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October 1, 1927

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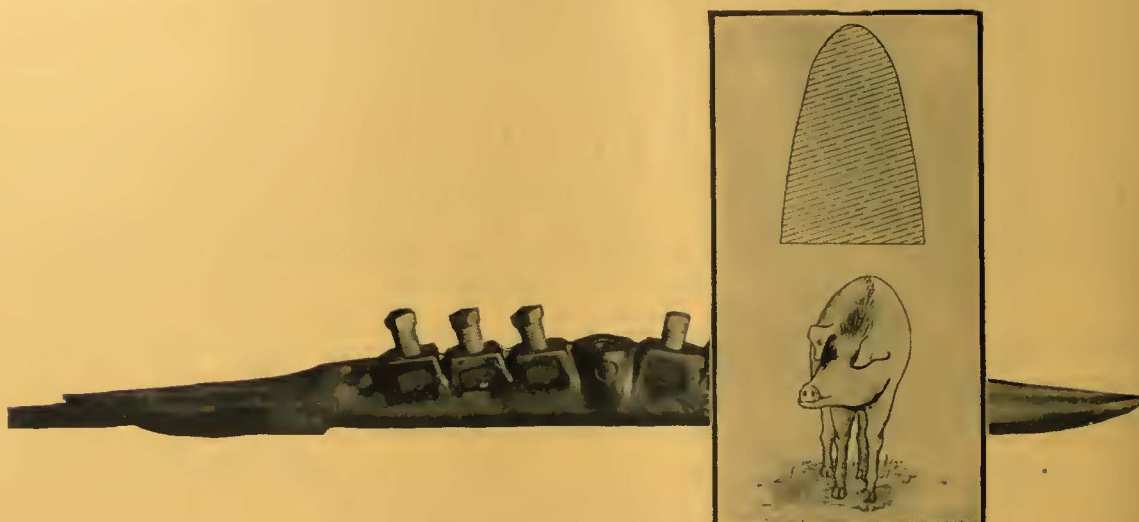


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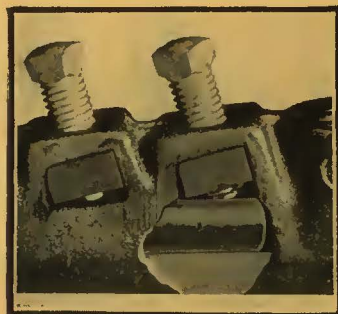
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The **RB** Razor Back Trolley Splicer



Keep Your
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by
Keeping it UP
with
Westinghouse
Rocking Nuts

THIS new Westinghouse splicer has an under-run shaped like a razor-back hog—hence its name, RB.

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East Pittsburgh Pennsylvania
Sales Offices in All Principal Cities of
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ELECTRIC RAILWAY JOURNAL

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Polishing the Diamond

EVERY facet in the diamond accentuates the brilliancy of the stone. Together they represent the work of a skilled artisan who with pride has devoted his talent and energies to bringing out to the utmost the beauty hidden in the precious jewel.

To the observer the great luster dazzles the eye. Not until a close inspection is made can each part be seen and a true concept be gained of the part contributed through the lapidary's skill.

Every vital phase of the Cleveland convention exhibits, reports, addresses, and conferences contributes to the making of a clear picture of the industry.

As it is necessary for the observer of the jewel to grasp the component parts of its completed beauty, so it is necessary for members of the A.E.R.A. to study all of the important phases of the convention both at Cleveland and after they return.

Like the skilled artisan, the JOURNAL, with the lapidary of analysis and thought, will endeavor to bring out distinctly in its dailies and report numbers every facet of the Cleveland convention.

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Another

The
**Turning
Point**

in street car service

**has
arrived**

See Them
at the

A.E.R.A.
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**W-N
Drive**

and
Worm Gear Drive

Westinghouse

Westinghouse Achievement



*Quieter running... Faster acceleration...
Higher schedule speeds... Lighter weight
... in street car service —*

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transportation engineer-
ing achievements, has
cooperated with the Chi-
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Railway and the Spring-
field Street Railway Com-
pany in the development
of worm drive motors.

These motors have arous-
ed nation-wide interest
in the possibilities for
marked advances in
street car service.

In addition, Westing-
house engineers, work-
ing in cooperation with
car builders, have now
developed the "W-N"
drive for street cars.

This Westinghouse achieve-
ment will unquestionably go
down in traction history as the
turning point in placing the
street railway industry in the
forefront as the most efficient
form for comfortable, safe, rapid
and reliable passenger service.

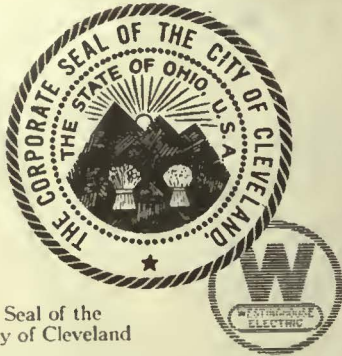
Westinghouse Electric & Manufacturing Company
East Pittsburgh Pennsylvania
Sales Offices in All Principal Cities of
the United States and Foreign Countries



1027

house





Seal of the
City of Cleveland

Cleveland

The Fifth City

ON the southern shore of Lake Erie stands a great industrial city, towering like a super-monument to its founder, General Moses Cleaveland.

It was in 1796 that Cleaveland's little band of pioneers selected the site for a settlement on Lake Erie at the mouth of the Cuyahoga River and surveyed the township of Cleveland, one mile square, overlooking the lake.

The little village developed slowly at first. Handicapped by hardship and suffering, it was not until 1852 that her ship came in.

That year the Baltimore, laden with the first cargo of iron ore from the Lake Superior region, entered Cleveland harbor.

If this cargo had been gold instead of iron, it could not have done more for the embryo city. Situated as she is on the Great Lakes at the logical and most economical meeting point of shipments of iron ore, coal and limestone, she soon became a great producer of iron and, as a result, started doubling her population every ten years.

With her production of iron she built machinery and ships to carry the iron ore and coal to make more iron until her

smelters have reached the enormous capacity of 3,000,000 tons a year.

When the dawn of the twentieth century brought us the automobile, Cleveland was the first city to grasp its possibilities and develop them.

Reaching out in other directions, she is crowding New York for first place in the cloak and suit industry. Ten million gallons of paint, valued at \$40,000,000, and more than 300,000,000 bricks and 200,000 tons of hollow tile are made in Cleveland every year.

Her progressive spirit has extended even into politics. In 1923 Cleveland adopted the City Manager form of government, a community fund for all charitable purposes, and a beautiful group plan of public buildings on the lake front.

But her outstanding achievement is the progressive development of the Cleveland Railway Company. The city participates in the control of the service, operation and maintenance.

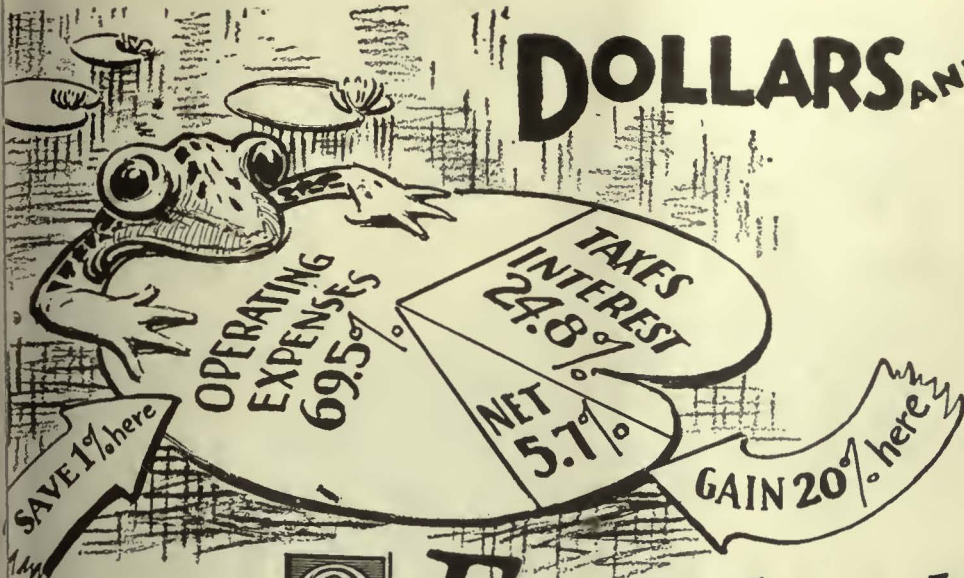
A super service at the lowest actual cost to the riders is the aim of the management. In attaining this end, more than fifteen hundred Westinghouse-equipped cars of the modern types are operated over the 400 miles of track Westinghouse accomplishments in advanced designs and in the manufacture of all transportation equipment is always in step with progressive street railway management.

Westinghouse Electric & Manufacturing Company
East Pittsburgh Pennsylvania

Westinghouse



DOLLARS AND SENSE!



Provide net income for the future by building endurance and permanence into overhead lines now. Statistics of the industry show that a 1% saving in operating expenses will increase the average net income nearly 20%. And it's the many small savings, easily made, that help most to swell the net.



Frogs take a bite out of operating expenses!

AND no wonder! It is not unusual for an O-B Type BC Frog to be in service after 500,000 car passes! The average of tests on five large electric railways was close to the half million mark! Can you say as much for the type of frog you are using?

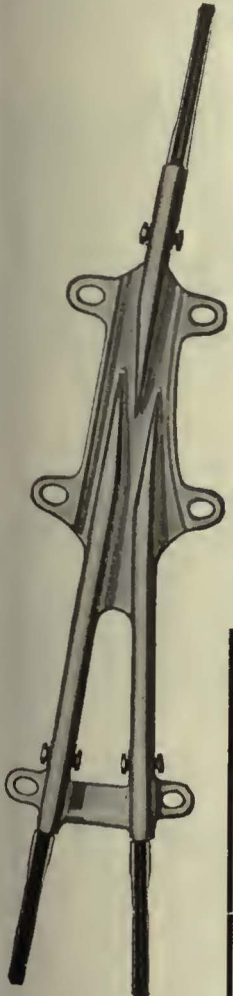
The big reason for O-B Type BC Frog longer life is in the runner extensions, close to the center, which prevent the wheel flanges from running on the pan. There's no jump, no arc, but rather, an easy, *smooth* transition all the way through, on the straight or on the turnout runner.

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Take the first step FIRST

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Most of the successful rehabilitations have shown, too, that track reconditioning is the logical start.

No matter how much or how little you plan to do toward improving service, take the first step first—rejuvenate your rail.

With the modern equipment shown here it costs little to grind out corrugations, build up and grind low joints and repair battered special work.

And it pays—handsomely!

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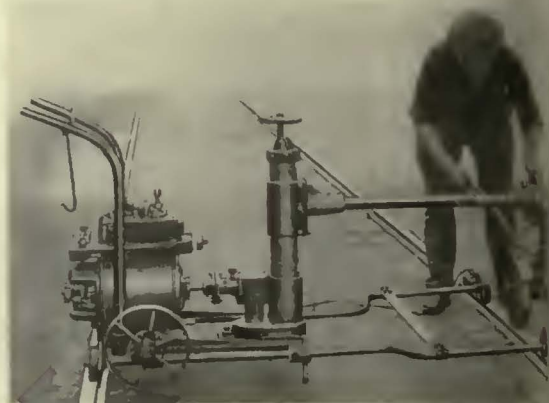
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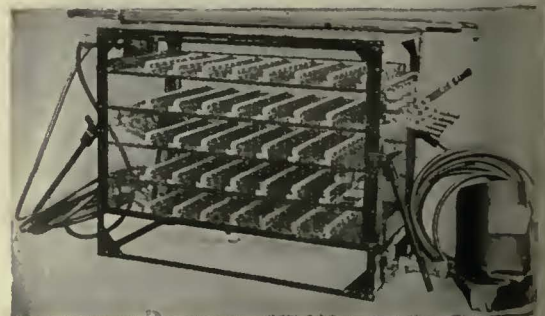
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"Vulcan" Rail Grinder



Reciprocating Track Grinder



"Ajax" Electric Arc Welder

 BETTER RAIL, BETTER TRANSPORTATION



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When Steel Twin Ties are used, together with modern labor saving machinery (that we have especially developed)—that dollar s-t-r-e-t-c-h-e-s out and covers a lot more territory.

And the Twin Tie job is much better in every way—for it stretches the dollar in actual construction costs—and then it stretches it out year after year—as the cars roll merrily by.

Which dollar are you spending?

THE INTERNATIONAL STEEL TIE CO.
CLEVELAND, OHIO

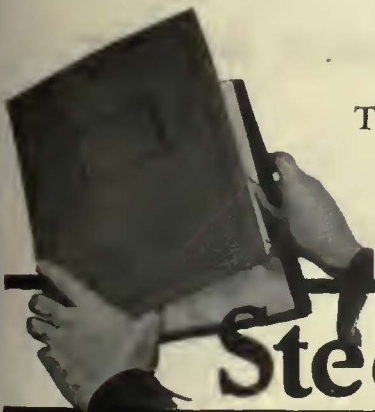
Look it up in your "Paved Track Note Book"

Steel Twin Tie Track

TWIN TIES ARE ALL STEEL

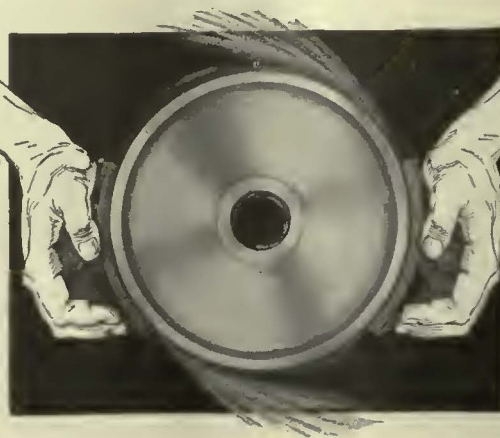
SPACES		
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312	314	316

A.E.R.A. exhibit.





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Braking

Double the Braking Area—

Double it—and you decrease over 50% the required energy absorption per brake shoe.

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Double it and you can attain a higher rate of retardation.

Double it and you decrease the frequency of brake shoe replacements.

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AMERICAN STEEL FOUNDRIES


NEW YORK

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American Multiple Unit Clasp Brake





KEYSTONE STEEL GEAR CASES

If a malleable iron case hits an obstruction in the road or if the lower half drops, it may derail the car or break the motor frame.

A Keystone Steel Gear Case will merely bend and buckle and the car will ride by. Then the case can be taken to the shop and pounded back into shape. If too badly smashed it is a simple matter to replace the lower half at small expense.

The steel that goes into Keystone Gear Cases is a soft, open-hearth, deep drawing steel. It is tough enough to protect the gear and pinion—has body enough to absorb all vibrations—and is flexible enough to bend and buckle so as to prevent serious accident as mentioned above.

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The halves of any given type of Keystone Cases are interchangeable. This insures perfect fit before they leave our shop and also enables you to replace either half if it becomes irreparably damaged.

Send for full particulars.

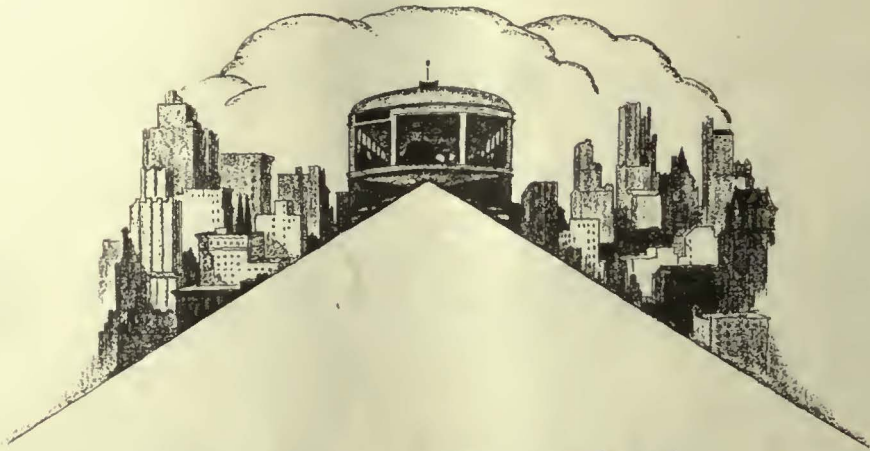
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MANUFACTURER OF RAILWAY, POWER AND INDUSTRIAL ELECTRICAL MATERIAL





*In the Spirit of St. Louis
we welcome you to Cleveland*

Take advantage of this opportunity for first-hand information on the progress in car development, exemplified by "Quality Shops," at

**Booth No. 105
Track Space H**

*The Spirit of St. Louis is
the Spirit of Progress*

ST. LOUIS CAR COMPANY
St. Louis, Mo.

St. Louis Car Co.





Door and Step Equipment Contributes to:

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- 1** Facilitates fare collection.
- 2** Educates patrons as to fastest boarding and alighting methods.
- 3** Speeds passenger interchange.
- 4** Reduces standing time of cars.

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- 1** Provides proper height of step.
- 2** Protects against carelessness.
- 3** Protects against injury.
- 4** Assures closed doors with car in motion.
- 5** Provides safe signalling systems.
- 6** Assures proper operation of doors and steps.

COMFORT

- 1** Helps eliminate noisiness.
- 2** Controls drafts in car.
- 3** Assures courteous treatment.
- 4** Eliminates crowding around entrances and exits.

EARNINGS

- 1** Reduces maintenance costs.
- 2** Reduces unproductive time in car operation.
- 3** Reduces accident expense.
- 4** Reduces platform expense.

NATIONAL PNEUMATIC COMPANY

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WESTINGHOUSE
DEVELOPMENT
LABORATORIES

WABCO
PACKING CUPS
GASKETS

It was Natural

that the originators and producers of the air brake should strive to perfect every detail of air brake apparatus.

that dependable and durable packing cups and gaskets be recognized as essential in preserving the integrity of air brake devices by reducing leakage.

that years of research and experiment be spent in developing materials superior to the rubber and leather products previously used.

that, with intimate knowledge of air brake requirements and ample resources at hand, there be produced the superior composition known as "WABCO."

It is natural, therefore, when you requisition air brake packing cups and gaskets to specify "WABCO" materials, thereby avoiding former leakage and reapplication troubles, and maintaining air brake systems at maximum efficiency with minimum expense.

Westinghouse Traction Brake Company
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WESTINGHOUSE TRACTION BRAKES

Remember Track D



The Four Features of
Balanced Design are
the Cardinal Points of
Today's demand

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Cincinnati Trucks
at the Convention

CINCINNATI BALANCED
LIGHTWEIGHT CARS

Safeguard and Accelerate Traffic

Automatic Signals by providing proper spacing of cars or trains, reduce trip time and enable more cars to be operated with consequent safety.

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Highway crossing protective devices of the flashing light, automatic flagman, or audible type, or combination of same, are a dependable insurance which soon pays off the investment.

Power operated remotely controlled switches are being used economically to accelerate Electric Railway traffic.

These Systems are products of the



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The ECONOMY Gasoline Vehicle Meter is inseparably linked to economical and safe operation.

the
ECONOMY
GASOLINE VEHICLE
METER

TEN years ago this organization first exhibited the ECONOMY Power Saving Railway Watthour Meter.—Now in service on 25,000 electric railway cars and locomotives. A corresponding device for use on gasoline propelled vehicles is here offered.

It is a rugged, reliable integrating meter with plain figures, registering the actual quantity of fuel consumed to the nearest tenth of a gallon.

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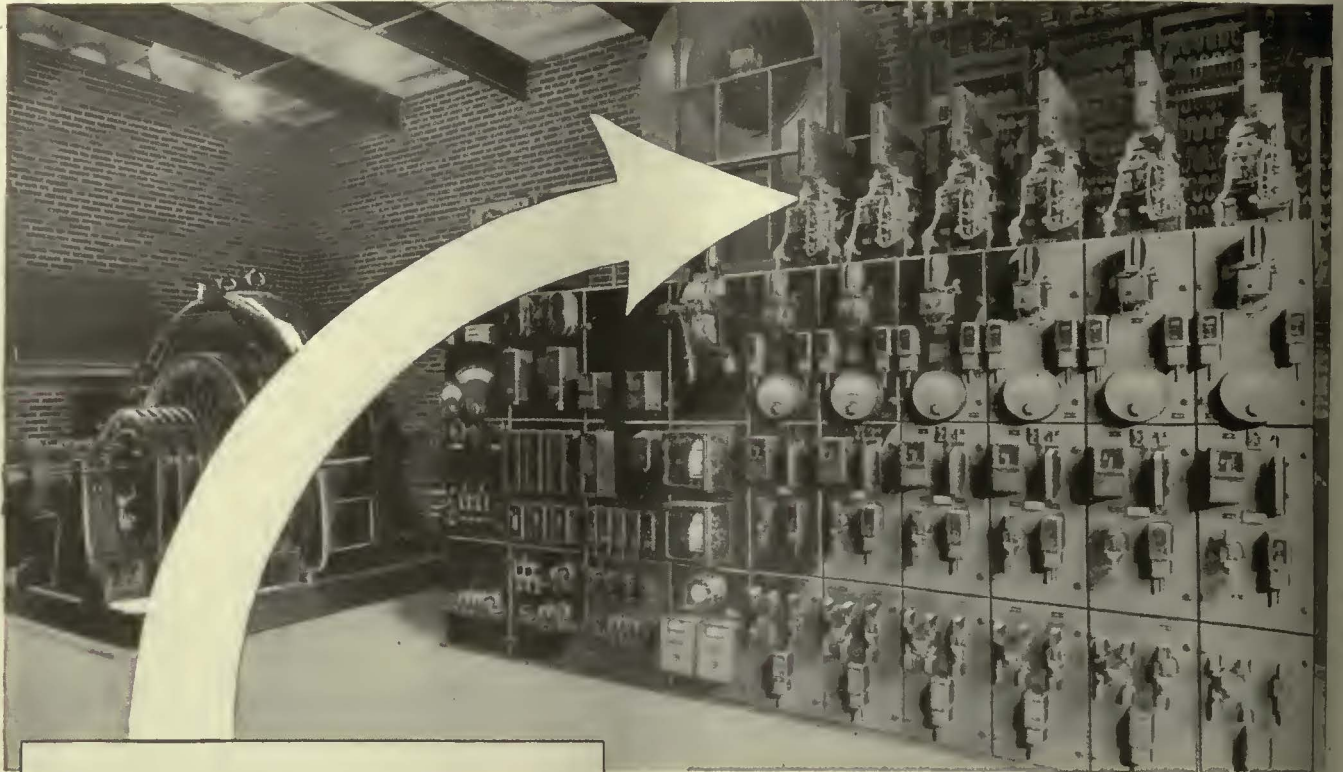
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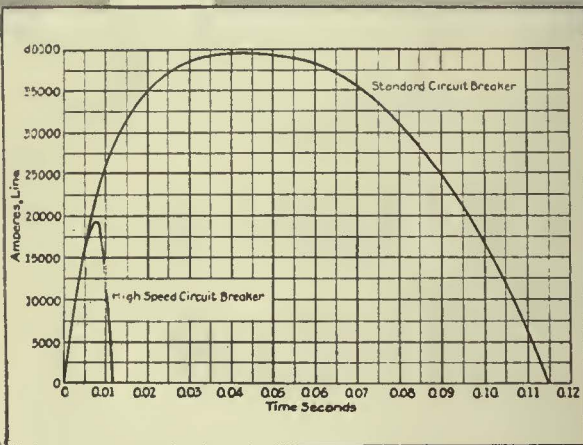
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The measure of the added protection

What the addition of High-Speed Breakers adds to your substations

With the high-speed type of air circuit breaker, the total elapsed time of a short circuit from initial current rise to complete interruption is but .008 to .015 second.

Operating at such extremely high speed, these breakers open short circuits so quickly that flashovers on commutating machines are prevented. This decreases wear of commutator and brushes and practically eliminates damage from internal grounding. It also insures greater reliability and lower substation maintenance.

Bulletin GEA-720 describes the G-E high-speed breaker. Your G-E Office has copies.



A new order of substation protection was instituted with the development of the G-E high-speed circuit breaker ten years ago. During these years about 1500 breakers of this type have been installed in the United States. The high-speed breaker is not an experiment of recent date.

GENERAL ELECTRIC

Electric Railway Journal

Consolidation of *Street Railway Journal* and *Electric Railway Review*
Published by McGraw-Hill Publishing Company, Inc.
CHARLES GORDON, Editor

Volume 70

New York, Saturday, October 1, 1927

Number 14

New York Gets Another Transit Report

NEW YORK has another transit report. This time it is Mr. Untermeyer, special attorney for the Transit Commission, who presents to that body an elaborate plan which purports to outline a method for unscrambling the transportation mess in the country's metropolis. Of course that is no simple job. It is comparatively easy to stand back and criticize almost any scheme which is suggested for straightening out the tangle of politics, prejudice, physical difficulties, finances, personalities, self-interest and public ignorance involved in the New York transportation problem.

There is no intention here to analyze Mr. Untermeyer's report in detail. The electric railway industry generally is little interested in the complicated legal, physical and financial scheme which is proposed. Suffice it to say that the report does not seem to put foremost the most important need, i.e., for more transit and better riding conditions for the millions of people who daily depend on its inadequate and distorted jumble of transportation lines. The word "jumble" is used in preference to "system," for by no stretch of the imagination could the latter term be made descriptive of the conditions which exist.

What the report seems to try to do is to find a way of utilizing the new subway lines to the construction of which the city is committed, and at the same time avoid the necessity of charging a rate of fare that will make these lines self-supporting, in accordance with the provisions of the law authorizing the city to undertake the construction of an independent subway. As a political expedient, this seems to be an astute move. First, the city was committed by its officials to the construction of this subway. They succeeded in inducing the Legislature to authorize it only by writing into the law the provision that the system must charge a rate of fare sufficient to make it self-supporting. If that program were permitted to go into effect, there would be presented to the intelligence of the voters the anomalous situation of privately operated subways required to charge 5 cents, while a city subway charged 8 or 10 cents for a ride. Obviously Tammany can ill afford to permit such a situation to develop. Now that the city system is well under construction, therefore, and before the people shall fully realize the blundering of its officials, Mr. Untermeyer starts out to re-scramble the situation, so that by dissecting the present transportation systems and taking from them the cream of their routes, the city may obtain a group of lines which will show some possibility of being operated on a 5-cent fare. What is to happen to the remnants of the private companies thus dismembered seems to be of small concern to Mr. Untermeyer. In fact, one is led to believe from the report that if he had his way fully their fate would be terrible.

The retention of a 5-cent fare remains the alpha and the omega of New York's transit policy, according to his report. Everything else seems to be secondary;

financial stability, efficient operation, increased convenience. Comfort and even decency for passengers do not seem to get so much as a serious thought. An elaborate and complicated plan, with many financial and legal contingencies, is set up, and the report then proceeds with meticulous care to argue that the scheme proposed would make possible the retention of a 5-cent fare. That seems to be the extent of its accomplishment. The slightest consideration does not seem to be given to showing just when the people of that city may expect to be treated less like sardines and more like human beings when they endeavor to ride on its rapid transit system.

Savings Banks Want Public Control to Continue

LEGISLATION has been drawn for introduction in Massachusetts to extend the period of public control of the Eastern Massachusetts Street Railway. This is an act that appears to be well considered. It is favored more particularly by the representatives of the savings banks of that state, who point out that under public control an insolvent railway in the hands of a receiver for a long time and in bad operating condition has been rehabilitated. The savings banks have, of course, in mind the conservation of the more than \$5,000,000 of bonds of the system held as part of the assets of their 2,800,000 depositors.

The present special act went into effect in 1919. It pledged the credit of the Commonwealth for the payment of principal of not exceeding \$4,000,000 of the road's serial bonds. The proposed new act in no way asks financial aid or credit from the Commonwealth. This is, perhaps, the most important distinction between the existing act and the one which the Savings Banks Association has endorsed. Under the terms of the proposed new act the Eastern Massachusetts property would continue to be operated by a board of five trustees appointed by the governor. They would have the same power as at present to regulate fares and to determine the character and extent of service. One section provides that they shall fix such fares as in their judgment will produce income sufficient to meet all operating and fixed charges, preferred dividends and 6 per cent on the common stock. Another section gives the company the right to sell electricity for light or power to the extent that it shall not be required for the proper operation of the railway, but the department of public utilities must first determine that public necessity and convenience require such sale.

The fact that the savings banks have a self-interest in seeing the present arrangement renewed detracts not a whit from the excellent record made by the railway management. Among the most noteworthy of the commendable things done was the division of the property into operating units, each made to stand on its own basis on the general theory of paying in fares to the extent

that the service was used. This plan has worked well. So was the provision well made that the cities served might contract within limits definitely fixed to making up any deficit from operation. Fortunately rehabilitation has progressed without the need for assessing any of the cost on the municipalities, but the provision is a wise one. Despite the trials and tribulations with which it has been beset the company has maintained a constant level of net earnings in the face of steadily diminishing gross income during six years. In this achievement the one-man car played a large part. It has, indeed, been hard sledding, but the courage of the management never faltered. After its house had been placed in order the railway went in for an intensive merchandising plan. The officers resorted to every expedient, not indiscriminately but wisely and well. It is none too soon to bring the matter of the renewal of the present arrangement to public attention. The good work should be permitted to go on.

Success in Rapid Transit Involves Co-ordination

PERHAPS no better demonstration of the necessity for co-ordination of transportation facilities to obtain best results has ever been made than that given in the Beeler report on rapid transit for Cincinnati, abstracted in two articles appearing in last week's issue and in this one. Several years ago the city of Cincinnati appropriated a considerable sum for the construction of a rapid transit subway line. The line was built in the rough, but has not yet been carried to completion. Meanwhile conditions have changed so that the need for the line for its original purpose, of furnishing an entrance for a number of interurban lines to a downtown terminal, does not exist. The problem was to find a use for the investment already made, totaling some \$6,100,000, so that it would bring some return to the city instead of lying idle.

