitive operations. Unfortunately, the Ultimate Bus Company used Wheeling streets only as a terminal and very little of its mileage was inside the city, so that the city tax was not an effective remedy.

In the early stages of the competition there were certain clashes between the companies, due to disputed rights and privileges, but after the late summer of 1921 no further open conflicts were evident. The traction company realized that the traffic would not support both bus and rail services and therefore adopted the policy of giving the buses enough latitude to permit them to wear themselves out promptly.

By midsummer only the Ultimate Bus Company had survived under the rates of fare which had been inaugurated. The revenues evidently were not sufficient to pay expenses and satisfactorily maintain the equipment. After the disappearance of the "tramp" buses, operated by individual owners competing with each other and not attempting to cover specified routes or operate on definite schedules, the technical position of the Ultimate Bus Company evidently improved.

The traction service still attracted the major part of the riding, and as the first winter approached the buses became less and less popular. To any one acquainted with the transportation business, it was realized that the bus operations as conducted in the Wheeling district could continue but a comparatively short time. The buses were wearing out. During April, 1923, the bus company was operating fourteen buses, the maximum number which it ever operated. Six of these buses ran to Bellaire and six to Martins Ferry, while the other two were held in reserve. In July four were withdrawn from service, and shortly after the big Wheeling Fair in September the total number of buses remaining in operation was reduced to five. The service was finally discontinued entirely on Thanksgiving Day.

EFFECT OF COMPETITION ON RAILWAY EARNINGS

It is interesting to review the course of traction revenues during this period. To begin with, revenues were also affected by the general business depression of 1921 and again by the recovery in 1922 and 1923. During this time inroads obviously were made by the buses. The accompanying chart has been prepared using the revenue of 1920, a normal year, as a basis, subsequent monthly revenues being expressed as a percentage of the 1920 average to present a clear picture of the situation. Seasonal variations in revenues have been eliminated. As nearly as can be determined the traction loss is expressed by the difference in indexes between those lines which suffered through bus competition and those lines that did not, the latter being selected to get a fair comparison. Obviously in a case like this it is possible only to determine the loss with

approximate accuracy, but it is believed that these two groups of route earnings would have closely followed the same trends except for the diversion caused by the buses.

The heavier curve shows that the routes affected have been operating at 34 per cent to 7 per cent below the otherwise normal, the average for the period being approximately 21 per cent. As but two routes were affected by the competing buses, the entire traction system lost only approximately 6 per cent of its revenue to the buses. The traction service was never reduced because of this lessened business, but as time went on it was gradually improved. At no time did the buses add a necessary service, so that the economic result was that the same amount of business was called upon to support the increased total cost caused by the added bus service. In other words, the operating expenses of the bus company were a dead loss to the community.

In December, 1922, the traction fare basis was changed. Up to this time the system had been divided into fifty-three short zones at 3½ cents each, with a minimum ticket fare of 6½ cents. The system had been designed especially to give the privilege of riding additional distances beyond the first fare unit at less than full fare zone charge; that is, while the first unit of fare was 6½ cents, all beyond that were at 3½ cents, which very closely approximated an ideal mileage or distance method of charging. Short zones, however, did not prove popular in this district. The new fare adopted in December, 1922, lengthened the zones, so that while the average rate per mile over the entire system was not changed, the fare unit for all zones was changed to 5 cents by ticket or 8 cents cash. In addition, reduced rate strip tickets, unlimited as to use, were adopted between Wheeling and some of the neighboring towns where the distances traveled by the majority of the people were apparently considerably less than full zone units.

Undoubtedly the reduced minimum fare and the reduced fare between Wheeling and Martins Ferry changed the sentiment on the bus situation. However, the fare element is not the sole factor in influencing riding, as the following experience on the Wheeling and Bellaire division demonstrates:

RELATION BETWEEN PATRONAGE AND FARES, WHEELING

	Index of Number of Patrons	Fare Between Wheeling and Bellaire, Cents
November, 1922	191	13½
December, 1922	231	13½ and 10
January, 1923	221	10
February, 1923	213	10
March, 1923	246	10
April, 1923	216	10
May, 1923	225	10 and 12½
June, 1923	221	12½

This case evidently offers further confirmation of the fact that buses and street cars cannot compete where either alone may successfully serve the traffic.

The laws have changed in Ohio and West Virginia since 1921, in that while buses which operated before the present laws were passed may still continue, no new routes may be started in either state without a certificate of public convenience. The day of the "wild-cat jitney" is gone. The future offers possibilities for the bus, but it must be co-ordinated with other transportation facilities and economically suited for the service to be supplied.

Association News & Discussions

Insull Proposes Rapid Transit Plan

Would Build Extensions to Present Elevated System in Ten Steps and Finance Through Customer-Ownership Plan—Also Would Have City Build Subway for "L" Through Loop District

A PLAN whereby the city of Chicago would obtain additional rapid transit facilities through customer ownership was proposed by Samuel Insull, head of the elevated railroads, gas and electric utilities in Chicago, in an address before the Chicago and Cook County Bankers' Association on Feb. 21. These additional facilities are to be had by additions and extensions to the existing "L" lines which would provide a midcity cross-town main line straight north and south through the city's center of population, at Roosevelt Road and Ashland Avenue, extending from Seventy-fourth Street and Ashland Avenue to connections with the North Side "L" lines near Belmont Avenue. The cost is placed at \$23,000,000, which, according to Mr. Insull, is a small amount when compared with what other public service companies have spent for extensions.

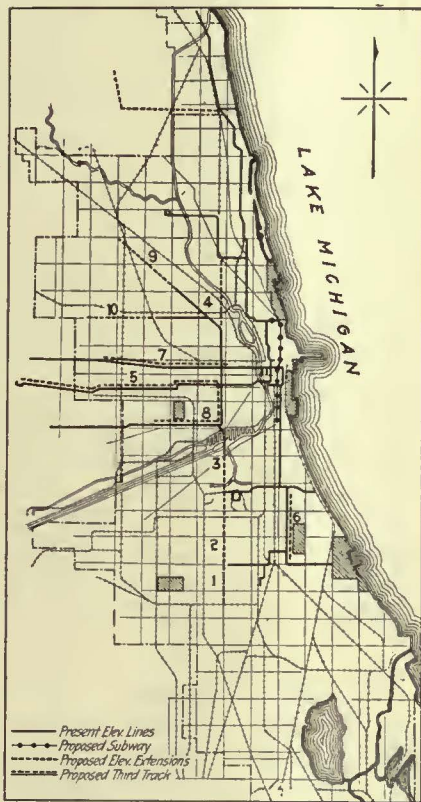
The financing of such a project was held to be feasible under a customer-ownership plan. Preferred stock of the reorganized Chicago Rapid Transit Company would be offered to the people, who will derive the benefit of additional service and the enhanced property values which will result from improved transportation. Adequate financial returns to the customer-owners is assured by the conservative capitalization of the Chicago Rapid Transit Company, which is less than the actual value of the company's property as appraised by the state utility commission.

In explaining the reason for the present traction situation and his proposed solution, Mr. Insull said:

"In the last five years there has been expended in public utility extensions, including the city's water works, the sum of \$169,958,194. Of this vast sum \$155,816,875 was provided by private enterprise for the extension of telephone, gas, electric and transportation service, the balance, \$14,141,329, having been invested by the city of Chicago in its water supply system. These vast expenditures are all divided as follows:

Commonwealth Edison Company.....	\$67,042,623	
Illinois Bell Telephone Company.....	50,770,776	
People's Gas Company..	28,470,265	
City Water Works.....	14,141,329	\$160,424,993
Chicago Surface Lines...	\$5,428,879	
Elevated Railroads.....	4,104,322	9,533,201
Total.....		\$169,958,194

"Of the total amount spent, the surface and elevated lines spent only \$9,533,201, or little more than 5 per cent, notwithstanding the pressing need



Proposed Extensions to Existing Rapid Transit Lines, as Outlined by Mr. Insull

and the constant demand for improved transportation. Why have the transportation needs of the city been neglected, while other utilities have gone forward to meet the growing demands on their service? There are many answers to this question—the increase in the cost of transportation as a result of the high prices of labor and

material caused by the war; the fear of the investors as to whether the investment would be remunerative or not; short time or expiring franchises; to be candid, a lack of initiative in recent years on the part of the managements of both the elevated and surface properties, caused in no small degree by some of the foregoing reasons, but to my mind the greatest obstacle of all has been the continued maintenance of the traction question as a political issue.

"The utilities outside of traction have not for a number of years been subject to any great extent to political agitation, but in one form or another the traction question has been a burning question in every local political campaign for years past. Extravagant and impossible promises have been made before election and very little, if any, really constructive work has been done after election.

"I am not a believer in municipal ownership or operation as a cure for the traction ills we suffer from. I do not believe that you can expect to overcome our present troubles by the removal of personal incentive or the abolition of business management and the inauguration in its place of political management.

"On the other hand, if the community wants municipal ownership, if the people desire to substitute political management in the place of business management, I believe in giving them what they want if a means can be found to do so. The task of finding such means is not mine. I propose to address myself this evening to pointing the way to the possible development of rapid transit facilities by the use of existing agencies, namely, the elevated railways and the employment of capital supplied by our own citizens for this purpose."

The following construction steps, and the estimated cost of each, to give to Chicago rapid transit facilities capable of handling 200,000,000 additional passengers a year were outlined by Mr. Insull. The extensions to the elevated system are indicated by corresponding numbers which are shown on the accompanying map.

Step 1	Extend Englewood branch, South Side, west to Ashland Avenue and south to Seventy-fourth Street; distance, 1 1/4 miles.....	\$1,500,000
Step 2	Build double-track line near Ashland Avenue connecting Englewood and Stock Yards branches South Side Elevated; distance 3 miles.....	3,000,000
Step 3	Build double-track line near Ashland Avenue connecting line built in Step 2 with Metropolitan Elevated Douglas Park branch near Twentieth Street; distance 2 1/2 miles.....	3,000,000
Step 4	Build double-track line near Ashland Avenue connecting Metropolitan Elevated Logan Square branch at Milwaukee Avenue with Ravenswood branch Northwestern Elevated; distance 2 1/2 miles.....	3,000,000
Step 5	Third-track Metropolitan Elevated Garfield Park branch from Marshfield Avenue to Forest Park; distance 7 1/2 miles.....	2,500,000
Step 6	Third-track South Side Elevated from Forty-third Street to Sixty-third Street for express service; distance 2 1/2 miles.....	2,000,000
Step 7	Complete the third-tracking of Lake Street line from Ashland Avenue to Laramie Avenue.....	800,000
Step 8	Third-track Metropolitan Douglas Park branch from Marshfield Avenue to Lawndale Avenue.....	1,800,000
Step 9	Extend Logan Square branch of the Metropolitan to Irving Park Boulevard; distance 2 1/2 miles.....	3,000,000
Step 10	Extend Humboldt Park branch of the Metropolitan west for 2 1/2 miles.....	2,500,000
T	Total.....	\$23,100,000

In addition to this contemplated rapid transit system, a north and south, four-track subway, owned and built by the city, would relieve the traffic congestion in the Loop, Mr. Insull said. He stated that the solution of the transportation problem in Chicago rests directly with the people of the community, and that customer ownership offers a method for speedily carrying out the much-needed extensions to the existing rapid transit system.

Electrification Standards Urged

STANDARDIZATION of contact line type and voltage for heavy railroad electrification was urged by W. S. Murray, consulting engineer, at a joint meeting of the American Institute of Electrical Engineers and the American Society of Mechanical Engineers at New York on Feb. 27. Mr. Murray stated that while the direct-current motor at not more than 1,500 volts is most economical for motive power, the economies of the high-tension alternating-current overhead trolley system are too great to be overlooked. To use d.c. motors and a.c. line requires a conversion unit on the locomotive, which can be a motor-generator set. Experimental locomotives of this type are now being built, and it is hoped that they will furnish valuable cost and operating data.

The importance of having a uniform contact system was especially urged by the speaker, who felt that it is desirable to have an electric locomotive able to operate on any standard gage railroad track in the country, as a steam locomotive can do now. No electric locomotive of any one of the seven principal electrified lines, he stated, can be used on any of the others.

The possibility of increasing greatly the mileage of electric divisions was pointed out by Mr. Murray. An electric locomotive can operate as high as 6,000 out of the 8,760 hours in a year, while the steam locomotive can operate barely 3,000 hours.

On this basis the electric passenger locomotive can average 700 to 1,000 miles a day, and the electric freight locomotive 300 miles a day. The present steam freight locomotives, he said, average 55 miles a day.

The power requirements of electrified roads are very moderate, according to the speaker. One modern 60,000-kw. unit could supply the entire New Haven electrification with a good margin of safety, as the present normal load is approximately 35,000 kw.

Program of Wisconsin Association

THE tentative program of the Wisconsin Utilities Association's annual convention to be held at the Hotel Pfister in Milwaukee, April 17 and 18, has been sent out by John N. Cadby, secretary of the association. General meetings will be held in the forenoons, while the afternoons will be occupied with separate sessions of the gas, electric and railway sections. Speakers at the electric railway section will include: James C. Jamieson, Dayton Mechanical Tie Company; Francis Fox, Griffin Wheel Company; Dudley Montgomery, Madison Railways,

and Andrew R. McDonald, member Wisconsin Railroad Commission.

The annual dinner will be held on April 18. M. H. Aylesworth of the N.E.L.A. and E. F. Wickwire, Ohio Brass Company, will speak.

New England Club Meeting

THE twenty-fourth annual meeting of the New England Street Railway Club will be held at the Copley Plaza Hotel, Boston, Mass., on March 27.

American Association News

Special Pullman Booth at St. Louis

THE Southwestern Passenger Association will establish a special Pullman ticket booth in the lobby of the Chase Hotel, St. Louis, on March 3 and 4 for the convenience of those attending the Midyear Meeting of the American Electric Railway Association. Through this arrangement it will be possible to make full arrangements for the return trip without leaving the hotel.

Dr. Ely on Midyear Program

AT THE afternoon session of the Midyear Meeting of the American Electric Railway Association at St. Louis, March 4, in addition to the speakers previously announced on the topic "The Improved Condition of Electric Railways," Dr. Richard T. Ely, professor of economics at the University of Wisconsin, will consider the subject from the standpoint of the economist. Dr. Ely is head of the Institute of Land Economics, and is an authority of wide reputation on taxation problems and land values.

Way Matters

A LENGTHY discussion concerning the best method of securing a service test of various types of rail joints featured the meeting of the committee on way matters held at Easton, Pa., Feb. 13 and 14. Following a description of the tests which had been made previously, not including any service test however, E. M. T. Ryder described a new plan to secure data on the latter subject. The original plan was to construct a rotary service machine, and a machine of this sort had in fact been designed. But when bids were received from the manufacturers the cost of this machine proved greater than the sum available. Some doubt was expressed concerning the value of the information to be derived from the use of the machine and for that reason the matter had been allowed to rest.

The new plan suggested was to build a circular track 200 ft. in diameter and operate fourteen double-truck cars around the circle. The outer rail was to be the association standard grooved girder rail and was to have the proper elevation, approximately 9 in., for a constant speed of 15 m.p.h. The inner rail was to be plain T, with bolted guard rails on both rails. The inside and outside wheel diameter were to be arranged so that there should be no slippage. It was felt that if this was done it would be unnecessary to make

the axles truly radial. The flange on the outer wheels was to be removed so that there should be no flange wear during the test. The committee discussed this subject at length, but its members were about evenly divided in their opinion concerning its feasibility and desirability and no definite action was taken.

The form of a questionnaire on substitute ties was determined upon after considerable discussion. It was decided to send this questionnaire to all member companies as well as to those railroads which are known to be using various substitute ties.

A comprehensive statement covering the experience of the Toronto Transportation Commission with methods of surface hardening of rails was given by A. T. Spencer. Data were presented and some samples exhibited to show the practical application of the "in situ" process used in that city. Much information from other sources describing various processes and the results obtained was also presented by Mr. Spencer.

The committee decided unanimously to adopt the A.R.E.A. type of track spike as standard for the American Electric Railway Engineering Association. No definite action was taken in regard to tie rod specifications. The subject of narrow grooved guard rails was discussed, but the committee decided to lay the matter over until the next meeting. Final action on the standardization of frogs was also postponed until the next meeting. A progress report was made covering flange for manganese steel crossings, steam over electric railway.

The standardization of switches and mates was discussed, and a progress report submitted concerning gages and flangeways with their permissible variations and clearances. An interesting study was presented by E. M. T. Ryder on the subject of a standard switch tongue. He showed the dimensions of the various types now in use and suggested a method of standardizing. The committee voted to continue the study of this subject and requested all the manufacturers to co-operate in securing further data before the next meeting. Revision of existing specifications was briefly considered and it was suggested that proposed changes be submitted at the next meeting. It was decided at a luncheon at the Northampton Country Club to hold the next meeting in Baltimore on April 16 and 17.

During the afternoon of Feb. 13 the committee spent several hours inspecting the plant of the Wharton company. This proved to be both interesting and instructive. The entire arrangements

for the meeting at Easton were in the hands of the officials of Wm. Wharton, Jr. & Company. The committee voted its sincere appreciation of the way that the arrangements had been carried out.

The members of the committee present were: W. W. Wysor, C. A. Alden, V. Angerer, S. C. Baker, E. B. Entwisle, R. B. Fisher, A. T. Spencer, H. H. Guillot, representing G. C. Estell; E. M. T. Ryder, C. F. Gailor and H. H. George, chairman.

Time for Answering I. C. C. Extended

THE time for filing an answer to circular No. 3 on depreciation of electric railway property issued by the bureau of accounts, depreciation section of the Interstate Commerce Commission, under date of Jan. 26, 1924, has been extended until April 6 (original limit March 6) at the request of the committee on national relations of the American Association.

mated on the basis of normal exhaustion through use, or shall there be included the effect of possible retirement through obsolescence, inadequacy, changes in the art, and public requirements?

Second—Shall a depreciation reserve be set up on a unit basis, on a group basis, or as a single reserve for the composite property?

Third—Shall a depreciation reserve be built up for the purpose of ultimately refunding his investment to the investor, or in other words for the liquidation of the securities issued, or shall it be limited to the replacement of property which it becomes necessary to retire?

ESTIMATION OF USEFUL LIFE AND EFFECT OF OBSOLESCENCE, ETC.

Attention is called first to the fact that the inclusion in the determination of useful life of possible retirement through obsolescence, inadequacy, changes in the art, and public requirements has the effect of shortening the estimated life as compared with normal wearing life, and consequently results in an overcharge against the public during the earlier part of the life cycle of all property which lives out its normal life.