Many estimates were made by the engineers to determine the best course of procedure. Naturally the simplest and the cheapest plan would be to complete the subway and run it as a separate unit. Used in this way, it was estimated that it would carry only 6,060,000 revenue passengers the first year. But by co-ordinating all the local facilities, and using surface cars, interurbans and bus lines to feed into the rapid transit line, it will carry 37,400,000 passengers the first year. Moreover, it will be possible to reduce the surface transportation mileage where it would duplicate the rapid transit, and so make a saving so great that not only will the combined system pay operating expenses, but from the start there will be almost enough revenue to meet fixed charges on the \$10,600,000 additional investment needed to complete the system.

A word of caution is not amiss for those who, for various selfish reasons, desire to modify any plan proposed so as to gain preference for some particular locality. It is shown conclusively that the addition of only three stations to those recommended would destroy the usefulness of the rapid transit line in the outer sections, would involve a serious loss of patronage, and would result in a deficit instead of a profit.

Every city administration that is faced with a need for rapid transit will do well to ponder this report, for it contains the essentials of success or failure for such an enterprise, set forth in no uncertain terms.

Prospects for Federal Income Tax Reduction

CORPORATIONS, as a whole, have been very patient with the federal government for leaving them out when favors in the form of tax reductions were to be handed out. Indeed, they accepted increases with comparative complacency when others were enjoying reductions. And probably little would be done about it now even though the corporation rate was increased from 1 to 13½ per cent and is now more than 2½ times the maximum normal rate for individuals and partnerships had not the Treasury piled up an unprecedented surplus of \$636,000,000.

Is there anything inherent in the corporation form of business ownership and operation that would justify such high taxation as compared to that of individuals and partnerships? Its main characteristic is that of limitation of liability, but the present rate of taxation imposes a very high rate of premium for this kind of negative insurance. If this unusually high rate of tax is to be continued we may expect to find more and more corporate businesses changing to another and cheaper form, or where this cannot be done, we may expect profits to decrease and the salaries of those in control to increase. An investigation of the income tax returns of one of our Middle Western states disclosed an alarmingly large number of corporations which were prosperous but were paying no dividends. The paradox of a lower rate of tax bringing in greater returns may be seen if the federal government reduces its rates.

A great part of the Treasury surplus above mentioned has already been paid out in debt retirement, but a huge sum is still available for return to the taxpayers. Who turns it to benefit? Under the act of 1926 the number of persons paying income tax to the government was reduced by almost one-half. While 7,369,788 persons made returns in 1925, only 4,171,051 did so in 1926. There are many who feel that the individual exemptions are already low enough and that too many people escape federal taxation. At any rate, there is little argument for further favors to this group while the corporate tax remains so high. For the holders of the shares, corporations represent an enormous group of people rich, middle class and poor—and either they must pay a high rate of tax for the privilege of investing in this form of business enterprise or pass the tax along—if they can! It is not often they can pass it along and they usually have to pay it.

There are some who feel that the demands for relief and control will make tax reduction impossible just now. Secretary Hoover, who may be expected to have clear ideas on this subject, says that reasonable demands for such purposes should not interfere with a substantial reduction of the income tax, and that annual appropriations will suffice. If a tax reduction is to be made at this time, corporations should certainly benefit by it. Reductions for them are long overdue. The sentiment in the ways and means committee and among members of both houses of Congress is more favorable to the cause than ever before. This splendid opportunity should be used so that the case may be kept prominent before them. Every corporation executive in every state should bring this matter to the attention of his representative in Congress and the Senate in the interests of his stockholders and in those of the buyers of his goods or services.

The Special Library a Valuable Adjunct

WITHIN the last few years a new form of activity has been added to the work of the utility corporation. It is that of maintaining a special library for the purpose of keeping on file within ready reach all information available about the subjects in which the various departments are interested. In this way it differs radically from the general library, which is content with the usual catalog, but largely leaves to the reader the work of locating and classifying articles on a particular subject.

Several electric railways have for a number of years devoted considerable effort to the development of libraries of this type. The work they have done has been noteworthy. For this reason the article on the conduct of the library of the Philadelphia Rapid Transit Company, published in this issue, is of particular value. While this library is organized along the same lines as others which were established earlier, in a relatively short time an invaluable set of references have been built up. Then, too, through a co-operative association the information that has been collected by the several libraries of this class is made available to all, and a vast fund of information has been assembled on practically any subject in the field of the industry.

Wood Preservation Progressing

LATEST statistics show that there are in the United States approximately 400,000 miles of steam railroads and about 47,000 miles of electric railways. The total number of ties in steam railroad tracks is approximately 1,100,000,000, of which about 730,000,000 or 66 per cent are treated. At the present time the steam railroads are installing about 100,000,000 ties annually, of which approximately 65,000,000 are treated.

There are in electric railway tracks about 124,000,000 ties. According to the records of the United States Department of Commerce and the Department of Agriculture, the electric railways purchased approximately 5,000,000 untreated and 1,120,000 treated ties in 1925. No records are available to show the number of untreated ties which were subsequently given some form of treatment by the purchaser, but it is quite probable that it would not materially affect the comparison.

From the above, it is evident that while the steam railroads are replacing slightly less than 10 per cent of the total number of their ties per year, 65 per cent of new ties have been treated. On the other hand, the electric railways are apparently replacing slightly less than 5 per cent of their total ties per year and treat less than 20 per cent of their new ties. The difference in the proportion of renewals is, of course, partly because the electric railways do not have the same proportion of renewals on account of mechanical wear as do the steam roads, and partly because of the more extensive use by the former of substitutes. No data as to the extent of the use of the latter are available, but they would undoubtedly show up favorably to the electric railways. The situation, however, is one which from the electric railway standpoint leaves considerable room for improvement.

At least two electric railway properties, Boston and Atlanta, own and operate their own treating plants and treat all ties and most of their other timber. One of these companies reports a cost of only 8.7 cents per treated tie per year as compared with 13.3 cents per

untreated tie per annum. Pressure treated creosoted ties have been known to give 30 years life in paved electric railway tracks. An extensive test installation on one steam railroad showed over 80 per cent of creosoted tie installations still sound after 17 years of service, and of the remaining 20 per cent more than half were removed for reasons other than decay. In this test it was proved that the average life of untreated ties ranged from 3.1 years for cottonwood to 8.5 years for white oak. The creosote treatment was full cell 10-12 lb. per cubic foot. In European tracks, life of treated ties as high as 40 years has been reported.

Big Returns from a Small Investment

PRESERVATIVE treatment is not limited to ties. The advantage for other timber is well known. Data recently published on a yellow pine pole line on the Bell telephone system between Hurricane, Ala., and New Orleans, La., which was installed in 1899, showed that in 1925 only 13.5 per cent out of a total of 7,644 treated poles in the line had been replaced because of decay. According to these data, the Bell system is now using between 600,000 and 700,000 poles annually, of which 90 per cent are treated. Government statistics show that the total number of poles being used per year is about 3,250,000. It is estimated that the telephone, telegraph, railroad and power companies are now treating about 2,500,000 poles annually, or 80 per cent of the total requirements. This is $6\frac{1}{2}$ times the number treated in 1909.

About 10,000,000 cross arms are now being used per year, of which about 1,000,000 are treated. While this is only 10 per cent of the total, it represents an increase of 1,500 per cent over the number treated in 1909.

While reasonably accurate data are not available for posts, car timbers and mines, it is reasonable to assume that there is at least an equal opportunity for improvement in these fields. The records show that there are now being treated approximately 400,000,000 ft. b.m. of construction timber and miscellaneous material per year, but this represents only about 1 per cent of the total annual production of such timber, and while it represents a gain of 38 per cent over the amount treated in 1909, there is still much left to be desired.

The economies to be effected from preservative treatment of timber are so obvious as hardly to require argument. It is not a matter of first cost, but rather one of average annual cost during the useful life of the material. The experimental stage has been passed, the anticipated life of treated timber upon which installations were originally justified has been exceeded, and the element of uncertainty has been removed. There would appear to be no good reason for hesitation in the matter of choosing between treated and untreated timber. Every dollar spent on treated timber is the same as putting money away in the bank, where it will earn a substantial return to the investor.

The wood preservation committee of the American Electric Railway Engineering Association has been doing excellent work for several years along the lines of educating the electric railway industry as to the benefits to be derived from wood preservation, but "reading the directions on the bottle will never cure the ill." The directions must be followed and the dose taken as prescribed.



Part of the P.R.T. library staff, which furnishes technical information for the 12,000 employees

12,000 Employees Can Use This Library

P.R.T. librarians are called upon by all departments for information on transportation, economics and related subjects—The 6,000 books and 150 periodicals kept on hand are of vital importance in employee training—Library exhibit to be seen at A.E.R.A. Cleveland convention

IT MAY readily be understood that the important function of a special business library is to correlate and provide information on subjects of pertinent interest to the organization which it serves. Such a library must be more than an imposing row of well-filled bookcases, more than an amply filled periodical rack, more, even, than an efficient filing and clipping bureau. The company library must serve as an effective digestive apparatus, consuming vast quantities of printed words and skimming from that material the trace of nutritive information for which the company's executives and the rank and file of its employees may be seeking.

What the public library, serving persons of every type and interest, cannot do, the special library is created for the explicit purpose of doing. Its chief librarian and assistants are specialists in securing from material already on hand, or from outside sources, the information requested, almost always in a rush, by the personnel of the company and, so far as possible, in anticipating and meeting those requests in advance.

In so far as the company's librarians are able to shoulder a portion of the load of the executives and to

carry on at least the preliminary steps of a research along lines desired by the various departments, the special library proves itself as one of the most important functions of the company. Hardly less important is the operative part which it may play with the employee training activities, now being carried on by so many of the larger and even the smaller companies in every type of industry.

The Philadelphia Rapid Transit Company perhaps has more diversified fields of activity than any other urban transportation system at the present time. Not only do it embrace every type of public transportation in Philadelphia, high-speed lines, street cars, city and intercity bus service and taxicabs, but its employees and management also embarked some time ago upon the high seas of finance, with the establishment of the Mitten Bank under Mitten auspices.

In a rapidly expanding organization such as this there are, of course, constant calls for specific information on innumerable subjects. The executives and the employees wish to be kept constantly in touch with new developments in the street railway, motor bus and taxicab industries.

and such related subjects as co-ordinated transportation, accounting practice, customer and public ownership, employee and public relations, benefited property assessments, cost of living, accident prevention, traffic problems, determinate permits, employee representation in management, foreman training, fares, wages, investment practice and countless other matters.

One of the features of the P.R.T. library is to bring these subjects to the attention of the persons directly interested in the various problems—in abstracted form when possible and always so as to reduce the amount of unproductive "digging" which must be done by the individual seeking information.

The library was first established as a central bureau in 1919. Its beginnings were small. One bookcase and a limited number of trade periodicals were the seed from which have sprung the more than 6,000 volumes and the 150 periodicals which are now at the beck and call of every member of the P.R.T. organization. On Sept. 15, 1926, the resources of the library

are located in the carhouses, garages, shops, general offices and other departmental locations. Some form of library publicity is posted at all times, including lists of new books received during the month, with very brief reviews of each; lists of short abstracts of magazine articles, etc. All of these library bulletins are, of course, sent to the various officials.

All of the 150 periodicals subscribed for are carefully reviewed and articles of particular interest are abstracted. These short abstracts are typed on a routing sheet and pasted on the outside of the magazine in which they appear. The magazine is then routed to a regular list of readers and to such individuals as may be interested in special features which appear therein. Pads of bor-

Belgium —Electrification proposals (McCallum), 474	Vol. 54 July to Dec. 1919
Belgium —Governmental plans for electrification, 998 —Plundered tramways, 746	Vol. 53 Jan. to June 1919
Belgium —Electrification plans, 174	VOL-56, July to Dec - 1920
	VOL 57 Jan to June 1921
Belgium —Electrification projects, 33 —Rehabilitation railways, 1184	VOL-60

Current collection: —Energy consumption devices (Ewing), 643	Volume 65 January to June, 1920
Current collection: —Losses at trolley contact, (Ewing), *863 —Third rail shoe at Wilkes-Barre A. Mason Ry., *424. —Trolley wheels, Device for truing (McMahon), *374	VOL-56, July to Dec - 1920
Current collection: —Third rail; —Starting device for (Harkham), *356. —Trackless trolley system, *1134.	VOL 57 Jan to June 1921
Current collection: —Conduit construction in Washington (Dann), *449 —Maintenance of devices (Dell), 803. —Pantograph shoe lubrication, *273. —Sleeve and contact rail construction *441. —Third rail and overhead compared (Gibbal), 157. —Trolley for cars inside shops, 474. —Trolley shoe at slow speeds (Greer), 6941. (Maitland) *2681.	VOL 59 Jan to June 1922
Current collection (continued): —Trolley shoe vs. trolley wheel (Savage), 187; (Savage), 187; (Ewing), 188; (Debow), 199. Discussed by C. E. E. A. 183; (C. E. E. A. Eng. Council), 303. —Trolley wheel with stationary guides, *478.	

ELECTRIC RAILWAY JOURNAL VOL. 65 JAN-JUNE 1925
Belgium —International Chamber of Commerce, Administrative discussion, 314.

ELECTRIC RAILWAY JOURNAL VOL. 63 JAN-JUNE 1924	ELECTRIC RAILWAY JOURNAL VOL. 65 JAN-JUNE 1925
Current collection (see also Overhead contact system): —Conductor rail maintenance in New York City, *120. —Conductor rail, Under contract in London, *479.	Current collection rate also overhead contact system: —Device for current-collecting (Delf and Tondur), 779
Current Collection (Continued): —Conduit construction New York City, *218. —Different voltage over sea track, *642. —Steel wire, Troubles overcome in Port Worth, Tex. (Robinson), *787. —Third rail construction on Staten Island, *714.	ELECTRIC RAILWAY JOURNAL VOL. 66 JUL-DEC. 1925
ELECTRIC RAILWAY JOURNAL VOL. 64 JULY-DEC. 1924	Vol. 67, Jan. June 1926
Current collection (see also Overhead contact system): —Catenary construction, Chicago, *82.	Current collection: —Maintenance of equipment reduced, Ft. Worth, Tex., *1249.

Information on certain subjects is prepared and sent to a list of officials on Lefax cards.

are thrown open to all of the 1,000 employees of the company, this being in line with the policy of the management to provide every possible assistance to the men in their efforts toward self-advancement.

The circulation of books and of periodicals is only one of the functions performed by the library staff. A clipping department is maintained which combs the newspapers of Philadelphia and of cities in many other sections of the country, searching out relevant news notes which are pasted into daily clipping books and circulated among the company's officials. To increase the effectiveness of this work a number of outside clipping services are also utilized.

Since the central filing department is a natural corollary of the library, it too comes under the jurisdiction of the librarian. This work includes the classification and filing of all company mail, interoffice communication reports and other material which must always be at hand for ready reference.

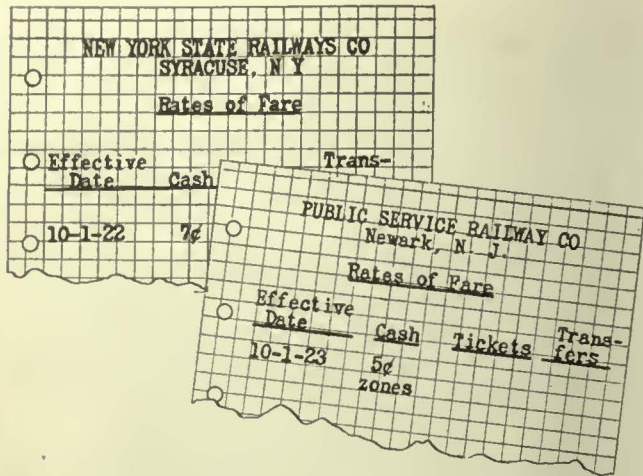
BOOK REVIEWS AND LIBRARY BULLETINS

So that the employees may constantly know what new material the library has available for them, considerable use is made of the 100 company bulletin boards, which

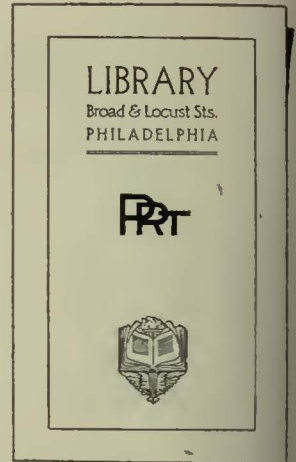
rower's application blanks are kept near each of the bulletin boards and when an employee wishes a certain book or periodical he simply fills out the card with the necessary information and the desired publication will be sent to him as soon as it is available. The company inter-office mail is utilized for this service. No charge is

made to the employees for any of the library service, but they, of course, are held responsible for books and periodicals loaned and are expected to return them within a reasonable period.

To determine how extensively the employees are making use of the library and also to ascertain the type of material which is most in demand careful records have been kept of all publications loaned and the locations to which they are sent. It was found, as might be expected, that shop employees were particularly interested in mechanical works and in maintenance articles published in ELECTRIC RAILWAY JOURNAL and elsewhere, while trainmen centered their attention on subjects lying more nearly in their field of activity, such as traffic studies, co-ordinated transportation, etc. All employees, however, have in common a very real interest in personal



Some of the index cards which make easy the finding of information on special subjects of interest to the library's users



The bookplate by which the volumes owned by the P.R.T. library are identified

analysis, investment practice, public and employee relations and similar more general subjects. "How to Get Ahead Financially," by William A. Schnedler, and "Financial Independence, How to Win It," by Harvey A. Blodgett, are two of the most popular volumes on the library shelves.

WORKING WITH THE TRAINING AND EDUCATIONAL DIVISION

The company is constantly expanding its educational work among the employees and the facilities of the library are thus being subjected to a corresponding increase in demand. Three correspondence courses, "The Electric Railway Industry," "Handling Men" and "Public Relations," are now being offered to the men and evening classes in public speaking, mathematics, English, blueprint reading and similar subjects will be offered during the fall and winter months. With all of these the library must co-operate by preparing reading lists and suggesting texts which will provide valuable supplementary information for those participating in the courses.

Extra copies of books and magazines which are subjected to the greatest demand are purchased, so that long delays in getting a desired publication may be avoided. An attempt is made to obtain copies of all surveys made in Philadelphia and in other cities on problems which affect coordinated transportation. When a particularly illuminating survey is made extra copies are secured and distributed to employees who request them.

The annual reports of the company are exchanged with about 100 other transportation companies and this collection of reports is of great assistance in the compilation of comparative statistics. The company publications, *Service Talks* and *P.R.T. Co-operator*, are also exchanged with a large number of other companies and publications received in return are routed to interested officials and are then filed.

A fare and wage history of street railway and motor bus companies of comparable size has been compiled. A book of fares and wages in effect is made up on 3 1/2 x 6 1/8 in. Lefax sheets. Copies of this book are in the hands of the various department heads. As fare and wage changes occur revised sheets are distributed.

Bound volumes of *ELECTRIC RAILWAY JOURNAL* and its predecessors from 1894 to date are maintained by the library. A cumulative index for this publication, from 1916 to date, is prepared to facilitate ready reference. This indexing has been accomplished by clipping and pasting all index references to articles on one subject on one or more cards. The volume number appears above the clipping, as is shown in an accompanying illustration.

Service Talks and *P.R.T. Co-operator* are bound with a carefully prepared index. A frequent query with the library is "Where did we publish this?" and it is thus essential that all company publications be thoroughly indexed.

The A.E.R.A. compilations, which are found to be of great assistance and value, are filed in vertical steel cabinets using the same subject headings which the association publishes in its annual report.

A large collection of legal books is maintained for the benefit of the company's legal staff. This collection includes the various Reporters, Pennsylvania Superior and Supreme Court Reports, U. S. Superior Court Reports, the American Law Reports, U. S. Supreme Court Reports and Pennsylvania Court Reports. An index to legal opinions emanating from the company's legal staff is prepared.

Other sources of information which are filed over a period of years are: Decisions and reports of the New York Public Service Commission, the New York Transit Commission, Pennsylvania Public Service Commission decisions, Philadelphia ordinances, Mayor's message-city transit department reports (Board of Supervisors, Engineers of Chicago Traction report), the *Commer*

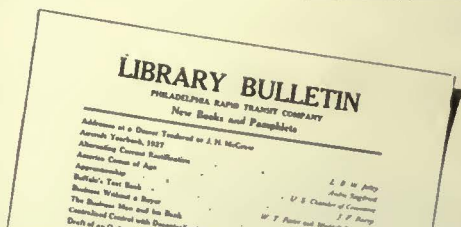
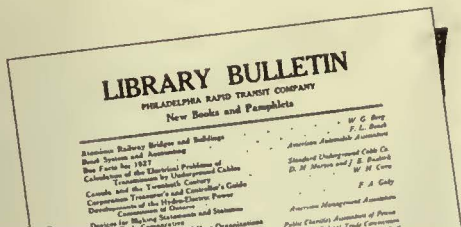
ROUTING SHEET		Date May 14, 1927
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BROOKLYN CITY RAILROAD		
Dividend policy explained. Circumstances connected with passing of Brooklyn City dividend reviewed - \$11 000 000 for improvements.		882
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Approval of \$20 000 000 Brooklyn refunding issue sought.		882
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Mitten Bank has merged with Brotherhood of Locomotive Engineers Title and Trust Co. 878		
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Monorail proposal for Detroit under advisement.		879

Your attention is called to special articles contained herein. When you finish reading, kindly initial and date, and forward to next succeeding name. If you do not contemplate prompt use of magazine please forward, and after routing has been completed it can be secured from library or photostatic copies of desired articles obtained.

Librarian, 1520 Spruce Street.

Messrs: W. K. Myers ✓
 C. E. Ebert ✓
 W. M. Campbell ✓
 H. E. Hutchinson ✓ JUN 3 1927
 W. W. Logan ✓

Items of special interest in the leading periodicals are listed by the librarian on the routing sheet which is sent with the magazine



LIBRARY BULLETIN
PHILADELPHIA RAPID TRANSIT COMPANY
1520 Spruce Street

NEW TACTICS ON SOCIAL CONFLICT
By *Laidler and Thomas*
A series of information as well as a brilliant debate on the interpretation of the literature which were discussed at the Annual Conference of the League for Industrial Democracy. The Changing Relations between Property Ownership and Control, The Trade Union Enter Business, and Changing Tactics of Employers toward Workers. The General toward Industrial Combinations and American Economic Imperialism.

THE WAY OUT
By *E. A. Filene*
Every man and woman concerned with what will happen in the next ten to twenty years should read this book. A clear forecast for successful business men, industrial workers and laborers.

MOTOR VEHICLES AND THEIR ENGINES
By *E. S. Fraser*
A practical handbook as the care, repair and management of motor trucks and automobiles for owners, chauffeurs and garages. It is written in a simple and non-technical manner and explains the care and operation of the most important accessories of automobiles. The last part of the book indicates how to drive a car and how to obtain the maximum economy and efficiency of equipment. The book is the result of the author's observations and experience.

TO OBTAIN ANY OF THE BOOKS REVIEWED, PLEASE FILL IN A BORROWER'S APPLICATION SLIP AND FORWARD TO THE LIBRARY

LIBRARY BULLETIN
PHILADELPHIA RAPID TRANSIT COMPANY
Short abstracts of articles appearing in current magazines

Volume 2 APRIL 1926 No. 11

ACCOUNTING
An interesting review of the new changes in the depreciation and amortization methods of accounting for fixed assets and of other facts.

ACCOUNTING, COST
Cost accounting in the storage plant. The use of individual cost record.

ADVERTISING
What has come out of the industrial situation. Advertising is based on products that do not serve demands of the selling.

BANKS AND BANKING
Forecast of the Trade Dept. The next 5 years will see more shifts and more opportunities in which some companies and banks in a library taking them the last years of a year had more.

BONUS
A major incentive for production workers. Methods for determining amounts and both of business for workers.

BUYERS MANAGEMENT
Principles of group buying management. Their application in the Retailer's group. Details of execution in all phases of management operation made possible through standardization.

CHICAGO
Hoopings on Chicago bills considered. Amended version has been passed through Senate committee of amendments suggested - new law represents new agreement of 1927 and comparison for local cases previous provisions.

To obtain the magazines listed, please fill out a Borrower's Application Slip and send to the Library at Broad & Locust Sts.

LIBRARY BULLETIN
PHILADELPHIA RAPID TRANSIT COMPANY
Broad & Locust Streets

ACCOUNTING PROCEDURES FOR PUBLIC UTILITIES
By *W. C. Bailey and D. E. Knowles*
A comprehensive compilation of the subject which should appeal to the accountant, the utility engineer, or the stockholder. Three principal subjects are covered: (1) Development and Control of Public Utility Enterprises, which presents the development of such types of public utility; (2) Service Obligations and Public Control of Public Utility Companies, which covers in a different kind of fashion the public utility companies; (3) Finance of Public Utility Companies, which tells how the companies in this manner share around the main, various accounts and amounts. The book acts as a learned reference book that remains handy and refreshingly the accounting practice in utility companies.

PROCEDURES IN EMPLOYMENT PSYCHOLOGY
By *W. Van Dyke Bingham and Max Freyd*
The book offers to research workers and to countless information in collecting methods for group management. It explains how to present mechanical tests and application tests, interview methods and methods devised used in determining aptitudes and other methods in testing. The final chapter discusses the actual procedure of analyzing and summarizing psychological measurements.

MAKING TRANSPORTATION PAY
By *Henry H. Norris, Ed.*
A digest of proceedings made by shorter address to the Charles A. Coffin Foundation in 1926 and is now edited in the new popular series of Electric Railway Practice. The accomplishments of some remarkable experimental methods with complete and distinctive, use of capital investment in the machine as well as in the new equipment, "Construction of Road and Bus" in the title of a chapter showing new phase of development. A list of the other chapters including are:

ROADS, ASH TO GENERAL ADMINISTRATION THROUGH THE PHILADELPHIA RAILROAD COMPANY'S EXPERIMENTAL DEPARTMENT IN CONNECTION WITH THE DEPARTMENT OF TRANSPORTATION.

The book is full of helpful information to all members of transportation.

TO OBTAIN ANY OF THE BOOKS REVIEWED PLEASE FILL IN A BORROWER'S APPLICATION SLIP AND FORWARD TO THE LIBRARY

Weekly bulletins issued by the library call attention to the most important books and magazine articles. They are posted on the company bulletin boards

Financial Chronicle (from 1920 to date), Aera (from 112 to date), A.E.R.A. Proceedings (from 1905 to date), Moody's and Poor's Manuals (from 1911 to date), Public Utilities Reports, and reports of the Boston Transit Commission.

Such services as the Industrial Arts Index, Reader's Guide, Public Affairs Information Services and Commerce Clearing House are found to be of considerable value. The publications of the American Management Association are used quite extensively and are bound in Stapflex binders by series.

The library uses a slightly modified Dewey decimal classification system and Library of Congress subject headings are followed with variations. Library of Congress cards are used whenever possible.

The P.R.T. library is a member of the Special Libraries Association and of the Special Libraries Council. It has established contacts with information sources both locally and nationally and these are of tremendous value when material is desired which is not available in the library's own files.

TO PARTICIPATE IN EXHIBIT AT CLEVELAND CONVENTION

A library exhibit at the Cleveland convention of the A.E.R.A. has been arranged for by the Special Libraries Association. The exhibit will be in charge of Miss Alma C. Mitchill, librarian of the Public Service Corporation of New Jersey, who is chairman of the committee; Mrs. C. S. Faltermayer, librarian of the



The central files of the company are under the librarian's direction

There are more than 6,000 volumes in this library of the Philadelphia Rapid Transit Company

Here are the "Best Sellers" as indicated by the reading of P.R.T. employees during a recent four-month period.

- MOTOR VEHICLES AND THEIR ENGINES, by Edward Smith Fraser and Ralph B. Jones
- HOW TO GET AHEAD FINANCIALLY, by William A. Schnedler
- FINANCIAL INDEPENDENCE—HOW TO WIN IT, by Harvey A. Blodgett
- INCREASING PERSONAL EFFICIENCY, by Donald A. Laird
- MAKING OF PERSONALITY, by Bliss Carman
- ELECTRICAL RAILWAY PRACTICES (edited) by Henry H. Norris
- HANDBOOK OF SAFETY AND ACCIDENT PREVENTION, by Fred W. Lange
- PRACTICAL FOREMANSHIP, by Glenn Gardiner
- FOREMAN TRAINING, by Cyrus McCormick
- TECHNIQUE OF EXECUTIVE CONTROL, by Irwin H. Schell
- HOW TO MAKE AND USE GRAPHIC CHARTS, by Allan C. Haskell
- ELECTRIC RAILWAY TRANSPORTATION, by Henry W. Blake and Walter Jackson
- THE WAY OUT, by Edward A. Filene
- MAKING TRANSPORTATION PAY, (edited) by Henry H. Norris
- PRACTICAL RAILWAY MAINTENANCE, by Charles W. Weiss
- ELECTRIC POWER STATIONS, by L. W. W. Morrow

Philadelphia Rapid Transit Company, and Lewis A. Armistead, librarian of the Boston Elevated Railway.

Copies of a specially prepared booklet entitled "The Value of a Company Library" have been prepared by this committee and have been sent to various transportation companies. Copies will be available at the Cleveland convention or may be obtained from any of the committee members.

The purpose of the library exhibit will be to point out the type of service which a company library should be equipped to render and to demonstrate the relative ease with which such a department may be established and built up to be one of the most useful adjuncts of the organization. The point will be made that a small company has quite as much need for a library of its own as have the larger organizations, although, of course, it will not need to be as extensive as those of the metropolitan companies.

Bus Speed on Fifth Avenue

IN THE caption of the illustration appearing on page 486 of ELECTRIC RAILWAY JOURNAL for Sept. 17, it was stated that the speed of buses in the congested section of Fifth Avenue, New York City, in the rush hour was "about 5 m.p.h." The figure should have been "3 m.p.h."

Car Building and Shop Statistics

STATISTICS of the car manufacturing industry as issued by the United States Census Department over two years. Included in them are statistics of electric cars built and electric railway repair shops.

Table I shows the electric railway cars built in 1925, according to figures in the latest census. The data are divided into freight and passenger cars. The table includes not only those manufactured in car building plants but also in railway shops. The value of the 1,79 passenger cars built is given in the report as \$19,604,81, and that of the 89 freight and other cars built a \$453,479.

Table II gives statistics of the electric railway repair shops in the country for the three years mentioned in the table. These figures, however, do not include data for establishments with products under \$5,000 in value. The average number of wage earners during 1925 employed in the shops included in the table was 32,521; during 1923, 34,925, and during 1921, 33,279. The wages paid in these shops during 1925 were \$48,357,386.

Table III gives detailed statistics of the work performed in the shops listed in Table II.

TABLE I—ELECTRIC RAILWAY CARS BY CLASSES AND TYPES OF CONSTRUCTION, BUILT IN THE UNITED STATES IN 1925

	Passenger	Freight and Other	Total
All wood.....	11	5	1
Steel under-frame.....	424	43	46
Steel body with wood interior.....	955	..	95
All steel.....	408	41	44
Total.....	1,798	89	1,88

TABLE II—OUTPUT OF ELECTRIC RAILWAY REPAIR SHOPS IN THE UNITED STATES, 1925, 1923 AND 1921

	1925	1923	1921
Number of establishments.....	521	547	56
Wage earners (average number).....	32,521	34,925	33,27
Wages paid.....	\$48,357,386	\$49,225,583	\$47,775,23
Paid for contract work.....	\$121,883	\$110,949	\$105,86
Cost of materials*.....	\$29,738,148	\$31,981,650	\$33,560,13
Value of products.....	\$83,812,220	\$86,412,645	\$87,312,42
Value added by manufacture.....	\$54,074,072	\$54,430,995	\$53,752,29
Horsepower.....	70,479	62,370	1

*Includes also cost of fuel, electric power and shop supplies.

†Value of products less cost of material.

‡Not called for in schedule.

TABLE III—DETAILED STATISTICS OF WORK PERFORMED IN ELECTRIC RAILWAY REPAIR SHOPS IN THE UNITED STATES, 1925, 1923 AND 1921

	1925	1923	1921
Total value of work or products.....	\$83,812,220	\$86,412,645	\$87,312,426
Motive power and machinery departments, value.....	\$6,210,757	\$7,303,978	\$7,715,044
Electric locomotives built—			
Number.....	14	17	*
Value.....	\$216,078	\$198,775	*
Repairs to motors, etc., value.....	\$5,525,622	\$6,692,410	\$7,226,905
Work for other corporations, value.....	\$117,000	\$101,754	\$78,472
All other work or products, value.....	\$352,057	\$311,039	\$409,667
Car departments, value.....	\$73,177,906	\$75,070,768	\$75,529,519
Cars built, value.....	\$608,988	\$3,523,648	\$1,248,267
Passenger—			
Number.....	45	299	127
Value.....	\$574,664	\$3,287,447	\$822,398
Freight—			
Number.....	2	47	2
Value.....	\$9,633	\$103,738	\$7,200
Other—			
Number.....	6	37	48
Value.....	\$24,691	\$132,463	\$418,669
Repairs to cars of all kinds, value.....	\$65,392,764	\$65,420,854	\$69,131,546
Work for other corporations, value.....	\$1,216,247	\$1,486,380	\$1,249,497
All other work or products, value.....	\$5,959,907	\$4,639,886	\$3,900,209
Bridge and building departments (shop-work only), value.....	\$639,619	\$438,624	\$516,942
Repairs and renewals, value.....	\$608,317	\$434,590	\$420,442
All other work or products, value.....	\$31,302	\$4,034	\$96,497
All other work or products, not classified, value.....	\$3,783,938	\$3,599,275	\$3,550,921

*None reported.



Hamburg has an excellent elevated and subway system with suburban extensions. This is a standard six-car train

Rapid Transit

Car Design and Noise Reduction

in Europe

By Henry W. Blake

Senior Editor *Electric Railway Journal*

European rapid transit cars are developing long American lines. Considerable progress has been made in London in the direction of reducing the noise from car operation. European surface cars are noticeably more quiet in movement than those in the United States

CARS on the rapid transit lines in Paris, Berlin, Hamburg and London bear a closer resemblance to those used in America than do the street cars. The bodies generally are of steel throughout, with multiple side doors, and the arrangement of seats gives large standing capacity. Sometimes these seats are entirely longitudinal, sometimes there are two or more pairs of seats on each side of the aisle.

All of the lines mentioned use sliding doors that are closed while the train is in motion, but otherwise the door arrangements differ greatly. The latest cars in London, for the Hampstead Tube, have an arrangement similar to the Interborough system of door control. The Hampstead Tube is running two trains, one of six cars and one of seven cars, with only one guard per train and electric-pneumatic door control with bell signal interlocking with the doors. The guard is near the rear end of the train and can communicate with the motorman by a telephone with a loud speaker in the latter's cab. This will introduce automatic doors as rapidly as possible

because of the saving in labor, and it is expected that they will be on all tube cars within three years.

On the rapid transit lines in Paris, Berlin and Hamburg the general practice is for the passengers to open the doors at stations, but for a member of the train crew to close them, usually by electrically controlled air engines. The Berlin elevated and underground railway, however, is putting on three sample trains, each with multiple-unit door control of different types. One will be of the Paris type, one a modified National Pneumatic type, and one the Kunz-Knorr type. In the National Pneumatic type one door engine operates both halves of each door, the power being transmitted to each half independently so that the work is equally distributed on both sides of the engine crosshead. If the door is obstructed while being closed the engine automatically adjusts its pressures so that the door will not slam when the obstruction is removed. The engine also has an automatic cushioning feature which eliminates the possibility of the door slamming at any time. Although

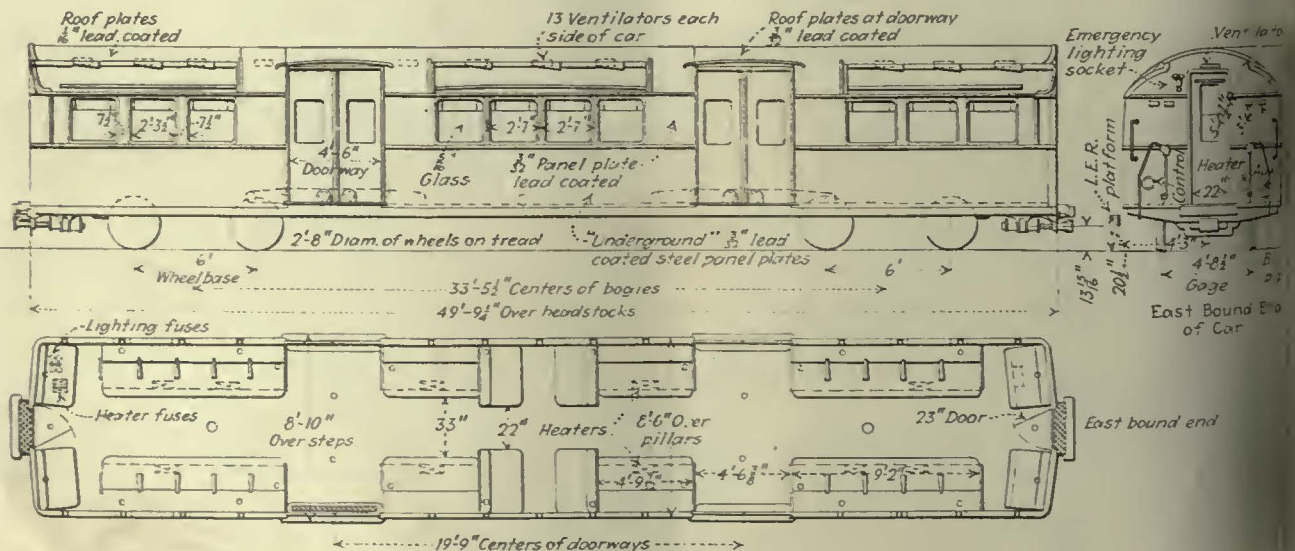


A "skirt" of ferrodo was built around the trucks of the London tube cars to confine the noise

Table Showing Weight of Cars on London Tube Railways in Tons of 2,240 Lb. Each

Type of Car	Total	Weight of Car, Tons (2,240 Lb.)							Seating Capacity
		Car Body	Motor End	Trailing End	Control End	Motor Truck	Trailer Truck	Trailer Truck	
Piccadilly standard (motor car)	27.62	14.03	19.45	8.17	.....	10.52	3.06	.....	42
Piccadilly converted (motor car)	29.59	16.00	19.67	9.91	.....	10.52	3.06	.....	32
Bakerloo standard (motor car)	28.91	15.32	19.16	9.74	.....	10.52	3.06	.....	43
Bakerloo Brush (motor car)	29.82	16.15	19.43	10.40	.....	10.52	3.15	.....	36
Bakerloo converted (motor car) (a)	27.60	14.01	19.25	8.35	.....	10.52	3.06	.....	34
Bakerloo joint stock (motor car)	32.49	17.43	21.95	10.54	.....	11.86	3.20	.....	36
Hampstead standard (motor car)	27.53	13.94	19.39	8.13	.....	10.52	3.06	.....	42
Hampstead Metro (1923) (motor car)	31.52	15.80	22.23	9.29	.....	12.29	3.43	.....	30
Hampstead Cammell (1923) (motor car)	31.99	16.29	22.31	9.67	.....	12.21	3.48	.....	30
Hampstead Metro (1924) (motor car)	32.65	16.96	23.10	9.55	.....	12.21	3.48	.....	30
Hampstead Cammell (1925) (motor car)	33.11	17.42	23.04	10.07	.....	12.21	3.48	.....	30
Piccadilly standard (trail car)	16.89	10.86	.....	.....	.....	.....	.....	3.01	52
Piccadilly Cammell (1919) (trail car)	18.25	12.52	.....	.....	.....	.....	.....	2.86	44
Bakerloo standard (trail car)	18.14	12.11	.....	.....	.....	.....	.....	3.01	57
Bakerloo joint stock (trail car)	21.20	14.80	.....	.....	.....	.....	.....	3.20	48
Hampstead standard (trail car)	16.63	10.61	.....	.....	.....	.....	.....	3.01	52
Hampstead Cammell (1923) (trail car)	18.45	11.69	.....	.....	.....	.....	.....	3.38	48
Hampstead B'ham (1923) (trail car)	17.75	11.15	.....	.....	.....	.....	.....	3.30	48
Hampstead B'ham (1924) (trail car)	18.25	11.65	.....	.....	.....	.....	.....	3.30	48
Hampstead Metro (1925) (trail car)	.....	.....	.....	.....	.....	.....	.....	.....	48
Piccadilly standard (control trailer)	17.35	11.32	.....	8.44	8.91	.....	3.01	3.01	52
Piccadilly Cammell (1920) (control trailer)	18.75	13.02	.....	9.14	9.61	.....	2.86	2.86	44
Bakerloo standard (control trailer)	18.60	12.57	.....	9.07	9.53	.....	3.01	3.01	52
Bakerloo joint stock (control trailer)	21.85	15.45	.....	10.54	11.31	.....	3.20	3.20	48
Hampstead standard (control trailer)	17.10	11.08	.....	8.32	8.78	.....	3.01	3.01	52
Hampstead Metro (1923) (control trailer)	18.92	12.21	.....	9.14	9.79	.....	3.38	3.34	44
Hampstead Cammell (1924) (control trailer)	19.54	12.74	.....	9.21	10.32	.....	3.42	3.38	44
Hampstead Metro (1925) (control trailer)	19.76	13.05	.....	9.38	10.38	.....	3.38	3.34	44

(a) Trail car converted to motor car.



The latest type of tube car has its main sash fixed to keep out noise and has an inswinging upper sash. The drawing shown is of a trail car

passengers are provided with handles inside and outside for opening the doors, they can do so only when the train guard has set his control switch to the door-unlocked position. This he does in normal operation only when the train has entered a station. Once the doors are open they remain until closed by the guard.

The operation of these inside and outside door handles are independent of each other because passengers at crowded stations were accustomed to hold the doors closed to prevent passengers on the platform from entering the car. While the handles are at the usual height, the latch is at the top of the door and is connected to the handles by levers. The purpose of this arrangement is to remove from the side of the door any sharp projection which might tear the clothing of passengers during entrance or exit.

In the Paris type, the doors are opened by the passengers but are closed by the motorman after a train leaves the station, through electrically controlled air cylinders. The doors are equipped with an ordinary latch, and when they come together with considerable force, under the action of this air cylinder, the latch drops into place through impact. On some of the new cars the doors are interlocked with the control so that the train will not start until all the doors are closed. On the older cars there is no interlock and passengers can open the doors from the inside or outside without any warning to the motorman.

TWO-FARE CARS IN LONDON AND PARIS

The tube or deep underground railways in London operate only one class of car, but on the shallow London underground lines, the Metropolitan and Metropolitan District, there are two classes. They are marked respectively first and third. The retention of these names is in line with the practice on most of the steam railroads in England, which originally operated three classes of cars—first, second and third, with different rates of fare. The second class was abolished on most of the steam railroads years ago, and the Metropolitan and Metro-



The Paris subway cars have three side doors and passengers are expected to enter by the center door. This is a first-class trailer. The class is indicated by the color (red) and also the numeral "1" on the side

politan District Railways, being old steam roads, have adhered to the "first" and "third" arrangement. The seats in the first-class cars are upholstered somewhat more luxuriously than those in the third class, and the outside is painted a different color so that the first-class cars can be recognized readily as they enter a station. On a six-car train on these two London lines the standard arrangement is to run two first-class and four third-class cars, the first-class cars being the second and fifth in the train, counting from either end. In a seven-car train there are three first-class cars, and they are placed in the second, fourth and sixth positions, counting from either end. The policy of the London company is to use moquette upholstery for all cars.

In Paris two classes of cars, first and second, are operated in all trains. They are of different exterior coloring so passengers can readily distinguish them when they arrive at a station and they are always in the same positions in the trains. The number of passengers paying first-class fares in Paris last year were 11.19 per cent of the total, though they contributed 16.29 per cent of the receipts. The standard trail car on the Paris Metropolitan line weighs 43,120 lb. and has a rated carrying capacity of 38 seated and 69 standing when used as first class and 38 seated and 72 standing when used as second class. An interior view of one of these cars is published. The motor car has slightly fewer seats because of the space occupied by the motorman's compartment. The



European rapid transit cars provide plenty of standing space. At left, Paris Metropolitan car; at right, latest type of London tube car



The London tubes are tubes in fact as well as in name. Larger diameters are used at junction and stations

proportion of higher-fare cars in a Paris train is always less than 50 and may be only 25.

In Hamburg and Berlin the rapid transit lines have only one class of fare. In Berlin it was the practice until recently to operate two classes of cars, but now those which formerly were the higher fare cars are used for smoking while the former lower fare cars are for non-smokers. Interior fittings are alike and all seats are being upholstered in imitation leather. Further particulars of these cars were given in last week's issue.

NOISE REDUCTION EXPERIMENTS IN LONDON

Of all the rapid transit lines abroad a greater study of the causes of noise reduction has been made by the London Underground Electric Railways than by any other. These studies were begun five or six years ago. Special attention was given to the conditions on the company's tube railways as, owing to their constricted section, only slightly larger than the car, it was thought the noise in them was somewhat greater than in the larger tunnels of the company, like the Metropolitan District Railway. The results of these early tests were published in this paper during 1924, particularly in the issues of Jan. 26, March 29 and Sept. 20.

Since the conclusions then reached were made public the company has had an experience of more than three years with various remedial measures. As some of the arrangements have been materially altered a review of the situation will be given, together with some particulars of the latest type of tube car, and comments on the relative amount of noise in operation of European surface cars as compared with those in the United States.

It is believed by the management of the London Underground Electric Railways that the principal noise produced by its trains comes from the motors, gears and wheels. The company's first efforts were to reduce the volume of noise. Later efforts, which have been directed to keeping the noise out of the cars, may be divided into two parts, namely (1) to retain the noise in the place where it is generated and (2) to keep it from entering the car.

To gain the first mentioned object, i.e., to retain the noise at the point where it is generated, a sort of skirt

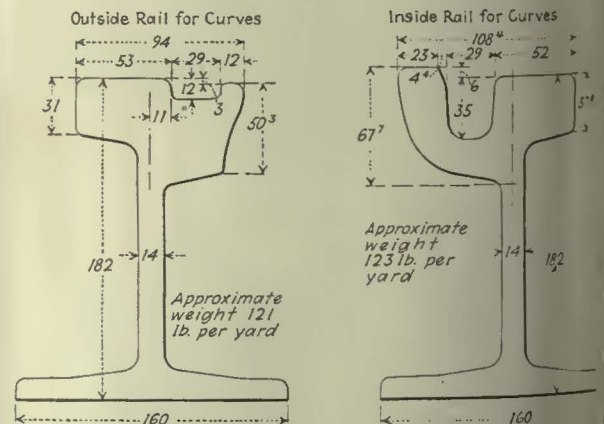
was built around the truck. This skirt consisted of a screen made of ferrodo or composition board, carried near the live rail as possible. While this gave fair results, it was looked upon as being somewhat of a risk. It was also inconvenient when an examination had to be made of the equipment. Moreover, it was found that much of the noise from beneath the car could be eliminated by better truck design. Hence, special attention has been given in the later types of trucks to see that they have fewer parts and better springs. A decision in regard to springs was reached after a movie picture had been taken of a truck while it was running at high speed. This picture showed that the truck proceeded by leaps and bounds. The more resilient springs in the present trucks are designed to reduce the length of these leaps and the reduction in parts to reduce the number of them which would rattle. It was found that even in the open a truck would be noisy if the springs were stiff:

A great deal of noise in trucks was found to come from the gears, and some from the motor brushes. The remedy here, in the opinion of the engineers of the company, is better design and maintenance, particularly better maintenance.

The efforts made to reduce noise in car bodies were similar to those made with trucks, namely (1) to reduce the noise, (2) to keep it where it was generated and to prevent it from entering the inside of the car.

In damping the noises on the car frame use was made of air-cell or sheet asbestos. This was installed to a thickness of $\frac{3}{8}$ to $\frac{1}{2}$ in. between the inside and the outside car panels. Some of it was also put under the floor and some in the roof. In the form in which it was used, however, it was found to be hydroscopic, i.e., it absorbed moisture and tended to rust the metal parts against which it was placed.

An effort was then made to cover these parts, particularly the inside of the outer panel, with a film of lead to prevent rusting, but finally the use of sheet asbestos was abandoned for open mesh cotton scrim. It is believed that the use of this material, well cemented on the non-producing or reflecting parts like the sash, panels, floor and ceiling, will stop their tendency to drum. This material also helps to hold the paint. It is attached with marine glue. In the flooring the scrim is placed under the wooden flooring and the wood is treated for waterproofing. In the latest cars the ceilings are non-metallic so that it is not considered necessary to use this material there.



The Paris surface lines use a shallow groove for the outside of all curves up to 90-ft. radius. It reduces friction and noise from cars passing around curves

All cars built since 1923 up to last June, 444 in number have been constructed in this way. The same protective measures have also been adopted for 100 cars of the District Railway, owned by the same company. In the cars the scrim is attached to the side sheathing. The company has also tried strips of asbestos fabric boid in oil, so as not to be frictional, and attached to the foundation and hand brake rigging and a few other places where there might be a chatter.

CUTTING OFF ENTRANCE OF NOISE INTO CAR

So much for noise reduction. The other recourse in the company's policy is to prevent the noise generated from getting into the car. If the passengers could be sealed within a car they would probably hear very little noise. This is impracticable. The next best plan is to reduce the amount of noise that gets in at the windows and elsewhere.

Originally the windows were arranged to drop, but it was found that passengers would keep them open unnecessarily. Now the sash is fixed, but above the main sash is a narrow sash, the width of the lower window, and hinged so as to swing inward. This sash is normally kept open and is found sufficient to give air as well as to keep out the rain when the car is outside the tunnel, but it is not large enough to admit as much noise as if the entire window was open. Another step to keep out the noise has been to make the window areas smaller and the glass in them thicker. A change was also made in the ventilators by arranging their passageways to be tortuous.

The company has constructed instruments for measuring noise, but while these instruments determine the volume of the noise produced, they cannot measure the irritating effect of the noise on the passengers, the degree of which, it is believed, depends not only on the volume, but to a considerable extent on the musical pitch of the noise. Thus, a note which compels persons to raise their voices while talking with others is tiresome, whereas a noise which does not require this would probably be less irksome to most persons. It has been found that in small tunnels there is more vibration and consequently more noise than in larger tunnels, like the District tunnel.

LITTLE NOISE FROM SURFACE CAR OPERATION

Outside of these experiments in London the European electric railways do not seem to have given any special attention to noise reduction. Nevertheless, the surface cars in Europe are noticeably less noisy in operation than those in the United States. This fact was noticed and commented on by the 1924 Committee on Foreign Operation of the American Electric Railway Association, whose report was published in the *ELECTRIC RAILWAY JOURNAL* for Sept. 20, 1924.

Among the reasons given by that committee for this condition are better maintenance of cars and track, slower speed of cars, use of wood in car construction, extended employment of fixed window sash and lower weight of cars. To these might be added the more common use in Europe of manganese flange-bearing special work, and in some cities the use of manganese flange-bearing rails on outside of all curves up to 90 ft. This is the practice in Paris. Where such rails are not used a great deal of attention is usually given to greasing the sides of the rails in curves to prevent squealing and friction. This is the practice in Berlin.

Chicago's Wells Street Terminal Opened

WORK on the new \$250,000 Wells Street terminal of the Chicago Rapid Transit Company was completed in time so that the station was officially opened on Aug. 1. It is now serving the thousands of west side and west suburban residents who daily enter and leave the Chicago Loop at that point. The new structure also provides a modern and spacious Loop terminal for the Chicago, Aurora & Elgin Railroad, serving the Fox River valley and other points west of Chicago.

On the first floor of the terminal is the main lobby, containing the Chicago, Aurora & Elgin Railroad ticket offices and baggage checking room, twenty telephone booths, rest rooms, a restaurant and a soda fountain



Entrance to station platforms and trains is from the third floor waiting room in the new Wells Street terminal of the Chicago Rapid Transit Company

concession. The second and third floors are "L" shaped, being constructed around the Chicago Rapid Transit Lines elevated structure. The north wing of the second floor includes a trainmen's room, with connection to the platform. Half of the east wing provides offices for the Chicago, Aurora & Elgin Railroad, while the other half contains a women's rest room and men's smoking room. On the third floor, which is reached either by elevator or stairway from the first floor, is a large waiting room. This room, located at platform level, gives access to all trains. Direct connections with the Rapid Transit Lines are made at the Quincy and Wells station of the Loop, which is reached by a glass-enclosed bridge extending over the sidewalk.

Walls and columns of the new station are of pink Tennessee art marble, with bronze capitals and old ivory cornices and ceiling. The floors are of terrazzo. Ticket booths are finished in bronze. A feature of the station is a system of electric amplifiers through which trains are announced throughout all parts of the building. The front of the building is designed in terra cotta and the rear of the structure adjacent to the tracks and platforms is of old English mission brick. Architect A. U. Gerber designed the new terminal.



Cincinnati's business district as it is today

Co-ordination Essential for Rapid Transit in Cincinnati

ARTICLE II

LAST week's article on the report of the Beeler Organization on rapid transit facilities for Cincinnati showed that the unfinished line should be completed with minor modifications, but that it should be extended to Fountain Square on the downtown end and to Oakley on the outer end. Following this discussion the report continues to show how the traffic was estimated and the financial results calculated. The following article, largely an abstract of the report, completes the presentation of the plan recommended.

A number of interesting methods were used to determine the probable rapid transit traffic and the loading at the various stations. Based on the riding on the street railway and the local bus lines, 5,045,379 rides would be made annually directly on the rapid transit line.

This, the second and concluding article on the Beeler report to the city of Cincinnati, shows the traffic that can be developed by the rapid transit line with various plans for operation. Only if the line is co-ordinated with the existing transportation can a profit be obtained

18,868,442 with one transfer a 11,532,230 with two transfers making a total of 35,446,051 annual riders. The daily loading shown in the traffic charts.

Standard gage track, laid with 100-lb. rail on treated ties in ballast, was recommended, with third rail at 600 volts d.c. power supply. A complete signaling system was considered essential including interlocking switches and signal towers

The car recommended is 49 ft. 11 in. long and 10 ft. wide. The locations of the doors are such as to facilitate rapid interchange of passengers. The car should weigh about 26 tons. It will seat 50 or 52 passengers and have a comfortable loading capacity of 162 and a maximum capacity of 200. Each car will be equipped with two 100-hp. motors. The manufacturers state that

Recommendations for Cincinnati Transit Summarized

1. Merge all street railway and bus lines with rapid transit system.
2. Extend existing subway to Fountain Square.
3. Extend outer end to Oakley.
4. Construct street car line between Madisonville, Mariemont and Oakley station.
4. Relocate Ludlow station in vicinity of Knowlton's Corner.
6. Construct and operate nine stations only on rapid transit line, as designated.
7. Provide prepayment areas for transfer between surface and rapid transit at five stations designated.
8. Adhere to recommendations in report as to schedules, running time and headways to secure fast, frequent and regular service.
9. Secure C., H. & D. Railway as tenant to serve College Hill territory.
10. Follow the changes recommended for street car and bus lines to co-ordinate with rapid transit and obtain minimum fare.

his motor capacity is capable of hauling a maximum load of 40 tons at a maximum speed of 45 m.p.h. with an accelerating rate of 1½ m.p.h.p.s. under the conditions pertaining to this line.

The choice of car for Cincinnati lies between the single car with automatic couplers and the two-car articulated unit, since the density of traffic does not justify employing units of more than two-car capacity. The advantage of the articulated unit is chiefly that a given carrying capacity can be secured at lower first cost and the cost of operation is about 9 per cent less than that of equal capacity provided by single units. Its disadvantage is that the articulated unit, having twice the capacity of a single car unit, cannot be adjusted to fit traffic demands so closely as the single car. Because of the greater flexibility and the comparatively low requirements it was recommended that single cars operated in trains be used, although further developments and greater experience with the articulated unit between now and the time the cars will be needed in Cincinnati may justify its adoption at that time.

DETERMINING SERVICE CHARACTERISTICS

Considerable attention was given to determining probable schedules. Intermediate running times were calculated between stations, with sufficient allowance for stops and for coasting to insure efficient operation. For the entire distance of 11.86 miles between Fountain Square and Oakley the total time estimated is 28 minutes. This includes 20-second stops at all stations except Fountain Square, giving an average speed between terminals of 1¼ m.p.h. A 30-second stop is allowed at Fountain Square and a layover of 6½ minutes at Oakley to take care of any unforeseen delays, afford time for changing cars, etc. On this basis each train will complete a round trip in 63 minutes.

A three-minute headway was decided on as meeting the demands for frequency of service. This headway would be maintained all day, except between midnight and 1 a.m. and between 5 and 6 a.m. No service is provided between 1 a.m. and 5 a.m., although it might later be found desirable to keep one train operating on a 60-minute headway during the owl hours. Saturday service is assumed to be the same as that for other weekdays but it necessarily would have to be distributed somewhat differently.

The same number of trips will be operated on Sundays as on weekdays, it is assumed that single cars will be operated until noon and two-car units for the remainder of the day. With the proposed schedule it was found that a total of 7,445,684 car-miles will be operated annually, of which 6.3 per cent will be operated with one car, 56.9 per cent with two-car units, 13.2 per cent with three-car units and 23.6 per cent with four-car



Eastern water level entrance to the Basin, the central district of Cincinnati

trains. The total car-hours corresponding to this would be 330,886 annually, allowing for pull-outs and pull-ins.

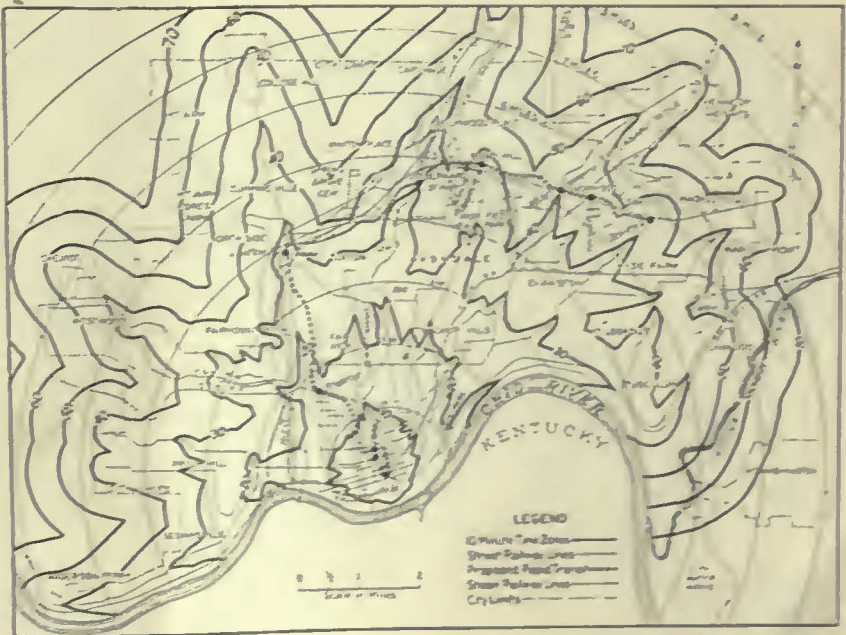
The number of train-hours shows that 390 hours 9 minutes would be operated on weekdays and 388 hours 9 minutes on Sundays and holidays, making a total of

TABLE I—SURFACE EQUIPMENT ON LINES AFFECTED BY RAPID TRANSIT PLAN

	Present	Proposed	Reduction
Street railway cars:			
A. M. rush period.....	290	260	30
Base.....	126	114	12
P. M. Rush period.....	512	250	32
Street railway buses:			
A. M. rush.....	49	38	
Base.....	23	26	
Base.....	51	38	
Independent buses:			
A. M. rush.....	84	0 (a)	95 (b)
Base.....	79	0 (a)	81 (b)
P. M. rush.....	84	0 (a)	97 (b)
Total cars and buses:			
A. M. rush.....	423	298	125
Base.....	233	140	99
P. M. rush.....	447	318	129

(a) None shown because merged with unified system.
(b) Includes reduction in street railway buses.