Retirement through obsolescence, inadequacy, changes in the art, and public requirements does not occur in accordance with any known or determined law, and the experience of the past is no guide as to what will probably happen in the future. The only result of including these elements in the estimate of useful life is therefore a shortening of useful life by an arbitrary amount, making it by so much less than normal wearing life. It follows, therefore, that the reserve for all those units which live out their normal life will be fully accumulated before the expiration of their period of usefulness, or in other words that the patrons during the earlier part of the useful life will pay not only their own particular depreciation charge but also the depreciation properly chargeable against the patrons during the remainder of the useful life.

On the other hand, if we consider those cases in which retirement through obsolescence, inadequacy, changes in the art, or public requirements actually occurs, it follows that, since the average useful life is the weighted mean between those cases in which the property does and does not live out its normal wearing life, the actual cases of retirement through obsolescence, inadequacy, changes in the art, or public requirements must occur prior to the termination of the estimated useful life and that therefore, working on the unit rule, the accumulated reserve for each unit will be inadequate and the deficit will fall upon the patrons of the particular year in which the retirement occurs, since this deficit is to be charged to operating expense. Practically, however, since rates cannot be adjusted to take care of this deficit, the burden will fall upon the security holders and result in a reduction or elimination of returns for the year in question.

The committee submits that the only practical methods of providing for these uncertain losses of value are by

Electric Lines File Depreciation Brief

American Electric Railway Association Committee Discusses Basic Questions of Useful Life and Depreciation Reserves Before the Interstate Commerce Commission

THE American Electric Railway Association was granted permission by the Interstate Commerce Commission to intervene in the proceedings under No. 15100, Depreciation Charges of Steam Railroad Companies, being a hearing before the commission on the recommendations of the bureau of accounts, depreciation section, with regard to the setting up of depreciation accounts by the steam railroad companies, and the action which should be taken by the commission in reference thereto under Sec. 20, Par. 5, of the interstate commerce act, as amended Feb. 28, 1920.

A committee consisting of W. H. Maltbie, chairman; R. R. Bradley, A. W. Brady and Frank Karr prepared a 4,500-word brief which was filed with the commission on Feb. 20. On account of the importance of the subject to the industry, the principal contentions in the brief are given below practically in full.

The conditions which surround the electric railway industry, although similar in some respects to those which surround the steam railroad industry, present nevertheless many points of difference, both as to the character of the traffic handled, conditions under which operations are performed, and relations of the companies involved to the general economic and financial situation in the country as a whole. Interest in the present case, therefore, is confined to the discussion of some of the general principles underlying a system of depreciation accounting, which by virtue of their general application might be applied in any subsequent cases relating to the accounting of carriers other than steam roads, and also because of the precedents established for subsequent cases before the Interstate Commerce Commission and state commissions.

No attempt is made in this case to file any full brief or complete discussion of the question of depreciation as applied to electric railway accounting. The present brief is intended only to cover a few general questions on principles which are so broad as to be of general application.

The recommendations made by the depreciation section, as the committee understands them, involve the division of the depreciable property of the car-

rier into two classes to be handled, respectively, on a unit and a group basis. For both classes depreciation is to be accounted for on the straight-line basis. Estimated useful life is to be determined with due allowance for possible retirement through obsolescence, inadequacy, changes in the art, and public requirements. These estimates as to useful life are to be made in the first instance by the Interstate Commerce Commission for the various classes of roads, and thereafter are to be subject to modification for individual lines in the discretion of the commission, on application by individual roads; and the corporations are to be under no restrictions as to the use which they shall make of the depreciation reserve.

In the case of property in the unit class the ratio of salvage to ledger value is to be determined by estimates, a separate depreciation account is to be set up for each unit, and if a unit is retired before the end of its estimated useful life the shortage in the depreciation reserve accumulated for that particular unit is to be charged to operation as of the year of retirement. If, on the other hand, the unit exceeds its estimated useful life, no further reserve is to be accumulated for it after the expiration of the estimated useful life.

In the case of property in the group class the ratio of salvage to ledger value is determined not by estimates but by actual average experience over the preceding period equal to the estimated life cycle, the reserve is set up for the group as a whole, and there is therefore no opportunity to determine whether a particular portion of the group which it becomes necessary to replace has or has not an adequate reserve accumulated for it; and there is therefore no opportunity or cause for charging into the operating expenses of any particular year any special deficits such as those which arise in the case of property handled on the unit system.

These recommendations raise, either directly or through conditions which inevitably follow their adoption, certain basic questions, on three of which the committee presented comments for consideration of the commission. These questions are:

First—Shall the useful life of property for depreciation purposes be esti-

the accumulation of a separate reserve, by amortization after they occur, or by a combination of the two.

SHALL DEPRECIATION RESERVES BE ON UNIT OR GROUP BASIS?

If the depreciation reserves are to be set up on a unit basis under the system recommended by the depreciation section, the amount of accounting involved in the case of the larger properties will be enormous; but in addition to this, even if the estimated useful life is made equal to the normal wearing life, without regard to retirement through obsolescence, inadequacy, changes in the art, or public requirements, the system will result in marked inequality of charge for depreciation purposes against the users in successive years, and in particular against the collective group of patrons during the first life cycle as compared with the collective group during the second life cycle.

Assume, for example, that this rule is in force and consider the charges against the patrons during the first life cycle of a group of new units. These patrons will be charged, first, full replacement cost on those units which live out or overlive their estimated life; second, full replacement cost on all those units that fail to live out their estimated useful life; third, full annual depreciation charges on those units which replace the units which fail to live out their estimated useful life. Patrons of the second life cycle, on the other hand, are relieved of any payments for depreciation during the remaining life of all those units of the group which exceed the average estimated useful life. In other words, the patrons during the first life cycle pay for more equipment than they wear out, while those during the second life cycle have the use of equipment without charge for its wear.

As a matter of fact, rates cannot be adjusted upward and downward from year to year in order to take care of these fluctuations in the depreciation appropriation, and the variation in the burden must be met by the security holders.

The accounting would have been simplified, exactly the same amount of money collected, and the charge equitably distributed if the reserve had been accumulated for the group and not for the individual units.

Another injustice to the patrons of the first life cycle from the adoption of the unit rule also follows in the case of all existing companies which have not already accumulated a depreciation reserve upon this basis. In other words, the general effect of the adoption of the regulation, at least in all properties where the number of units is sufficient so that annual replacements are approximately equalized, will be to force the shipping public to refund to the investors approximately one-half of the service value during the first life cycle after the adoption of the rule. The committee submits that, even if such refund is desirable, the present economic situation does not justify the loading of this burden upon the patrons of the railroads at the present time.

The difficulties growing out of the

unit system of depreciation are all due to the fact that the depreciation section has attempted to determine useful life on an average basis, apply the resulting figures to individual units, and charge the deficit in the case of any unit which does not live out the average life to the unfortunate user or security holder at the moment of its retirement. It is obvious that such a system is economically unsound.

It is submitted that if the estimate of useful life is to be based on the average life of a large group or field of units, then the charges against operation for the establishment of a depreciation reserve or reserves for those units must be set up for the same group or field; and, further, that the overpayment on long-lived units (resulting in the completion of their reserve before the termination of their useful life) shall be used to meet the deficit due to underpayments on short-lived units which failed to live out their estimated useful life. The result of such use, of course, is a deficit in the reserve of the long-lived units which is properly charged against the patrons who get the benefit of these units during the remaining life years. It is certainly more equitable to charge this inevitable deficit against those who are given the use of the property than to charge it against those who happen to be the users in the year of retirement.

But if this position is adopted the reserve is practically on a group basis, and unit accounts become unnecessary.

All forms of dealing with theoretical depreciation demand for their application a predetermination of service life, and this is impossible for any particular piece of apparatus or for the collective apparatus of any particular company. Even those estimates of average life which are based upon a nationwide experience are, in view of the constantly increasing service demand, of doubtful value; but even if such average figures were accurate and dependable they could not equitably be applied to any particular company. Average service life estimates can only be equitably used when replacement costs are chargeable to a general replacement account. Vital statistics are accurate and dependable, but they are not a safe basis for self-insurance by the individual.

The method recommended for the handling of depreciation upon group properties differs, as noted above, only in the method of determining the ratio of salvage value to cost or ledger value, but the impossibility of isolating the units retired from time to time results in a second difference in that it will be impossible to charge into operating expenses of the year of retirement any deficit in the reserve, since there will be no indicated or designated portion of the reserve applicable to the property retired. This method, therefore, will not result in the inequality of charge between patrons in the first and subsequent life cycles, and will not accumulate a reserve in excess of current needs in the case of older properties where replacements costs have become practically uniform from year to year. In the case of new properties, however, or in the case of extensions of existing

properties of sufficient importance to justify their recognition as a separate depreciation accounting group, the comments herein made as to accumulation of an unnecessary reserve still hold.

IS RESERVE FOR REPLACEMENT OR LIQUIDATION?

A depreciation reserve can serve but one or the other of two purposes. The first is the insurance of necessary replacement of property; the second is liquidation of the capital invested. Since, however, the investor in a major railroad business does not anticipate at any time an ultimate liquidation, he is not interested in and does not demand the accumulation of a liquidation reserve. Moreover, the public is not interested in the accumulation of a liquidation reserve and, in so far as it understands the fact that this reserve must be accumulated at its expense, does not demand (and in fact opposes) its accumulation. Regulatory bodies therefore should deal with a depreciation reserve only as a means of replacement.

The unit plan operated under the rules proposed will build a liquidation as well as a renewal reserve for all companies, old or new. The group plan operated under the rules proposed will build a liquidation as well as a renewal reserve for new companies (assuming ratio of salvage to ledger value to be estimated in view of the lack of experience) and also in the case of new extensions of sufficient magnitude to be treated as a group. It accumulates only a replacement reserve in the case of companies sufficiently old or with property sufficiently diversified to have practically uniform annual replacement costs.

The committee believes, therefore, that as between the group and the unit methods the former should be adopted, but we go further and respectfully urge that the practical, businesslike way of dealing with depreciation in the case of companies where the investor does not look to an ultimate liquidation is to allow each year as operating expense a sum reasonably in excess of the replacement costs of that year until a sufficient reserve has been accumulated in a general depreciation account to serve as a balance wheel or reservoir out of which to take care of any year-to-year variations in replacement costs; and thereafter in the event of any abnormal replacement cost which cannot properly be handled out of the reserve reservoir to charge the excess to a suspense account and amortize it in subsequent years.

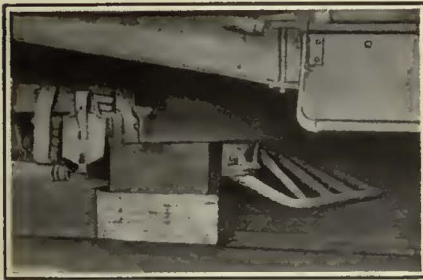
POSSIBLE TO DEVISE EQUITABLE SYSTEM

This association believes that it is entirely possible for the commission to set up under the interstate commerce commission act as amended a classification of depreciable electric railway property, fix tentative rates for each class, group the individual companies according to their needs, and devise a system of depreciation accounting that will equalize replacement burdens, prevent the accumulation of excessive reserves, and still leave the companies a reasonable and necessary economic freedom.

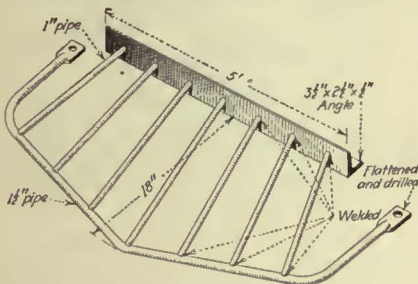
Maintenance of Equipment

Car Fender Made of Pieces of Steel Pipe

A SATISFACTORY though inexpensive type of car fender consisting mainly of short pieces of steel pipe is being used by the Chicago & Joliet Electric Railway on its interurban and suburban cars. For the outside edge of the fender a piece of 1½-in. pipe is used. A 3½-in. x 2½-in. x ½-in. angle bar forms the



This Fender Is Made of Pipe in the Shops of the Chicago & Joliet Electric Railway



Details of the Joliet Pipe Fender

back transverse member, which is attached to the truck frame, while seven pieces of 1-in. steel pipe, spaced equidistant, serve as supporting members between the angle and the outside or lower pipe. The ½-in. pipes, slanting upward, also act as a guard to prevent large objects from getting under the truck while the car is in motion.

The piece of 1½-in. pipe is bent to the desired shape over a templet. The angle is cut and drilled to receive the bolts for anchoring it to the truck frame. With the pipe laid out flat on the floor the angle is placed on a support 6 in. higher and in the proper relation to the pipe to secure the correct angularity of the supporting members. The seven pieces of 1-in. pipe are cut to the exact lengths to fit. The two end

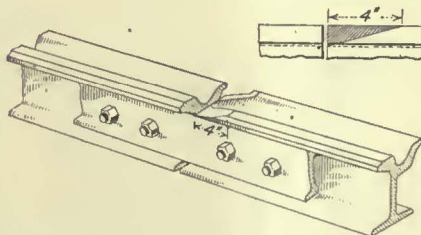
supports are oxyacetylene welded into position first, after which the remaining five pipes are welded in position.

The outside member of the fender is attached to the same portion of the truck as the angle, the end of the pipe being flattened and bent into a position flush with the bottom face of the angle. A hole is drilled in this flattened portion to receive the bolt for fastening to the truck frame.

Fenders of this type have proved very satisfactory in the service in which they are used, and in no instance have the joints opened due to vibration of the truck. As mounted, the lower edge of the fender clears the track by about 7 in.

Rail Head Cut Back Before Welding Battered Joint

IT HAS been found by the Union Street Railway, New Bedford, in building up badly battered rail joints that more satisfactory results are obtained by cutting back the head of the rail on a diagonal before commencing to weld. This is done with an acetylene torch and takes only about ten minutes longer per joint than the old method. The cut is made on a slant from the top of the fish plate or from the bottom of the groove to the head of the rail at a point about 3½ or 4 in. back from the rail end. The joint is then built up

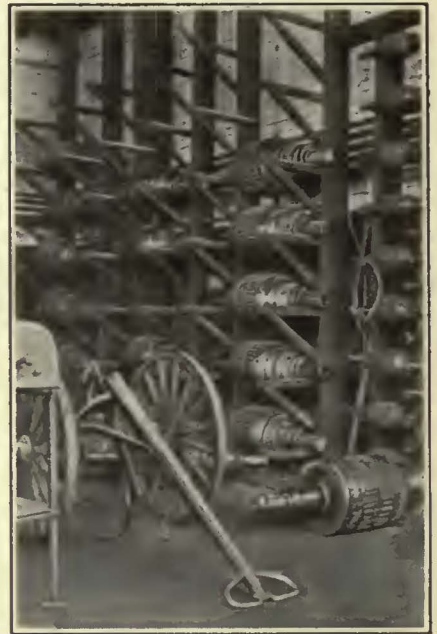


Head of Battered Rail Is Cut Back Before Building Up

by welding with hard steel and ground. The whole operation takes about one hour per joint and a job done in this way will last considerably longer than when the joint is built up simply by welding without cutting back the head of the rail for a new surface.

Armature Life Prolonged by Careful Storage

SPARE armatures are stored in the shops of the Holyoke Street Railway in racks built up of metal bars as shown in the accompanying illustration. The supports are short arms extending from vertical posts and braced underneath by diagonal pieces. To prevent the armatures



These Simple Racks Provide a Convenient Place for Storing Armatures

rolling off the end, the supports slope back slightly. A chain hoist traveling on an overhead trolley is used to lift the armatures and convey them to and from the racks.

Dipping and baking armatures is not favored by this railway. Insulating varnish has been found to be sufficient protection. In spite of the fact that winters are severe in Massachusetts and much snow usually falls, there have been few burned out armatures. The principal cause of failure is in the bearings. During December, 1923, and January, 1924, there was only one armature burned out on the sixty-odd cars operated on this railway.

The care exercised in handling armatures is thought to be an important element in prolonging their period of service.

Chattanooga Signal Record Still Improving

THE effect of careful maintenance on the forty-two Nachod signals in use on the single track in and about Chattanooga, on the lines of the Tennessee Electric Power Company, continues to show improvement, as revealed by the annual report of the signal department, covering the year 1923. This is to be compared with a report covering the years 1919-1922 in the Feb. 10, 1923, issue of *ELECTRIC RAILWAY JOURNAL*, page 254.

In the table below figures are given showing specific troubles found, with the number of cases of each. During 1923 these were reduced to seventy-one from eighty-six in 1922, while the total of all the signal operations was increased from 2,082,404 in 1922 to 2,124,680.

The operations per failure were 24,214 in 1922 and 29,928 in 1923, an increase of almost 23 per cent. A comparison of previous years shows that the record has been consistently and continuously improved from 11,336 operations per failure in 1919. The number of lamps out has been markedly reduced, due to regularly renewing them at stated

COMPARATIVE RECORD OF SIGNAL TROUBLES FOUND IN CHATTANOOGA

	1922	1923
Line wires.....	3	2
Fuses blown.....	9	15
Lamps out.....	19	8
Relay trouble.....	11	13
Setting contactor.....	6	4
Restoring contactor.....	5	4
Bad grounds.....	3	6
Pole wiring.....	13	6
No trouble found.....	12	3
Miscellaneous.....	5	18
	86	71

	1922	1923
Total operations of all signals for year.....	2,082,404	2,124,680
Number of operations per failure.....	24,214	29,928
Average yearly operations of each block of signals.....	99,162	101,174
Average daily operations of each block of signals.....	272	276
Number of blocks in service...	21	21

periods, while contactor troubles almost completely disappeared.

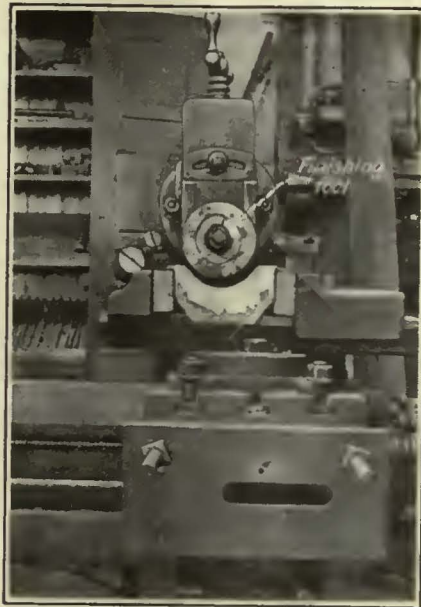
The department overhauled twenty-two old signals and relays, at the same time converting them into the latest model. The oil in which the relays are immersed was renewed in twenty-five of the signals. Three blocks of signals were converted into other types to conform to different operating conditions, and one of them was made to work in conjunction with a Cheatham switch. Twenty-seven overhead trolley contactors were taken down, painted and adjusted and 2½ miles of iron line wire replaced with No. 10 copper.