142,286 train-hours annually. This figure represents the number of hours that a motorman and a conductor will actually be on duty on a train. Adding time for reporting and for pull-outs and pull-ins made by the regular



Time zones from Fountain Square using present street car lines



Old canal bed at Race Street bridge, before construction of rapid transit line began

crews brings this up to 148,686 hours. This is practically the pay hours for motormen and conductors required to operate the system because with no extra trainmen required for rush-hour trips, this service being cared for by operating more cars in a train without added men, there should be little time to be paid for which does not represent active duty.

The maximum car requirements occur in the evening rush hours, when 21 four-car trains, or 84 cars, will be in service. As cars will be out of service at certain periods for repairing and general overhauling purposes it has been estimated that 90 single-car units should be purchased.

TIME SAVING ESSENTIAL

Since time saving is one of the essential benefits of rapid transit, three time maps were prepared to show the time from Fountain Square to all other parts of the city. Similar information is given in Table II. A very appreciable saving will be made in the time to reach all rapid transit stations as compared with existing facilities. Where a transfer to surface transportation lines must be

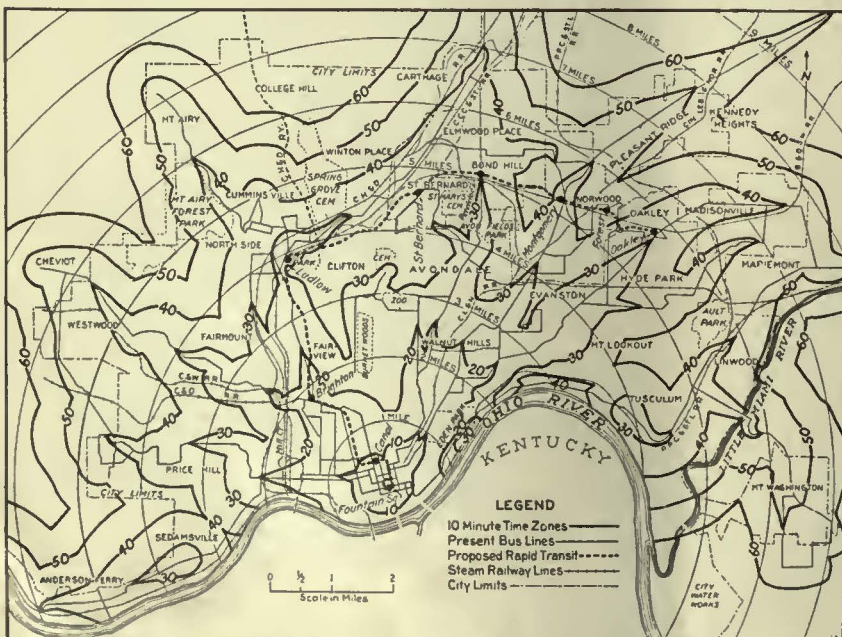
made, the saving varies. The time for a trip by street car or bus now is little different until a point between the 20 and 30-minute zones is reached. Beyond the 30-minute zone the bus shows an appreciable saving if topographical conditions are favorable, though it should be remembered that the buses accomplish most of the time saving by running express and not accommodating local business.

The value of the time saved to riders who may use the rapid transit line is perhaps intangible. On an average each rider will save approximately 11.7 minutes each trip. This means that the rapid transit will save its patrons about 7,400,000 hours annually which they may use for work or rest or play. If time is worth 10 cents an hour the saving would mean some \$3,700,000 per year to the citizens of Cincinnati.

Operation of the rapid transit system will be possible only provided all local transportation facilities are unified into one comprehensive system, and if there is a reticence by the unified system of all riders now using cars and buses. Practically all lines, both street car and bus, will be affected. On some lines it will mean a slight change in load only, brought about by transfer of riders to the new high-speed line. In territory served directly by the rapid transit line 26 out of 40 car lines will be affected. Six of the nine company bus lines and twelve of the sixteen independent bus lines are likewise affected.

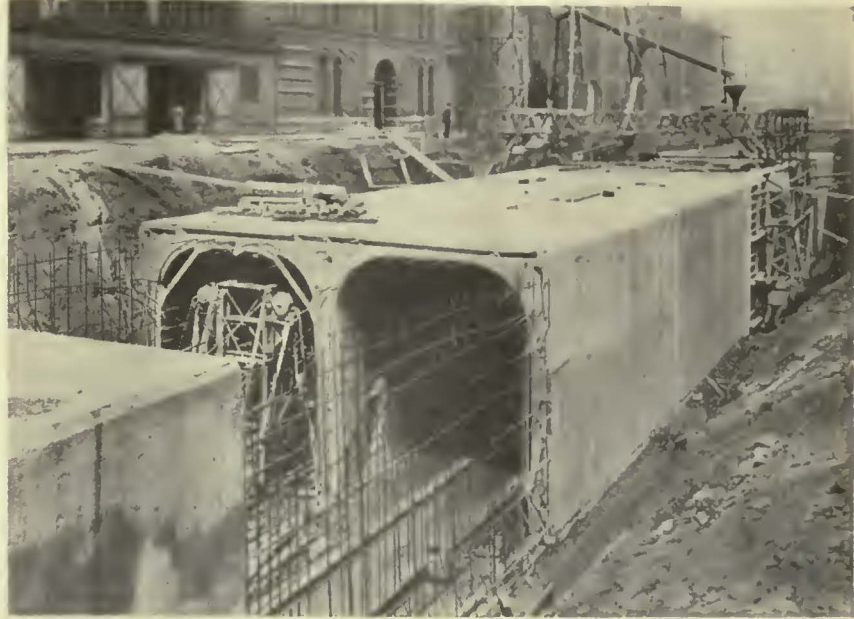
An analysis of the present service was made to determine the demand for transportation under the changed conditions. Three-fourths of the independent bus lines are now operating in what will be rapid transit territory. With the advent of rapid transit the field for these bus lines will be filled by it, as patrons will find it quicker than other means. An analysis of the business shows that 49.1 per cent are potential riders on the new line. The losses sustained by the bus lines will vary from 10 per cent to 100 per cent. With half of the bus business going to the rapid transit, operation of independent bus lines will no longer be justified or sufficiently remunerative to be continued. Some of the routes could be shortened and in that way continue to compete with the railway lines for the short-haul business. This would result either in wasteful duplication of service or drastic curtailment, either of which would be undesirable. Even if the independents could continue to operate, most of them would be of little value to the community served because they could not give the patrons the privilege of transferring to the rapid transit line, for at the outer ends of the lines their present traffic would find quicker service in the rapid transit line, while patrons along the inner sections of these lines would find little or no saving in time over street cars.

The present lines that will be affected by rapid transit and the pro-



Time zones from Fountain Square using present bus lines

posed rearrangement are shown in two maps on page 596. Three car routes should be discontinued and two new ones added. Seven present car routes should be revised to fit in with the new conditions. Three railway bus routes should be discontinued. Two independent bus routes should be continued but modified, and five new bus routes should be established to feed into the rapid transit stations. Two other bus routes should be revised. Eleven independent bus routes should be discontinued entirely and the passengers cared for by new lines feeding into the rapid transit stations and by the present street railway lines. Two suburban bus lines should be shortened, their city terminals to be at rapid transit stations. The report devotes considerable space to the details of the various routes, and indicates the exact changes that should be made in each. A summary of the cars and buses required under the present and proposed arrangements is shown in Table I. There will be a maximum reduction of 32 street cars and 97 buses, while the rapid transit system will



Central Parkway near Odeon Street. This shows a typical section of the subway line as constructed in the canal bed

that the amortization charge would be approximately \$14,000 annually. Approximately 3.19 miles of new track must be built

TABLE II—COMPARATIVE RUNNING TIME AND DISTANCES VIA STREET CAR, MOTOR BUS AND RAPID TRANSIT LINE

Station	Running Time, Via				Distance, Miles		
	Street Car Min.	Motor Coach Min.	Rapid Transit Min.	Sec.	Street Car	Motor Coach	Rapid Transit
Britton.....	15	15	6	00	2.15	2.44	2.22
Luow.....	28	25	11	40	4.75	5.15	4.80
St. Bernard.....	30	..	17	21	5.15	..	7.33
Papek.....	36	30	20	05	5.80	5.80	8.56
Montgomery.....	40	36	23	31	6.15	5.94	10.11
Fort.....	43	40	25	19	6.70	6.50	10.65
Osly.....	42	35	28	00	6.62	6.55	11.86

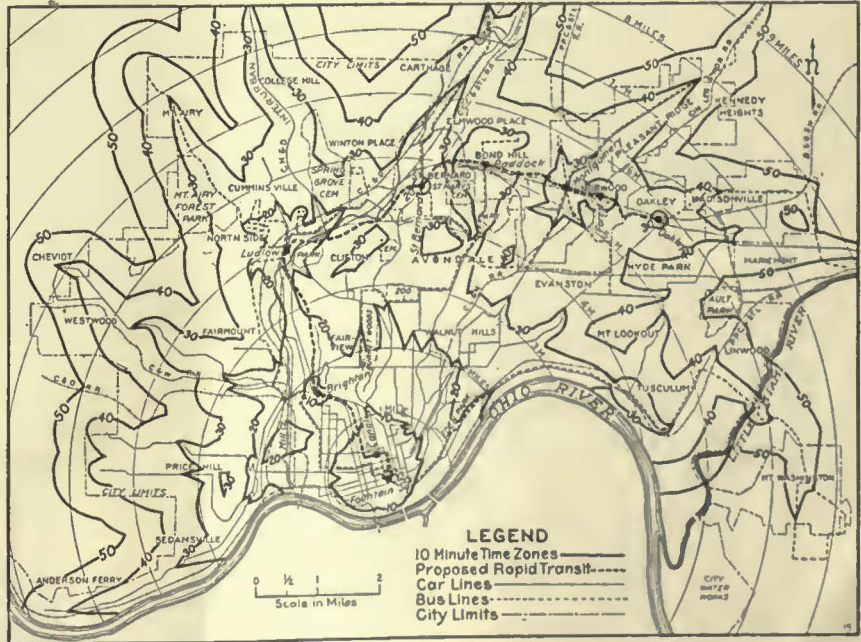
TABLE III—SAVINGS IN OPERATING STREET RAILWAYS ALONE

	Annual Costs
Saving in surface railway operation if unified system can divert traffic to rapid transit line.....	\$312,250
Saving in bus operation.....	120,012
Totalsaving.....	\$432,262
Amortization of abandoned track.....	\$14,000
Renewal and retirement of new track.....	10,000
Deduct total added charges.....	24,000
Net annual saving.....	\$408,262

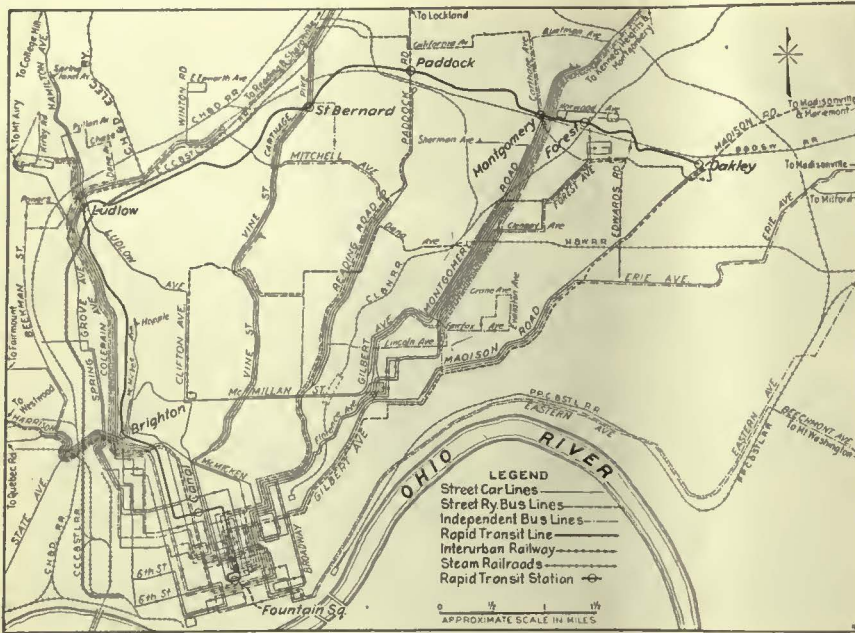
require a maximum of 84 cars, none of which will be on the street surface or in any way interfere with or be interfered with by street traffic. The result of this should be a marked improvement in street traffic conditions in which the balance of street railway system, its patterns and the public generally will participate. The saving in car and bus miles, and the additional rapid transit car-miles, will be considerable. There will be a direct saving of 1,300,000 street car-miles and nearly 2,000,000 bus-miles with the addition of approximately 7,500,000 rapid transit miles. Some 300 fewer round trips by street cars into and out of the Basin, as well as some 1,300 fewer motor coach trips, will be made daily.

at a cost of \$200,000. Assuming a 20-year life the annual amount required for renewal and retirement would be \$10,000.

Under the rearrangement, operation will be discontinued over 11.37 miles of surface track. The cost of elimination of this track would be a minimum of about \$166,000 possibly twice that amount, which would have to be expended immediately. The value of the track must not be amortized during the life of the franchise. It is estimated



Time zones from Fountain Square using rapid transit and co-ordinated surface transportation facilities



Present street car and bus lines affected by rapid transit line

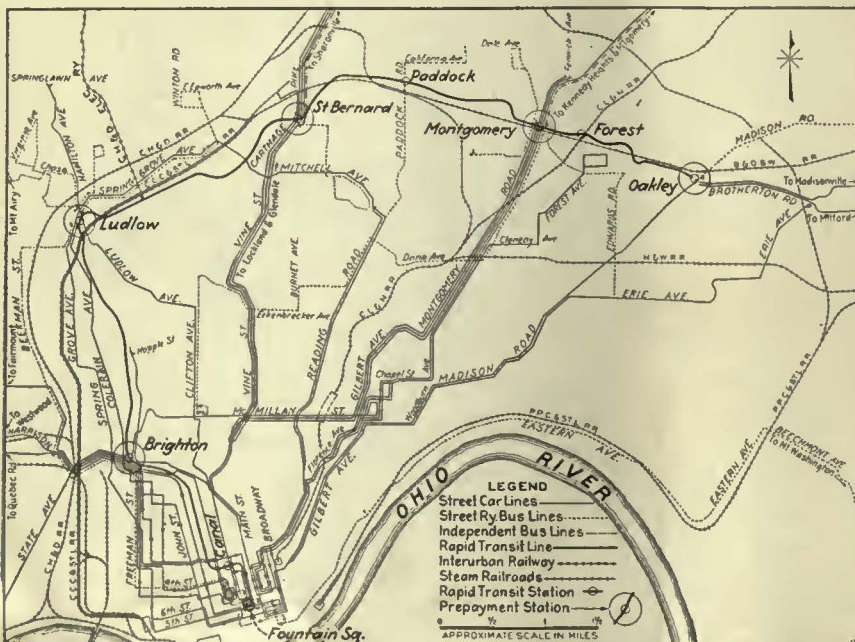
Analyses of the savings to the street railway alone in surface operation according to the proposed plan show the summarized annual figures as given in Table III.

The net annual saving is applicable toward the payment of the operating expenses of the rapid transit line.

TABLE IV—ANNUAL OPERATING COST OF RAPID TRANSIT LINE ALONE

Maintenance of way and structures.....	\$83,500
Maintenance of equipment.....	162,000
Power.....	247,500
Trainmen's wages.....	200,714
Other transportation.....	123,000
Injuries and damages.....	55,843
General and miscellaneous.....	40,000
Depreciation reserve.....	149,945
Total.....	\$1,062,504

With the unified system and a discontinuance of excess competitive service 5,311,433 less miles would be operated annually by the independent buses, and this would be an



Proposed routing of street car and bus lines in conjunction with rapid transit line

additional economic saving to the community under the service-at-cost plan.

With the characteristics of the proposed rapid transit line determined, the estimate of the cost of operation given in Table IV was made.

This estimate includes operating the rapid transit line, including train, station and signal service and a sufficient allowance to cover depreciation on all depreciable property. Taxes and fixed charges are not included.

The total estimated cost of completing the rapid transit line, including the extension to Fountain Square, the equipment, real estate and construction for prepayment stations, necessary track changes in connection with the prepayment areas, construction of surface feeder track, together with interest, insurance and contingencies during the construction period, is \$10,606,960. Details are given in Table V on page 597.

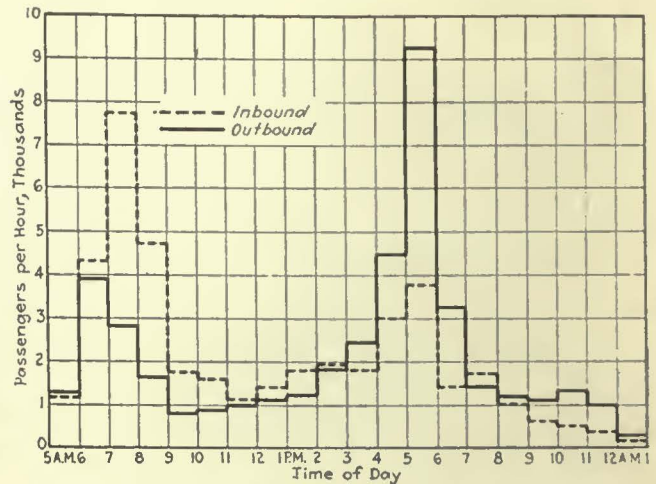
Under any feasible plan of operation a rapid transit line cannot be made to pay from the start; neither can the true value of such an enterprise be determined solely from the financial results. To operate the rapid transit line independently would scarcely pay its operating expenses, to say nothing of interest and sinking fund charges. The number of passengers to be carried under present conditions would be but about 6,060,000 annually. The plan for unification of all the local facilities, street cars and buses, into one comprehensive system is the only practicable solution. Were this plan effective now some 38,000,000 riders would use the rapid transit line to advantage as they would save time in making at least a portion of the trip via the rapid transit line. These results can be expected only by adopting the unification plan in full. The service must be fast, frequent and regular.

Strong pressure will undoubtedly be brought to bear for the operation of the rapid transit stations which it is specified should be eliminated. Requests for other stations undoubtedly will be made. To make stops at the four stations eliminated would mean an increase of 4½ minutes in the running time from Fountain Square to Oakley, reducing the schedule speed between terminals from 25.4 to 21.9 m.p.h. Three extra trains would be added, the extra equipment alone costing \$270,000. The time lost would destroy the usefulness of the line beyond Norwood and make the extension to Oakley impracticable. In addition there would be a loss of about 4,500,000 passengers annually who would not be attracted to the line.

Were it possible to make the rapid transit plan effective immediately, but with the independent buses continuing in operation, the operation of the unified system would result in a deficit of \$845,723 annually, if financed

y 50-year serial bonds. On the other hand, could the independent bus lines be merged with the unified system immediately \$839,800 additional net revenue would accrue, exclusive of charges on the old rapid transit bonds. If it were possible to secure the new capital requirement under 50-year sinking fund bonds instead of 50-year serial bonds, the deficit of \$5,923 would be transformed into a balance of \$12,361.

The rapid transit line, however, cannot be put in service before 1930. In the meanwhile, the most important question to be answered is what will result from discontinuing independent bus operation. There is a large investment in the 84 buses of the several independent lines affected by rapid transit, which must be paid for by somebody, and instead of loading up the subway and surface systems with the cost of buying them might be sounder economics to allow them to be operated for a reasonable time with a definite understanding between the city and the operators that the old equipment must not be replaced when it is worn out. On the basis of completely merging them in 1932, the estimate of Table VI on page 598 was prepared. It will be noted that while the revenue in 1930 is greater than now, operating expenses, taxes and fixed charges will have increased, the latter from \$2,171,184 to \$2,527,935, this change being due to the increase in the capital charges in the new financing of the street railway and restoring on



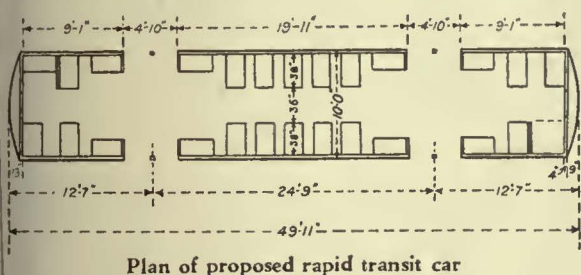
Hourly load demand at point of maximum traffic, rapid transit line

partial operation, a net deficit of \$246,111 will result for the year 1930. In the future, as traffic expands more will be added to plant and equipment account, which will still further increase these charges.

As operations continue, more and more business will gravitate to the rapid transit line. The year 1932 at least should witness a complete cessation of independent bus operations. In that year there should be a balance of \$136,704 from operation, which would be applicable to payment on the principal of the rapid transit debt. During 1933 a balance of \$243,824 is shown, and this increases at the rate of approximately \$120,000 per annum.

ALTERNATE PLANS CONSIDERED

Several alternative plans were considered. These include the operation of the rapid transit line independently and also with its own system of bus feeders, but without any connection with the street railways. Operation of the present subway without the extensions proposed was figured for each of the test combinations. In all six plans were prepared. The comparative results for 1930 are given in Table VII, page 598. Plan No. 1

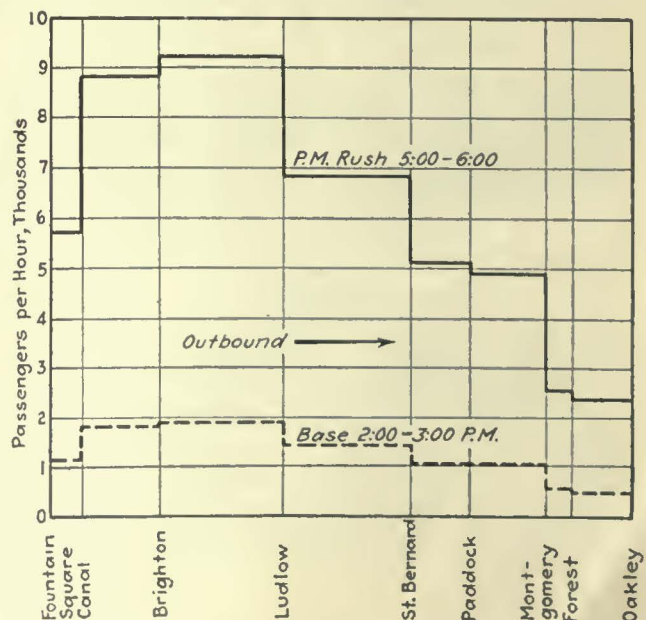


Plan of proposed rapid transit car

Nov. 1, 1928, the dividend rate on the capital stock which for three years was reduced from 6 to 5 per cent under the terms of the ordinance. Because of these factors and on account of the independent buses being yet in

TABLE V—COST OF COMPLETING RAPID TRANSIT PLAN

1. Construction work, including station, of downtown extension from Central Parkway and Walnut to Fountain Square.	\$2,600,000
2. Completing construction work exclusive of track and equipment between Central Parkway and Walnut and Oakley. This includes constructing stations at St. Bernard, Paddock Road, Montgomery Road, Forest Avenue and Madison Road, and completing and finishing stations exclusive of equipment at Race Street, Brighton and Ludlow.	720,000
3. Lighting system for stations and tunnels.	125,000
4. Complete equipment of all stations including heating system.	275,000
5. Complete fire protection for tunnels and stations.	90,000
6. Ventilating system for tunnels and stations.	50,000
7. Encasing right-of-way.	10,000
8. Construction of track with 100-lb. rail, creosoted ties and the necessary special work including cross-overs, yard and shop tracks.	600,000
9. Construction of third rail and bonding of track and third rail.	330,000
10. Complete signal system including interlock track switches, signal towers and automatic block signals.	300,000
11. Distribution systems.	285,000
12. Expense necessary to provide for car storage, yards, shop facilities, etc., on property of the Cincinnati Street Railway at Mitchell Avenue.	100,000
13. Passenger car equipment.	2,025,000
14. Service and work car equipment.	100,000
15. Real estate for prepayment stations.	750,000
16. Construction of prepayment stations including fixtures and clock changes.	500,000
17. Locating line at Knowlton's Corner including construction of roadway and station, right-of-way and damages.	716,000
18. Construction of surface line connection between Madisonville and Oakley.	125,000
19. Construction of surface track additions and changes recommended at Ivorydale and on Freeman Avenue.	75,000
Total.	\$9,976,000
20. Interest, insurance and contingencies during construction at 6 per cent.	830,960
Grand total.	\$10,606,960



Maximum load demands in afternoon rush outbound, rapid transit line. The inbound morning loads are quite similar

TABLE VI—ESTIMATED RESULTS OF FUTURE OPERATIONS UNIFIED SYSTEM SURFACE AND RAPID TRANSIT

	1930 (b)	1931 (c)	1932	1933	1934	1935
Revenue						
Combined surface and rapid transit.....	\$9,544,185	\$10,297,425	\$10,844,000	\$11,178,000	\$11,511,000	\$11,845,000
Operating expenses.....	6,666,000	7,160,000	7,480,000	7,666,000	7,827,000	7,995,000
Taxes.....	808,500	826,600	843,100	856,100	870,100	884,100
Net after taxes.....	2,069,685	2,310,825	2,520,900	2,661,900	2,813,900	2,965,900
Fixed charges						
Street railway.....	1,865,000	1,897,000	1,929,000	1,961,000	1,993,000	2,025,000
Net for rapid transit.....	204,685	413,825	591,900	700,900	820,900	940,900
Fixed charges						
Rapid transit (a).....	662,935	670,858	678,003	685,202	692,186	698,932
Net after all charges (a).....	(d)458,250	()257,033	()86,103	15,683	128,714	241,968
Deduct payment on principal of rapid transit bonds.....	212,139	217,473	222,807	228,141	233,475	238,809
Net after all charges exclusive of money applied to purchase of rapid transit system (a).....	(d)246,111	()39,560	136,704	243,824	362,189	480,777

(a) Includes interest and payment on principal under 50-year serial bonds to cover new capital necessary to complete rapid transit plan, but does not include fixed charges on old rapid transit investment of \$6,100,000. (b) Assumed that independent buses will carry 7,500,000 passengers during year. (c) Assumed that independent buses will carry 2,500,000 passengers during year. (d) Deficit.

is the one adopted, and which has been discussed in detail in the report.

While requiring the greatest amount to complete, Plan No. 1, the one recommended, is in reality the cheapest. Its net deficit is less and it furnishes the most comprehensive and economical solution of the city's transit problem. Plan No. 2, without the extensions, but with unified operation, would show nearly twice the net deficit. If considering only the amount of money to complete the rapid transit line, Plan 3, which calls for independent operation without the extensions, requires only \$4,386,330 additional capital. The cheapness is only apparent, as its operating expenses alone would exceed the revenue by 27 per cent. The net deficit would be even greater than that of Plan No. 1, which would carry ten times as many riders.

The deficits under plans No. 4 and No. 6 indicate clearly that if the rapid transit were to be operated as an independent line it would not support its own system of feeder lines to bring patrons to it under the present rate of car fare. A comparison of plans No. 1 and No. 2 with the others shows that the construction of the rapid transit extension to Fountain Square is well justified from a purely financial standpoint. It should also be remembered that the plan carrying most passengers will tend to improve its earning ability faster. The plan recommended, No. 1, will serve 66 per cent more people than any of the remaining five plans.

Since the Cincinnati Street Railway is operating under a service-at-cost franchise the people of the community have a direct interest in any matter influencing the business. For this reason the estimated results of operation of the various plans were carried out to determine the effect of each on the operations of the street railway. Any of the plans for independent operation of the sub-

way would throw additional burdens on the street railway.

Some attention is given in the report to methods of financing the rapid transit project other than the issue by the city of bonds under its present financing arrangement. It is pointed out that property values in uptown Manhattan increased more than 100 per cent in seven years, due largely to the installation of a rapid transit line. More recent lines have caused even greater increases. For this reason attention is called to the plan recommended in Pittsburgh and approved at a referendum by the voters of Detroit.

Briefly, the plan approved in Detroit divides the cost for financing the project into (a) the cost of what is termed permanent way, which in general includes construction cost, and (b) the cost of equipping the systems, which, as the name implied, includes the cost of all equipment necessary to operate the system. The cost of the latter is the car rider's proportion of the total cost, and is collected by charging a fare that will pay the cost of operating the service and of fixed charges on the equipment. The cost of the former, i. e., construction cost, is apportioned between the benefited property owners and the general taxpayer, the former paying 75 per cent and the latter 25 per cent. As worked out in Detroit, the benefited property owners pay 51 per cent of the total cost, the car riders 32 per cent and the general taxpayer 17 per cent. Since in Cincinnati charges on the old rapid transit bonds are all being paid for by the general taxpayer, it is believed to be only fair and just to all concerned that at least a part of the new capital requirements be secured by a direct assessment on the benefited property owners, and it is suggested that careful consideration be given this method as a means of partially financing the rapid transit line.