The signal department also installed one Cheatham switch and changed the location of two others of these switches.

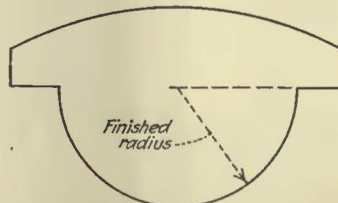
Finishing Journal Bearings on a Shaper

IT IS quite common practice among electric railways to fit journal and axle bearings to the particular shafts on which they are to operate. After babbitting, the insides are usually either turned or bored out to the required dimensions. As clearance is usually allowed at the side for the entrance of oil, the important fitting dimensions are the depths and the radius at the top.

The Philadelphia & Western Railway, Norristown, Pa., has found it



Cutting Babbitt from a Journal Bearing in a Shaper



Gage Used for Accurate Fit of Bearings

convenient to machine journal and axle bearings in a shaper by employing a circular tool which is bolted to the tool post. The edges of this steel disk are beveled so as to provide a cutting face, and by use of different diameters for the disks any desirable variations in the finished bearings can be produced. In finishing, the bearing is clamped to the bed of the shaper and as the tool is moved back and forth the cuts can be regulated as desired. An allowance of approxi-

mately 1/8 in. babbitt is made for machining purposes.

In order to provide for accurate gaging of the bearings during the machining operation a circular gage is provided which gages the inside radius from the split bearing face. An accompanying illustration shows the method of machining the bearings and type of gage used.

New Handles for Old Tools Save Money

THE maintenance of way department of the Springfield Street Railway, Springfield, Mass., has made a saving in the purchase of new tools by a program of replacing the handles in old ones. Among such tools as shovels, picks, hammers, axes, and the like, a broken handle is usually the cause of the tool being discarded.

To avoid throwing away good material the railway employs one man in the storeroom of the track department during bad weather to refit tools with new handles. The latter are purchased locally for such tools as picks and axes and are made in the carpenter shop of the railway for tools for which handles cannot readily be purchased.

Heavy Plow Tears Up Pavement Quickly

AN UNUSUAL method of removing old pavement from between the rails is used by the Boston & Worcester Street Railway. A small car has been constructed with a square framework of 20-in. steel I-beams. Inside of this frame is another frame, triangular in shape, and built of 15-in. I-beams. To the bottom of the triangular frame 75-lb. T-rails have been bolted upside down. These are pointed at the front end and bent downward three-quarters of an inch. Adjustment of height is made by blocks under the springs so that the pointed rail ends will clear the pavement or dig into it to any desired extent.

The triangular frame has been filled with 4½ tons of concrete, making the total weight of the pavement digger about 9 tons. It is pulled by a 1½-in. steel cable 20 ft. in length and attached to the vortex of the triangle. Two 30-ton cars are used to pull the digger. On a recent job, pavement was removed by this apparatus in six hours that would have cost \$1,800 to remove by hand.

New Equipment Available

Air Motor Hoists with New Features

FOUR heavier sizes of air motor hoists have now been added to the line supplied by the Ingersoll-Rand Company, New York. These hoists range in capacity from 500 to 10,000 lb.

Among the features incorporated in these hoists is a balanced three-

throttle and stops the motor whenever the load is by chance raised to the top of the hoist.

The addition of an automatic brake is a new feature. This holds the load at any desired position regardless of air pressure. The brake consists of a disk attached to the motor shaft and a brake plunger with a friction base which is held in contact with the disk by a spring whenever the hoist is not operated. It is entirely automatic in its action.

Light Box Signals Traffic Officer as Well as Motorman

A NEW type of signal light box has been developed by the National Pneumatic Company, New York. An interesting feature of this box is the inclusion of two holes in the back of the box opposite the top of the two signal lamps. With the doors closed and the car ready to start light shines through these holes. The box is installed so that these come just above the window ledge at the front of the car, and traffic officers can thus see when lamps are lighted and are advised that the car is in readiness to move. They can thus signal traffic for prompt operations of cars.

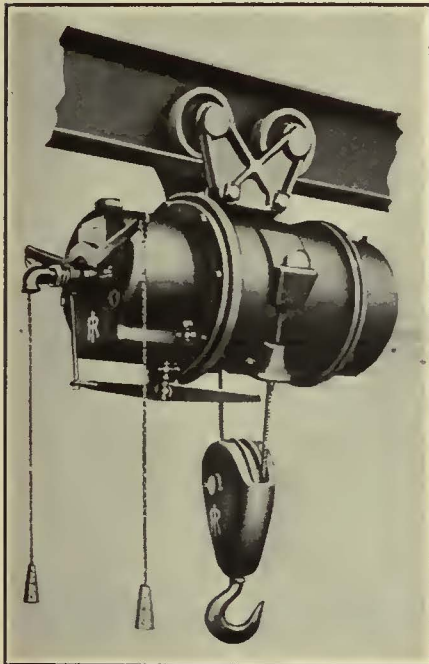
Another new feature of the signal box includes a dimmer for the front signal holes, so that during the night time some of the rays from the lamps can be shut off, but during the daytime the maximum illumination is obtained. This consists of a slide inside the cover with a wing nut

attachment on the front. By loosening this slide can be changed so as to dim the illumination or give full illumination as desired.

Wide Swing Grinder

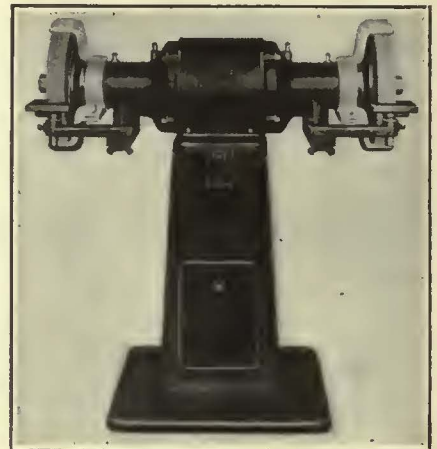
A NEW construction in grinding machines with the wheels spaced 37 in. apart is being marketed by the Hisey-Wolf Machine Company, Cincinnati, Ohio. This wide spacing permits grinding of large bulky castings and at the same time prevents interference where two workmen grind at the same time.

This machine is equipped with a 3-hp. motor and can be furnished for



New Air Motor Hoist

cylinder air motor which operates in either direction. The throttle graduation is very fine and controls the hoist at any speed. A safety stop lever is provided which closes the

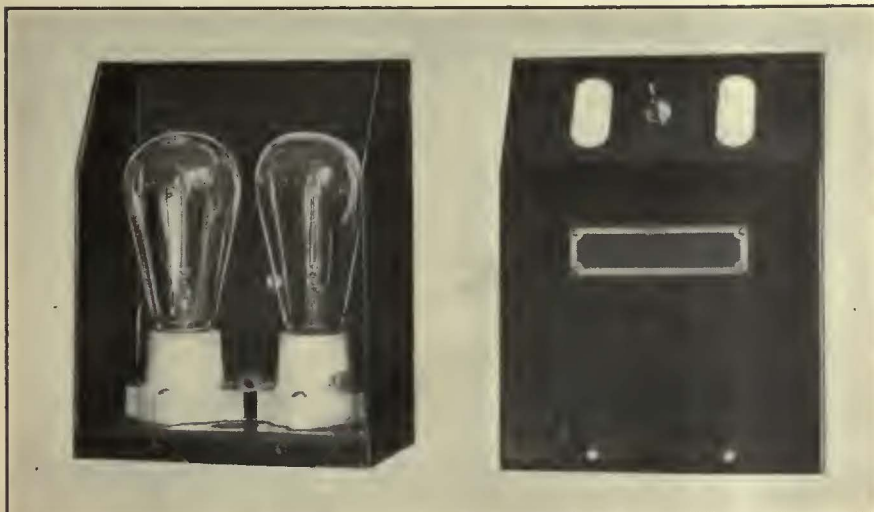


Wide Spaced Grinding Wheels Fitted with Open End Wheel Guards

either alternating or direct current operation. The size wheels recommended are 14 in. in diameter and the machine is suitable for use in mounting wire brush wheels or buffing wheels. A special feature is the adjustable open end wheel guard, which can be readily removed if desired.

A fully inclosed and combination wheel guard can be supplied to order. This guard is fitted with removable end covers and exhaust pipe connection, and, like the open type guard, is of dimensions and specifications as recommended by the American Engineering Standards Committee. It is adjustable to any angle and can be moved back as the grinding wheel wears. This full safety guard is interchangeable with standard open end guard. Four high-grade ball bearings are fitted to the spindle.

The grinding rests are adjustable and are held in position by clamping nuts and bolts with concealed heads. The spindle is of one-piece construction and made of high grade steel. The grinder has a base 22 in. x 25 in. and the motor has a no-load speed of 1,600 r.p.m.



Signal Light Box with New Features

The News of the Industry

Detailed Improvement Plan Submitted

Rerouting, Trackless Trolley and Gasoline Bus All Included in Commissioner Cann's Plan for Toledo

General rerouting of railway lines, establishment of a trackless trolley crosstown line, and the development of a double-deck gasoline bus "de luxe" service on Collingwood and Madison Avenues—the most exclusive residence and business thoroughfares in the city—are included in a plan which Street Railway Commissioner W. E. Cann laid before the City Council at Toledo. The entire plan will possibly come before the Council on March 3. The cost of the plan is estimated at \$760,000, with \$532,820 for the physical changes in the present system, \$157,000 for overhead equipment and cars for the trackless trolley line, and \$76,000 for the double-deck buses.

The matter of the trackless trolley crosstown line has already been before the Council for several weeks. Disposition of the issue has been delayed from week to week because it is feared it will be practically impossible to pass the necessary enabling measure without some concessions.

It is believed that in order to carry out the double-deck gasoline bus feature, which is an innovation, a separate corporation would have to be organized to operate the buses. A 10-cent fare would be charged on the buses and a ten-minute schedule maintained. It is not known what the attitude of the Community Traction Company would be toward this form of operation, but it has already frowned upon the use of buses on the crosstown line.

The commissioner told the members of the Council at a special meeting on Feb. 23 that he estimated the changes would increase operating expenses by \$666,951 a year, while the revenue of the lines would be increased by \$558,930 through the economy of the changes and additional service possible.

He intimated that the apparent loss of \$108,021 would be easily absorbed through economies of one-man operation on various lines at all except rush hours.

Retaliatory Measures Resorted to by New York City Board

The Board of Estimate of New York, sitting in committee of the whole, adopted formally on Feb. 25 a policy of refusal to enter into contracts with the Brooklyn-Manhattan Transit Corporation for the operation of subways or any other form of transportation lines. A resolution to that effect was offered by Comptroller Craig as the result of a discussion of the withdrawal of surface car service across Williams-

burg Bridge. Every member of the board voted for the proposal except Borough President Maurice E. Connolly of Queens, who said he saw no need of such action. A large delegation of Brooklyn residents criticized the present municipal operation of the bridge cars and asserted that because of the municipal 3-cent operation thousands of passengers were forced to pay an additional fare or walk.

The board laid over for further consideration the method of construction of the extension of the Fourteenth

Street-Eastern subway. Two hundred men and women from the Ridgewood and East New York sections of Brooklyn urged immediate action, and the members of the latter delegation opposed the construction of an elevated structure. Borough President Connolly of Queens urged that the line should be built through Wyekoff Avenue instead of Cypress Avenue, which brought opposition from both delegations. The board decided to visit the sections affected with Arthur S. Tuttle, its chief engineer, before making a decision.

Transportation Puzzle Solved

Cincinnati Street Railway and Traction Company Submit Agreement—
Seven and One-Half-Cent Fare Favored at the Meeting—
Much Yet to Be Done to End Controversy

SUBSTITUTION of an entirely new traction contract for the present service-at-cost franchise, declared to be "beautiful in theory, but not workable as a practical proposition," appears to be likely to result from negotiations that terminated in the presentation to the Council committee on street railroads on Feb. 21 of a plan for the solution of the railway problem of Cincinnati, Ohio. The Cincinnati Traction and the Cincinnati Street Railway, the two parties to the controversy, insist that the agreement will achieve all that the city administration has sought in addition to improved service and lower fares. The agreement, signed by W. Kesley Schoepf and Walter A. Draper for the traction company and by Robert A. Taft and Samuel Assur for the street railway, was discussed in executive session by city officials, Councilmen and members of the Mayor's citizens' street railway committee following the public hearing in the Council chamber. The terms will also have to be approved by the directors and stockholders of the two companies, to whom they are to be submitted at the earliest moment.

The agreement was read to the members of the Council committee. It is predicated upon demands made by Mayor George P. Carrel and the City Council two years ago. In substance, these demands called for a scaling down in capitalization; a consolidation of the two companies involved, so that the city might deal with a single corporation, and a divorcement from the present street railroad organization of all activities that were not directly concerned in the actual operation of the railway.

It was announced that before the administration would commit itself as to the acceptability of the agreement between the two companies there must be a definite understanding as to what is to become of the other provisions of the franchise, since the conditions im-

posed by the agreement were considered to clarify only one phase of that contract. Accordingly it was suggested that a special committee be named by Council, to be composed of the Mayor's cabinet, including the service and the safety directors, vice-mayor, street railroad director, city solicitor and members of the Council committee on street railroads. The members of this committee will listen to further proposals from the railway company, which is to become the operating company under the terms of the agreement, as to the disposition of the other questions affecting the present service-at-cost franchise.

Some of the questions to be determined are: What shall be the rate of fare? Is the cost of operation to be the determining factor, as provided for under the existing contract, or shall that contract be discarded entirely and a new franchise substituted that will contain a definite fare to be charged until 1932, when, under the original franchise granted under the Rogers law, there is to be a revision?

With regard to the fare feature some of those at the conference favored a straight 7½-cent fare until 1932, provided other terms of the proposed amended franchise tax were satisfactory. A further question to be determined is whether or not the city, in the interest of the car rider, shall forego the franchise tax, which, under the existing contract, is to be paid when earned, and if so, is the operating company to assume the obligation of maintaining the streets between rails? Also, what return upon the capital is the company to be permitted to earn in the interest of low fares and improved service?

These are some of the details that will have to be worked out before it can be stated finally that the entire problem definitely has been adjusted to the satisfaction of all parties at in-

terest. It was predicted that it will be at least three or four months before an end is reached in the five-year controversy. The report recites that the Cincinnati Street Railway agrees to purchase all the interests of the Cincinnati Traction Company in the system, and that thereby two of the demands of the Mayor and the Council will have been met.

As to reduction in capitalization, it provides that the capital shall be reduced by approximately \$10,000,000, exclusive of any reduction in the capital of the Cincinnati & Hamilton Traction Company, known as the Millcreek Valley line. The present capital of that corporation is \$2,200,000, divided equally into common and preferred stock.

While the agreement makes no direct reference to the fact, the new operating company as soon as possible also will purchase the Millcreek Valley line outright from present stockholders. Whatever price is paid for that property will be additional capital.

The basis of the purchase price of the Cincinnati Traction Company interests and of the leasehold of the Millcreek Valley line from the Ohio Traction Company is \$4,250,000 in stock of the Cincinnati Street Railway and the assumption by the latter company of \$2,817,000 of outstanding obligations, together with \$1,651,000 car trust certificates. In addition the Cincinnati Street Railway will assign its perpetual leasehold in the Chester Park property. That property comprises approximately twenty-five acres, now devoted to amusement purposes. The lease contains a privilege of purchase clause for \$100,000.

The Traction Building and the Cincinnati Car Company also will be retained by the Ohio Traction Company. In that connection a new company will be organized to take over the park property, car building plant and the Traction Building. W. Kesley Schoepf, president of the Cincinnati Traction Company, will head this new organization.

If the terms of the joint agreement are ratified ultimately the total outstanding permanent capital of the new operating company would be \$22,761,950 exclusive of any stock that may be issued for the purchase of the Millcreek Valley Line. The total capitalization will include, however, the \$2,817,000 outstanding obligations to be assumed and which are being liquidated and also the \$1,631,000 car trust certificates which are being paid off through charges to depreciation.

It was stated that neither of these items represents permanent capital, the total of which, even with the purchase of the Millcreek Valley Line, will approximate not more than \$24,000,000. If this last figure represents the total permanent capitalization, it will be \$1,000,000 less than suggested as the maximum by the Mayor's citizens' street railroad committee. The joint report submitted by representatives of the two companies indicates that with the \$10,000,000 reduction of the existing capital there will be an annual saving to the car rider of approximately \$546,000, which in terms of fares, would represent a trifle more than one-half

cent per passenger. This will make possible a reduction in fares as soon as the new arrangements have been put into effect.

Co-operation on the part of the city of Cincinnati and of Norwood is sought by foregoing the franchise tax and also the percentage tax on gross earning demanded by the two municipalities respectively under existing contracts. If that is done, the capital reduced as proposed and the other suggested economies are carried out, a 7½-cent fare is possible. The company now pays approximately \$500,000 property tax annually for county, city and school purposes, in addition to other taxes which aggregate \$800,000 a year without considering any municipal franchise tax.

Detroit's Corporation Council Removed

The appointment of C. E. Wilcox to handle the claims of the Department of Street Railways at Detroit, to which reference is made elsewhere in this issue, was opposed by Corporation Counsel Richard I. Lawson, who maintained that the Corporation Counsel's office was equipped to care for the legal matters that might arise in connection with the street railways.

Mr. Lawson was appointed Corporation Counsel by Mayor Frank E. Doremus. He was dismissed by Joseph A. Martin, acting Mayor during the absence of Mayor Doremus, who is ill. Mr. Martin's drastic action followed Mr. Lawson's refusal to recede from his position in opposition to the appointment of Mr. Wilcox as the executive head of the claims division of Department of Street Railways. Mr. Lawson contended that under the charter he alone as Corporation Counsel is vested with the authority to name counsel for any department of the municipal government.

Acting Mayor Martin stated that Mr. Lawson's refusal to approve the action of the Street Railway Commission in appointing Mr. Wilcox made Mr. Lawson's dismissal necessary in order to sustain the actions of the Street Railway Commission and to protect the people's interest in the municipally-owned street railway.

Proposal Made to Reestablish Galva-Kewanee Line

B. F. Lyons, Beloit, Wis., has presented to Kewanee's City Council a proposition to take over all the local public utilities, including the railway system and the interurban line between Galva and Kewanee, now inactive.

It is Mr. Lyons' plan to extend the local railway to the north end of town, which was not served by the Galva & Kewanee system, improve the interurban service, give the city a modern electric light plant and reduce gas rates 25 per cent.