TABLE VII—COMPARATIVE RESULTS—VARIOUS RAPID TRANSIT PLANS—ESTIMATES FOR THE FIRST YEAR OF OPERATION—1930

	Unified Operations		Independent Operations			
	Fountain Square to Oakley Plan No. 1	Central Pkwy Walnut to Oakley Plan No. 2	Rapid Transit No Feeders Plan No. 3	Rapid Transit Bus Feeders Plan No. 4	Fountain Square to Rapid Transit Plan No. 5	Rapid Transit Bus Feeder Plan No. 6
Total revenue passengers.....	110,350,000	105,490,000	3,636,227	8,355,043	6,060,379	13,925,072
Using rapid transit.....	37,400,000	22,460,000	3,636,227	8,355,043	6,060,379	13,925,072
Cost of completing plan.....	\$10,606,960	\$6,946,930	\$4,386,330	\$6,350,180	\$7,582,523	\$9,708,580
Revenue from operation.....	9,544,185	9,121,155	354,630	756,830	569,330	1,239,400
Operating expenses.....	6,666,000	6,572,860	449,967	962,666	495,058	1,068,701
Taxes.....	808,500	803,424	4,256	9,082	6,832	14,873
Net after taxes.....	2,069,685	1,744,871	(d)99,593	(d)214,918	67,440	155,824
Fixed charges						
Street railway.....	1,865,000	1,865,000				
Net for rapid transit.....	204,685	(d)120,129	(d)99,593	(d)214,918	67,440	155,824
Fixed charges						
Rapid transit (a).....	662,935	434,183	274,146	396,886	473,908	606,786
Net after all charges (a).....	(d)458,250	(d)554,312	(d)373,739	(d)611,804	(d)406,468	(d)450,962
Deduct payment on principal of rapid transit bonds.....	212,139	138,939	87,727	127,004	151,650	194,172
Net after all charges exclusive of money applied to purchase of rapid transit system (a).....	(d)246,111	(d)415,375	(d)286,012	(d)484,800	(d)254,818	(d)256,790

(a) Includes interest and payment on principal under 50-year serial bonds to cover new capital necessary to complete rapid transit plan, but does not include fixed charges on old rapid transit investment of \$6,100,000. (d) Deficit.



Exterior view of new light-weight city-type cars which were placed in service by Worcester, Mass., Railway Aug. 9. These are almost identical with the Springfield cars

Springfield and Worcester Companies Introduce Latest Light-Weight City-Type Car

MARKED by special ceremonies in which civic and business organizations participated, an official demonstration trip was made in Springfield, Mass., Sept. 16, on two of the new one-man, two-man, double-end, light-weight, double-truck city-type cars which were part of the order of 50 cars placed by the Springfield Street Railway with the Wason Manufacturing Company last spring, as announced in the JOURNAL for March 26. A similar demonstration for the first of the 50 units ordered at the same time for service on the Worcester Consolidated Street Railway, at Worcester, Mass., was made on Aug. 9. As previously

noted in the JOURNAL, the Osgood-Bradley Car Company furnished these units.

In Springfield C. V. Wood, president; W. L. Harwood, engineer of power and equipment; H. M. Flanders, general manager, and other officers of the company had as their guests the Mayor of Springfield and other city authorities, presidents of business clubs and representatives of business organizations. They boarded the cars at the starting point, Vernon and Broadway, shortly after 10 a.m. A trip was made on some of the railway lines, including a portion of the system where an extensive piece of track reconstruction work rapidly nearing com-



Spacious interior of the Worcester cars which reveals some of the passenger comforts



Interior view of one of the Springfield units, showing roomy and attractive features

pletion. President Wood and some of the members of the party made a brief inspection of the work. From this point the cars returned to the center of the city, where the picture reproduced in this article was taken. The trip occupied approximately an hour and a half. There was every indication of the enjoyment and appreciation of the party of this progressive addition to Springfield transportation facilities. An hour after the trip one of the new cars was in operation on one of the principal streets in Springfield.

Twelve of the new cars had been delivered by Sept. 16. It is understood eighteen will have been turned over by the car builders by the end of last week and that the rate of delivery will be five a week until completion of the order. The car company is up to its schedule on delivery.

WORCESTER ALSO STAGED CELEBRATION

Prior to putting the first cars into service in Worcester the company took 30 invited guests, representing heads of city departments, the Mayor and Councilmen and business men of the city, for an hour's ride over the several routes. After the trip every one was enthusiastic and commented favorably on the riding qualities of the new car and the attention that the company and car builders had given to the minute details to make the units indicative of the attitude hoped for from the riding public. It is hoped that before the early part of October the entire order of 50 will have been completed. This, together with plans for rehabilitation of 100 of the latest type cars of the present fleet, will give Worcester nearly enough cars in good up-to-date condition to fill all wants, including rush-hour needs.

With the exception of certain details of equipment, which may be seen from the accompanying specification, the units for Worcester and Springfield are alike. The

outward appearance of the cars is strikingly attractive. They are constructed along graceful and serviceable lines, and afford the public high visibility, a decidedly favorable feature brought out by the color scheme. Truck and platform supports are black, the body is light yellow, the belt rail red. Above the belt and body posts is cream, over windows and vestibule light yellow, and the roof is red. The cars are of the low-level type, easy to board, and have rear treadle-door exits. They have commodious aisles and comfortable upholstered leather seats.

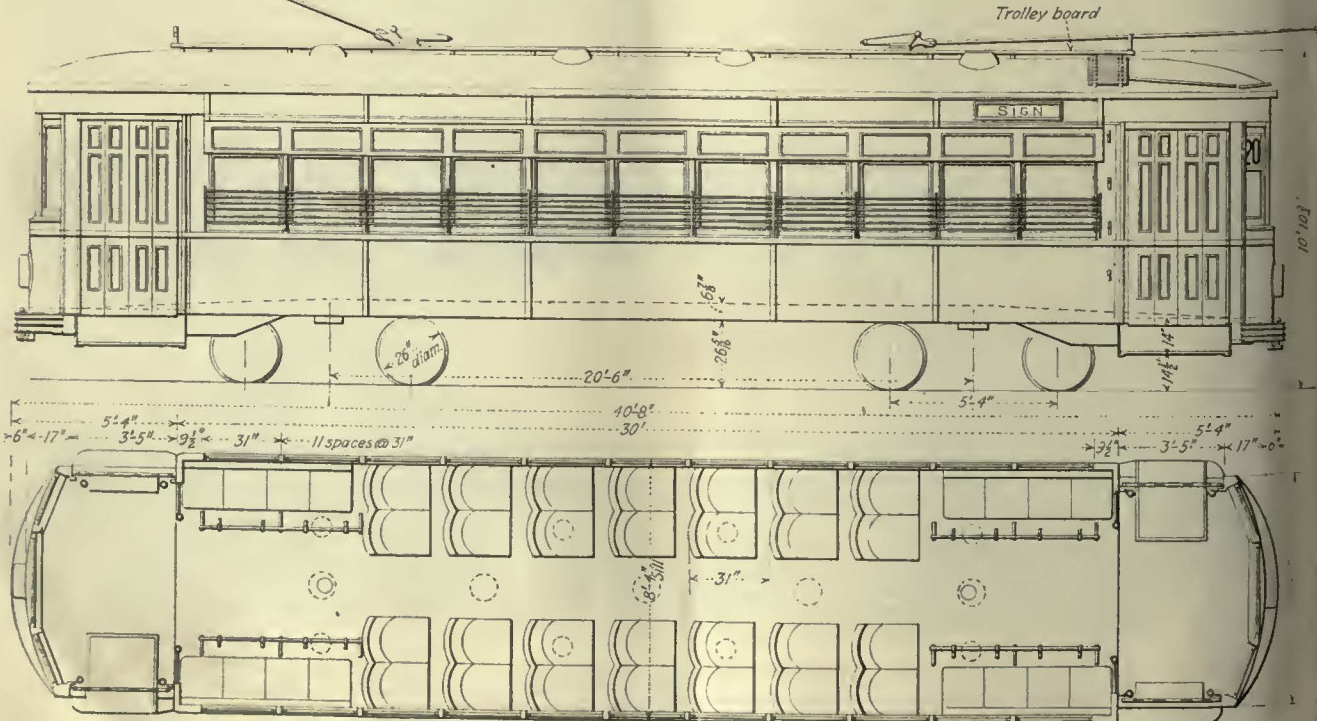
At first glance of the interior, from the standpoint of the public, an impression is given of roominess, abundant light, both artificial and daylight, and good ventilating equipment. There are four Druid glass 94-watt dome lights placed along the center line of the arch roof. Metal sash windows that can be raised so as not to obstruct the passenger's vision are one of the notable features. Ventilators are arranged on each side of the center of the roof, and the flooring is of linoleum. The units have 44 seats each, including sixteen longitudinal, four on each side at the front and back of the car. The motorman's seat in the rear can be reversed to give an additional place for a patron in the rush hour. The electric heaters under car seats are thermostatically controlled, and the interior trim of the units is African mahogany. There are no handles on seat backs, nor are there curtains on the car body windows. Rico retrieving hand straps are installed over the longitudinal seats at the ends of the car for standees. All piping for door engines and switch boxes is concealed.

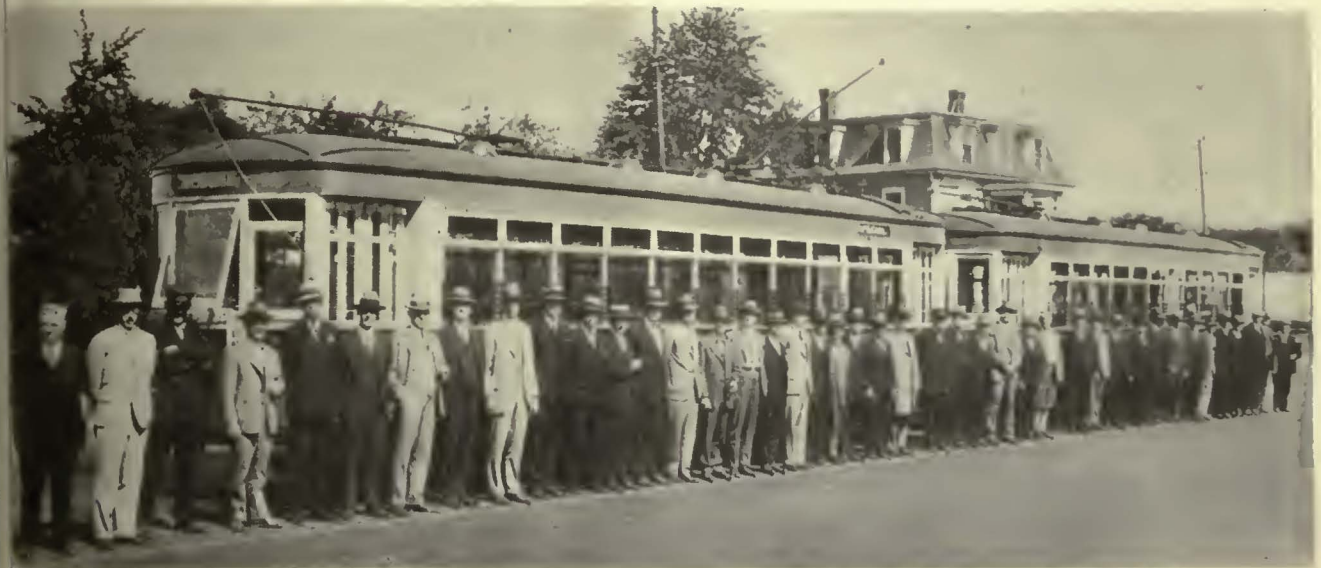
NEW FEATURES IN DOOR CONTROL

Both units are equipped with treadle control doors and stationary steps; windows in front of the motorman are arranged to open out, and the top of the equipment cabinet on the motorman's platform is of aluminum. The four doors are of the two-panel folding type. Those at the right-hand front and left-hand rear corners are pneumatically controlled by engineer's valves operating light-weight door engines. Door engines are in flush-type panel boxes mounted over the top of the door. The

Seating plan and general dimensions of the Springfield, Mass., fifty units

The 50 units for Worcester are similar with the exception of a few major differences, among which are truck wheelbase, 5 ft. 6 in.; width over all, 8 ft. 5 1/2 in.; height of rail to trolley base, 11 ft. 2 in.





Official party on Springfield demonstration trip with two of the new light-weight city-type cars in the background. These cars are part of a 50-car order placed with the Wason Manufacturing Company

her two doors, although under the direct supervision of the motorman, are treadle-operated by means of an electro-pneumatic controlling and interlocking arrangement. In operation it is as follows: When used as a one-man car the right-hand rear door is hooked up so it can be treadle-operated after the brakes have been applied and the car operator has pressed the button on the top of the equipment cabinet. This is a new and unique feature of the treadle-operated doors. Pressing the button accomplishes two things—it draws the attention of the car operator to the rear door and it closes a circuit that interlocks the brakes with the rear door so that car cannot be moved until after the doors are closed. The seating of the brake interlocks in turn causes pneumatic switches to operate and to energize the treadle mechanism and hold the circuit on the brake interlock magnet. This circuit is not broken until the doors are

closed, when the brakes can be released by means of the engineer's valve.

When the car becomes a two-man car, there is a separate switch or door control handle that permits the conductor to open the treadle door from the rear platform. Likewise, by the insertion of a key from the street, the door can be opened from outside and the rear entrance used for loading purposes by a street fare collector. The same thing can be done when operating pay-leave on outbound trips.

The company has issued an illustrated leaflet for distribution to the public in which the operation is described in a simple manner. The method of display followed for destination signs is worthy of mention. At the car end a side sign is cut into the letter-board over the window and the 10-in. route number sign displayed in the right-hand vestibule window presents

DETAIL SPECIFICATIONS OF THE SPRINGFIELD AND WORCESTER CARS

	Worcester	Springfield	Worcester	Springfield
Type of unit.....	One-man, two-man, city, double-end, double truck	Same	Consolidated Car Heater	Railway Utility Co.
Number of seats.....	44	Same	Crouse-Hinds Type 5	C. H. Ohio Brass
Order of car body.....	Osgood-Bradley Car Co.	Wason Mfg. Co.	D.F.	
Date of order.....	April, 1927	Same	Never split	Same
Date of delivery.....	August, 1927	Same	African mahogany	Same
Weight car body.....	35,300 lb.	36,000 lb.	Plain	Same
Center centers.....	20 ft. 6 in.	Same	Symington	Brill
Length over all.....	40 ft. 8 in.	Same	Elec. Serv. Sup. No. 23409	Same
Length over body post.....	30 ft.	Same	4 G. E. No. 265 inside hung	4 Westinghouse inside hung
Tire wheelbase.....	5 ft. 6 in.	5 ft. 4 in.	Yellow cream, red band	Same
Width over all.....	8 ft. 5 1/4 in.	8 ft. 6 in.	International	None
Height of rail to trolley base.....	11 ft. 1/4 in.	10 ft. 10 1/4 in.	Wood and canvas	Same
Window post spacing.....	31 ft.	Same	Safety Car Devices Co.	Same
Body.....	Semi-steel	Same	Rex Curtain Supply Co.	Same
Roof.....	Arch	Same	Hale-Kilburn No. 392A	Brill
Door.....	End	Same	31 in.	Same
Brake.....	G. E.	Westinghouse full safety	Brown leather	Same
Shafture bearing.....	Plain	Plain Westinghouse	American Brake Co., Type J	Westinghouse piston traveler
Control.....	Carnegie	Std. Steel Wks. A. E. R. A.	Stationary	Same
Signal system.....	Faraday	Same	Kass	Same
Compressor.....	G.E.C.P. 27 B	D.E. H16 Westinghouse	Ohio Brass	Same
Controls.....	Flexible	Same	Trolley catchers.....	U. S. No. 20 Nuttall
Control.....	G. E. K-35 KK	Westinghouse	Trolley base.....	Nuttall Roller Bearing No. 20
Controllers.....	Metropolitan type	Same	Trolley wheels.....	U. S. Nuttall Westinghouse
Destination signs.....	Hunter Keystone	Same	Trucks.....	Osgood-Bradley, Type O.B. C 45-66-J
Door mechanism.....	National Pneumatic	Same	Ventilators.....	Osgood-Bradley Car Co. exhaust
Doors.....	Folding	Same	Wheel type.....	Standard Steel Works 26-in.
Energy saving devices.....	Artbur power saving recorder	Same	Wheel guards.....	Wood
Equipment boxes.....	Johnson Type JT	Cleveland Lock Corp.	Special devices.....	Variable hand brake device, Folberth windshield wipers, door treadles
Floor covering.....	Linoleum	Same		
Gears and pinions.....	G. E. Grade M heat-treated	Nuttall		
Glass.....	Crystal	U. S. Gov. spec. 123		
High brakes.....	Peacock staffless	Same		
High strap.....	Rico No. 12	Same		

some interesting design refinements. Kranz safety device switches are included in the cabinet in the top of the motorman's platform.

On the Springfield cars the main motor resistance in the power circuit for operating the motors is the new type of ribbon wound on edge, cutting down the weight about three-quarters and space for locating it about one-half. Safety switches for the auxiliary control circuits, as lighting, heating, compressor control and buzzer circuits, have been installed, and are an innovation in Springfield cars. It is believed this is the first time a switch of this type has ever been put on any street car. It was made especially for these cars and is a development of a switch used on the experimental car that was conceived by President Wood and designed by W. L. Harwood, as stated in the JOURNAL of March 26.

Some of the major differences between the Springfield and the Worcester cars are that the former are equipped with Westinghouse motors, control, and air brakes, whereas the Worcester units have General Electric; trucks for Springfield are Brill and for Worcester Osgood-Bradley. For the purpose of comparison and to show the difference between the two units, the specifications released by the Osgood-Bradley company and the Wason company respectively are tabulated herewith.

The Readers' Forum

Experience with One-Man Cars Satisfactory

GENERAL ENGINEERING & MANAGEMENT CORPORATION

NEW YORK CITY, Sept. 22, 1927.

To the Editor:

We note on page 445 of your Sept. 10 issue an article reciting the objections that the Los Angeles Railway has to operating its system with one-man cars. This article is of particular interest to us in view of a story sent you recently reciting the experience of the Scranton Railway.

The interest charges mentioned in the Los Angeles story probably include interest on the conversion of the entire equipment, plus charges for installation of signals, etc., and is considered reasonable.

However, several points mentioned in objection to the proposed operation are of interest to the entire street railway industry, as they may, if not rebutted, work a hardship on many companies who may be confronted with them by commissions or governing bodies before which they appear in an effort to reduce their operating expenses by one-man operation.

It is not our intention to criticise any street railway company, as we know there are often peculiarities of operation of which the outsider has no knowledge, but we wish to go on record from our experience, as follows:

Cost of breaking in men has been negligible with us. We have usually figured an average of five days.

If only 5 per cent of the present force cannot qualify as one-man operators it still leaves a tremendous balance in favor of one-man operation.

The additional supervisory force may be needed in a large railway, but this has not been the case in any of the companies under our management.

The difficulty of the operator being obliged to stop and pull switches and plug them and then remove the plugs is not an operating condition with which we are familiar. Electric switches at important points relieve the operator of such an adventure, and in outlying sections spring switches can usually be relied upon.

The additional hazard at railroad crossings is one which we emphatically deny. The hazard is not so great as that encountered by the operator of a bus.

The delays in case of accidents are present owing to time lost getting names of witnesses, but blockades can be more expeditiously handled with one man in control.

The increased possibility of hold-ups may be serious in some sections of the country, but the probability of a hold-up man assaulting a conductor has not been one of our major problems.

The city ordinances in regard to fenders is probably a serious handicap. We have found, however, that most city officials are glad to co-operate with us and permit the use of an improved type of life guard, and about 450 railway companies are now using them.

The speed of operation, in our experience, has not been influenced by the number of men on the car. Traffic conditions have everywhere affected speeds where cars must travel through the heavily congested parts of a town, and there often is a decrease in speed when the one-man car is in no wise to blame. The Wisconsin Railroad Commission, after extended observation in the Milwaukee Electric Railway & Light Company case, states:

We are convinced that the difference in actual running time between one-man cars and two-man cars is negligible and that the substitution of one-man cars for two-man cars will have no appreciable effect upon street traffic.

We are satisfied that the one-man cars can be operated as safely as two-man cars. We have discussed this feature many times in other decisions and will not enlarge upon it here.

Similar decisions have been rendered by various other commissions.

C. G. KEEN,
Railway Engineer.

A Correction on Paris Wages

CORRECTION should be made in the table of wages paid motormen and conductors on the Paris Surface Lines, as published on page 354 of the issue of this paper for Aug. 27. The correct figures follow:

Period	Monthly Wages in France	American Equivalent—Monthly	Yearly
First year.....	757	\$30. 28	\$363. 31
Next 1½ years.....	787	31. 48	377. 7
Next three years.....	807	32. 28	387. 3
Next three years.....	827	33. 08	396. 9
Next three years.....	857	34. 28	411. 31
Next three years.....	887	35. 48	425. 7

Note—Basis of exchange 1 franc = 4 cents.

Indiana Freight Business Expanding

THAT freight service on electric lines in Indiana is increasing is shown in the business being done by the Indiana Service Corporation at Fort Wayne. The depot is handling nearly 15,000 shipments a month. One month recently 997 cars were handled, 202 of which were through-bound cars. This depot is operated 24 hours a day except Sunday, with 32 men employed. The new station is located on High Street and was constructed at an approximate cost of \$400,000.

Maintenance Methods *and* Devices

Protecting Field Coil Leads from Iron Dust

CONSIDERABLE trouble was experienced at one time with short circuits in the field coils of the ventilated motors on some of the lines of the London Underground Electric Railway. The trouble occurred because iron dust from the brake shoes, rails and wheels would be drawn into the motors by the ventilating fans and would collect on the coils, where it was naturally very destructive to their insulation, particularly of the leads. Shellac was tried to overcome the difficulty, but did not prove very satisfactory as it would crack and flake, then the dust would get in. Short circuits of the kind described did not occur on the lines operating in the open or with the non-ventilated motors in tunnel service, but with the subway ventilated motors it presented a real problem.

tors, where Empire cloth alone is enough protection.

The advantage of this insulating paste or putty is that it can go into service in a plastic condition.

Cleansing Is Thorough in European Repair Shops

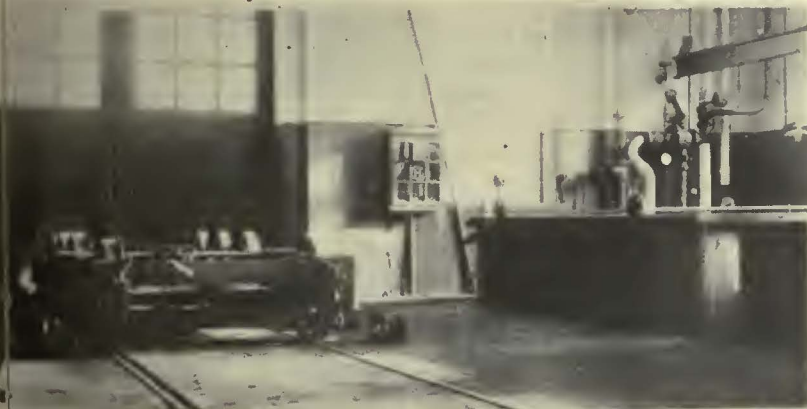
VERY thorough cleansing which truck and other parts receive when a car goes through overhauling at one of the repair shops is a feature of the repair shop practice of most of the European electric railways. It is not uncommon in this cleaning process to let these parts "pickle" in vats of soda or other chemical solutions or to be steamed to remove all paint, grease and other dirt before the car is put into service again.

Two of the accompanying illustrations show the tanks used for this purpose in the shops of the Hamburg

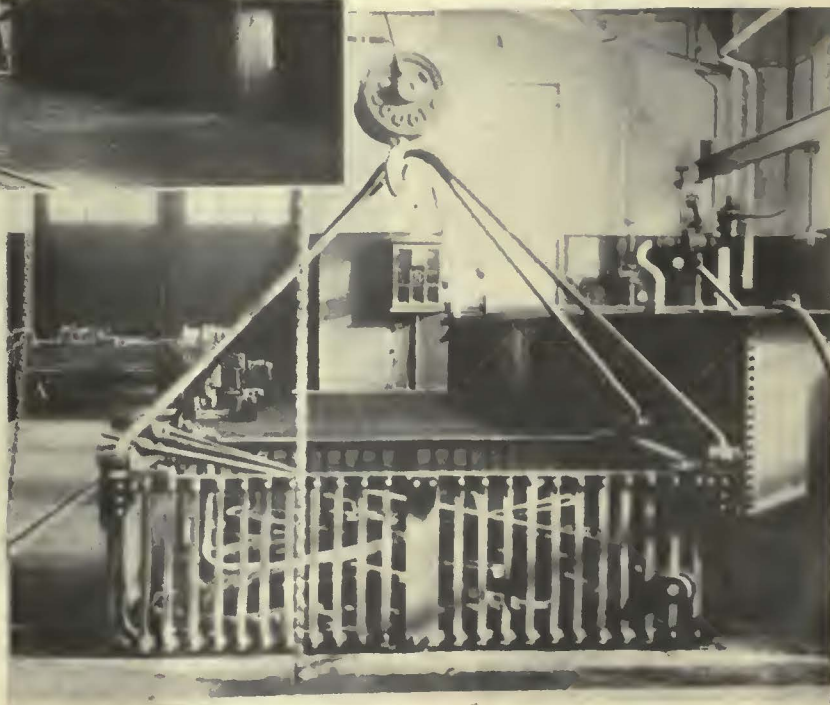
Elevated Railway, Hamburg, Germany. The illustration at the left shows one of these tanks and the end of another. Each tank is large enough to take in an entire truck frame. These tanks are filled with a solution, kept warm by means of steam pipes, of which soda is the principal ingredient. In the lower part of this tank is a grating on which the truck frame rests, while the cleansing process is going on. This grating is given a rocking motion to agitate the liquid and so free the truck from grease and dirt more easily. The truck frames are left in this tank for a sufficient length of time so that they come out quite clean.

Small parts are put in the metal basket shown in the second illustration and are cleansed in the same way. Similar practice is followed in Berlin and other cities, and various cleansing fluids for this purpose are sold by dealers in chemicals. In Dortmund, Germany, where such a chemical cleaning tank is used, a pipe connection has been fitted near the bottom of the tank by which compressed air can be admitted to agitate the liquid.

In the repair shops of the London General Omnibus Company, prefer-



Some of these pickling tanks are large enough to accommodate a complete side frame



All metal parts of trucks receive a soda bath during overhauling at Hamburg

Finally, the method was devised of protecting the exposed parts, like the field leads, with a paste made up of two parts of asbestos powder and one part of mica powder, which are mixed to the consistency of a paste. The use of gray enamel Megalac. This enamel is the material used in the Underground shops for coating the armatures. The paste is mixed with these three ingredients until it is about the consistency and appearance of putty. It is then held in by Empire cloth. Then tape is wound around the joint. This practice is not necessary with unventilated mo-



In London steaming is used for cleaning many of the large car and bus parts in the overhaul shop

ence is given to steaming. The third illustration shows the system used. The steam chamber shown is large enough to hold a pair of bus side frames. In this particular view a workman is welding the side frame before it enters its Turkish bath. Incidentally this process, like most others in the Chiswick repair shops of the London General Omnibus Company, is carried out on a moving belt conveyor. The motion is a continuous though a slow motion, and while the part, in this instance a bus frame, is on this conveyor the various necessary repairs are made by the workmen, who remain in the same place. The welding and steaming, shown in this particular illustration, are but two of the processes which this bus frame undergoes while it is on this moving platform.

Field Coils Tested Under Pressure

USE is made in the shops of the Portland Electric Power Company of an apparatus to test field coils for short and open circuits while they are subjected to a pressure similar to that which exists when the coil is bolted in position in the shell. An air cylinder and shoe compress the field coil while it is being subjected to the customary alternating current electrical test in an open transformer. The simplicity with which the apparatus operates is the outstanding feature.

The frame which carries the air cylinder is built up from the ground

A bolt in the axle caps of the motor is worth two in the bushes along the roadbed.

and supports, in addition to the air cylinder, the base and laminated section of the transformer. The top of the transformer core is hinged so that it may be raised by air pressure to permit the coil under test being slipped over the vertical leg. Also, connected to the piston of the cylinder is the ram, cut away to slip over the core of the transformer and exert

pressure on the coil that is under test.

In operation, the coil is slipped over the exposed leg of the transformer core. Then air is admitted to the cylinder, lowering the head to the coil and at the same time bringing the top portion of the core in contact with the leg. This closes the magnetic circuit. With the coil under a pressure of approximately 2,000 lb., the primary coil of the transformer is connected to the a.c. circuit. The current is indicated on an ammeter. Shorts or open circuits in the coil under test result in abnormal or sub-normal rating on the ammeter.



Testing field coils under pressure in Portland, Ore.

Apparatus used in Portland, Ore., to test field coils under service conditions. The air cylinder applies a pressure of approximately 2,000 lb. to the coil while it is in the magnetic field of an alternating cur-

rent transformer. Variation in the current flowing through the primary coil of the transformer indicates shorts or open circuit in the coil under test. At left, open position. At right, closed position.

New Equipment Available

Electrically Driven Arbor Saw

WHEELS and belts are eliminated in a new type direct-driven arbor saw placed on the market by the Gallmeyer & Livingstone Company, Grand Rapids, Mich. The machine has a 30-in.x3-in. table, machined and fitted with a removable throat plate to allow for the use of a dado and grooving saws, etc. The table tilts up to 45 deg. and may be locked in any desired setting.

A dial with graduations and a pointer indicates the position of the table. A stop facilitates a quick and accurate return to the horizontal position. A cross-cut gage can be used on either side of the saw, two slots in



Portable direct-driven arbor saw

table being arranged for this purpose. The gage can be set at any angle and clamped rigidly. Holes are provided for mounting an auxiliary wood face piece when such action is desirable.

The ripping gage is machined on both sides and can also be used on either side of the saw. Tightening of the lever head screw locks the ripping gage in position and lines it up automatically with the saw. A guard to protect the operator is placed over the saw and can be set for any thickness of stock. A splitter guard also

keeps the stock from pinching the saw. The saw may be raised and lowered from flush with the table to high enough to cut 2½-in. stock.

The pedestal is a heavy one-piece casting fitted with two rollers at the back and two stationary feet at the front to give a firm foundation when in operation. When the handle is pulled forward in a position for moving the machine a cam lifts the feet from the floor automatically and brings the weight of the front of the machine on to a third roller, which is carried on a swivel bearing moving with the handle. This makes the machine portable.

Correct pressure on a brush holder spring hammer will avoid many a flashy and costly repair.

Extension for Spray Painting

FOR painting cars, ceilings and high, inaccessible places an extension for a spray painting gun has been developed by the Alexander Milburn Company, Baltimore, Md. It grips the standard Milburn gun, which while in use can be swiveled to any desired angle. The section is 8 ft. long and with the operator's reach will spray the paint to an approximate height of 14 ft. Other lengths of extensions will be furnished if desired.

For painting within arms' length the gun is immediately detachable and can be used. A slight pull on the operating handle of the extension operates both the air and the levers on the spray gun simultaneously. The paint under pressure flows to the atomizing chamber, is expanded and driven into the pores of the surface to be covered.

The extension unit consists of the extension and standard type gun, pressure feed tank with the regulators, etc., 25 ft. of air hose, 25 ft. of paint hose and hose with connections to the

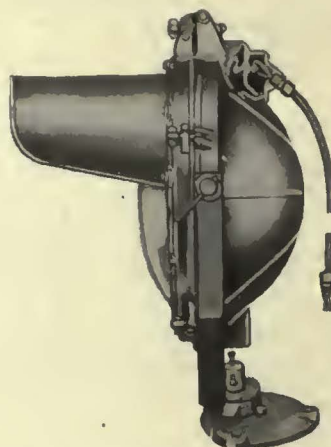


Extension arm applied to paint spraying gun

compressor or pressure container. The extension is constructed ruggedly of strong tubing and has the gun and angle control close to the bottom for easy manipulation. It is light in weight, well balanced and can be handled easily.

Increased Efficiency in Floodlight Projector

BY IMPROVED design greater efficiency is obtained in a parabolic shaped reflector of 24 in. diameter just announced by the Crouse-Hines Company, Syracuse, N. Y. The reflector intercepts and redirects into the beam a greater portion of the lamp rays than has heretofore been obtained.



Type LCE-24 floodlight projector with hood recommended for railway yard lighting

The case is made of special cast aluminum alloy to resist corrosive gases. It is practically airtight, the large radiating surface making the usual ventilators unnecessary. This feature prevents dust and dirt from getting into the case and collecting on the reflector. The door and the case are ground to fit so that no gasket is necessary.

By means of two simple adjustable stops the projecting case can be released from its position, tipped completely over or turned around for cleaning and lamp renewal and then returned to its original position. This makes it unnecessary to refocus the projector every time a lamp is renewed or the lens cleaned. This is especially convenient when the projectors are mounted on the edge of a tower, ledge or roof.

When used for railway yard lighting, the floodlight projector can be supplied with a 15-in. hood to throw the stray light beneath the tower. This also prevents soot from falling on the lens.

News of the Industry

Union Men Advertise Service at Their Own Expense

An appeal from the trainmen of the Tide Water Power Company at Wilmington, N. C., addressed to the general public in behalf of their employer's business, appeared recently in the Wilmington *Star* in the form of a large advertisement which accentuates the peaceful revolution taking place in the relation of employer and employee in the industry. The advertisement was written and paid for by the members of the Amalgamated Association, and occupied a space three columns wide by eight inches deep. It was as follows:

REQUEST

*An Appeal from the City Lodge
No. 708*

The Members of the Amalgamated Association of Street and Electric Railway Employees of America, Division No. 708, of Wilmington, N. C., employed on the city and suburban cars of the Tide Water Power Company, is paying out to its employees in Wilmington

Every month more than \$36,000. Every twelve months more than \$432,000.

This money is largely spent in Wilmington as a big factor in keeping Wilmington going.

OUR APPEAL

Is to ride the cars which we are operating so as to enable the company to maintain schedules and operate more cars, thereby giving more men work and making a larger payroll for Wilmington.

We, the members of the Amalgamated Association, earnestly solicit your patronage as passengers on the cars which we operate and shipment of freight and express over our line. We are endeavoring to carry you safely and on schedule to and from your work or to your destination. We have an interest in our work and in serving you and we trust that you will help us and help Wilmington by riding the cars which we operate. This will increase the number of employees, therefore making the payroll in Wilmington larger by patronizing the transportation system of the Tide Water Power Company.

This advertisement is written and paid for by the members of the Amalgamated Association of Street and Electric Railway Employees of America, Division No. 708.

Safety-Conscious School Children in Atlanta

At the request of the superintendent of the Atlanta, Ga., public schools, the Georgia Power Company will this year detail several men to visit every school in the city and tell the children about safety methods.

Last year an official of the company

conceived the idea of reducing accidents, particularly among children, by having two trainmen visit the different city schools and talk for a few minutes on safety. After a considerable argument the Board of Education was finally sold on the proposition and two trainmen, themselves the fathers of several children, were taken from their cars and detailed to the work of talking to the children in the city schools.

The two men visited the different schools and were given a few minutes at chapel exercises. So good an impression did these men make and so important did the school board consider the work that the superintendent wrote President Arkwright asking that he detail speakers to talk to the children every year.

In addition to lowering the number

of accidents to children, which was the main object of the speaking campaign, the plan accomplished other and scarcely less important things. It showed the children and their parents that the street car company was something more than a "soul-less corporation" as had been pictured. It demonstrated that the company really had the safety of the children at heart. It got the attention of the children themselves and built up a kindly feeling for the company. And it taught them valuable safety habits for every-day use in riding on the street cars and crossing the streets of the city.

Officials of the company consider the expense of taking the speakers from the cars and filling their places with substitutes negligible compared with the splendid results obtained.

Recapture Advocated in New York City

Unification of transit lines with non-political control advocated by special counsel for Transit Commission—Cost put at \$196,000,000—Surface lines ignored—Not all rapid transit lines involved

SAMUEL UNTERMYER, special counsel for the Transit Commission in its investigation of the New York transit situation, has rendered a report to that body in which a summary of the recent hearings is given and recommendations are made for a plan of transit unification. Many interesting exhibits are included to support the text and recommendations. The summary was made public on Sept. 26. It is not expected that the plan in detail, a book of several hundred pages, will be ready for distribution for another week or ten days.

Mr. Untermyer recommends the recapture of the lines of the New York Rapid Transit Company, subsidiary of the Brooklyn-Manhattan Transit Corporation, and the termination of the lease under Contract 4 between the city and the New York Rapid Transit Company on Dec. 31, 1928, and that notice should be served on the company by the city to that effect.

A similar notice of recapture and the termination of the lease between the Interborough Rapid Transit Company and the city and the termination of Contract 3 between that company and the city is recommended. But simultaneously with such notice to the Interborough Rapid Transit it is recommended that an offer be made to buy the Interborough Rapid Transit and its leased Manhattan Elevated property by the exchange of New York City bonds, aggregating \$245,594,000, for the securities

of the companies. The exchange of securities recommended is on the following basis:

\$148,762,000	3½ per cent city bonds for I.R.T. outstanding 5 per cent mortgage bonds.
33,832,000	3½ per cent city bonds for I.R.T. outstanding 7 per cent notes.
10,500,000	3 per cent bonds for I.R.T. outstanding 6 per cent notes.
10,500,000	3½ per cent city bonds for I.R.T. stock at \$30 a share (\$350,000).
42,000,000	3 per cent city bonds for Manhattan Railway Company's stock at \$70 a share (600,000).

The city bonds would have a sinking fund attached which would retire them at maturity. In event such an exchange of securities materializes, it is recommended that at least that portion of the city bonds exchanged for company bonds and notes be exempted from the debt limit by securing an order of the Appellate Division of the Supreme Court of New York.

Legislation should be sought, according to Mr. Untermyer, granting to the commission and the city the right through the courts to condemn by the power of eminent domain such company property as may be required by the city to carry out a unification plan. Presumably this power might be used in connection with condemning the Sea Beach and Brighton lines of the Brooklyn-Manhattan Transit in case the city could not secure trackage rights over those lines.

In event the New York Rapid Transit Company does not notify the city 30

days after notice of recapture that it is willing to accept the terms of such recapture, it is recommended that the city begin a suit for a declaratory judgment to determine the right of the city to terminate Contract 4 and the amount payable by it to the company.

If the Interborough Rapid Transit does not accept the offer of purchase made by the city within two months after it has been authorized by the city, the latter should then continue its proceedings for the recapture of the recapturable portions of that property.

BOARD OF TRANSIT CONTROL

Formation of a corporation with authority to lease from the city such transit lines as it may own or acquire is recommended. The corporation would have nominal share capital, if any, and the right to issue bonds and other obligations. The board of directors would consist of nine members. The chairman of the Board of Transportation would be chairman of the board and a director. The comptroller of New York City would be a director and a third would be named by the mayor. The Real Estate Board of New York, Merchants Association of New York, Brooklyn Chamber of Commerce, Queensboro Chamber of Commerce and the Bronx Board of Trade and Bronx Chamber of Commerce, acting together, would each submit a nominee to the Transit Commission, which would in turn name such nominees as directors. The Borough of Richmond will have a representative on the board when the subways are extended there. The terms of directors will be from four to six years. Eight directors selected as above shall elect the ninth member. The mayor will be an ex officio member of the board without voting power. The ninth director selected as above described will be president of the corporation and must be an operating man of not less than ten years' experience. Directors will serve without compensation, excepting that \$50 will be apportioned among them at each meeting of the board to the exclusion of the chairman, president and comptroller. Salaried officials will include the president, one or more vice-presidents and other minor officials.

This plan of control does not look toward municipal operation, says Mr. Untermeyer. He recommends that the lease from the city of its constructed and acquired subways to the new corporation be for 25 years and that such subways be operated on a 5-cent fare initially and unless otherwise required by law."

REFERENDUM PROPOSED

Mr. Untermeyer suggests that the following proposal be submitted to a referendum vote:

Do you favor the repeal of the existing law so as to assure the continued maintenance of a 5-cent fare on the city-owned and operated transit lines as between the car riders, the taxpayers and the owners of the properties benefited, after all private interests in the properties have been eliminated, if it should hereafter appear that the maintenance of such fare yields and may

continue to yield less than the cost of service, and that it will or may involve annual deficits that must be met by taxation.

The law referred to in the above-proposed referendum is that of 1924, which requires that the fare be readjusted upward if during the third year of municipal operation of a road the gross revenues are not sufficient to cover operating expenses, fixed charges and amortization costs.

Mr. Untermeyer's report contains various exhibits tending to show that the new city system now being constructed when joined with the recapturable portions of the existing privately operated properties will make a self-supporting system on a 5-cent fare within a comparatively short time. He says:

If the new city subways are compelled to increase the fare to, say, 7 cents, will the existing rapid transit lines be likewise permitted to increase their fare and thus penalize 79 per cent of the car riders and incidentally add the huge sum of \$44,000,000 a year to the revenues of the present privately owned companies? If not, how can the new city subways hope to get their share of the traffic or to relieve the existing congestion? . . . I do not for a moment admit that the new city subways when joined with the recapturable properties will not make a self-supporting system on a 5-cent fare within a comparatively few years. The proofs are to the contrary.

SURFACE LINES WOULD NOT BE INCLUDED

Mr. Untermeyer would exclude surface lines from the proposed unification of rapid transit lines because, among other reasons, they are losing money and "it would involve the impossible task of separate negotiations with each of the 43 companies included in the seventeen separate operating systems."

Representatives of the Brooklyn-Manhattan Transit Corporation are expected to contend in court that the city cannot recapture until ten years after the completion of the Nassau Street subway, construction of which has not yet been started, on the ground that its contract with the city gives it trackage rights which the city cannot furnish until the Nassau Street subway is built.

The B.-M. T. also will oppose condemnation of its Sea Beach and Brighton elevated lines, on the ground that such condemnation would be unconstitutional. It also will oppose legislation for condemnation, which Mr. Untermeyer has suggested.

The officials of the company also intend to appeal to popular sentiment, particularly in Brooklyn, against recapture of the B.-M. T. subway system, which they assert would result in a disruption of the present Brooklyn rapid transit service and leave many sections without transportation to midtown or uptown Manhattan without payment of an additional fare. Another argument which spokesmen of the B.-M. T. intend to use in an appeal for popular support against the plan is that the city cannot find the \$196,600,000 needed for the recapture plan.

James L. Quackenbush, general counsel of the Interborough, said he did not

care to discuss Mr. Untermeyer's report.

John H. Delaney, chairman of the Board of Transportation, who is Mayor Walker's chief adviser on transit matters, approved the Untermeyer report in principle, but said that there undoubtedly would be changes in minor details, as the plan suggested by Mr. Untermeyer in his report was only tentative. In the presence of Daniel L. Ryan and Frank X. Sullivan, the other members of the board, who gave general acquiescence to his views, Mr. Delaney said:

There are three big points about the plan. It preserves the 5-cent fare, it assures public control and it eliminates stock speculation. The entire Board of Transportation is heartily in accord with the report in principle.

The city has not money enough within its debt limit right now to pay \$196,000,000 for recapture, but it will take a year to work out the proposals and before they can be put into effect.

If the city decides to put the money into recapture of the lines, this will affect the debt limit only temporarily. The entire investment which private capital now has in the lines which it is sought to recapture is self-supporting. The returns which the railroads are securing are sufficient to carry the investments by the companies. We would be changing the form merely and it would throw no additional burden on the city.

We know that the B.-M.T. subway system is showing a profit to the company. So far as the Interborough is concerned, the earnings of its East Side and West Side subway lines are all thrown into one pot at present. If we decide to recapture the Interborough East Side subway, it would take a year to allocate the earnings of that system before we could go to the court to have the city's investment in that line exempted from the debt limit and demonstrate what its earnings were.

I am pretty well satisfied with the whole idea of the plan. I suggested this idea of a quasi-public service corporation a year ago in an address before the Municipal Club of Brooklyn. It is very gratifying to find that Mr. Untermeyer has found a way out and has reached a solution without municipal operation.

We are not so much concerned with municipal operation as we are with getting away from private exploitation.

CHAIRMAN RECOMMENDS CAREFUL STUDY OF REPORT

Dwight W. Morrow, chairman of the committee formed to represent the bondholders at the time the financial structure of the Interborough Rapid Transit Company was readjusted, issued this statement on Sept. 28:

An informal meeting of the committee of Interborough bondholders was held today and there was discussed the report and recommendations of Mr. Untermeyer, the special counsel to the Transit Commission, on the proposed plan of readjustment. It recognized that this report is preliminary in character, but the committee is of the opinion that the plan should be given careful consideration and that everything should be done by the representatives of the bondholders to aid the Transit Commission and its counsel in its efforts to work out the complicated task imposed upon the commission by the Legislature.

Mr. Morrow's statement was issued late in the day at the offices of J. P. Morgan & Company. J. P. Morgan is

the nominal head of the committee, but Mr. Morrow has acted as its chairman since the readjustment in the Interborough's affairs on May 1, 1922. The committee was formed to further the interests of owners of first and refunding 5 per cent bonds, of which \$150,000,000 are outstanding, and of three-year secured convertible 7 per cent notes.

Meanwhile the Citizens Union has opened an attack on the proposed constitutional amendment, to be voted on in November, by which \$300,000,000 of city bonds would be released from debt limit consideration and the money used for subway construction. The union utilized Mr. Untermyer's report as a basis for its attack. In part the statement read:

The report of Mr. Samuel Untermyer to the Transit Commission throws a flood of light upon the real purpose of the constitutional amendment to increase the city's borrowing capacity, which is to be voted upon at the coming election.

The statement then quoted Mr. Untermyer's fifteenth recommendation, which was to the effect that everything possible should be done in order that public approval of the proposed amendment could be obtained.

Thrift Conspicuous in St. Louis

After the stockholders of the United Railways Savings & Loan Association, controlled by employees of the United Railways, St. Louis, Mo., had voted to increase the capital stock from \$11,000,000 to \$12,000,000 the board of directors declared a six months dividend of \$114,000.

The association, formed twelve years ago with 126 members to encourage thrift and home owning, was authorized at the outset to issue capital stock for a gross value of \$1,000,000. Today the association has 6,000 members and assets of \$4,500,000. In August, 1927, the receipts of the association were \$200,000 and loans \$165,000.

Railway Exhibit in Rochester Includes Instructive Scenario

A film which features the New York State Railways exhibit at the annual Rochester, N. Y., Exposition shows how the present electric railway lines in the city follow the old Indian trails. This scenario was written by Leon R. Brown, editor of the *Transportation News*, house organ of the Rochester lines of the railways. The picture is part of the industrial course for public school pupils.

The railway's exhibit also graphically shows the toll in street accidents through carelessness of motorists and pedestrians by means of a film, in a trolley car, which is entitled "What the Motorman Sees." This depicts the many close calls the man at the controller experiences during the course of the day's work.

COMING MEETINGS

OF

Electric Railway and Allied Associations

Oct. 3-7—American Electric Railway Association, annual convention, and exhibit, Public Auditorium, Cleveland, Ohio. Exhibits open at noon of Oct. 1.

Oct. 4 — American Automobile Association, Motor Bus Division, Cleveland, Ohio.

Oct. 18-21—National Association of Railroad and Utilities Commissioners, thirty-ninth annual meeting, Baker Hotel, Dallas, Tex.

Oct. 26-27—Public Utilities Association of West Virginia, annual convention, Parkersburg, W. Va.

Oct. 26-27—Society Automotive Engineers, Transportation Section meeting, Hotel Sherman, Chicago, Ill.

Ohio Safety Councils Will Hold Monster Meeting

Representatives of utility companies, industrial plants and safety councils from all over Ohio will hold a two-day safety congress and exhibition in Columbus on Nov. 10 and 11.

There are about 200 plants and other companies in Ohio now doing safety work, with the result of a reduced rate

to employers for claims amounting to \$1,250,000. The congress and exhibition will show how this great saving was accomplished and the methods used in prevention of accidents.

Sick Employees of Pacific Electric to Have Added Comforts

The New California Lutheran Hospital of Los Angeles, Cal., is to be the official headquarters for afflicted employees of the Pacific Electric Railway. This new hospital to care for the sick and injured will have many improvements over the previous hospital facilities. Through negotiations concluded by Dr. Weber, chief surgeon of the medical department, and approved by Vice-President and General Manager Pontius, the \$1,500,000 edifice will become available to all of those whose names appear on the official payrolls. It was announced that dependent family members of employees are to be granted a special rate in the two and four-bed wards at the low rate of \$3.75 per day for hospitalization.

Dr. Weber's staff has been augmented in many ways so that at the present time practically every disease or injury can be cared for in an efficient and thorough manner. The scope of the medical department has been extended not only to the very numerous disorders and injuries to which human flesh is heir, but also to dental service.



Officials of New York State Railways and city of Rochester on inspection trip over new subway railroad in bed of abandoned Erie Canal. The cars were the first operated by electricity over the new line

Front row, left to right: Charles E. Ogden, secretary to the Mayor; Charles R. Barnes, City Commissioner of Railways; Mayor Martin B. O'Neil, John P.

Morse, chairman of the Citizens' Committee on Subway Operation, and James F. Hamilton, president of the New York State Railways.

New Orleans Has 100 Per Cent Safety Day

For the first time in its history the New Orleans Public Service, Inc., New Orleans, La., established a 100 per cent transportation safety record on Sept. 20. During the 24 hours ending at midnight not a single accident was reported. In that period 399 cars were operated over 38,966 miles of tracks, 22 buses over a mileage of 2,866 and approximately 395,000 passengers were carried. New Orleans has a population of 425,000.

The nearest approach to the perfect record was made on several occasions when only two accidents were reported during an entire day. The term "accident" does not necessarily mean bodily injury, but covers all forms of complaints, where a report is required to the company.

New Services Planned in Maine Sections

The York Utilities Company, Sanford, Me., operating between Biddeford and Sanford via Kennebunk, discontinued service on Sept. 15. Service in Sanford over York tracks will be confined to a 5-mile route between Sanford and Springvale. The bus line from Sanford to Biddeford via Alfred will continue to operate, and also the Sanford-Springvale bus line. The company is also seeking approval of a petition to operate buses between Biddeford and Kennebunkport. Citizens of Sanford wish to have the electric railway operate between Sanford Square and Lion Hill for the benefit of mill employees. The Biddeford & Saco Street Railway is planning to use York Utilities rails in Biddeford between City Square and Proctor Road. It is the intention of the Biddeford & Saco company to lease the route from month to month. If the line proves profitable, a long-time lease will probably be negotiated.

Safety Work Expanding in West Virginia

The Monongahela West Penn Public Service Company, Fairmount, W. Va., which is extending its safety work throughout its territory, will hereafter devote at least one page of *Courtesy and Service*, its magazine, to news of the safety and accident prevention work. President Alexander and others are giving valuable suggestions and assistance to the safety director in co-ordinating the safety program with other activities of the company. At various places on the properties, such as carhouses, garages, power plants, substations, linemen's rooms, trainmen's rooms and shops, safety suggestion boxes have been installed. With these boxes will be provided pads for safety suggestions. This is an invitation to all employees of every department to submit suggestions which, in their opinion, will make for greater safety or eliminate hazardous conditions

or practices now existing. Employees are urged to submit suggestions, every one of which, according to the statement of the company, will receive attention and, if worthy, will be put into effect. If it cannot be carried out the reasons why will be given to the one making the suggestion.

Hearings Begun on North Shore Rate Increase

Hearing of evidence on the application of the Chicago, North Shore & Milwaukee Railroad to the Interstate Commerce Commission for permission to increase rates for intrastate travel in Illinois and Wisconsin on a par with its interstate rates began in Chicago Sept. 21 before Examiner Hoy. L. E. Butler, assistant to the vice-president, testified that interstate rates on the North Shore line were recently increased to 3.6 cents a mile, while intrastate fares in Illinois and Wisconsin still remained at the 3-cent level. The proposed increase in rates, he explained, would not affect commutation tickets and was made necessary by the strong competition under which the road operated with steam lines.

Baltimore Riders Read About Iron Horse

In the Sept. 22 issue of *Trolley News*, the car pamphlet of the United Railways & Electric Company, Baltimore, Md., an interesting story is told entitled "The Fair of the Iron Horse," the pageant and exhibition of the Baltimore & Ohio Railroad, in commemoration of its hundredth birthday. When spread out the folder on one side is a map showing the car and bus line connections to the Fair Grounds.

Utility Subjects to Be Discussed Before Florida Students

Lecture courses in all of Florida's higher institutions of learning will be conducted this fall by speakers to be furnished by the Florida Public Utilities Information Bureau. The lectures delivered at the University of Florida were made following special invitations sent to the experts by the executives of the school. Lectures as planned by the committee, it was stated will be of much assistance to the students.

Col. Peter O. Knight, Tampa attorney, and John P. Ingle, manager of the Jacksonville Traction Company, recently lectured at the University of Florida. Robert J. Holly of Sanford is director of the bureau, Mr. Ingle is chairman of the executive committee.

For the past several years many lectures have been delivered by public utility experts in Florida before classes at the University of Florida, at Gainesville, and with the announcement of the committee's lecturing program, invitations for the speakers are expected to come from all the state institutions.

Further Efforts to Make Safety a Reality

White lines indicating how far the rear end of a street car will swing while making a curve are being painted on all downtown street intersections in Atlanta, Ga., by the Georgia Power Company. Motorists and pedestrians who stay clear of the line are out of the danger zone. Safety experts say that the lines will prevent a number of yearly street car accidents as well as speed up the cars, often delayed by traffic in turning corners.

New Franchise for Omaha to Be Submitted

Preliminary conferences between the members of the City Council of Omaha, Neb., and representatives of the bondholders and stockholders of the Omaha & Council Bluffs Street Railway have resulted in an agreement to submit a new franchise at a special election to be held on Jan. 10, 1928. As tentatively agreed upon the franchise will have a life of 30 years; it shall not be exclusive, but will give the Council the right to license buses and other forms of city transportation; it shall be subject to the exercise by the city of all future powers conferred upon it. It provides that the right to the use of the streets shall cease whenever the franchise terminates, and that city firemen and policemen and mail carriers in uniform and on duty be carried free. A proposal to retire half the bonds in twenty years was voted down.

Freight Service in Utah Authorized

The Bamberger Electric Railroad has been authorized by the Public Utilities Commission of Utah to operate a pickup and delivery freight service in less than carload lots at its terminals, Salt Lake City and Ogden. The application was protested by the Salt Lake-Ogden Transportation Company, an auto truck line, but the commission held that there was no good reason why such permission should not be granted if shippers desired this service.

Lower Fare Sought on Atlanta Line

A petition of patrons of the Oglethorpe University car line asking for a unit fare of 7 cents between Oglethorpe and Atlanta, Ga., instead of the present two-unit fare of 13 cents is being considered by the Georgia Public Service Commission. Attorney Charles M. Hutchinson, representing the petitioners, stated that the present fare of 7 cents from Atlanta to Buckhead and of 6 cents from Buckhead to Oglethorpe was exorbitant, discriminatory and out of line with prices charged on other systems. Preston S. Arkwright, president of the Georgia Power Company, appeared in opposition to the petition.

Recent Bus Developments

Rules in Favor of Indiana Buses

Interurban buses in Terre Haute, Ind., now may take on and discharge passengers on any street traversed by a railway despite the city ordinance against the practice. The judge in Superior Court recently granted a restraining order to that effect on application of Joseph H. Gregg and Andrew Carl, owners of the Blue & Gray Bus Line and the Hoosier Transportation Company. The Mayor and chief of police are especially directed not to enforce the city ordinance. This will, until further order of the court, stop arrests of bus drivers for picking up and discharging passengers along railway lines. Legality of the ordinance has been questioned in a petition filed with the Indiana Public Service Commission.

In this instance, both the car lines and the buses are being operated under certificates of convenience and necessity issued by the Indiana Public Service Commission. The avenues by which the buses reach the heart of the business district in Terre Haute and which are the nearest routes to this point are traversed by car lines. A similar situation prevails in several other Indiana cities. The order issued by the court is a temporary one, but will hold good until a final order on the petition for permanent injunction is issued. The court named no date for a further hearing of the case.

Line in Missouri Continued

The United Railways, St. Louis, Mo., has been granted a certificate of convenience and necessity for the continued operation of its bus line between Wellston and St. Charles, Mo., via Federal Highway No. 40. A permit was issued by the Missouri Public Service Commission, which now has jurisdiction over Missouri bus lines.

Roberto's Bus License Revoked in Boston

The bus license of Alphonso Roberto, owner of a bus line which operates between Revere and East Boston, has been revoked by the Massachusetts Department of Public Utilities because of violation of the terms. The commission finds that on Nov. 18, 1926, and on May 23 to 28 inclusive of this year Roberto on 49 instances took on a total of 210 passengers for hire at points where, under the terms of his license, he was not authorized to stop for that purpose. The commission also finds that he discharged passengers in violation of terms of his certificate.

This is the case which attracted considerable attention when it was given a public hearing, Roberto contending that despite the state rules and regula-

tions a person has a constitutional right to get on and off a public bus wherever he pleases, and especially that he cannot be held prisoner in a bus when he desires to get out.

The restrictions had been placed in the certificate in conformity with the policy of protecting the electric railway, in this case the Boston Elevated, against unfair competition. This is the first time that the Public Utilities Department has revoked a bus license.

Buses on Old Jersey Car Route

The City Commission of Millville, N. J., has granted permission to the successor of the Millville Traction Company, Millville, N. J., to substitute buses for trolley cars on the Millville-Vineland route. The permit to operate buses extends to Dec. 31, 1930.

Bus Expansion in Lakewood

A hearing was held before the Public Service Commission on Sept. 22 on the petition of the Jamestown Street Railway, Jamestown, N. Y., to abandon its Lakewood railway line for buses operated by the Jamestown Motor Bus Transportation Company, its subsidiary. No opposition to the change was expressed, and it is expected that the commission will authorize the change.

The city's attorney, Ernest Cawcroft, declared that there was no objection on the part of the city provided there was assurance that the new service would be adequate to handle the traffic now handled by the railway. George L. Maltby, general manager, testified that an expenditure of \$8,000 to \$10,000 would be necessary to put the railway in good shape.

Buses on Utah Line

The Utah Light & Traction Company has been authorized by the Public Utilities Commission of Utah to discontinue service on its Murray-Midvale-Sandy line from the intersection in Murray of Second Avenue with State Street and to tear up its tracks on the line south of that intersection. As a substitute for street-car service on this line the company is to operate buses with the same frequency and at the same rates offered by its present railway service. Approximately 6 miles of street car track will be abandoned and superseded by bus service. This is the southern section of a line of about 14 miles which runs from Salt Lake City south to Murray, a community about 7 miles south of Salt Lake City, and thence south to the communities of Midvale and Sandy.

At the hearing the railway introduced evidence to the effect that the section of line which it seeks to abandon has been operated at a loss for several years.

Review of New Jersey Fares Refused

Chief Justice Gummere of New Jersey has denied an application by three municipalities and individuals in those municipalities for a writ of certiorari to review the decision of the Board of Public Utilities Commissioners readjusting bus and railway fare zones on the lines of the Public Service Transportation Company and the Public Service Railway.

However, the Chief Justice announced that, because of the importance of the case, he would permit the applicants to renew their plea before the Supreme Court *en banc* in Trenton in October if they wished.

The municipalities joining in the effort to have the decision reviewed were Irvington, Roselle Park, and Kenilworth.