Mr. Lyons emphasized the need of a railway between Galva & Kewanee. He pointed out that during 1922, 132,077 people rode on the interurban between the two cities. In the same year, 739,353 passengers were carried on the city line.

Paper Says Buses Are Fair Weather Agency

The Grand Rapids *Herald* of Feb. 23 says that when the blizzard of Feb. 19 blocked the highways of western Michigan bus lines generally called in their cars and hung out the "Roads closed" sign. The paper says that on the other hand their competitors, the interurbans and the steam railroads, put on special crews of workmen and recommissioned their snowplows. Thus the job of opening the highways was left by the bus lines for the county and state to do with the public's tax money, while the job of keeping the railroads and electric lines going was accomplished by the transportation corporations out of their own treasuries. The paper sees in this evidence of a remarkable difference in standards, methods and expenditures of two competing transportation services. In commenting on the situation the paper said:

Throughout the storm last Tuesday the rail lines, including the street railway here in Grand Rapids, made every effort to keep up service, and by noon Wednesday practically all schedules were restored to normal. This storm service was not profitable. It costs Michigan railroads and electric lines thousands of dollars each year. But it is a fundamental doctrine of rail transportation that service must be maintained. On the other hand, snow removal and storm service cost the bus lines little or nothing. When the roads are opened it is county and state plows, operated at public expense, which break through the drifts. And as soon as the job is done the buses are back in service.

The same is true of the jitney bus as a means of local transportation. It is fair weather transportation, punctually available when transportation is least necessary. Street cars, on the other hand, are all-weather transportation, functioning particularly when needed most.

This telling point exemplifying the essential difference between present highway and railway transportation is not necessarily an argument in favor of less consideration for buses. But it is either an argument for more consideration for interurbans and other rail lines or an argument for fixing greater responsibilities on bus lines. Society's problem in terms of transportation is to equalize the responsibilities and burdens of these competing elements.

Legislature Will Consider Railway in York, Ont.

Negotiations are in progress looking toward giving full power to the York Township to operate railway service in any or all parts of the municipality. It was arranged at a recent meeting with Toronto transportation officials that the township should submit a definite proposition to the commission, on which future negotiations would be based. It is believed that the township will ask the commission to build and operate the line and provide the cars. No matter what the Legislature at its session will decide, it is practically certain that the township will take over and rehabilitate the section of the old Toronto Suburban between the city limits and the Humber River, a distance of approximately 1 mile. This will cost the township \$20,000, and another \$20,000 to rehabilitate it. The township scheme includes the construction of the Oakwood line, of about 4½ or 5 miles of double track, at an approximate cost of \$1,250,000. The people of the district have already indorsed the project, but the necessary money by-law has not been submitted. The commission stated that all negotiations were subject to approval of Council.

Goodyear Did Not Oppose Akron Railway

The news report from our Akron correspondent published on page 226 of the Feb. 9 issue stated, in connection with the circulation of a petition for signatures favoring the franchise sponsored by the railway company, that car men had been refused entrance into the plant of the Goodyear Tire & Rubber Company, and, furthermore, that employees had been warned against signing the petition on penalty of dismissal.

The JOURNAL has been satisfied that this statement was an injustice to the Goodyear Tire & Rubber Company.

The circulation of the petition in question in the Goodyear plant was refused, but this is merely a standing rule of the company against all petitions, and similar refusal was made on a petition against an increase of the 5-cent fare. As to the threat of dismissal, Goodyear officials claim that no such instructions were issued. It may be that some discussion among the men gave rise to the spread of this report, but it was not a company measure. The Goodyear people also claim not to have been identified in any way with what has been felt was a general movement of the tire people to back the motorization of Akron.

During the controversy one of the Akron newspapers printed a statement to the effect that Goodyear Assembly workers had backed the Mayor in his fight for a 5-cent fare. A company official writes that the Goodyear Assembly is an institution of factory laborers which acts independently of the policies of the Goodyear company in its opinions, and it does not in any way represent or reflect the attitude of the company. As a matter of fact, it is explained that the Assembly is not unanimous in its stand, inasmuch as one of its members, also a member of the Akron City Council, introduced an ordinance advocating a 6-cent fare for the railway.

It should be stated in passing that the Goodyear Tire & Rubber Company is a member of the American Electric Railway Association.

Fighting the Season's Blizzard

The baby blizzard which swept the Atlantic Coast on Feb. 19 blanketed New York City in several inches of snow, pressing into service thousands of employees with their plows, tractors and other snow-fighting apparatus. Traffic was delayed and, with the after-business and after-theater rush, subways were jammed to capacity. In order to inconvenience the daily toilers as little as possible the New York Transit Commission offered a suggestion that employers send home their help early so that the traveling might be a little more evenly distributed. In Rochester the New York State Railways called out all the available men and equipment. By hard fighting both the city and the inter-urban lines were kept open throughout the storm, although traffic was delayed generally. The East Avenue bus lines kept running, but on delayed schedules. Several interurban bus lines radiating from Rochester were tied up by country drifts on Feb. 20. In Pittsburgh, when

the ice and sleet began to cripple seriously the transportation, several hundred employees of the Pittsburgh Railways were out clearing the car tracks instead of being decorated at their safety rally, which had to be postponed indefinitely.

\$24,500,000 Program

Chairman of Boston Trustees Indicates Need of Extension of Term of Public Control

A program of improvements on the Boston Elevated Railway to cost \$24,500,000 has been prepared by the trustees of the company. It was outlined by Chairman James F. Jackson on Feb. 28 before the committee on street railways of the Massachusetts Legislature in connection with a hearing on a bill to authorize the company to issue bonds. The program is as follows:

1—Completion of Everett Shops.	\$4,500,000
2—Modernizing surface car-houses, repair units and track layouts	4,000,000
3—Completion of South Boston boilers, cable and switching requirements at South Boston, underground conduit and substation additions	3,000,000
4—(a) 25 steel elevated cars needed for increased traffic. (b) 53 Cambridge subway cars for Dorchester extension. (c) Replacing 400 inefficient surface cars 22 years old. (d) Replacing 100 wooden elevated cars 22 years old.	10,000,000
5—Storage for 60 elevated cars at Everett, lengthening elevated station platforms for eight-car trains; miscellaneous machinery, buses, garages, Everett and Linden Street terminals, track betterments over a period of three years	3,000,000
Total	\$24,500,000

Chairman Jackson in addressing the legislative committee reviewed the affairs of the company at length, repeating as was necessary in a statement of the kind many facts about operation noted from time to time in the ELECTRIC RAILWAY JOURNAL. He said that five of the ten years fixed as the period for the public control of the railway by the state ended June 30, 1923, and that it would seem to go without saying that the commonwealth must desire a genuine test of the service-at-cost furnished by the State to its citizens. As he sees it the outstanding need of the railway is additional capital for changing and extending the existing subways and permanent structures and for building additional subways and structures.

Mr. Jackson says that while the policy of gradually replacing obsolete and worn-out cars with modern equipment can be continued through the use of operating revenue, the time has come when additional cars must be provided, the cost of which cannot be met from operating revenue but must be met from capital. He also says a second unit must be built at the Everett shops.

Mr. Jackson says:

Capital for all these purposes is ordinarily obtained by the issue of corporation stock or bonds. Under the settled policy of this Commonwealth no stock can be issued at less than par value, and no bonds can be issued in excess of outstanding stock. Until, therefore, the stock of the Boston Elevated sells at par and the margin be-

tween outstanding stock and bonds has been increased the door is closed to the issue of corporate securities.

The cold, calculating money market is extremely sensitive and independent in its movements. It all seems to come to this, that unless there be legislation extending the period of public control any new issue of stock at par will be impossible. And without such preliminary issue of stock there can be no issue of bonds.

Mr. Jackson is opposed to any special legislation changing in this case the State policies with reference to issue of stocks or bonds. Moreover, he does not think any such change would solve the problem. In conclusion he says:

It would seem consistent with sound public policy that there should be legislation which would enable our car-riders to secure necessary capital upon rates that would reflect the advantage of a public over a private service.

Apparently, look in whatever direction one may, the all-important change in the present situation seems to be the making more definite in one way or another what is to be the tenure of public control, whether or not it is to extend beyond 1928.

Expert Answers Transit Queries.—

How soon can new subways be built and to what extent will they relieve present conditions in New York City, N. Y., are questions which James Blaine Walker, secretary of the Transit Commission, is answering in a series of articles in the *New York Evening Post*. Article I, under date of Feb. 27, gave the general outline of the transit problem, dwelling on the terrific increase in travel in the past twenty-odd years and the resultant need of not two subways but of three or four subways. In the next article Mr. Walker will give the history of the subways with some interesting news angles.

Posters Give Information.—Posters which really carry a message and at the same time have sufficient coloring and effective layout to attract the eye were used during February in the cars of the Philadelphia Rapid Transit Company, Philadelphia, Pa. One poster advertised a new and improved trolley route guide, route map and directory for sale by conductors and "L" cashiers at 10 cents. Another told that the longest suspension bridge in the world could be seen on special trolley routes of the Elevated and urged patrons to "watch it grow." Still another suggested seeing the waterfront, manufacturing district and Roosevelt Boulevard—16 miles for 19 cents by bus and railway.

Engineer Should Study Subway Plan.

—According to a tentative report submitted to the City Council of Pittsburgh, Pa., recently by a special committee of five appointed several weeks ago, traffic problems and other matters which enter into the plan for a \$6,000,000 downtown subway loop should be carefully studied by a qualified engineer, with a selected advisory committee of citizens. The committee is of the opinion that experimental investigations into the further control of the vehicular and railway traffic within the triangle district is necessary. It further suggests that these experiments might be put into operation during certain hours of the day and not in effect at other times. The committee said that no definite conclusions have been reached because since 1917 four plans for subway facilities have been advocated.

Financial and Corporate

\$1,800,000 Net for P. R. T.

\$1,000,000 Loss in Revenue in Philadelphia Attributed Largely to Frankford "L"—Consolidation Suggested

The year 1923 again shows the 6 per cent dividend on the Philadelphia Rapid Transit Company's \$30,000,000 capital stock to have been earned. It is explained that while passenger revenue increased \$2,490,597, the greatly increased use of free transfers, through the operation of the Frankford "L," reduced the average fare from 4.91 cents to 4.81 cents, the equivalent of one mill on each of 918,000,000 passengers. This represented a loss in revenue through reduction in fare of almost \$1,000,000.

Operating expenses and taxes increased \$2,182,143. The principal contributing factors here were increased car service given, increased cost of purchased power and duplication of operating costs due to the impossibility of making effective the reduced surface car service which was contemplated to offset the riding diverted to the Frankford "L."

The stockholders approved the payment of a 1922 and 1923 co-operative wage dividend to employees not to exceed 10 per cent of the annual wages. Since this is payable only after the stockholders' 6 per cent has been earned and paid, the company explains that P. R. T. becomes in effect a preferred stock, underwritten by the employees. Mitten Management, with the stockholders' assent, proposes to continue the 10 per cent co-operative wage dividend during 1924.

An unexpected wage increase of 3½ cents an hour to which the men were entitled from June 1 under the three-city average scale made it impossible to earn the full 10 per cent co-operative wage dividend for 1923, after payment of fixed charges and the stockholders' 6 per cent dividend. The employees, believing that ownership of the workshop was more important than receiving 3½ cents an hour more in the pay envelope, signed over this wage increase—amounting to \$600,000 for the year—to the co-operative wage dividend fund. This wage investment, together with the wage dividend actually earned, which amounted to \$1,200,000, made up

a total of \$1,800,000 added to the fund during 1923. This leaves the fund short by \$50,000 of the full 10 per cent for 1923, but men and management have jointly undertaken to make up this amount by added effort during 1924.

The company points out that the \$2,500,000 real estate mortgage loan, secured by car terminals and guaranteed by P. R. T., provides \$1,500,000 for the new southern car terminal, after retiring outstanding liens. Reference

PHILADELPHIA RAPID TRANSIT COMPANY INCOME ACCOUNT FOR YEARS ENDED DEC. 31, 1923 AND 1922

	1923	1922
Gross passenger earnings	\$44,249,360	\$41,758,764
Other operating revenue	681,130	770,779
Railway operating revenue	\$44,930,491	\$42,529,543
Way and structures, equipment and power—maintenance, renewals and depreciation	8,560,400	8,560,400
Power operation	4,416,307	3,475,307
Conducting transportation	14,003,087	13,383,432
General	4,060,159	3,548,378
Taxes, including paving tax	2,695,708	2,586,000
	\$33,735,661	\$31,553,517
Operating income	11,194,830	10,976,026
Non-operating income	621,539	706,429
	11,816,370	11,682,455
Interest	1,161,637	1,020,090
Rentals	8,674,732	8,683,087
Sinking fund—City contract	180,000	150,000
	\$10,016,369	\$9,853,177
Net income	\$1,800,000	\$1,829,278

is also made by the company to the plan to increase P. R. T. indebtedness from \$15,000,000 to \$25,000,000, to cover \$3,500,000 of two-year 6 per cent notes, and to provide \$6,500,000 for future financing. Stockholders will be asked to approve plans for equipment trust certificates which may later be issued in the acquisition of new motor buses.

The initial motor bus installation was made in September, 1923, when the Roosevelt Boulevard line connecting Frankford and the North Philadelphia section was placed in operation. Plans are under way for the establishment during 1924 of additional auxiliary bus routes covering 40 miles and requiring about 150 buses.

An experimental installation of the trackless trolley was made on Oregon Avenue, the southernmost cross-town street, to serve the shipping industries on the Delaware River. At present this section does not offer sufficient traffic to justify the large investment necessary in surface tracks.

Expenditures for improvements and additions during 1923 are shown in the accompanying table:

520 passengers and 56 utility cars	\$6,616,703
Track extensions and track construction in co-operation with city paving	646,140
Motor bus and trackless trolley development	508,420
New substation, carhouse, shop and other equipment	536,302
Final repayment of U. S. Government wartime advances	1,381,759
	\$9,689,324

President Dunbar says that the consummation of the plan looking to the simplification of the present complicated corporate structure of the P. R. T. leasehold system, now under consideration, would greatly strengthen P. R. T. by giving it the added financial power necessary to greater participation in city-company transit development. This plan contemplates a consolidated ownership in one corporation, providing for an exchange of the various securities of the present owning and leasing companies for such bonds and stocks in the new corporation as will preserve existing relative priorities.

Boston Elevated Bonds Returned to the Legal List

Boston Elevated Railway bonds are again on the official list of securities in which the savings banks of Massachusetts may invest. The Massachusetts Department of Public Utilities has certified to the Bank Commissioner that the Elevated has earned and paid the required dividends for five successive years, which makes its bonds legal investment for the banks. The company dropped off the list when it failed to earn and pay the dividends, and the question has been raised whether the help which the company received from the various communities during its period of public trusteeship can be counted toward qualifying its bond issues for bank investment. This question was submitted to the Attorney-General, who has handed down an opinion in the company's favor. On the strength of this opinion the bonds have been certified to the Bank Commissioner.

Birmingham and Tidewater Railways to Be Sold on March 24

The date of the sale of the property of the Birmingham Railway, Light & Power Company, Birmingham, Ala., at public auction has been changed from March 15 to March 24. On this same date the Birmingham Tidewater Railway property will also be offered at auction at a minimum price of \$500,000. The Tidewater company is under the same control and management as the Birmingham Railway, Light & Power Company. Both companies have been in the hands of receivers for some time.

PASSENGER STATISTICS OF PHILADELPHIA RAPID TRANSIT COMPANY

	Passengers Carried		Average Rate per Passenger		Passenger Revenue	
	1923	1922	1923	1922	1923	1922
January	74,857,899	68,147,370	4.84c	4.94c	\$3,625,767.94	\$3,363,925.75
February	68,570,408	62,513,337	4.82	4.93	3,305,182.54	3,082,552.87
March	79,422,257	71,625,943	4.82	4.92	3,827,671.64	3,525,522.04
April	76,730,494	71,430,998	4.81	4.92	3,694,068.56	3,514,679.44
May	82,591,742	75,952,200	4.81	4.91	3,973,888.56	3,727,018.41
June	77,264,587	70,675,234	4.82	4.91	3,723,608.11	3,467,919.88
July	72,719,051	67,563,520	4.80	4.89	3,493,820.93	3,305,598.30
August	71,609,710	66,713,224	4.80	4.89	3,435,641.53	3,261,881.54
September	73,237,080	69,350,179	4.80	4.90	3,515,750.30	3,396,512.88
October	81,258,998	74,757,191	4.80	4.89	3,898,959.12	3,658,031.40
November	78,555,394	74,246,140	4.80	4.89	3,771,562.44	3,634,190.44
December	80,969,615	75,908,176	4.81	4.91	3,983,439.27	3,820,930.51
Total	917,787,235	848,883,512	4.81c	4.91c	\$44,249,360.76	\$41,758,763.46

The minimum sale price of the Birmingham Railway, Light & Power Company's property is set at \$20,000,000 by the court, which includes all liabilities. All claims against the receivers of the company must be filed by March 7, according to the court order. Bids on the Birmingham Railway, Light & Power Company's property will be received up until noon on March 24. Bids on the Birmingham Tidewater Railway property will be received up until 12:30 o'clock on March 24.

Warren Street Railway to Be Sold

Application was made to the Pennsylvania Public Service Commission recently for permission to transfer the stock of the Warren Street Railway, Warren, Pa., to the Penn Public Service Corporation. The transfer includes the interurban lines to Jamestown, N. Y., and Sheffield and also the light and power franchises held by the Warren corporation.

The Warren system was founded in 1892 with D. H. Siggins as head of the enterprise. He built the lines to Sheffield and Jamestown. Later the active management was turned over to Hugh A. Siggins, who added the power and lighting facilities.

Hearings on Abandonment and Rates Combined in Ohio

The application of the Cleveland & Eastern Traction Company for permission to abandon its lines running between Cleveland and Chardon and between Warnerdale Junction and Middlefield, Ohio, on the grounds that the lines have been operating at a loss and can never be operated at a profit, was heard by the Ohio Public Utilities Commission on Feb. 15.

Coupled with the abandonment proceedings was the hearing on the application made by the company for an increase in fares from 3 cents a mile to 3.34 cents a mile, average, from a point 8 miles out of Cleveland to the terminals, Chardon and Middlefield. This would raise the cost of a ticket to the former point from 75 cents to 90 and to the latter from 95 cents to \$1.20.

No decision was rendered on this application, while the hearing of the abandonment proceedings was continued until March 19 to enable the protesting parties to work up their case on the basis of the presentations made by the railway.