At the offset, Chief Justice Gummere indicated that he could not see what standing the municipalities, as such, had in the case, holding that municipalities were created as governing bodies and that the case at point was not a governmental function. In the cases of the individuals joining in the application for the writ, he considered their interest small. He said:

Nothing has been shown to me, the Chief Justice said, in ruling upon conclusion of argument by counsel for the municipalities, that the Public Utilities Commission, by its act, has authorized the Public Service to charge excessive rates. It hasn't been suggested that the rates are excessive.

In arguing for the writ, Mr. Stewart said the application for the review was based upon the fact that no evidence of valuation of the property used and useful in the service by the buses had been submitted to the board or found by it.

Coach Application Opposed by New York Companies

The Equitable Coach Company, to which the Board of Estimate recently awarded a bus franchise for Manhattan, Brooklyn and Queens, has been directed by Transit Commissioner Leon G. Godley to amend its application for a certificate of convenience and necessity by filing a plan for financing. The contention that the petition on which the hearing was held was defective because it did not contain such a plan had been made by Clarence J. Shearn, counsel for the Brooklyn-Manhattan Transit Corporation and subsidiary surface line companies. Godfrey Goldmark, counsel for the Equitable company, immediately filed an amended petition, which he had held in reserve.

The amended petition proposed as a method of financing the issuance of \$4,000,000 of 6 per cent first mortgage bonds, \$6,500,000 of 5½ per cent equipment trust certificate notes, 75,000 shares of preferred stock without par value but entitled to a dividend of \$7 a share and 225,000 shares of common stock of no-par value. All of these securities are to be issued when designated by the commission, and the

entire financial plan is contingent on the commission's granting a certificate for all the routes specified in the franchise.

Mr. Shearn declared that millions of Brooklyn passengers yearly would be inconvenienced, because the Brooklyn surface lines would be affected severely if the application were granted and the Equitable company permitted to operate buses.

Mr. Shearn said that the Brooklyn surface lines carried 530,000,000 passengers each year. William Wallack, representing the New York Railways, declared that it was the duty of the commission to protect the surface lines as existing transit facilities, not through favoritism, but in the public interest.

The Union Bus Corporation objected to the granting of the certificates on two grounds. The first of these was that no statutory public hearing, as required by law, was held by the Board of Estimate before granting the Equitable company a franchise. The second was that the city had sustained a loss of \$100,000 by awarding the franchise to the Equitable company, as the Union Bus Corporation offered the city a guaranteed minimum return of \$500,000, as compared with \$400,000 offered by the Equitable company.

Legal Point Raised Over Brockton Fair Bus Permit

A temporary bus line service to the Brockton Fair is being arranged by the Eastern Massachusetts Street Railway, Boston, Mass., under a license from the Brockton city authorities. An interesting point of law has arisen in this connection. Licenses issued by the city authorities are not revokable by the city, under Massachusetts law, and some opposition to confirmation is developing before the Public Utilities Department on the ground that it might mean that the railway could operate this line to the Brockton Fair grounds every year. The question has been assigned for a public hearing.

"Busmen, Don't Be Road Hogs"

In a letter to all officers, inspectors, chauffeurs and other employees of the County Transportation Company, the bulk of the stock of which is owned by the New York & Stamford Railway, and which operates a network of bus lines in Connecticut and the Long Island Sound section of Westchester, Leverett S. Miller, president, has laid down a code of courtesy.

In this code or pronouncement there is no place for "road hogs." Mr. Miller suggests practicing the rule of judgment tempered by recognition of the rights of others. He says that by encouraging the practice of common courtesy among drivers, public and private, the number of highway casualties in Westchester will be lessened and the lamentable condition existing in that section as elsewhere will be improved.

Financial and Corporate

Gary Railways to Issue \$363,000 Common Stock

Authority to issue a total of \$363,000, par value, of common stock was granted on Sept. 19 to the Gary Railways in an Indiana Public Service Commission order. The purpose of the new issue, as alleged in the company's petition, is to reimburse the treasury for money used in purchasing the common stock of the Shore Line Motor Coach Company, a supplementary motor coach system jointly controlled by the Gary Railways and the Chicago, South Shore & South Bend Railroad.

Massachusetts Railway in Plight

The Shelburne Falls & Colrain Street Railway, operating between Shelburne Falls and Colrain, in Massachusetts, the revenues of which have been greatly enhanced by freight transportation from the Griswoldville Manufacturing Company, has been notified by the latter that it will transport all its freight by means of motor trucks after Nov. 1. It is thought unlikely that the road will be able to continue after the loss of this substantial revenue. This line is 7 miles long. It was built 31 years ago and gives the industries in that section their only connection with railroad facilities by means of a cement bridge across the Deerfield River to connect with the Boston & Maine line.

Montreal Company Given Time Extension on Property Disposal

The City Council of Montreal, Canada, has adopted the report of the city executives favoring the extension of time to the Montreal Tramways to sell certain properties it possesses in several city wards. Delay in disposing of them was due to the state of the real estate market which has necessitated this further extension of two years to January, 1930. The contract with the city provided for disposal of land in various wards within five years.

Preferred Stock Offering in Richmond

An issue of \$1,965,600 of 6 per cent cumulative preferred stock of the Virginia Electric & Power Company, Richmond, Va., was offered Sept. 19 at \$97.50 a share and a yield of 6.15 per cent. The par value of the stock is \$100 a share. The stock was issued to provide for extensions and improvements of equipment throughout the area served by the company in Virginia and North Carolina.

Employees of the Virginia Electric & Power Company were given an opportunity to purchase the stock before

it was placed on general sale. On the partial payment plan an initial payment of \$7.50 was made on each share and the balance in nine months at \$10 each. In Richmond, 2,000 more employees bought 400 more shares of the latest issue than they purchased of the issue of \$1,500,000 brought out in December of last year.

Decrease in Boston Traffic in July

The cost of service of the Boston Elevated Railway, Boston, Mass., exceeded the revenue in July, 1927, by \$353,208, against \$393,028 in July, 1926. The number of revenue passengers carried was 26,167,466, compared with 27,160,300 for July, 1926. Total miles operated numbered 4,491,667, against 4,809,609 in July, 1926. These figures included bus-miles of 465,875 in July 1927 and 417,165 in July 1926.

President Baker Defends Fitchburg & Leominster Road

Charles S. Cummings, Boston, has filed a bill in equity in the Superior Court in Boston asking that a receiver be appointed for the Fitchburg & Leominster Street Railway or that the Boston Safe Deposit & Trust Company, trustee under the mortgage indenture, be ordered to take possession of the road for the bondholders. Mr. Cummings, as the owner of \$5,000 of bonds of the company, declares the company has defaulted on interest payments and that it owes various banks \$710,800 in unsecured notes. He wants the road enjoined from paying any more interest on the unsecured notes until the bondholders are paid in full.

Mr. Cummings alleges that the \$300,000 of bonds, due on Feb. 1, 1921, were extended for five years at 7 per cent; that up to 1926 on this five-year extension the railway paid interest on the bonds and also paid \$25,700 on secured debts and \$231,686 on unsecured debts, a grand total of \$315,886, or a sum more than sufficient to pay the bonds in full.

In 1926 the plan was adopted through action of a bondholders' and note holders' committee to extend these bonds another five years at a lower rate of interest. A new plan was made for handling the unsecured notes by which the noteholders would have their notes maturing each year. Under this plan no provision was made to establish a fund to pay off the bonds, it was claimed. Mr. Cummings charges that in the last eighteen months, holders of unsecured notes have received \$14,216 in interest and that bondholders of the Leominster, Shirley & Ayer Street Railway have received \$6,000 in interest. He complains that the note holders will have received \$106,620 and that the holders

of the bonds of the Leominster, Shirley & Ayer Street Railway will have received \$20,000 in interest to the damage of the Fitchburg & Leominster bondholders.

PRESIDENT DEFENDS ACTION

When he was informed about the bill in equity Emerson W. Baker, president of the railway, said that the company's property is perfectly protected by the so-called "after acquired" clauses in the trust mortgage. He said:

All that Mr. Cummings wants, apparently, is to get paid par value for his bonds right now and to let the best wait until the end of the reorganization period. Our hope and endeavor is to improve the property and so improve the condition of the bonds. It is now far better than when we took hold of it on Oct. 21, 1926.

Mr. Cummings is in error when he alleges the property is no better off than it was before. The rolling stock and other equipment are far better than ever before. The amusement park has been rebuilt, much work has been done on tracks and three rotary converters have been installed. Take, for instance, the bus terminal. It has been repaired and a heating plant put in.

As a matter of fact, the bonds are hard to get. Those who hold them now seem to be well satisfied with the progress made and are very reluctant to part with them.

The remark by Mr. Cummings about interest is misleading. All he would have to do to get the interest on his bonds would be to present them at the Boston Safe Deposit & Trust Company. It has awaited since 1926 at 5 per cent. This is one-half per cent more than the rate originally issued. His declaration of 7 per cent I cannot understand, inasmuch as that rate operated from 1921 to 1926 and ended then.

Mr. Cummings' prayer relating to payment of sums to unsecured creditors I would answer by saying we have not paid out anything since Feb. 1, 1927, and are not planning to pay anything now. I do not see how anything would be gained by a trustee or receivership. We are operating at a profit so far as revenue and expenses are concerned. For the six months ended July, 1926, there was a loss of \$20,000, but for the six months ended July, 1927, we made \$26,000, a change of about \$46,000 for the better.

This does not mean that the company is prosperous. It merely means we are operating at a profit and expect to pay out of our current income for all new equipment over a period of years. We do not expect ever to pay more than a small percentage by way of compromise with the noteholders and very old unsecured creditors. In other words, the capital structure ultimately will have to be greatly reduced, but this has no present effect on the quality of service rendered.

COURT DISALLOWS CONTENTION

The Charles S. Cummings bill, heard in equity session recently at Boston, Mass., was denied by Judge Marcus Morton on the grounds that there was no dispute as to facts in the case and that whatever question in law might be raised it would not justify the court in issuing an injunction to prevent payment of interest. Such a move would it was brought out, prevent the proper and successful negotiation of plans for the betterments of the company to the general advantage of the public.

Deficit in Indianapolis in 1926

The net earnings of the Indianapolis Street Railway, Indianapolis, Ind., for the year ended Dec. 31, 1926, less taxes, were \$880,575, against \$1,116,924 for the year previous. After all deductions there was a deficit of \$203,514. This compares with a balance in 1925, after all deductions, of \$41,175.

An extensive improvement program was carried out by the company. This included track and paving work, the installation of temporary cross-overs, replacements, renewals and the relocations of loop track. Five new substations are now well under way. Power is to be supplied by the Indiana Electric Corporation, at a material reduction, and the operation of cars greatly improved.

The company is at present operating 33 buses, fifteen of which are used on nine feeder lines. The service, while greatly accommodating the public and protecting the company from further inroads of competing bus lines, has lacked patronage and resulted in a net loss from operation, including depreciation, of \$203,507 for the year 1926. In addition to the general news on the

INCOME ACCOUNT OF THE INDIANAPOLIS STREET RAILWAY

For Year Ended Dec. 31, 1926

Gross Earnings:	
Passenger receipts—city lines.....	\$4,425,529
Transfer receipts—city lines.....	310,866
Track rentals interurban passenger cars.....	105,994
Track rentals interurban freight cars.....	53,238
Chartered cars.....	736
Advertising.....	30,600
Dog permits.....	1,151
Rent of land and buildings miscellaneous.....	27,417
Rent of terminal building and stations.....	247,467
Sale of power.....	6,126
Rent of equipment.....	1,315
Miscellaneous income.....	2
Receipts, Broad Ripple Line.....	86,689
Bus receipts.....	214,703
Interest, discount.....	6,954
Total.....	\$5,518,794
Operating Expenses:	
Maintenance of way and structures.....	\$610,914
Maintenance of equipment.....	502,982
Special maintenance per order of Public Service Commission of Indiana.....	
Operation of power plant.....	756,813
Operation of cars and buses.....	2,028,500
General expenses.....	444,135
Total.....	\$4,343,346
Net earnings.....	\$1,175,447
Less taxes.....	294,872
Total net earnings, less taxes.....	\$880,575
Deductions:—Bond Interest	
Interest on \$4,000,000 Citizens Street Railroad 5's.....	\$200,000
Interest on \$4,547,000 Indianapolis Street Railway 4's.....	183,484
Interest on \$3,570,000 Indianapolis Traction & Terminal Company's 5's.....	178,663
Interest on \$285,000 Broad Ripple Traction Company's 5's.....	12,361
Interest on trust equipment notes.....	2,684
Interest on Indianapolis car equipment company preferred stock.....	4,250
Interest on notes.....	49,497
Total deductions.....	\$630,939
Surplus (exclusive of accrued depreciation).....	\$249,635
Deductions from surplus:	
Indianapolis Street Railway sinking fund.....	\$80,000
Indianapolis Traction & Terminal Company sinking fund.....	73,150
Dividends unpaid on \$5,000,000 preferred stock 1926.....	300,000
Total deductions.....	\$453,150
Balance (deficit).....	\$203,514

COMPARATIVE OPERATING STATEMENT OF THE INDIANAPOLIS STREET RAILWAY

	1926	1925
Earnings:		
Passenger receipts—City lines.....	\$4,425,529	\$4,754,227
Transfer receipts—City lines.....	310,866	176,492
Miscellaneous earnings—		
Track rentals.....	782,398	605,649
Gross earnings.....	\$5,518,794	\$5,536,369
Maintenance of way and structures.....		
Maintenance of equipment.....	\$610,914	\$631,678
Special maintenance expended from revenue from increased fares by order of Public Service Commission.....	502,982	517,988
		20,708
Total maintenance.....	\$1,113,896	\$1,170,375
Operation of power plant.....	\$756,813	\$734,466
Operation of cars.....	2,028,500	1,682,517
General expenses.....	444,135	445,462
Total operation expenses.....	\$4,343,346	\$4,032,821
Net earnings.....	\$1,175,447	\$1,503,548
Less taxes.....	294,872	386,624
Net earnings, less taxes.....	\$880,575	\$1,116,924

company's bus activities the report refers to the proposed merger of the Peoples Motor Coach Company and the Indianapolis Street Railway.

During the past year the company purchased 370 Johnson registering fare boxes and 1,000,000 tokens at an expense of \$31,105. The token system was started on Jan. 1, 1927. By this the company hopes to eliminate the expense of printing tickets and other expenses in the counting room. Beside 59 one-man cars are now in operation in Indianapolis, resulting in a saving in operating cost. More cars are to be converted into the one-man operating type during the year 1927.

The board of directors was unable, according to the report, to declare dividends on the Indianapolis Street Railway preferred stock during the year 1926 on account of decreased earnings, due principally to the constantly increasing use of privately owned automobiles and to serious loss from bus competition.

During the year 1926 there was paid to employees and beneficiaries of the Pension Fund and Benefit Association \$29,000, of which sum the company contributed \$5,000. These two associations since their organization have disbursed nearly \$200,000 as subsidies for the sick and surviving members of families of deceased members.

Railway Net of Northern States Power Shows Improvement

The gross earnings of the street railway department of the Northern States Power Company for the year ended Dec. 31, 1926, were \$268,704, representing 0.95 per cent of the total gross. In 1925 the gross earnings were \$277,578. Net earnings in 1926 showed a loss of \$30,654 against a loss of \$61,858 for the year previous. This company, controlled by the Northern States Power Company of Delaware, a Byllesby property operates 16 miles of line connecting Fargo, N. D., and Moorhead and Dilworth, Minn.

Evanston Railway Asks Authority for Refunding Issue

Application for authority to issue 15,000, par value, of general mortgage bonds was made to the Illinois Commerce Commission on Sept. 14 by the Evanston Railway, Evanston, Ill. The company's petition states that the new bonds are to be issued in lieu of first mortgage bonds in the amount of 15,000 recently paid and canceled.

Fight Over Goshen, Ind., Discontinuance

A recent ruling by Judge Thomas Wick in the federal court at South Bend, Ind., granted permission to R. R. Smith, receiver of the Chicago, South Bend & Northern Indiana Railway, to discontinue service in Goshen. The receiver cited the constant decrease in revenue at Goshen for several years as the reason for the discontinuance. The City Council, however, will oppose the court ruling because of a finding clause in the franchise. The legality of the franchise likely will come before the courts.

Partial Discontinuance in Syracuse Allowed

The Public Service Commission granted on Sept. 23 the petition of The New York State Railways for permission to discontinue service on its Green Street line in Syracuse. It was established at the hearing that the line was operated at a loss and that there were other means of public transportation available to the patrons. Commissioner Brewster in his memorandum accompanying the order said that the loss to the petitioner through this operation exceeded its income therefrom by more than 50 per cent and further that no real public necessity demanded the continuance of service.

A. G. & E. Properties Under New Owners

The American Electric Power Corporation, of Delaware, which now owns the voting stock of the Pennsylvania Gas & Electric Corporation, has purchased the American Gas & Electric Company's controlling interest in the block of American Electric Power Company, which owns control of utility properties in and near Wilmington, Del., and Springfield and Dayton, Ohio. The purchase of this holding company stock in no way anticipates any change in the local management of the subsidiary properties except that they will come under the general management and supervision of Stevens & Wood, Inc., New York, a corporation that for many years has operated extensive public utility properties in Ohio, Pennsylvania, New York, Virginia, District of Columbia and North and South Carolina. Transportation service will be furnished to and about Wilmington, Del., and Media and Chester, Pa., and to

Springfield and Dayton, Ohio, by the Peoples Railway of Dayton, Ohio, the Wilmington & Philadelphia Traction Company, Wilmington, Del., and the Springfield Railway, Springfield, Ohio.

Eight Months Net of Eastern Massachusetts \$546,377

Net income of the Eastern Massachusetts Street Railway, Boston, Mass., after all charges for the month of August, was \$42,409, compared with \$38,433 a year ago. Gross operating revenues for the month were \$744,925, against \$757,134, and income after taxes was \$223,167, compared with \$222,656. For the eight months period ended August, 1927, the net income after all charges was \$546,377, compared with \$530,067. Gross operating revenues for this period were \$6,326,620, against \$6,373,659, and income after taxes was \$2,309,846, compared with \$2,316,886.

Balance Higher in Reading

For the year ended July 31, 1927, the operating revenue of the Reading Transit Company and subsidiary companies, Reading, Pa., was \$2,935,181, against \$2,981,253 for the period ended July 31, 1926. Operating expenses and taxes, excluding depreciation and maintenance, decreased from \$1,715,145 to \$1,619,880 for the 1927 period. Total deductions from income left a net income of \$210,073 in 1927 and \$159,560 in 1926. After the provision for dividend on preferred stock the balance of net income was \$90,928 against \$40,415 for the year ended July 31, 1926.

Kaw Valley Sale Confirmed

The sale of the Kansas City, Kaw Valley, & Western Railway, Kansas City, Mo., was confirmed on Sept. 14 by Judge John C. Pollock of the federal court in Denver. The sale was made to a group headed by Jo Zach Miller, Jr., 1001 Commerce Building, Kansas City, and George W. York, Cleveland. The sale price was \$300,000. Mr. Miller is president and Mr. York vice-president of the new company. The line has been in receivership several years. It operates between Kansas City and Lawrence, Kan.

Second Avenue Railroad, New York, Sold

On behalf of the preferred certificate holders' committee Arthur W. Hutchins has bought for \$500,000 all the tangible assets of the Second Avenue Railroad, New York. The sale was made at public auction conducted by Joseph P. Day, who announced that the sale was subject to the confirmation of the Supreme Court. The assets comprise the real estate, franchises, trackage, agreements and contracts. The real estate included the entire block on First and Second Avenues between 96th and 97th Streets.

An action started on behalf of George E. Warren and others against the Second Avenue Railroad brought about the sale, which was directed by a judgment of the Supreme Court of New York County and under the direction of John C. Clarke, referee.

The assets were purchased provisionally and subject to the confirmation of the Transit Commission's acceptance of the reorganization plan adopted by the certificate holders' committee.

Improvement in Revenue from Omaha Property

The report of the Omaha & Council Bluffs Street Railway, Omaha, Neb., for the month of August, filed with the Nebraska Railway Commission, continues to show a steady decrease in traffic exceeding 3 per cent, compared with the month of August, 1926, but the financial results of operation are better. Revenue for the month was \$216,093, a decrease of \$9,000 over August, 1926, but operating costs were cut \$14,000, to \$166,173. The net after payment of taxes was \$26,744, and as interest charges are \$37,479 a month, the deficit was \$11,412, compared with \$20,611 for August a year ago.

Attractive Railway Securities Await the Knowing Investor

The fact that progressiveness is permeating most of the electric railway industry and that in view of this condition opportunities abound among its securities was emphasized by Clarence V. Price, of Price and Company, in an article in a recent issue of the *Financial World*. As proof of this spirit of progress he cites arguments such as trained men, light-weight and one-man cars, weekly tickets, bargain rides and many other features of modern merchandising methods whereby service is really sold to prospective riders. In addition he refers to the changed attitude on the part of the railway managements who now take the public into their confidence, seeking their opinions and reactions as well as catering to their conveniences and comforts. Such conditions convince Mr. Price that many investors are overlooking some unusual bargains in the electric railway security field. He says that these have a real promise for the future. "Too many investors, perhaps," he says, "still are looking on the local transportation industry with 1915 eyes. The best advice that I could give them is to familiarize themselves with current conditions."

Discontinuance Sought in Hillsboro

John H. Mitchell, manager of the Illinois Power & Light Corporation, has applied to the Illinois Commerce Commission for authority to discontinue the two railway routes operating in Hillsboro, Ill.

Legal Notes

FEDERAL CIRCUIT COURT—Law prohibiting competing buses on certain streets is valid.

An Oklahoma statute and a city ordinance which prohibited the operation of buses on streets occupied by street railway lines or on the first two streets on either side of a street so occupied and parallel to it, was held not to be discriminatory and invalid because they excluded from such prohibition motor buses operated by the street railway company as part of its transportation system. The court said that competition, like monopoly, may be restrained for the public welfare; the test in each instance is the public good. [People's Transit Co. vs. Henshaw, S.L. 20 Fed. (2D), 87.]

FEDERAL DISTRICT COURT—Rulings on Valuation of Public Utility Property.

In an extended decision, the District Court for the District of Idaho, ruled on methods of valuing real estate used in public utility service and on allowances for overhead, contingencies, contractors fees, good will, working capital, depreciation, reasonable return and other features in connection with valuation and rate making. [Idaho Power Co. vs. Thompson et al., 19 Fed. (2d), 547.]

KENTUCKY—Street Railways May Sue to Restrain Operation of Illegal Bus Lines.

A street railway company, as a taxpayer, can maintain a suit to restrain the operation of a competing bus line over city streets, where the competing line has no franchise. The fact that the railway company itself may be operating bus lines on some streets without a specific franchise does not prevent it from bringing suit to enjoin the operation of a competing bus line. [People's Transit Co. vs. Louisville Railway, 295 S. W., 1055.]

MASSACHUSETTS—Only Duty of Railway on Reservation Is to Refrain from Wanton or Reckless Conduct.

A railway company had laid tracks on a reservation in the center of a street, and a person intending to become a passenger, while crossing the reservation diagonally at a place where there was no cross walk was struck by a car. It was held that the railway owed him no duty except to refrain from wanton or reckless conduct. [Fernald vs. Boston E.R., 156 N. E., 692.]

MASSACHUSETTS—Failure to Register Makes an Auto Trespasser.

In an action for damage to an auto resulting from a collision with a street car of the defendant, under circumstances warranting a finding of due care on the part of the plaintiff and negligence on the part of the de-

pendant, it appeared on the day before the accident the plaintiff removed from his auto the motor, listed on his certificate of registration and installed a new motor therein, but obtained no new registration since the installation. It was held that the plaintiff was a trespasser on the highway and could not recover for damages to his auto through the negligence of another. [Wallace vs. No. Bedford & Onset St. Ry., 155 N. E., 660.]

MASSACHUSETTS—Passenger on Truck Is Guilty of Contributory Negligence.

An experienced truck driver who was riding in another truck as a guest was injured while the truck was running on the wrong side of the road and was struck by an electric car. Both the driver of the truck and his guest were held to be guilty of contributory negligence. [Thorpe vs. Boston E.R., 156 N. E., 748.]

MASSACHUSETTS—Driver Trying to Start Stalled Car on Track Without Looking for Approaching Street Car Held Negligent.

An automobile became stalled on a straight railway track and the driver started to crank it without looking to see whether any cars were coming. The railway was not responsible when he was struck. [Loyle vs. Boston Elevated Railway, 157 N. E., 356.]

MISSOURI—Refusal of instructions on sounding gong upheld.

An action was brought under the humanitarian doctrine for personal injury when a street car hit an automobile which was being driven on the left side of the street and in a rut in the car tracks. The plaintiff claimed that if the car gong had been sounded the driver would have had warning, but the request of the company that the court instruct the jury there was no evidence that such failure to use the gong was the approximate cause of the collision was refused. This refusal was upheld by the Supreme Court. [Perry vs. Fleming et al., 296 S. W., 167.]

MISSOURI—Wording of Ordinance for Punishing Transfer Abuse Is Important.

An ordinance passed by the City, making it unlawful for any person not connected with the railway company to sell, barter, or exchange for any consideration a street railway transfer, or give it away for the purpose of enabling another person to use it for passage, or any person so to use it, or to alter the transfer so that it could be used for a round trip, to be guilty of a misdemeanor. The Court held that the wording of this ordinance attempted to regulate the rates and practices of the company which the city had no power

to do. The Court pointed out, however, that an ordinance prohibiting the use or issue of transfers in violation of the rules and regulations of the street car company, would be valid, as these rules presumably would have the sanction of the State Public Service Commission. [Ex Parte Packman, 296 S.W., 366.]

MONTANA—For Taxation, Electric Railway Track and Poles May Be Considered Personal Property.

For the purpose of taxation, the State of Montana classified property into seven groups of which one includes real estate and improvements and one personal property. The rates were different on these two. By an amendment of the act, a street railway track was placed in the "personal property" group. The present case was upon the proper grouping of the overhead construction and poles which, for reasons given in the decision, were also placed in the "personal property" group. [Butte Electric Railway vs. Brett, 257 P., 478.]

NEW JERSEY—License Required by Bus Hauling Employees of Single Industrial Plants.

A bus hauled only employees of a single industrial plant to and from it and made no stops to receive or discharge passengers in a town where it had no municipal license. This was held to be a violation of a statute which requires motor buses to receive municipal licenses from the municipalities through which they operate and have such licenses approved by the Board of Public Utility Commissioners. [Doskovich vs. Board of Public Utility Commissioners, et al., 138 At., 110.]

OHIO—Judicial Notice Will Be Taken of Differences Between Buses.

A bus company operated some 16-passenger buses under authority of the Public Utilities Commission, but the State Supreme Court issued an order at the request of a railway company that the bus company must use 7-passenger buses instead of those employed. The bus company then removed 9 seats in each of the 16-passenger buses, but the Court held that this was not in compliance with its order. [Scioto Valley R. T. Co. vs. Public Utilities Commission, 157 N. E., 475.]

WASHINGTON—Passenger Alighting in Dangerous Place Must Exercise Special Care.

At a point where an accident occurred there was a single track in the middle of a street and only on one side of this track the street was paved. On this paved side, traffic moved in both directions. A passenger was injured after alighting from a car by being hit by an automobile travelling in the opposite direction from the car. The passenger had an unobstructed view and as good an opportunity to see possible danger as the car operator. The decision of the jury in favor of the railway was upheld. [Jones vs. City of Seattle, et al., 157 P., 393.]

Personal Items

Cincinnati Men in New Posts

Added Responsibility for Engineers Under New Power Arrangement—Careers of Men Involved, Messrs. Venning, Clark, Swift, Noertker and Genrich, Are Reviewed

FURTHER details available about the promotions in the personnel of the Cincinnati Street Railway, Cincinnati, Ohio, and the assignment of additional duties to officers of the operating department of the railway indicate more importantly than a previous item the significance of the changes. To provide for the new power distribution plans under which the railway will get all its power from the Union Gas & Electric Company through a system of eighteen automatic substations, the responsibility

operating company in Cincinnati, the Cincinnati Street Railway.

W. P. Clark was appointed assistant superintendent of track and roadway. He will assist the superintendent in handling the large program of track reconstruction work which is being carried on by the company. Mr. Clark had also served the traction company prior to the reorganization in 1925. After his graduation from Tri-State College at Angola, Ind., as civil engineer in 1921, he went to the company as material

L. S. Ready Takes Up Commissioner's Duties

Lester S. Ready, vice-chairman of the board of directors of the Key System Transit Company, Oakland, Cal., and formerly president of that company, has completely severed his connection with that utility. The California Railroad Commission, of which he was formerly chief engineer, has announced that arrangements have been concluded with Mr. Ready to take charge of the preparation and presentation of the commission's testimony and evidence in the pending Pacific Telephone & Telegraph rate case.

Mr. Ready is a graduate of the University of California, College of Electrical and Mechanical Engineering, class of 1912. For four years he was chief engineer of the commission and was connected with the engineering department of the commission for thirteen years. He has had charge of the various engineering investigations in connection with all the varied rate proceedings before the commission in recent years.

Daniel Durie Made General Manager of West Penn Lines

H. L. Mitchell, president of the West Penn Railways, Pittsburgh, Pa., on Sept. 27 announced changes in the operating organization of the company. Two operating divisions have been created and a general manager has been named for each of the two sections of the system. Daniel Durie, Connellsville, Pa., who has been general superintendent of what is known as Territory "A," is promoted to the general managership of the Pennsylvania Division. The West Virginia and Ohio Division is under the direction of A. C. Spurr, Wheeling, W. Va.

Three co-operating departments are included in the railway's organization, all located at Pittsburgh. J. L. Fritsch, chief engineer of the company since its beginning, has charge of engineering and construction standards. James McFall, general claim agent of the West Penn Railways and the West Penn Power Company, is in charge of the claims department. H. K. Breckenridge, Pittsburgh, development engineer, is in charge of bus developments and standards.