Both Robert D. Beatty, secretary and general manager of the company, and Charles Currie, Cleveland, ascribed the gradual decline of the interurban to three factors, in all of which the advent and maintenance of good roads is a factor:

- 1—Widespread use of the privately owned passenger automobile.
- 2—Growth of bus lines.
- 3—Increasing use of motor trucks for hauling milk, farm produce and freight.

Mr. Beatty testified that the red ink figures first appeared in 1922, when the opposition came strongest, while Mr. Currie testified that a survey made by him had showed a decrease in freight business from 1920 to 1923, a situation

in which, he said, he was unable to find any indication that this branch of the business would ever become profitable.

Investors Service Reviews Utilities

The third survey of the utility field by Moody's Investors Service, dated Feb. 28, chronicles another year of genuine progress and prosperity. The outstanding developments of the electric railways, electric light and power companies, telephone and telegraph companies, gas companies and water companies are reviewed. With respect to the electric railways, Moody's says that in endeavoring to appraise and evaluate the many factors which enter the conviction arises that the final conclusions must wait upon further developments. Without going so far as to predict an era of prosperity for the electric railways, Moody's says that one can readily find much ground for encouragement with respect to them.

Better Report in Toledo in January

Operations of the Community Traction Company, Toledo, in December provided \$5,041 plus \$165 bank interest to be added to the fare stabilizing fund. Gross revenue was \$359,859, an increase of \$26,467 over the same month a year ago. Increased taxes, wages, interest charges and depreciation and maintenance allowances, however, cut down the net.

Through the sinking fund an additional \$120,000 of 6 per cent bonds of the Community Traction Company has been purchased and retired and a corresponding par value of common stock issued to the city. This makes the city holdings now \$596,000 of common stock. On this \$2,980 a month in revenue is refunded to the sinking fund. Actual operating expenses for the month were \$268,760. This is equivalent to 72.86 per cent of gross revenue. Revenue passengers numbered 5,535,810, an average of 178,574 a day compared with 176,784 in December.

Bus feeder lines continued to be operated at a loss.

Auction Sales in New York.—At the public auction rooms of A. H. Muller & Sons there were no sales of electric railway securities this week.

Net Income Falls Off.—For the six months period ended Jan. 31, 1924, the Brooklyn City Railroad, Brooklyn, N. Y., reports a passenger revenue of \$6,854,569, against \$6,815,593 for the same period ended a year ago. The net corporate income showed a falling off from \$1,180,409 for the six months ended Jan. 31, 1923, to \$1,143,871 for the six months ended Jan. 31 of the current year.

Deficit for Six Months.—For the six months period ended Dec. 31, 1923, the Interborough Rapid Transit Company, New York, N. Y., reported a deficit of \$442,645. The total revenue for the six months period was \$28,082,921. Income available for all purposes was \$7,247,292.

Suggests Purchase Consideration.—The Colorado Springs & Interurban

Railway, Colorado Springs, Col., recently announced to the City Council that owing to operating losses caused by the increase in automobile traffic it will not apply for a renewal of its franchise. The company has suggested that the city take up the question of buying the company's property, valued approximately at \$3,500,000. The railway is owned largely by the estate of Winfield Scott Stratton, one of the city's chief benefactors. The company has not paid bond interest for two years and no dividends have been paid since 1912 on the \$500,000 of preferred stock outstanding.

Another Payment on Account of Municipal Railway Purchase.—The remaining debt of the city of Seattle on account of its purchase of the local railway lines, for which \$15,000,000 in bonds was issued to the owners of the system, was reduced to \$12,501,000 recently when City Treasurer Terry wired to the city's fiscal agency in New York \$1,337,187 to meet bond interest and principal payments due on March 1. The payment included \$833,000 principal and \$333,350 interest on the railway purchase bonds, also \$26,800 interest on other railway bonds.

Want Property Transferred.—Hugh Goodfellow, Warren Olney and W. I. Brobeck, as trustees of the San Francisco-Oakland Terminal Railways, have applied to the California Railroad Commission for authority to transfer to the Key System Transit Company, East Oakland Railway and Oakland & Hayward Railway, the properties formerly belonging to the San Francisco-Oakland Terminal Railways. The Key System Transit Company has also applied to the commission for authority to sell \$2,500,000 of first mortgage bonds and to execute a mortgage to the Oakland Bank, as trustees, to secure an issue of \$10,000,000, par value, first mortgage bonds, due July 1, 1938, in conformity with the reorganization plan.

The Indiana Service Corporation, Fort Wayne, during 1923, carried 20,276,514 revenue passengers. Although the single cash fare on city lines in Fort Wayne is 7 cents, the average fare per revenue passenger was 5½ cents through the general use of the "weekly pass."

Interborough Sells Hotel Property.—The Hotel Belmont, New York, was recently sold by the Interborough Rapid Transit Company, New York, N. Y., for approximately \$7,000,000 to William Ziegler, Jr. The Ziegler residence in East Sixty-third Street, which is said to have been constructed and decorated at a cost of \$1,250,000, was accepted in part payment. It will be resold by the Interborough Company.

Seeks Abandonment.—The Chautauqua Traction Company, Jamestown, N. Y., has applied to the Public Service Commission for authority to abandon that part of its line south of the village of Mayville to a point at the south line of the village of Westfield. The line proposed to be abandoned operates on the bridge in Mayville over the Pennsylvania Railroad tracks, replacement of which is required. The company alleges that its line is not meeting operating expenses and taxes.

Traffic and Transportation

Another Atlanta Hearing on March 4

Public Discussion of Fares Expected
to End Then—Terms of Com-
pany's Plea Restated

In connection with the work of reporting the hearings on the petition of the Georgia Railway & Power Company, Atlanta, to the Mayor and the City Council looking toward the adoption of a plan designed to put railway operation there on a satisfactory financial basis, sight has at times been lost of the correct aims of the company. Even the *ELECTRIC RAILWAY JOURNAL* fell into this error in the issue of Feb. 16 in reporting the events of the fifth public hearing. It was stated that the company was asking for an increase in fare from 7 to 10 cents, for the privilege of asking 2 cents for a transfer, and for the elimination of jitneys from the streets on which the railway operates. It was further said that unless these things can be secured, the company has warned the public that it cannot make any extensions or improvements in its service, and may be forced to cease operation.

As a matter of fact the company is merely suggesting seven definite remedies to assist the railway, and has offered, provided the public does not approve any of the plans advanced, to try any fair plan the public thinks will best serve its interest so long as the plan will provide the necessary revenue. Thus the 10-cent fare clause asks only for a 10-cent cash fare, tickets to remain at 6½ cents. The definite changes asked in the conditions under which the railway is now operating are as follows:

1. Complete elimination of jitneys from streets upon which street cars are operated.
2. Renewed and effective enforcement of regulation of street traffic.
3. Ten-cent cash fare on street cars; tickets to be sold at the present rate of 6½ cents. Car riders will pay no increase in fare if they buy tickets.
4. Two-cent charge for transfers.
5. Reasonable revision in the operating routes of the cars in the interest of more efficient operation.
6. Elimination of unnecessary car stops to effect quicker street railroad service.
7. Relief to the extent necessary from paving charges and gross receipt taxes.

So that there may be no possible misinterpretation of the facts in connection with the matter it has been deemed advisable to set down again that if the city and the public grant its petition the railway will:

1. Submit its books, records and accounts to any fair audit and pay the cost of the same in order that its statements may be verified.
2. Negotiate an agreement between the city representing the public and the street railroad as to what constitutes a living basis and thereafter will operate the street railroad system and buses in co-ordination to the extent necessary to accommodate the traffic under proper supervision of the public and Public Service Commission as efficiently and economically as possible, and will extend and improve the service to the extent its revenue and credit permit, as trustee for the public.

3. Agree to any fair conditions of continuous supervision, representation or auditing the public desires or deems necessary to secure proper administration of the plan agreed to.

4. Agree to maintain the service at the highest standard under the lowest rate of fare that will support it on the living basis agreed to.

The petition was filed with the Mayor and the General Council on Dec. 1, 1923. The recapitulation of its principal provisions at this time appears particularly pertinent as it comes on the eve of the public hearing set for March 4, which is expected to be the last one.

At the sixth hearing on the company's petition, held on Feb. 21, the principal speakers were Marion Jackson, a leader of the Municipal League of Georgia, and Preston S. Arkwright, president of the railway. Mr. Jackson opposed the appointment of John A. Beeler to conduct the survey of Atlanta's traffic conditions. He proposed that the appointment of an engineer to make the local survey be left to Newton D. Baker, former Secretary of War, or to some other prominent man outside of Atlanta. Alderman Bachman, chairman of the special committee of the City Council handling the company's petition, defended the choice of Mr. Beeler by the committee, and refused to change his position in the matter.

Bridgeport Will Join Other Cities in Fare Petition

A hearing is scheduled for March 11 in Hartford on the petition of the Connecticut Company for authority to raise the rate of fare in Bridgeport to 8½ cents. At the same time petitions will be heard from New Haven, Hartford, Waterbury, Meriden, Stamford and New Britain, which seek a reduction of the 8½-cent charge put into effect on Feb. 10. This hearing will take the place of any local hearing in Bridgeport to which the city might have been entitled. A conference of representatives of several cities decided to ask for a hearing at which the whole subject of rates would be discussed. Reference was made to the probable hearing previously in the *JOURNAL*.

Chicago "L" Extends Non-Stop Service

Special Sunday express service between 10 a.m. and midnight has been started on five branches of the Chicago Rapid Transit Company's system. This service is an extension of the week-day "shoppers' special" trains which were placed in service during the holidays last December to accommodate patrons, especially women shoppers, living in the outlying districts and suburbs. The popularity of the week-day trains during the holidays led the management to continue the service afterward, and now it has been extended to provide the same service on Sundays. Trains are

operated between the Loop and some outlying station on each branch without stops in either direction on a thirty-minute headway. Time-tables have been distributed by the agents at the stations at which these trains stop, indicating the exact time the train will depart from each station. The success of the week-day train is attributed to the punctuality and speed of the trains.

Bus Will Replace Emporia Railway

Voters of Kansas Town Decide to Per-
mit Local Company to Make
Substitution

Emporia, Kan., a city of 11,000, has authorized its City Commissioners to arrange to substitute buses for the railway. The decision was made after buses had been tried out for several months along the routes where street cars had been running for twelve years. At a referendum election on Feb. 19 the majority for the buses was 353, a substantial number when it is considered that only 1,600 out of an electorate of 5,000 showed enough interest in the election to cast ballots.

The commissioners agreed to submit the question after the buses had been tried out and had met with the approval of the patrons served. Under the agreement made by the Kansas Electric Power Company, operating the local railway, six bus lines will be established instead of the three car lines.

"We found the buses dependable and easy to operate," said Ralph Smalley, manager of the power company. "We found them slightly more expensive to run than the street cars, but to offset that they carried more passengers, and we believe when the new lines are well established we can turn our transportation system from one that is losing money to one that will earn money, or at least break even."

Three or four days before the election, a driving snowstorm covered the car tracks, and with the thermometer at zero the cars were unable to run. The buses, however, maintained schedule and won friends for the new form of transportation. Another factor was the vote from a portion of the city not served by the car lines. Here the vote was especially heavy for the buses, the people realizing that the power company could not be induced to extend its railway while it was losing money, and they voted for the buses as their only opportunity to obtain service. Patrons of a line which extends into a ward where the streets are not paved, however, voted almost solidly against the buses, basing their action on the contention that the buses cannot run on muddy streets, and in rainy weather their service would be stopped.

According to the ordinance approved at the referendum the power company will pay the city a stated sum for tearing up the car tracks, the company to be relieved forever of paving maintenance.

Two bus lines already are in operation and the other lines will be established as soon as the company decides on the type of bus it will use.

Bus Certificate Refused.—For the same reason that it refused a certificate to the Red Star line to operate a bus line between Columbus and Chillicothe, Ohio, the Public Utilities Commission has also withheld a certificate from the same company to establish bus transportation between Columbus and Portsmouth. The Scioto Valley Traction Company testified that the proposed routes followed its right-of-way.

Parlor Car Service Started.—Parlor car interurban service was established by the Milwaukee Electric Railway & Light Company on Feb. 27 between Milwaukee and Waukesha. This new service will be in addition to the company's regular railway and bus service. An interesting feature is the plan of the company to institute a postcard referendum on the cars by which it will seek to determine the most desirable time schedules in order to make the new service as convenient as possible.

Buses May Replace Cars.—Buses will supplant trolley cars of the Galesburg Railway, Light & Power Company between Galesburg and Knoxville, Ill., on April 1, if the Illinois Commerce Commission approves. The railway operates over a highway which is to be surfaced with concrete and the state highway department has ordered the company to vacate by April 1. It is expected that the bus service will be permanent. Later it may be extended to Abingdon, should permission be given to abandon the railway between Knoxville and Abingdon.

Keeps to Decision of Voters.—The City Commission of Muskegon, Mich., recently reiterated its views, through Commissioner Paul R. Beardley of the transportation committee, that bus service must not compete with the electric railway service. The occasion for the City Commission again taking this stand was the coming up of a petition for extending a bus line. The commissioner said the city would abide by the vote of the people, who decided some time ago by a vote of ten to one that cars should be retained and competing bus lines removed.

Higher Fare Asked by North Carolina Road.—In order to take care of the loss which, officials say, has been occurring steadily for many months in the operation of its Wilmington lines, the Tide Water Power Company plans to file with the State Corporation Commission an application to increase its fare from 7 to 8 cents, with two tickets for 15 cents. Announcement to this effect was made by F. A. Matthes, executive vice-president of the Tide Water company, at a general meeting of the Chamber of Commerce.

Buses for Interurban Traffic.—Looking toward a new way of handling interurban traffic on the Chicago, South Bend & Northern Indiana Railway, R. R. Smith, general manager, has announced that the company has sent out calls for bids for buses to be operated between South Bend, Elkhart and Goshen, Ind., on one route and South Bend and Niles, Mich., on another, as part of the interurban system. Mr. Smith said that the company had under consideration placing buses on South Bend, Laporte and Michigan City lines.

Legal Notes

FEDERAL COURTS—Statute Penalizing Employer Who Makes Non-Membership in Union Condition of Employment Held Unconstitutional. Clayton Act Does Not Prohibit Injunction Against Union Officials Not Party to Dispute.

This case relates to strikes called on the Pacific Electric Railway by the Brotherhood of Railroad Trainmen and the Brotherhood of Locomotive Engineers in July, 1918, and in August, 1919. The case was decided in the District Court in favor of the company, but was appealed, and the decision was affirmed Nov. 13, 1923, by the Circuit Court of Appeals, Ninth Circuit. Among the points decided was the unconstitutionality of Sec. 679 of the Penal Code of California, which provides that any employer or his agent who shall compel any person to agree not to join any labor organization as a condition to secure or continue in employment shall be guilty of a misdemeanor. This law, in view of 35 Sup. Ct. 240, was held by the Circuit Court to be repugnant to the due process clause of the Fourteenth Amendment and therefore void. Another point decided was in connection with an injunction issued by the District Court restraining the railroad brotherhood officials and others from interfering with the company's business and with contractual relations with its employees, who were under agreement not to join any labor organization. The brotherhood officials claimed that this injunction was in violation of Sec. 20 of the Clayton act prohibiting injunction against certain acts and disputes between employer and employee. But in view of the fact that none of those against whom the injunction issued were employees and that the company at no time had had relations with either of the labor organizations which these officials represented the Circuit Court held the injunction was proper. It pointed out in this connection that "the right of the employee to strike does not give the outsider the right to instigate a strike," and quoted 38 Sup. Ct. 65, 72. [Montgomery et al vs. Pacific Electric Railway, 239 Fed. Rep., 680.]

FEDERAL COURTS—Property Covered by a Contract to Lease and Equip a Railway.

In 1892 the Ninth Avenue Railroad and in 1895 the Eighth Avenue Railroad, then horse railways, were leased for long periods to the New York Railways, under an agreement by which the latter company agreed to equip the lines electrically and return to them at the termination of the lease. In the case of the Eighth Avenue line this return was to cover "all property of every kind used by the said lessee in the maintenance and operation" of the railway. The Ninth Avenue lease declared that all the cars, etc., which the lessee should "provide, purchase, substitute, or supply" for the operation, should revert to and become the prop-

erty of the lessor. During its operation of these lines the New York Railways used many cars over all or part of the lines, and the suit in question was brought to determine what equipment must be turned over to these companies after the New York Railway passed into the hands of a receiver in 1919. The court decided that where delivery in kind, as with cars, could be made, the number to be supplied could be determined on a pro rata car mileage basis. Another question arose when, on the whole system operated by the lessee, say, one machine of a certain kind was used, and such a machine was necessary and proper or even suitable on the former leased lines. Then, if such a machine was not supplied, there was a breach of covenant, for which pecuniary compensation may be demanded. For such claims, however, the lessors are on the basis of the general creditors of the company. Since materials, equipment, and supplies of public utility corporations are not regarded as chattels in the ordinary sense because needed to enable quasi public corporations to carry out their franchise duties, the rights of lessors, as against a lessee of lines operated as a unit, to apportionment of cars and equipment on termination of leases, are not affected by any rights of general creditors, who relied on the possession of the property by the lessee when they extended credit to it. [New York Railways et al vs. Eighth Avenue Railroad et al; same vs. Ninth Avenue Railroad et al., 293 Federal Rep., 633 (See also 612).]

GEORGIA—Duty as to Safe Place for Passengers to Alight Stated; Directing Passenger to Alight From Left Side of Street Car Held Not Negligence in Itself.

In looking to the safety of its passengers, the street railway must exercise proper caution, not only to see they leave the car safely but have a reasonably safe place at which they may alight. But where a passenger was struck by an automobile soon after he had left the car, the mere fact that he had been directed to leave the car from its left side could not be accounted negligence on the part of the company, in the absence of any further and additional allegation indicating how or why. [Jernigan vs. Georgia Ry. & Power Co., 120 Southeast. Rep., 439.]

KENTUCKY—Passenger Stepping Off Car Into Way of Automobile Contributorily Negligent.

Assuming that the opening of the door of the vestibule was an invitation to alight, a passenger stepped through the door in broad daylight, while the car was moving very slowly, with the result that he was struck by the rear fender of an automobile traveling in the same direction. The court held that he was guilty of contributory negligence, the danger being obvious and apparent. [Twaddell's Adm'r. vs.

South Covington & C. St. Ry Co., 255 Southwest Rep., 1027.]

MICHIGAN—Franchise Requirement for Paving Will Be Enforced.

Where a franchise requires that the company pave between the rails and the village pave the rest of the streets, this paving must be done by the company even if the street is taken over for a county road and the county paved 16 ft. and the village 12 ft. Financial inability of the company to perform this obligation does not relieve it from such duty or prevent a forfeiture of the franchise, even though such forfeiture will operate to the detriment of other municipalities and interfere with the public duties of the railway as a common carrier. Where the franchise is for single or double track, it may take up the double track and establish a single track, but this does not change its obligation for the paving fixed by existing double track, and the village has put in its share of the paving. A franchise requiring paving of the streets between the rails does not require paving of the devil strip or to the ends of the ties. [Village of Grandville vs. Grand Rapids, Holland & Chicago Railroad, 196 N. W. Rep., 351.]

WISCONSIN—Under Condemnation Proceedings, the Offer of a Railway to Grade and Surface Property Not Considered in Fixing Damages, but Condemnation of Special Easement Permissible.

In order to build a second track, a railway company condemned a triangle constituting the greater part of the frontage of a city lot and agreed to grade and surface the property to be condemned and maintain it in such condition in the future, under penalty of forfeiture if there was a breach of the conditions. This offer was urged in diminution of the damages to be paid. But the court held that such a plan was not desirable, because the question of maintenance of proper grade of the surface might involve serious dispute in the future, and a forfeiture clause is not favored in law, and might also lead to numerous lawsuits. There was no objection, however, to the condemnation by the electric railway of a special easement. [Milwaukee Electric Railway & Light Co. vs. Becker et al., 196 Northwest Rep., 575.]

UTAH—When on a Public Street a Car Should be Under Such Control that it Can Be Stopped When the Headlights Disclose an Automobile Ahead.

The part of a public street occupied by street car tracks remains a part of the street, though not paved, and one entering thereon is not a trespasser. Hence, it was the duty of a motorman operating at night, during a rain storm, along such a route, to have his car under such control that he could stop it within the distance that his headlights would disclose an automobile on the track, as the unpaved part of the street was separated by curbs from the paved portions. [Kakunis vs. Ogden Rapid Transit Co., 221 Pacific Rep., 853.]

Personal Items

Wickwire Made "O. B." Vice-President

Well-Known Secretary of Ohio Brass Company Recently Elected to New Office

Edward F. Wickwire, secretary of the Ohio Brass Company, than whom few men in either the electric railway or electric light and power industries are better known, has been elected vice-president of that company. Mr. Wickwire is one of those men who appears to be everywhere and in everything, and always with him go new ideas (and a pleasing wit). In a dynamic sense he is Rooseveltian. But there is no intention here to attempt to build up a comparison by any method

"stale" in the metropolis fifteen minutes after it was off the press. This led him to figure out that people back home in Cohoes were reading history instead of news because they bought New York morning papers and read them in the evening—that being the only time that most people in a factory town had time to read the daily paper. To think is to act with Mr. Wickwire and so he secured the agency for the New York *Evening Journal* and introduced that paper in his home town and succeeded in building up quite a "respectable" circulation.

As a result of this venture, he shortly afterward secured a place in New York in the circulation department of the *Evening Journal*. Later he had some experience in newspaper reporting work. Whether or not a spirit of contrition for any of his past journalistic acts had anything to do with it, Mr. Wickwire next got himself a job as secretary to the president of the New York, Ontario & Western Railroad, among the emoluments of which position were free transportation not only in this country but abroad. However, he had no time to go or money to spend when he got there—just the reverse of the well-known "all dressed up" bro-mide.

Incidentally his "wim, wigor and witality" caused him to join the Twenty-second Regiment, N. G. N. Y., and he volunteered with that regiment for service in the Spanish-American War. His mother appealed to Mrs. McKinley and his discharge was ordered, but he said it took more nerve to withdraw than it did to proceed and finally convinced his mother that it was his duty to see it through. He was transferred to the Seventh Artillery of the Regular Army, stationed at Fort Slocum, where he claims he performed his duty to his country by helping to prevent the Spanish Mackerel from invading Manhattan Island.

Mr. Wickwire's work on the entertainment, publicity and membership committees of the American Electric Railway Association is well known. This year he is a member of the A.E.R.A. executive committee, publicity committee, committee on inter-urban operation, committee on city operation and is chairman of the committee on co-operation of manufacturers. He has also very recently been made chairman of the publicity committee of the Central Electric Railway Association.

Mr. Wickwire is also active in civic work in Mansfield, for he is not like the prophet in his home town. He has staged lots of entertainments for the Elks, the Country Club, the Auto Club and for miscellaneous events. He was really the organizer of the Richland County Auto Club and its first president. He is also a vice-president of the Ohio State Automobile Association. He has been active in connection with his automobile affiliations in getting



E. F. Wickwire

vidious or invidious, Plutarchian or otherwise. So far as his connection with the Ohio Brass Company is concerned, Mr. Wickwire has been with that company since 1903. In fact, he has been connected with the manufacturing end of electric railway work practically all his business career.

Mr. Wickwire was only twenty-two years old when he started traveling for the Sterling Supply & Manufacturing Company, New York, which manufactured fare registers, safety brakes and other electric railway specialties. After he had been on the road about two years the Sterling Supply & Manufacturing Company absorbed the Meaker Manufacturing Company, Waukegan, Ill., and changed its name to the Sterling-Meaker Company. Mr. Wickwire was made secretary and general sales manager of the company at the time of the merger, but in 1903 he resigned that position to become identified with the Ohio Brass Company, in charge of sales in the Middle West territory.

Before he left school in his home town of Cohoes, N. Y., Mr. Wickwire took a trip to New York and observed the fact that a newspaper became

adequate bus and truck regulation in Ohio.

This, however, is really a statement of only part of the activities of the man. As the facts that have been set down indicate, Mr. Wickwire has been both a maker of events and a recorder of them. It is quite natural, therefore, that his experience, combined with his unusual natural talents, should result in Mr. Wickwire being called upon to serve in connection with all the multifarious activities noted previously, which after all, as just indicated, is only a cursory list.

J. W. Gerke Goes Into Equipment Business

J. W. Gerke, familiarly known as "Jake" Gerke to thousands of railway men, has opened a sales office at 303 Fifth Avenue, New York, N. Y., from which he will handle the sales of new and used equipment of all description suitable for the electric railway industry. Mr. Gerke recently retired from the Transit Equipment Company. Before this he represented the Texas Company for three years, selling Texaco lubricants to the railways.

Mr. Gerke is familiar with all phases of street railway operation, as he has had twenty-one years experience in the construction and operation of street railways in the Middle West and in the East. During this time he served as superintendent of maintenance of the New York & Queens County Railway, Long Island City, N. Y., and as superintendent of equipment for the Long Island Electric Railway and the New York & Long Island Traction Company. Back in 1909 Mr. Gerke acted as master mechanic of the Tri-City Railway, Davenport, going to that position from Washington, D. C., where he served as superintendent of the Washington, Arlington & Falls Church Railway. Following his connection with the Davenport property he became master mechanic of the Wilmington & Philadelphia Traction Company, with headquarters at Wilmington, Del.

C. E. Wilcox Appointed to Handle Municipal Railway Claims

Clarence E. Wilcox, Corporation Counsel for the city of Detroit under former Mayor James C. Couzens and under Frank E. Doremus, the present Mayor, has been appointed head of the claims division of the Department of Street Railways at Detroit by the Street Railway Commission.

Mr. Wilcox was active under former Mayor Couzens in drawing up the ordinances which were approved by the voters bringing the Department of Street Railways into existence. The appointment of Mr. Wilcox was approved by acting Mayor Joseph A. Martin. He will supervise all damage suits against the D. S. R. Mr. Wilcox resigned a short time ago to enter private practice.

John Meagher has been appointed purchasing agent, succeeding J. M. Pogue, of the Indiana, Columbus & Eastern Traction Company. Mr. Pogue was recently promoted to manager.

William G. Marshall Succeeds the Late Cecil G. Rice in Pittsburgh

William G. Marshall has been appointed manager of the associated bureaus and superintendent of the claims department of the Pittsburgh Railways, to succeed the late Cecil G. Rice. Mr. Marshall has been in the employ of the Pittsburgh Railways since 1916, following a year in the law office of Burleigh & Challener. He was born in Pittsburgh, March 17, 1888. He at-



W. G. Marshall

tended the Wilkesburg public and high schools. He was graduated from Washington and Jefferson College in 1911 and from the University of Pittsburgh law school in 1914. The same year he was admitted to the bar in Pittsburgh.

James Mangan, formerly superintendent of the railway department of the Rutland Railway, Light & Power Company, will assume charge of the transportation department of the Ephrata & Lebanon Traction Company, Lebanon, Pa., effective March 1.

Robert K. Brown, superintendent and chief engineer of the Salt Lake & Utah Railroad, Salt Lake City, Utah, has been elected president of the Engineering Council of Utah, to succeed Dr. Joseph F. Merrill. The Engineering Council of Utah is composed of representatives from all societies of professional engineers in Utah.

Charles S. Crable, for the last three years superintendent of equipment of the Jamestown Street Railway, Jamestown, Westfield & Northwestern Railroad and the Chautauqua Traction Company, Jamestown, N. Y., will resign on March 1. Mr. Crable will assume the presidency of the Jamestown Welding & Brazing Company, Jamestown.

Neal Nash, who has been connected for many years as manager of the Wisconsin Rapids Street Railroad's properties, which furnish service in Wisconsin Rapids and interurban electric railway service to Nekoosa and Port Edwards, announces his resignation from the managership of that company to accept a position on the salesforce of a Chicago paper company. L. M. Nash, president of the company, announces that Mr. Nash will be succeeded as manager by L. C. Wiperman, who

for many years has been in charge of the company's south side carhouses and rolling equipment. Mr. Wiperman in turn will be succeeded by Joseph Nash, to be in charge of the south side carhouse.

George Donley, Orange, Mass., has been chosen superintendent of the Athol & Orange Street Railway, which goes under municipal operation on March 1. The appointment was made on Feb. 23 by the new board of trustees, of which W. W. Woodward, Athol, is chairman. Mr. Donley has been with the Athol & Orange road during practically the entire time of its operation, working as a platform man and in other capacities. He was assistant superintendent when the line became part of the Northern Massachusetts system.

Frank E. Marsh, for ten years superintendent of the Northern Massachusetts Street Railway, has retired from service with the Templeton division, recently purchased by a company headed by Charles Melhardo. Mr. Marsh is still in charge of the Athol & Orange section. It was about ten years ago, when the Connecticut Valley system took over the Northern Massachusetts lines, consisting of the Templeton Street Railway, the Gardner, Westminster & Fitchburg and the Athol & Orange, that Mr. Marsh was on the ground as active superintendent. At that time J. A. Taggart, who was superintendent of the Connecticut Valley lines, assumed the title of general manager of the Northern Massachusetts as well as the Connecticut Valley, but he spent most of his time in Greenfield.

Obituary

James H. Nichols, one of the incorporators and original owners of the Denver Tramway, Denver, Col., who left Denver in 1919 to take up his abode in California, died recently at the age of eighty-one.

Charles H. Lake, chief engineer of the plant of the Ohio Valley Electric Railway at Kenova, W. Va., died suddenly while on duty at the plant on Feb. 13.

Dr. Plimmon Henry Dudley, prominent inventor of improvements in railroad engineering, died on Feb. 26 in the Hotel Commodore, New York, in his eighty-first year. Making rail transportation safe was a hobby of his. He invented the track indicator in 1880 to detect track defects. In that same year he became consulting engineer for the New York Central and had remained continuously with that road. Doctor Dudley was born in Freedom, Ohio. He was educated at Hiram College. He designed the first 5-in. steel rail used in the United States, high carbon rails and 6-in. 100-lb. rails. He made a special study of rails, including their composition, strength and form. The ELECTRIC RAILWAY JOURNAL has reproduced Doctor Dudley's opinions where they dealt with subjects bearing on electric railway transportation.

Manufactures and the Markets

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

Birney Club's Second Year

Arranges St. Louis Convention Details
 —Fraternal Body Becoming Factor
 Among Manufacturers

Through the Birney Club, which was organized in January, 1923, the manufacturers of electric railway equipment in the St. Louis district have been brought together and are now co-operating in a really constructive program for the industry. At the second annual meeting of the club, held Jan. 30, 1924, the following officers were elected: C. O. Birney, president; Edwin B. Meissner, vice-president; B. W. Stemmerich, secretary; O. E. Turner, treasurer. They have all held office since the foundation of the club and it was felt that they should be re-elected because the results achieved during the first year of the club's life warranted continuation of the same officers for another year.

Until St. Louis was selected for the Midyear Meeting of the American Electric Railway Association only a few people outside of that city really knew that there was such a thing as a Birney Club. When announcement was made that the bulk of the local work in connection with that meeting would be looked after by members of the Birney Club there were many who asked, "What is the Birney Club?" But those in St. Louis and the vicinity have appreciated for some time the tremendous good that this club is doing and its sphere is so steadily broadening that it is now receiving national recognition.

As the name indicates, the foremost figure in the club and the one most influential in its original organization is Charles O. Birney, superintendent of car construction, Stone & Webster, Inc. The club is really an outgrowth of the gathering together of those interested in the Birney safety car. As time has passed, the movement has widened so that, although the original idea is still kept in mind, it is today a club devoted primarily to fostering friendship and fellowship among its members and the promotion of the best interests of the electric railway industry.

There is no question but that the Birney Club has brought about a close personal friendship among all its members, of whom the great majority are competitors one with another. The members are still keen competitors, but with a spirit different from that previously apparent. The spirit of fair dealing, one with the other, is uppermost in their minds. The fact that all the members of the Birney Club are closely co-operating and are interested in the electric railway industry made it possible for this club to be the foundation stone of the local organization to take care of the Midyear Meeting. Every member of the Birney Club is a working member of the local midyear

committee and practically all the important sub-committees are headed by members of this club.

The Birney Club will have in evidence at this meeting two new rubber-tired safeties which will be used for the convenience of the guests and will be objects of interest to all those attending.

A meeting of the club held Feb. 25 approved a new constitution which provides that membership shall be open to the electric railway industry and "allied interests," leaving it open to the membership to decide from time to time just what constitutes allied interests.

Collier Gets B.-M.T. Concession

The New York Transit Commission on Feb. 28 approved a proposed contract between the Brooklyn-Manhattan Transit Corporation and Barron G. Collier, Inc., covering the advertising and vending privileges upon the lines of the company. Commissioners Harkness and O'Ryan voted to approve the contract, while Chairman McAneny voted in the negative.

Under the Collier contract, which is for a period of fifteen years, the company will receive a minimum of \$15,000,000, divided \$4,500,000 for the first five years, \$5,000,000 for the second five years and \$5,500,000 for the third five years.

The proposed contract for advertising and vending privileges was submitted

to the commission early in January by the New York Rapid Transit Corporation (B.-M. T.) after lengthy negotiations between the company and Barron G. Collier, Inc., in which it was developed that a much larger profit could thus be made from these privileges upon the company's lines than was apparently possible through their exercise by the company's own organization, the Broadway Subway and Home Boroughs Car Advertising Company, which had carried on the business for several years. The commission points out that there is a public interest in these profits, in the sense that the larger the revenue derived by the company from all of its operations the nearer comes the day when the city may begin to realize a direct return financially upon its investment in the lines.

The first Collier offer proposed a base rate of \$800,000 a year for fifteen years, with certain increments based upon possible increases in gross sales, which was a substantial increase over the best profits ever made by the company's own organization. When the contract with Collier came before the Transit Commission for approval, and thereupon became public information, three other advertising concerns became very active for the privilege and offered bids higher than Collier's. The commission directed that these figures should be used as the basis of negotiating a new contract. Later the company submitted a new contract with Collier at the figures named above. This contract also provides for further payments to the company based on earnings which result in a potential increase of \$500,000 over the period of the contract. There was a rather heated contest before the commission, but the contract was said to have been finally awarded on the basis of probable performance.

ELECTRIC RAILWAY MATERIAL PRICES—FEB. 27, 1924

Metals—New York		Paints, Putty and Glass—New York	
Copper, electrolytic, cents per lb.	13.125	Linseed oil (5 bbl. lots), per gal.	\$0.96
Lead, cents per lb.	9.00	White lead (100 lb. keg), cents per lb.	12.00
Nickel, cents per lb.	28.00	Turpentine (bbl. lots), per gal.	\$1.02
Zinc, cents per lb.	7.15	Car window glass, (single strength), first three brackets, A quality, discount*	84.0%
Tio, Straits, cents per lb.	54.875	Car window glass, (single strength), first three brackets, B quality, discount*	86.0%
Aluminum, 98 to 99 per cent, cents per lb.	27.00	Car window glass, (double strength) all sizes, A quality, discount*	85.0%
Babbitt metal, warehouse, cents per lb.:		Putty, 100 lb. tins, cents per lb.	4-6
Fair grade	60.00	*These prices are f.o.b. works, boxing charges extra.	
Commercial	28.00	Wire—New York	
Bituminous Coal		Copper wire base, cents per lb.	15.50
Smokeless mine run, f.o.b. vessel, Hampton Roads	\$4.725	Rubber-covered wire, No. 14, per 1,000 ft.	\$6.60
Somerset mine run, Boston	2.325	Weatherproof wire base, cents per lb.	17.75
Pittsburgh mine run, Pittsburgh	2.125	Paving Materials	
Franklin, Ill., screenings, Chicago	1.95	Paving stone, granite, 4x8x4, f.o.b. Chicago, dressed, per sq. yd.	\$3.60
Central, Ill., screenings, Chicago	1.50	Common, per sq. yd.	3.20
Kansas screenings, Kansas City	2.25	Wood block paving 3 1/2, 16 treatment, N. Y., per sq. yd.	2.56
Track Materials—Pittsburgh		Paving brick 3 1/2x8 1/2x4, N. Y., per 1,000 in carload lots	54.00
Standard Bessemer steel rails, gross ton	\$43.00	Crushed stone, 1-in., carload lots, N. Y., per cu. yd.	1.85
Standard open heart rails, gross ton	43.00	Cement, Chicago consumers' net prices, without bags	2.20
Railroad spikes, drive, Pittsburgh base, cents per lb.	3.10	Gravel, 1-in., cu. yd., f. o. b. N. Y.	2.00
Tie plates (flat type), cents per lb.	2.60	Sand, cu. yd., N. Y.	1.25
Angle bars, cents per lb.	2.75	Old Metals—New York and Chicago	
Rail bolts and nuts, Pittsburgh base, cents, lb.	4.125	Heavy copper, cents per lb.	10.75
Steel bars, cents per lb.	2.40	Light copper, cents per lb.	9.125
Ties, white oak, Chicago, 6 in. x 8 in. x 8 1/2 ft.	\$1.70	Heavy brass, cents per lb.	6.00
Hardware—Pittsburgh		Zinc, old scrap, cents per lb.	4.00
Wire nails, base per keg	3.00	Yellow brass, cents per lb. (heavy)	6.00
Sheet iron (28 gage), cents per lb.	3.85	Lead, cents per lb. (heavy)	7.50
Sheet iron, galvanized (28 gage), cents per lb.	5.00	Steel car axles, Chicago, net ton	\$20.25
Galvanized barbed wire, cents per lb.	3.80	Cast iron car wheels, Chicago, gross ton	21.25
Galvanized wire, ordinary, cents per lb.	2.75	Rails (short), Chicago, gross ton	22.25
Waste—New York		Rails, (relaying), Chicago, gross ton	26.50
Waste, wool, cents per lb.	.15	Machine turnings, Chicago, gross ton	12.75
Waste, cotton (100 lb. bale), cents per lb.:			
White	12-18		
Colored	9-14		

Denver Attracts Missouri Car Company Interests

Orrin Merry, president of the Missouri Car Company, East St. Louis, has announced at Denver that within a short time his company expects to begin the erection of a \$750,000 car equipment shop in the outskirts of Denver. The site for the plant is said to have been selected. The works will take up 12 acres. It is said that the concern will be known as the Colorado Central Railways. It is planned to incorporate under the laws of Colorado, with a capital of \$500,000. M. L. Phelps will be the consulting engineer.

It will be recalled that the affairs of the Missouri Car Company have recently been under official inquiry. During this investigation Mr. Merry explained that the company had no orders at that time for cars, but he ascribed this to lack of capital with which to begin operations. He said that he took charge of the company's affairs last May under control vested in him by the stockholders and that one of his first official acts was to dismiss the force of stock salesmen, through whom \$178,000 of stock had been sold, most of it locally and some of it at commissions as high as 25 per cent. He further said that he had always worked to conserve the assets of the company. Mr. Merry was formerly with Durant Motors.

Manufacturer Co-operates by "Post" Advertising

An excellent example of co-operation of a manufacturer with the electric railway industry is contained in the March 1 issue of the *Saturday Evening Post*. The Westinghouse Electric & Manufacturing Company has a full-page, two-color advertisement which carries to the more than two million readers of the *Saturday Evening Post* the message that "You need street cars." The copy under this caption follows:

How do you suppose the great bulk of the people in your town get about on their errands of business and pleasure? You may go in your automobile—but most people ride in street cars! Street cars are the links in the endless chain of transportation that bind your community together for business, social and industrial growth.

Given a square deal, which is all it asks, your electric street railway company will be a tremendous factor in the growth, progress and prosperity of your community, whether it is large or small. You and all other citizens will act in your own interests if you make sure that your street railway company always has a fair chance to provide the kind of service your community needs.

Many of the technical problems that have surrounded the development of street cars to their present state of efficiency have been solved by Westinghouse Engineering. Many more problems, apparently insurmountable today, will be solved by them in the future. With your interest and helpful co-operation—and that of our citizens as well—it will always be possible for your community to enjoy the resulting economy and the increasing efficiency of the street car.

Rolling Stock

Community Traction Company, Toledo, Ohio if Commissioner Cann's plan is approved, will spend \$157,000 for overhead equipment and cars for the

trackless trolley line and \$76,000 for the double-deck buses for that line.

Tygarts Valley Traction Company, Grafton, W. Va., during the year just ended purchased two additional safety cars.

Illinois Power & Light Company, Chicago, Ill., recently purchased for one of the interurban lines of the Illinois Traction System seventeen light-weight double-truck cars weighing approximately 36,000 lb. equipped, each with a seating capacity of fifty-two persons. The cars are to be equipped with four motors, type GE-265, form 4, 35 hp., prepared for 4½-in. axle, 26-in. wheels and K-35 single-end control with DB-981 line breaker. The new cars will replace very heavy cars, equipped with GE-73 motors. These motors and control will be incorporated in old passenger cars rebuilt for locomotive service.

Chicago, North Shore & Milwaukee Railroad, Highwood, Ill., has ordered ten single-deck coaches from the Yellow Coach Manufacturing Company, Chicago.

Springfield Street Railway, Springfield, Mass., will shortly purchase four additional buses in anticipation of the independent jitneys being banned May 1. The new buses will be of from twenty-five to thirty-passenger capacity.

Boston Elevated Railway will spend \$10,000,000 for rolling stock if suggestions of trustees receive legislative sanction.

General Electric Company, Schenectady, N. Y., recently received orders from the Detroit United Railway, Detroit, Mich., for motors and control to be used on a standardized medium-weight type of car which it was recently decided to adopt. These cars, ten of which have been purchased, will be operated on four major divisions. The new cars are 56 ft. long, seat fifty-four persons and weigh about 64,000 lb. each, fully equipped. Each car will be equipped with four GE-275-E, 600-volt, 60-hp., tapped-field motors and PG-5 single-end control. A Universal equipment will be used, geared for about 48 m.p.h., on 600 volts, thus allowing an economical application to limited, express and local service on all four divisions.

British Columbia Electric Railway, Vancouver, B. C., through the British Columbia Rapid Transit Company, its subsidiary, has placed orders for five Fageol buses and one White bus. The six buses will be ready for service on May 1. They will cost \$12,400 each. The new buses will seat twenty-two passengers and have a baggage compartment.

Pittsburgh Railways, Pittsburgh, Pa., will place within a day or two an order for 140 standard center entrance city cars. It is reported that the company will shortly place another order for forty-three one-man, two-man single-entrance cars, forty-five one-man, two-man double-entrance cars and fifteen interurban cars, making 103 cars in all. These orders are part of the general rehabilitation plan mentioned in the *ELECTRIC RAILWAY JOURNAL*, issue of Feb. 2.

Track and Line

New Brunswick Power Company, St. John, N. B., has under consideration the construction of an extension to the electric railway operated since the acquisition of the lines of the St. John Street Railway. It has been proposed that a line be built to Millidgeville.

Pacific Electric Railway, Los Angeles, Cal., has been ordered to lower its tracks to specific grade level on American Avenue between Anaheim Street and North Long Beach. The company must eliminate curbs and pave the avenue full width from curb to curb.

Tygarts Valley Traction Company, Grafton, W. Va., during 1923 relaid its track on Main Street and Walnut Street with steel ties, new joints and bonds, in a concrete base. The company also replaced the old wooden structure under the Dorsey Street Bridge, over the Baltimore & Ohio tracks, with a substantial steel structure.

Wisconsin Traction, Light, Heat & Power Company, Appleton, Wis., will make track and roadbed improvements on Third Street in Menasha, Wis., in connection with the proposed plan of the city to pave this section of the city as soon as weather conditions permit.

Trade Notes

Chester F. Gailor, New York, N. Y., announces that he is no longer connected with the Rail Welding & Bonding Company, but that he will continue to handle reliable and practical welding, grinding and bonding machines and accessories, as well as general track tools and equipments produced by the Railway Track-Work Company, the Lite-weld Company, the Witherow Steel Company, General Grinding Wheel Corporation, Stackpole Carbon Company and welding rod and joint plate concerns.

Hardwood Manufacturers' Institute, Chicago, Ill., will hold its second annual convention at the Seelbach Hotel, Louisville, Ky., May 8 and 9. Special attention is being given to the development of an attractive program dealing with subjects of mutual interest to all branches of the industry. A most cordial invitation is extended to other manufacturers as well as to the consumers and distributors of hardwoods.

S. B. Thayer Son & Company, Washington, D. C., will move their office on March 1 to suite 308-316 Bond Building, Washington, D. C. The change is necessary because of the necessity for more office space than is available in the Munsey Building. The company has been established more than eighty years and is equipped for work in connection with engineering, organization, hydro-electrics, industrial development, railroad construction, short railroads or extensions to develop a resource or industry, and the arrangement of bond issues upon sound operating properties.

Ohmer Fare Register Company, Dayton, Ohio, recently announced the appointment of J. F. Ohmer, Jr., as third vice-president.

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MOST POWERFUL

Peacock Brakes have three times the braking power of ordinary equipment.



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Peacock Staffless Brakes are rapid and effective. They stop the cars in the shortest time.

GREAT CAPACITY

There is enough room in the big housing to take up almost unlimited amounts of chain. Worn brake shoes or slack rigging cannot prevent holding because this brake overcomes all slack.

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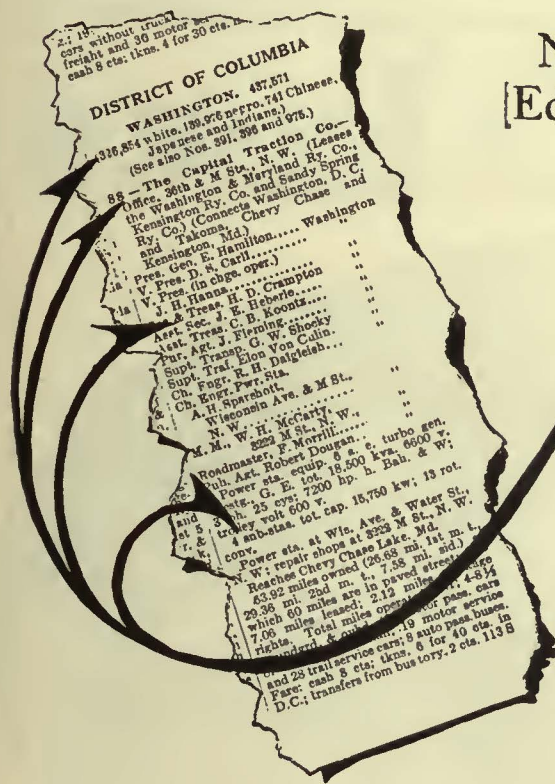
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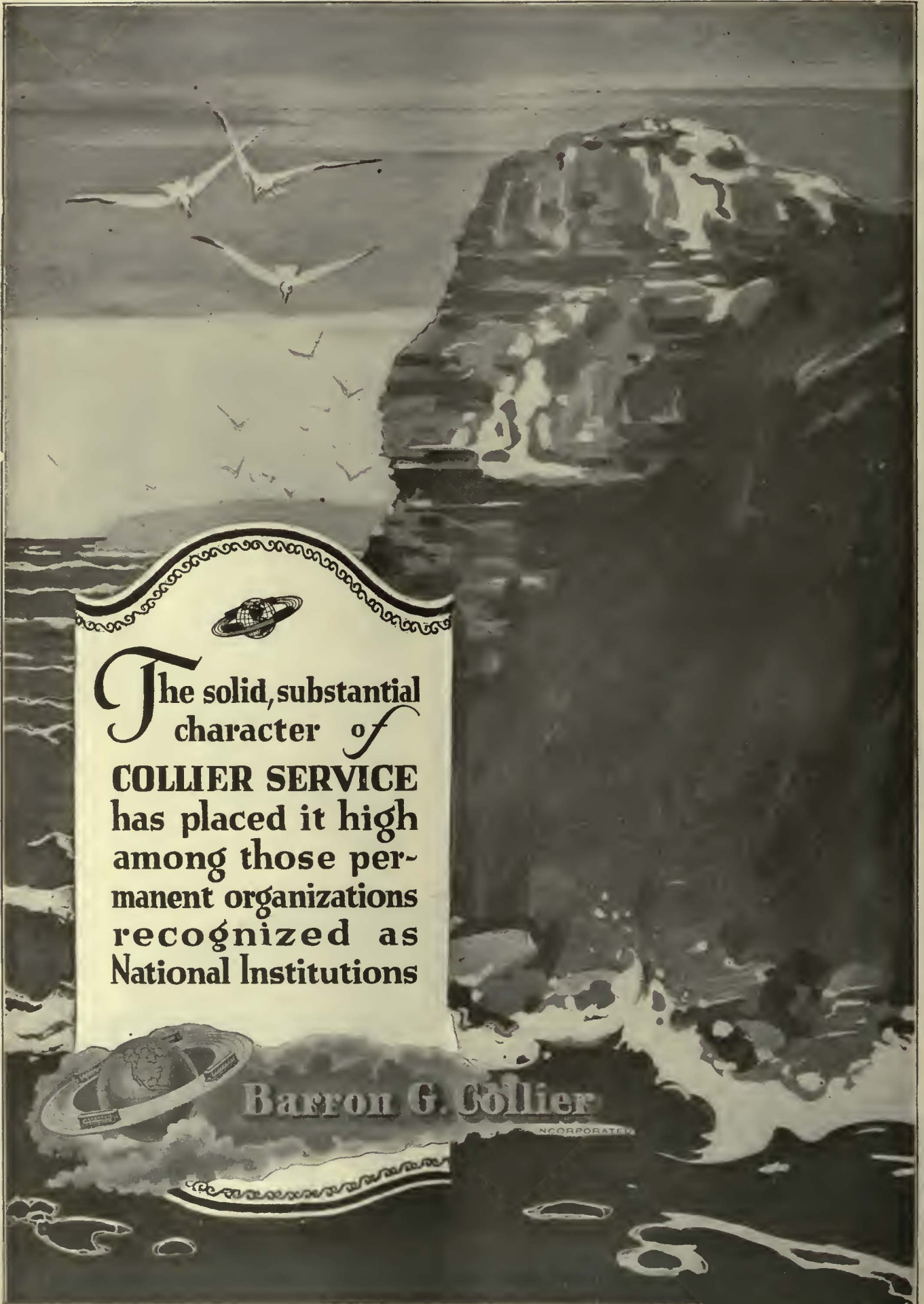
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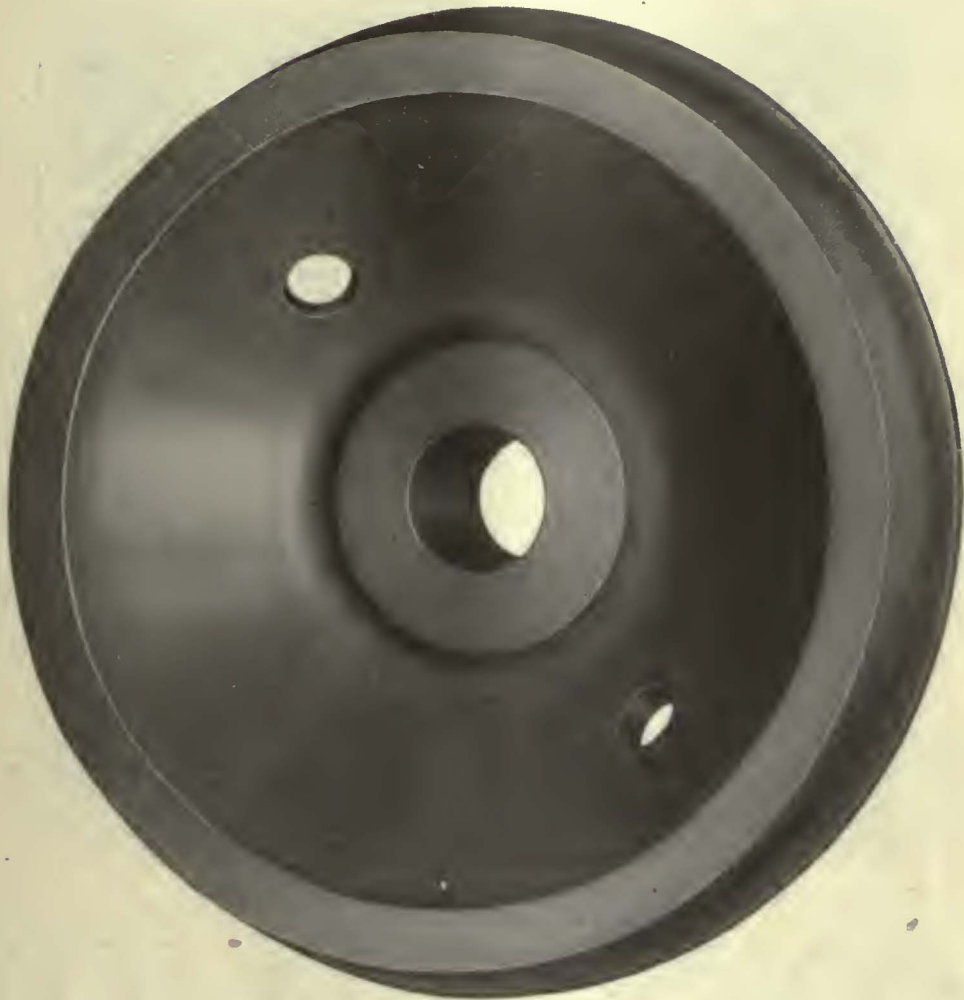
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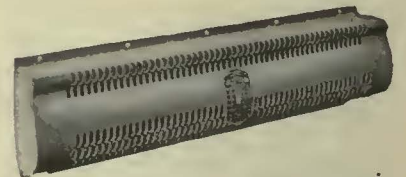
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Single and double coil cross seat, truss plank, and panel type heaters for railway service. Consolidated Heaters with Consolidated Thermostatic Control a combination which means efficient operation and economy in maintenance.

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"Jack 'em out"

Simplex Reel Jacks Have a "T" Base Do Yours?



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Simplex Cable Reel Jacks Meet Every Requirement of Service, Capacity, Safety and Economy

No. 322—Simplex Jacks for cable pulling cannot tip over from an accidental side pull. They have a "T" shaped base rigidly braced with steel rods.

They are designed for Reels of 36 in. to 84 in. diameter. The raise on the Cap is 29 in. to 43 in.; on the Shoe from 17 in. to 31 in.

The manpower available in this automatic double-acting jack can raise a reel 3 in. in 17 seconds by the watch. 1/4-in. lifts per upward and downward stroke practically level the Reel even on uneven ground.

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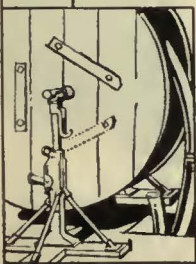
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to spend
for equipment
tools, devices and materials
during 1924

Track Extension
Greatest

Electric Railway Track Forces
of Track Were Rebuilt Dur
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More
During 1923 TH

Passenger Cars Arranged
stitute Nearly 50 per Cent

roads being
Outlook for Railway Financing Better

ment Bankers

Enthusiastic, but Are Cognizant of

the Public

RELECT
Receiverships I

ve Companies Failed During 1923—
Total Number Emerging from
Miles and \$305,265,000 F
Reduced from

**\$262,000,000 for New Plant and Equipment
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World Reconstruction Eight Years

... with Reconstruction and More Miles
... than Ever Before—The Amount
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Railway Costs Approaching Stabilized Conditions

... that Period of Rapid Fluctuations of Labor and Material Prices Is At
... Wholesale Prices of Commodities and Street Railway Operating Materials Costs Reced
... 1923, While Construction Costs and Street Railway Wages H

... the country is

Ordered Any Year Since 1913

...-Man or Two-Man Operation Con-
... New Cars for City Service—The
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... in Thirteen Years

...ck Involved and Capitalization Lowest on Recor
...r Foreclosure Is Thirty-one, Lifting 1,750
...curities Involved—Net Res
...o Sixty-three Compani

Orders for Automotive Equip- ment on the Increase

PURCHASES of motor buses by electric railway
more than doubled during 1923 as compared with
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1924—A great year for Electric railways

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Buy from this list of long life parts THEY'RE BOYERIZED

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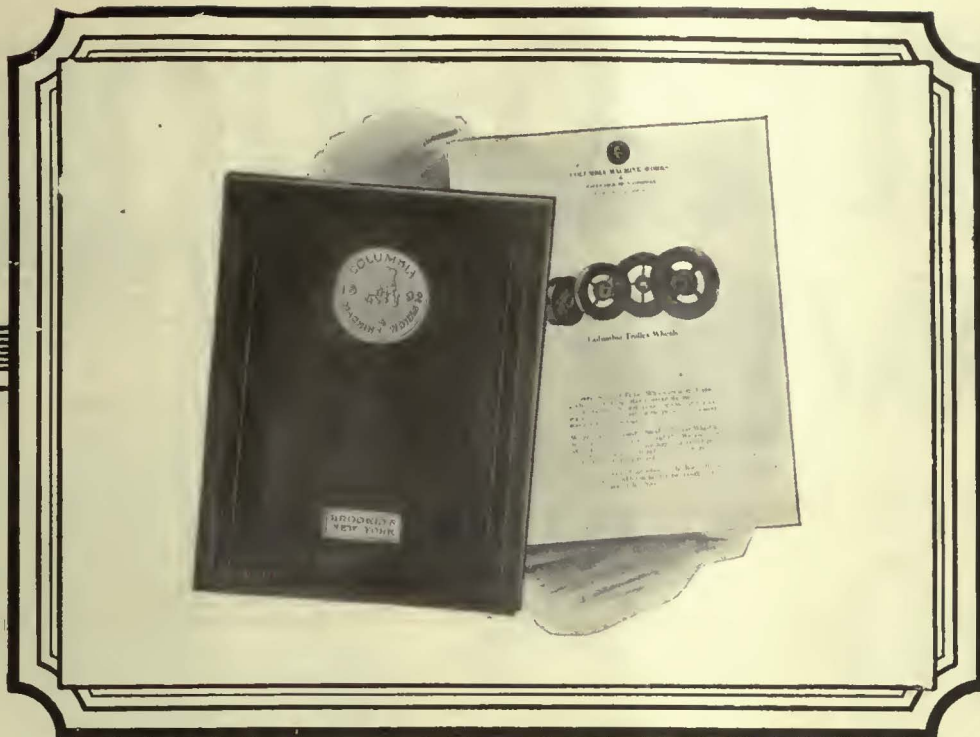
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The Columbia Machine Works has special facilities for making repairs—extending even to the complete rebuilding of certain car types—while our standard railway parts are of the highest quality and can be furnished on the shortest notice.

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CHILLED IRON WHEELS

from
50

foundries

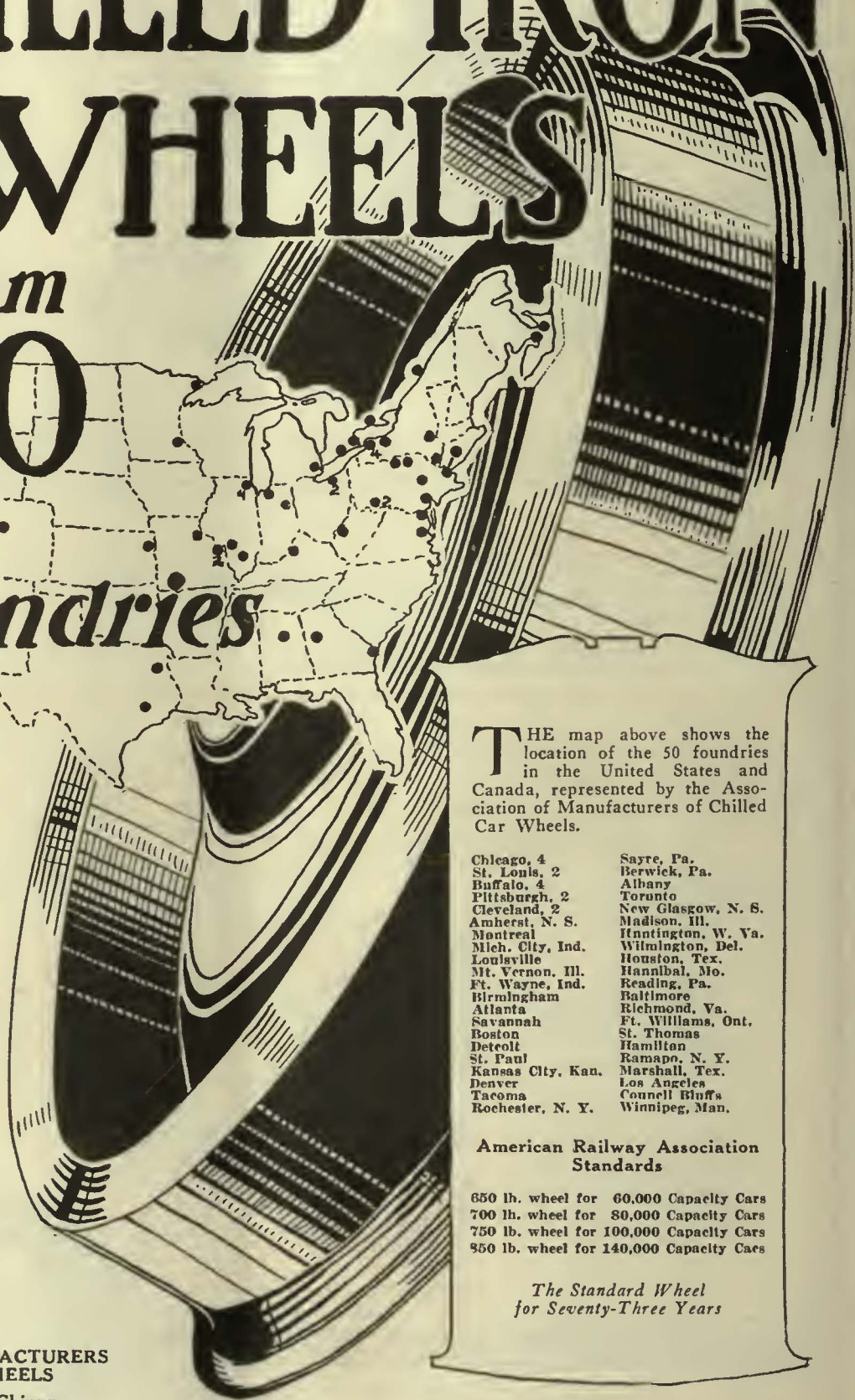
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street car
service

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25,000,000
in service

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- | | |
|-------------------|--------------------|
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| St. Louis, 2 | Berwick, Pa. |
| Buffalo, 4 | Albany |
| Pittsburgh, 2 | Toronto |
| Cleveland, 2 | New Glasgow, N. S. |
| Amherst, N. S. | Madison, Ill. |
| Montreal | Huntington, W. Va. |
| Mch. City, Ind. | Wilmington, Del. |
| Louisville | Houston, Tex. |
| Mt. Vernon, Ill. | Hannibal, Mo. |
| Ft. Wayne, Ind. | Reading, Pa. |
| Birmingham | Baltimore |
| Atlanta | Richmond, Va. |
| Savannah | Ft. Williams, Ont. |
| Boston | St. Thomas |
| Detroit | Hamilton |
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Standards

- 650 lb. wheel for 60,000 Capacity Cars
- 700 lb. wheel for 80,000 Capacity Cars
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*The Standard Wheel
for Seventy-Three Years*

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They give an arrestive warning at the highway against the approach of your interurban trains by loud ringing bell and flashing red lights. Before he reaches the crossing they give the motorman a special indication that he has started the bell ringing. Made also with swinging wig-wag. Operated entirely from trolley power, and at the highest possible car speeds. Their cost is but little—and by their insistent warning they save damage suits and expensive litigation.

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Remember Nachod Spells Safety!

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**BRAZED
BONDS**



Type AT-F
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Conserve your power

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Of Aetna throughout, they are designed to withstand the severest climatic conditions and the hardest usage—to help you keep down maintenance costs.

Feeder wire, in the type of insulator shown, may be tied either to the top or side.

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Also of Aetna insulation. Used for holding cable where pins cannot be used or for supporting wire or cable of any kind.

Made in fourteen different sizes of hole from 13/32-in. to 2 3/4-in.

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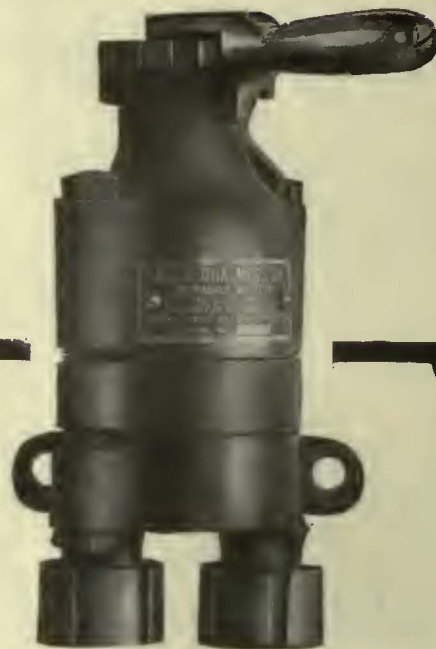
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Engineers Valves for Air Brakes

This engineer's valve has been adopted by many important railways as STANDARD, regardless of the other equipment used. Several years of commercial application has demonstrated type "C" Engineer's Valve to be superior in every respect. A few important features are graduated application positively secured at service point—quick emergency point—graduated release, if desired—very quick release at full release point—no ground joints—simple design—valve can be completely dismantled and re-assembled in two minutes by removing only two nuts—etc., etc.

500,000 service applications and releases at 90 lbs. pressure show no wear on the parts.

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**In Eight Years and Nine Months
Nearly Three Million Double-truck
Cars Passed Over This Tisco
Manganese Steel Centre Frog**



The marvelous wear-resisting qualities of Tisco Manganese Steel Centre Frogs are well demonstrated in this type "K.C.," over which passed 2,865,000 double-truck cars in eight years and nine months. The unusual serviceability of Tisco Manganese steel trackwork has been a big factor in keeping down maintenance costs.

Our engineering staff, working with the foremost railway engineers, has developed various types of trackwork unsurpassed for long service. *We would be glad to recommend the type most suitable for your purposes.*

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Taylor-Wharton Iron & Steel Co.
Plant at High Bridge, N. J.
Manganese Steel
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Wm. Wharton Jr. & Co.
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Special Trackwork
Cylinders for Gases

Tioga Steel & Iron Co.
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**The THERMIT
INSERT RAIL WELD**

*"We are satisfied
that this is the only
commercially practic-
able method of
eliminating the joint"*

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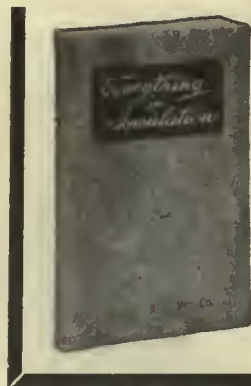
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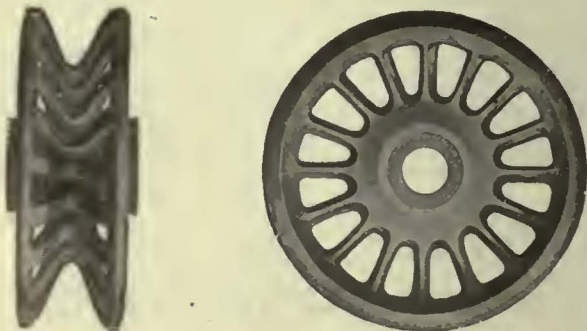
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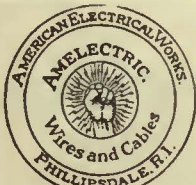
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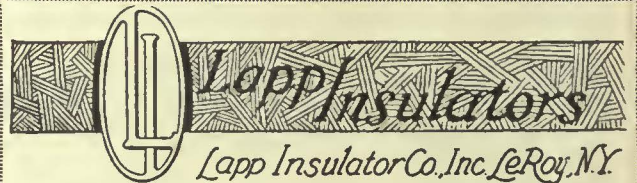
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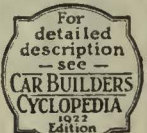
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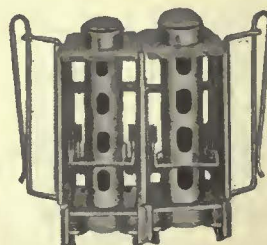
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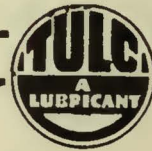
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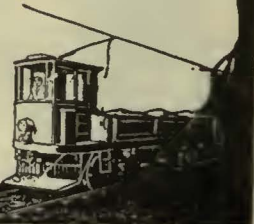


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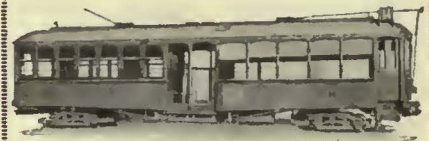
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20—50 ft. Steel Cars

Extreme width 9 ft. 2 in. Extreme height 12 ft. 2 in. Truck center 30 ft. 10 in. Hunter signs. Earll catchers. G. E. air brakes. Reversible cross seats, seating 52. Brill 30-E-1 Trucks, 4 ft. 6 in. Wheel base 30 in., 21-in. wheels.

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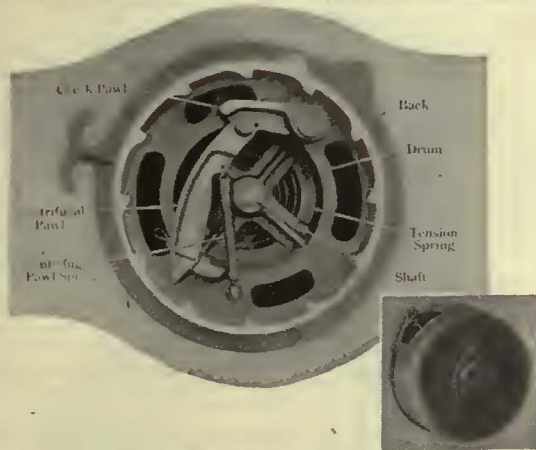
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0165

WHAT AND WHERE TO BUY

Equipment, Apparatus and Supplies Used by the Electric Railway Industry with
Names of Manufacturers and Distributors Advertising in this Issue

- advertising, Street Car
Collier, Inc., Barron G.
- Air Receivers, Aftercoolers
Ingersoll-Rand Co.
- anchors, Guy
Elec. Service Supplies Co.
Ohio Brass Co.
Westinghouse Elec. & M. Co.
- Armature Shop Tools
Elec. Service Supplies Co.
- Automatic Return Switch
Stand
Ramapo Ajax Corp.
Automatic Safety Switch
Stands
Ramapo Ajax Corp.
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Bemis Car Truck Co.
Johnson & Co., J. R.
St. Louis Car Co.
- Axles, Bus
Standard Steel Co.
- Axle Straighteners
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- Axles, Car Wheel
Bemis Car Truck Co.
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- Badges and Buttons
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The
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Nichole-Lintner Co.
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Westinghouse Elec. & M. Co.
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Side
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Stuck Co. A.
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Railway Track-work Co.
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Nat'l Tube Co.
- Boilers
Babcock & Wilcox Co., The
- Bond Testers
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Elec. Service Supplies Co.
- Bonding Apparatus
Amer. Steel & Wire Co.
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Indianapolis Switch & Frog
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Ohio Brass Co.
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General Electric Co.
Ohio Brass Co.
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Railway Track-work Co.
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McGraw-Hill Book Co., Inc.
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Anderson Mfg. Co., A. &
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Le Carbone Co.
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- Brushes, Wire Pneumatic
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Yellow Coach Mfg. Co.
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(See Wires and Cables)
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Mica Insulator Co.
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(See Brushes, Carbon)
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Consolidated Car Heating
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Westinghouse Elec. & M. Co.
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Bethlehem Steel Co.
- Cars, Dump
Differential Steel Car Co.,
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St. Louis Car Co.
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Wason Mfg. Co.
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General Electric Co.
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or Copper
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Wm.
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Amer. Brake Shoe & Fdry.
Co.
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Trolley
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General Electric Co.
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Hubbard & Co.
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(See also Snow-Flows,
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(See Conveying and Holst-
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Galef, J. L.
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Bethlehem Steel Co.
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ing)
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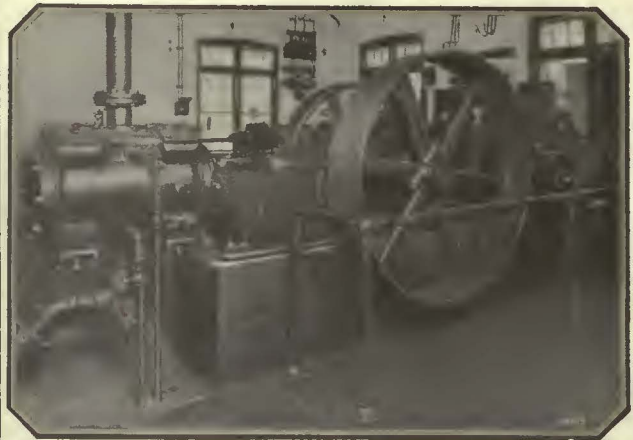
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Bulletin No. 3430

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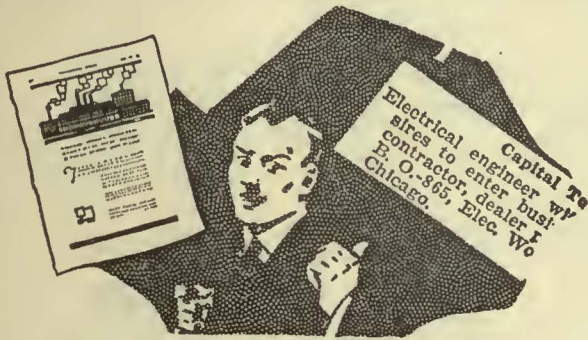
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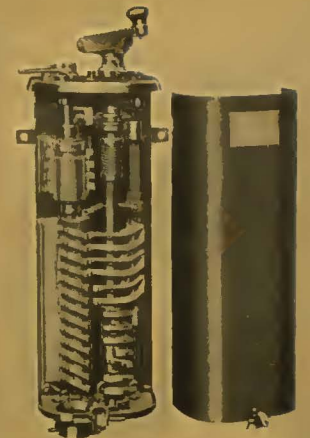
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