H. S. Metcalfe, who has been in charge of public relations, has been appointed assistant to Walter S. Finlay, Jr., president of the West Penn Electric Company, in the publicity and public relations field, but he will continue to serve the railways department as his services are needed.

J. O. Horton, who has been in the Pittsburgh office, is transferred to Connellsville and appointed assistant to Daniel Durie, general manager. Ernest R. Kooser, Connellsville, assistant superintendent of Territory "A," becomes superintendent of transportation in that division, and Joseph Black, located at New Kensington, is named superintendent of transportation in Territory "B."



F. J. Venning



H. L. Swift



W. P. Clark

of Messrs. Venning, Clark, Swift, Noertker and Genrich are increased.

F. J. Venning will continue as superintendent of power and will have jurisdiction over the Perdleton power house and all operations incident to the production of power. He will have charge of the transmission lines to the point where current is delivered to the switches in the substations and all feeder lines from the time they leave the substations, as well as the overhead trolley lines. He will also supervise the maintenance and operation of the Mount Adams Incline. Mr. Venning began as a boiler for the Westinghouse Electric Company in 1889. He entered the street railway field in 1893 as barn foreman for the Citizens Traction Company of Pittsburgh, where he later became superintendent of maintenance of way and overhead lines. He remained in Pittsburgh until January, 1910, when he was appointed superintendent of construction for the Cincinnati Traction Company. He was made superintendent of overhead lines for this company in June, 1918, and in 1920 was given additional jurisdiction over shops and equipment. In February, 1926, he was made superintendent of power for the new

man. In 1924 he was made paving engineer.

Harley L. Swift was appointed superintendent of substations and will have jurisdiction over the maintenance of all present substations and the construction of the new substations, including the installation of the equipment. He went to the Cincinnati Street Railway in January, 1927, as assistant superintendent of maintenance of way, leaving his position as superintendent of factory No. 14 of the American Window Glass Company at Monongahela, Pa. He is a graduate of Penn State College, where he received his degree in 1914 as mechanical engineer.

J. A. Noertker was appointed electrical engineer and will look after the details of the new substation installation. He entered the company's employ in 1921 as draftsman after his graduation from the University of Cincinnati as electrical engineer.

H. C. Genrich was appointed electrician and will continue to handle the inspection and maintenance of the present substation and to assist in constructing the new stations. He has been with the company since 1895 and has served as chief electrician since 1898.

Manufactures and the Markets

100 Articulated and One-Man Units for Cleveland

Shortly after the Cleveland convention an order will be placed by the Cleveland Railway for 100 street cars part of which are to be the duplex articulated type and the rest for one-man, two-man, front-entrance, center-exit operation. Samples of each type are under construction and will be exhibited at the convention. Authorization for the purchase was made about two months ago by the City Council of Cleveland, according to Joseph H. Alexander, president of the traction company. The order is in addition to the 36 single-deck buses, ten de luxe single-deck buses and six double-deck units which were purchased from the White Motor Company, Yellow Coach Company, and Six-Wheel Company respectively.

Rolling Stock Order Placed by German State Railways

In connection with the electrification of the railways in Silesia and Saxony, the German State Railway Company has lately placed orders for more than 80 electric locomotives and other rolling stock to an estimated value of \$850,000,000. Brown, Boveri & Company, Mannheim, in conjunction with the Krauss Locomotive Works, Munich, are to supply seven 2,200-hp. express locomotives and the A.E.G. and the Siemens-Schuckert Company, Berlin, in conjunction with the Borsig Company of Tegel, 33 2,600-hp. engines. The A.E.G. and the Siemens-Schuckert concerns are also to supply twelve heavy goods engines and eight shunting locomotives, while the Bergman Electric Company and the Schartzkopf Company, Berlin, are to supply five light express locomotives and 23 goods engines.

Fire Destroys 25 Trolley Cars in Canada

Fire last Sunday night destroyed a wing of the Ottawa Electric Street Railway carhouse in the Rockcliffe district and 25 trolley cars, with an estimated loss of \$200,000. An early investigation points to the blaze having originated from defective wiring. Breaking out near the front door of the building, the conflagration soon assumed uncontrollable proportions and swept through the entire wing, rapidly reducing it to ashes. Besides the 25 emergency trolley cars lost, a track bonding car and a track grinder car were destroyed. The entire loss is covered by insurance.

Two other wings of the main carhouse were saved. The structure is within a stone's throw of Rideau Hall, official residence of the Governor-General, and but for an opposite wind these buildings would have been endangered

by myriads of sparks thrown up by the blaze. Firemen had a strenuous task in keeping the flames from catching the thick bush, which stretches for miles at the rear of the carhouse and forms Rockcliffe Park, a scenic beauty spot of the capital.

Subway Approach Planned by I.T.S. for St. Louis

Illinois Traction System, Springfield, Ill., has engineers at work to devise plans for a co-ordinated subway and elevated railway system to connect its downtown terminal and station at Twelfth and Lucas Avenue, St. Louis, Mo., with a proposed new approach to the McKinley Bridge which spans the Mississippi River at Salisbury Street.

The new system would give the railway approved access to the downtown section for its freight and passenger business and eliminate many grade crossings in north St. Louis. Three tentative plans are under consideration, but the preliminary studies have not advanced sufficiently to warrant any announcement at this time. It probably will be January before anything definite will be decided.

Worcester's \$75,000 Bus Purchases Approved by Commission

The Worcester Consolidated Street Railway, Worcester, Mass., has entered into a conditional sales agreement with the Yellow Manufacturing Sales Corporation, Chicago, for the purchase of seven motor coaches, which has been approved by the Massachusetts Department of Public Utilities as being "reasonable and proper and for a lawful purpose."

The coaches are to have special bodies, manufactured by the Lang Body Company. The conditional sale calls for the payment of a sum not exceeding \$75,410, with 6 per cent interest, in installments on specified dates.

Twin Coach May Appear in New York

Contingent upon the outcome of franchise hearings before the New York Transit Commission and legal proceedings by other transportation companies concerned, the Equitable Coach Company, New York, N. Y., will operate Fageol Twin Coaches on crosstown lines in Manhattan and ordinary street-car type city buses in Brooklyn.

Should the necessary permission be secured, the company will place in service 163 Twin Coaches in Manhattan, establishing a crosstown service with a two-minute rush-hour headway. An indeterminate number of the street-car type buses will be purchased for use in Brooklyn.

Electric Locomotive Sought for South Africa

The South African Railway Administration is inviting tenders for an electric freight locomotive. The authorities desire to find an electric unit that will be a big improvement on those in use at present, and it is their intention to test this single unit against the three units now being employed. Should the experiment prove successful, it is understood that this contract for a single locomotive will be followed by one of the largest contracts in the history of the South African railways.

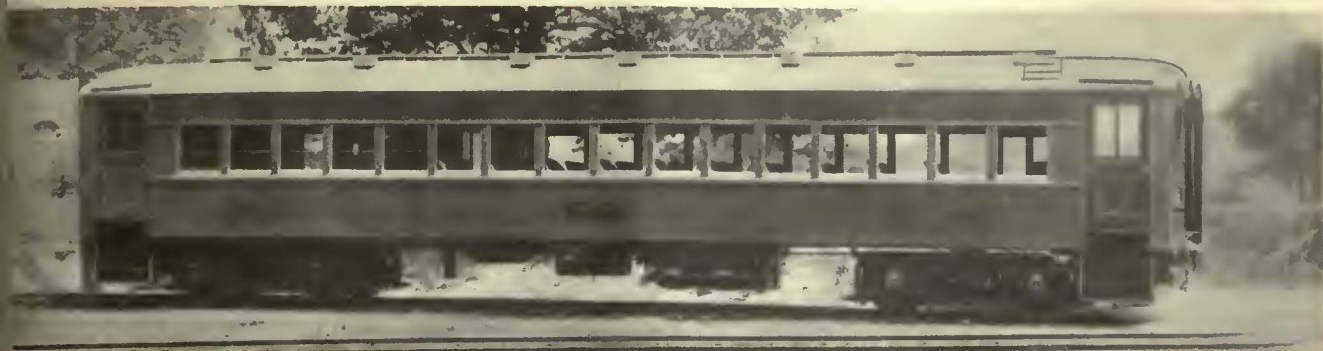
Delivery of Detroit Cars Will Begin in October

Delivery of the 125 Peter Witt type cars ordered on July 30 by the Department of Street Railways of the City of Detroit from the Cummings Car & Coach Company, Chicago, will begin in October. Following the first delivery eight cars will be completed each week. Payment for the cars, as outlined in the July 23 issue of *ELECTRIC RAILWAY JOURNAL*, is being made by an initial installment of \$250,000 and \$18,000 per month over a ten-year period from Aug. 1, 1927, to July 1, 1937, inclusive. The units are of the single-end type and are designed for two-man operation.

Specifications for the units follow:

Number of cars ordered.....	125
Type of unit.....	Peter Witt two-man, motor, passenger, city, single end, double truck
Seating capacity.....	52
Builder of car body.....	Cummings Car & Coach Company, Chicago
Weight, total.....	36,000 lb.
Bolster centers, length.....	23 ft. 9 in.
Length over all.....	48 ft. 5 in.
Truck wheelbase.....	5 ft. 6 in.
Width over all.....	8 ft. 4 in.
Window post spacing.....	29½ in.
Body.....	Steel
Roof.....	Arch
Doors.....	Peter Witt
Air brakes.....	Westinghouse DH-16
Armature bearings.....	Plain
Car signal system.....	Faradsky
Compressors.....	DH-16
Conduit.....	Flexible
Control.....	K-35 HH
Curtain fixtures.....	Curtain Supply Company
Curtain material.....	Pantasote
Destination signs.....	Hunter
Door mechanism.....	National Pneumatic
Doors.....	Front folding, center slide
Energy-saving device.....	Cleveland
Fare boxes.....	Cleveland
Finish.....	Lacquer
Floor covering.....	Wood
Gears and pinions.....	Grade M. & B. P.
Glass.....	D. S. A.
Hand brakes.....	Peacock
Hand straps.....	Rico No. 7
Heaters.....	Gold
Headlights.....	Golden Rod
Headlining.....	Three-Star Agasote
Interior trim.....	Cherry
Journal bearings.....	Plain
Journal boxes.....	Symington
Lamp fixtures.....	Electric Service Supplies Company
Motors.....	Four General Electric 265, four Westinghouse 510, inside hung
Roof material.....	Wood
Sash fixtures.....	Edwards
Seats.....	Rattan
Seat spacing.....	29½ in.
Seating material.....	Rattan
Steps.....	Stationary
Step treads.....	Kass
Trolley.....	Ohio Brass
Trolley base.....	Ohio Brass
Trolley wheels.....	Detroit Street Railway, standard
Trucks.....	Standard
Ventilators.....	Railway Utility Company
Wheels.....	26-in., steel
Wheelguards.....	H. B.

Twenty New Steel Motors and Trailers for the South Shore Line



Ten motors and ten trailers of this type for the South Shore Line

Delivery of the first of twenty new steel motor cars and trailers built by the Pullman Car & Manufacturing Company was made recently to the Chicago, South Shore & South Bend Railroad, Michigan City, Ind. The initial assignment of new equipment, which was ordered in January, consisted of five rail cars. They were received July 30. Five additional trailers were expected to arrive by Aug. 8, while the ten motor cars were scheduled to be in service shortly after. Reference to delivery appeared in the JOURNAL of July 30.

Features which distinguish the latest group of passenger cars from the 25 units put in service by the South Shore line a few years ago, coincident with the re-electrification of the road, are their greater length and the bucket type seat used. The new cars are 61 ft. long, 1 ft. longer than the old ones, and are equipped with rotating bucket seats upholstered in gray Byzantine plush, whereas green plush reversible cross seats were installed in the earlier equipment. Another interesting arrangement in the new cars is the Pullman type smoking compartment, which has been made standard for both motors and trailers. The smoking compartments are furnished with facing leather-covered seats for eight passengers. An aisle passes around this compartment, making it unnecessary for passengers entering the cars to pass through the smoke-filled room.

Control apparatus in each car permits multiple-unit operation with either a motor or trailer car at the head end of the train. The cars are also equipped with steel and canvas diaphragms, making possible the operation of solid vestibule trains. Steel pilots are at both ends of the cars.

The interior finish of the cars is mahogany with cream-colored ceilings, while the exterior is done in the railroad's standard orange and maroon lacquer. A 32-volt multiple lighting system is used, with a 225-amp.-hr. storage battery automatically charged from a motor-generator set.

The motor car specifications are as follows:

Number of units.....	10
Type of unit.....	Two-man, motor, passenger, inter-urban, double end, double truck
Number of seats.....	48
Builder of car body.....	Pullman Car & Mfg. Company, Chicago, Ill.
Weights:	
Car body.....	63,700 lb.
Trucks.....	33,200 lb.
Equipment.....	33,700 lb.
Total.....	129,600 lb.
Bolster centers.....	38 ft. 0 in.
Length over all.....	61 ft. 0 in.
Length over body posts.....	49 ft. 6 1/2 in.
Truck wheelbase.....	7 ft. 0 in.
Width over all.....	10 ft. 1 1/2 in.
Height, rail to trolley base.....	13 ft. 1 in.
Date of order.....	Trucks, Dec. 18, 1926; body, April 18, 1927
Date of delivery.....	Aug. 8, 1927
Window post spacing.....	35 in.
Body.....	All steel
Roof.....	Arch



Interior of one of the units showing the rotating, bucket type seats

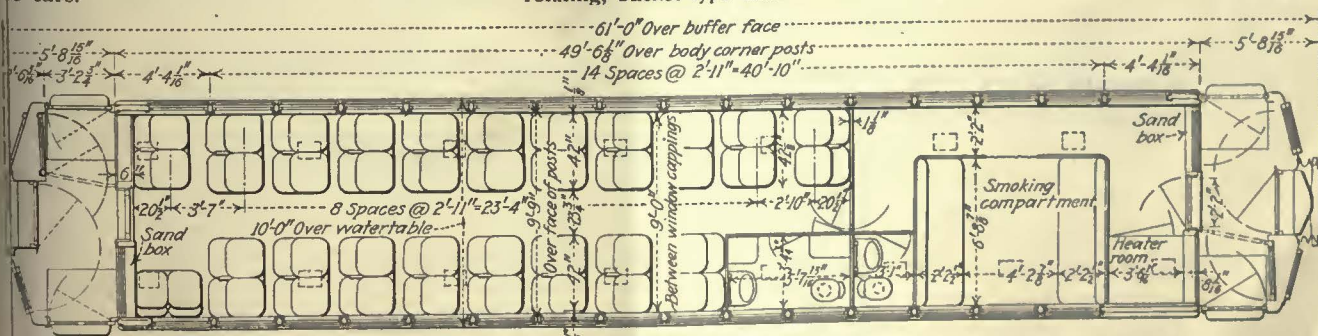
Doors.....	End, swinging
Air brakes.....	Westinghouse AMU
Armature bearings.....	Plain
Axles.....	5 1/2 x 10 in.
Car signal system.....	Faraday 32-volt, single stroke bell
Compressors.....	Westinghouse D3F, 1,500-volt
Conduit.....	Metal
Control.....	Westinghouse HBF, 1,500-volt
Couplers.....	Ohio Brass Company
Curtain fixtures.....	Railway Curtain Company
Curtain material.....	Pantasete
Destination signs.....	Hunler
Energy-saving device.....	Economy meters
Finish.....	Duoc
Floor covering.....	1 1/2-in. battleship linoleum
Gears and pinions.....	Westinghouse BP
Glass.....	Plate
Hand brakes.....	Peacock staffless
Heat-insulating material.....	Balsam Wool
Heaters.....	Peter Smith, OC2
Headlights.....	Electric Service Supplies Company
	32-volt, 250-watt

Headlining.....	Steel
Interior trim.....	Mahogany
Journal bearings.....	Plain
Journal boxes.....	Symington
Lamp fixtures.....	Pullman dome type
Motors.....	Four Westinghouse No. 567, inside hung
Painting scheme.....	Orange and maroon
Pantograph.....	No. 515C Westinghouse
Roof material.....	Poplar wood and canvas
Safety car devices.....	"Deadmao" feature and controller

Sash fixtures.....	Adams & Westlake
Seats.....	Hale & Kilburn No. 900 rotating
Seat spacing.....	35 in.
Seating material.....	L. C. Chase Co., Byzantine plush, gray and brown
Slack adjusters.....	Westinghouse type J
Steps.....	Stationary
Step treads.....	Stanwood self-clearing
Trucks.....	Baldwin Locomotive Works, equalizer type
Ventilators.....	Railway Utility Company
Wheels.....	Rolled steel, 36 in. diameter

The ten trailers are identical in design and dimensions with the motor cars. They are fitted with control including full safety equipment the same as on the motor cars. The air brakes are Westinghouse ATU, trailer type. The trailers seat 50 passengers as compared with 48 for the motor cars on account of a slight rearrangement of the toilet. Weights are as follows:

Number of seats.....	50
Date of delivery.....	July 26, 1927
Weights:	
Car body.....	60,000 lb.
Trucks.....	33,200 lb.
Equipment.....	3,000 lb.
Total.....	96,200 lb.



Plan of one of the new South Shore motor units. The general dimensions of the trailers are identical

\$300,000 Railway Order for Japan

Contracts have recently been let by the Tobu Railway of Japan for 28 motor-coach equipments, sixteen trailer-coach equipments and two completely automatic rotary converter substations to supply 1,500 volts direct current for the electrification of the 50-mile stretch of railway from Sugito, on the Asakusa-Kuzuu line, to Nikko. This order, which was awarded to the English Electric Company of London, is valued at approximately \$300,000. It is the fourth placed by the Tobu Railway with the same company and is additional to contracts for the supply of twenty motor-coach and fourteen trailer-coach equipments previously awarded by it to this concern.

Metal Markets Dull

Producers of the non-ferrous metals can find little ground for optimism in the market report for the week ended Sept. 27. Sales of all metals have been meager and the prices for all the more important ones are lower.

The excellent buying of last week has been followed by a wave of lassitude, and the tonnage disposed of during the week ended Sept. 27 was one of the smallest of the year. Most sellers feel confident that the present lack of interest is only a passing phase, and have merely quoted 13.25 cents. Certain sellers who pursue the policy of always disposing of their output irrespective of market conditions have made large concessions from this price, and in consequence have practically monopolized the market. To obtain a price of even 13 cents, however, they have been compelled to make a wide canvass of the consumers.

The most that can be said for the lead market is that the American Smelting & Refining Company is holding firm at its contract price of 6.25 cents in spite of a quiet domestic demand and continued reductions abroad, which have brought the London spot price today to £20½, the lowest level reached since March, 1922. The leading producer in the Middle West has gone back to 6

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

Metals—New York		Sept. 27, 1927
Copper, electrolytic, cents per lb.		12.80
Copper wire, cents per lb.		15.25
Lead, cents per lb.		6.25
Zinc, cents per lb.		6.15
Tin, Straits, cents per lb.		58.75

Bituminous Coal, f.o.b. Mines

Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons.	\$4.175
Somerset mine run, Boston, net tons.	1.80
Pittsburgh mine run, Pittsburgh, net tons.	1.95
Franklin, Ill., screenings, Chicago, net tons	†
Central, Ill., screenings, Chicago, net tons.	†
Kansas screenings, Kansas City, net tons.	2.70

†Quotations withdrawn because of strike.

Materials

Rubber-covered wire, N. Y., No. 14, per 1,000 ft.	\$5.55
Weatherproof wire base, N. Y., cents per lb.	5.20-5.70
Cement, Chicago net prices, without bags.	2.05
Linseed oil (5-bbl. lots), N. Y., cents per lb.	11.2
White lead in oil (100-lb. keg), N. Y., cents per lb.	13.75
Turpentine (bbl. lots), N. Y., per gal.	\$59.0

cents St. Louis, which seems to be the deadline for the time being, so far as this seller is concerned.

Less zinc was sold in the week ended Sept. 27 than in any other week since February. On Sept. 28 zinc sold as low as 6.075 cents, though forward deliveries were higher.

Tin has broken through the 60-cent level, and is down to about 58½ cents for prompt Straits, forward being about half a cent less.

Twenty Car Sets Sold Sao Paulo Company by Canadian Car & Foundry

The Canadian Car & Foundry Company, Ltd., Montreal, Canada, recently furnished twenty sets of car parts for the twenty new units built by the São Paulo Tramway, Light & Power Company, Ltd., of Brazil. The new units were placed in service on May 5. Their interior finish is of fine quality national wood, highly varnished, which, combined with a creamy white ceiling and a diffusion of illumination with opal reflectors, at all times gives a restful and pleasing atmosphere. The outside color scheme is composed of Tuscan red paneling surmounted by framing finished with cadmium yellow. This gives the cars a bright and attractive appearance.

The units are of the one-man, two-man type and they are adaptable to the pay-enter or pay-leave method of operation. The company built an experimental car before decision was made to construct the twenty units. In outside appearance the cars are very much after the order of the usual type of American units. The seating arrangement is a departure from American practice, however, in that there are two longitudinal seats at either end of the car and facing four crosswise rattan slat seats in each case.

Noiseless Trolley Experiments

Noiseless trolley service is being sought by the Eastern Massachusetts Street Railway. Experiments with noiseless trucks are being conducted on the system by a representative of the J. G. Brill Company of Philadelphia, under an understanding that if satisfactory results are obtained the Eastern Massachusetts will have its cars equipped with new Brill trucks.

ROLLING STOCK

HOLYOKE STREET RAILWAY, Holyoke, Mass., received one Mack city-type bus, gas-electric drive, 196-in. wheelbase, with four-cylinder motor and 25-passenger capacity.

SOUTHERN PACIFIC MOTOR TRANSPORTATION COMPANY, bus-operating subsidiary of the Southern Pacific Railroad, San Francisco, Cal., has accepted delivery on two Mack buses, 230-in. wheelbase, with four-cylinder motors.

The buses will operate between Santa Cruz and Boulder Creek, a route 16 miles long, at a 50-cent fare.

BINGHAMTON RAILWAY BUS LINE, INC., subsidiary of the Binghamton Railway, Binghamton, N. Y., has received three 25-passenger Mack city type buses, AB model, 196-in. wheelbase.

SHORE LINE MOTOR COACH COMPANY, subsidiary of the Gary Railways, Gary, Ind., announces the acquisition of a 42-passenger parlor-type twin coach. The unit is a six-cylinder type. It was built by the Frank R. Fageol Company, Oakland, Cal., and will be used in main line service between Chicago and Muskegon, Mich.

TRACK AND LINE

COLUMBUS RAILWAY, POWER & LIGHT COMPANY, Columbus, Ohio, has completed the laying of new track on High Street, between Arcadia and Oakland Park Avenues, a distance of about ¼ mile.

CONNECTICUT COMPANY, Bridgeport, Conn., has been granted permission by the Public Utilities Commission to make changes in its line west of Ash Creek to Library Corner in the town of Fairfield. The company will abandon the present trolley line and give service over the new highway to be known as the Fairfield cut-off. The new route will be considerably shorter, and the company proposes to lay a double-track line. The old route was a single-track affair with numerous switches to cause service delays. Public approval has been voiced on the change.

ST. JOSEPH RAILWAY, LIGHT, HEAT & POWER COMPANY, St. Joseph, Mo., has completed a track job on Alabama Avenue. As soon as this was finished work was started on laying new tracks, steel ties and new concrete between Eighth and Eleventh Streets. Later on the company will rehabilitate its line on Alabama Avenue from Lake Avenue west to the railroad tracks.

READING TRANSIT COMPANY, Reading, Pa., has been busy with a program of track rehabilitation during the spring and summer months which has included relocation and reconstruction of the double track on Aulenbach Cemetery Hill. Another important piece of work under way is the complete rebuilding of the track on North Eleventh Street between Marion and Amity, a distance of about three blocks. The track area is being paved with asphalt on a concrete base, finished off with granite liners. Work on North Eleventh Street will cost about \$18,000. In addition the company has done considerable repair work, special work switches, etc., at Sixth and Washington Streets and Third and Chestnut Streets and at Fourth and Centre Avenues. Track joints have been raised along the entire route of the Eleventh Street line, except in the section of new track on Schuylkill Avenue and on Penn Street.



“They have built a high wall of
“Peacock” Staffless Brakes—”

Reg. U. S. Pat. Off.

An amazingly high percentage of modern trolley cars in service are equipped with Peacock Staffless Brakes. We recognize in this the decision of company executives to provide the last possible safeguard. They have built a high wall of Peacock Staffless Brakes to stand between their patrons and the menace of ever present emergencies of traffic.

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Consists of but two parts — one endless section and one split section. Makes all pneumatic tires quickly detachable as well as *demountable at the rim*. Offers a complete range of sizes.

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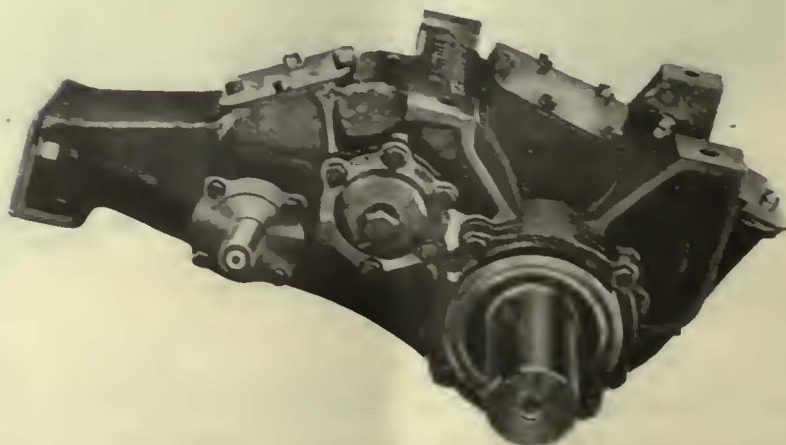


Heywood-Wakefield Co., Wakefield, Mass.; 516 West 34th St., New York, N. Y.; 439 Railway Exchange Bldg., Chicago, Ill. H. G. Cook, Hobart Bldg., San Francisco, Cal. The G. F. Cotter Supply Co., Houston, Texas. F. N. Grigg, 630 Louisiana Ave., Washington, D. C. The Railway & Power Engineering Corp., 133 Eastern Ave., Toronto; Montreal; Winnipeg, Canada.



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See the WN drive on the car exhibited by the J. G. Brill Co., and also in the exhibit of the Westinghouse Elec. & Mfg. Co. at the A.E.R.A. Convention.

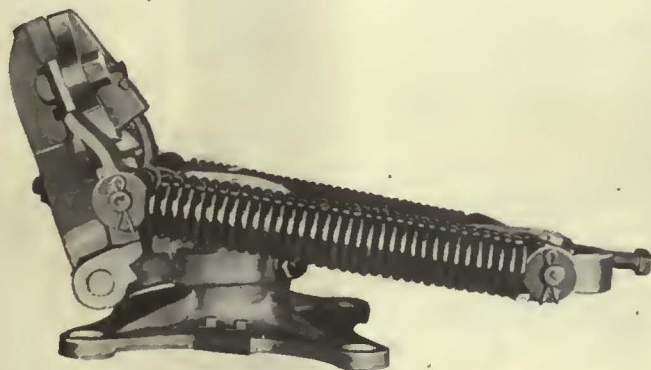
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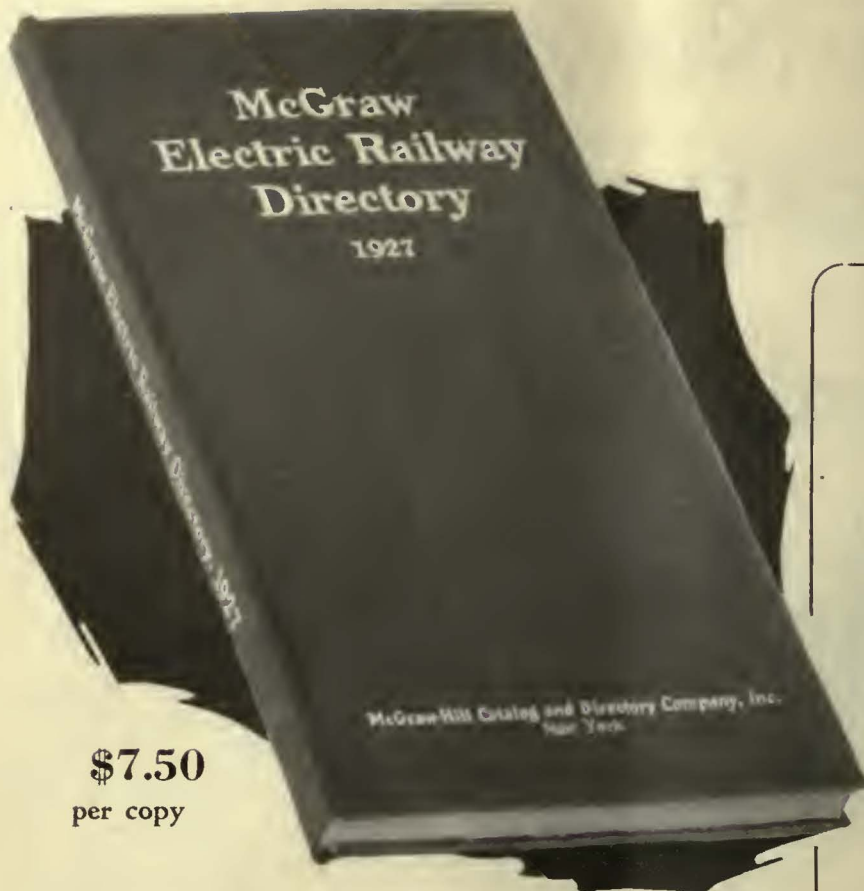
See this base on display at our space 110 at
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Location of repair shops.

Location and the total capacity of power plants.

Mileage of the road, owned, leased and trackage rights.

Gage of track.

Number and kind of cars used.

Number of buses operated.

Number of garages, capacity and their location.

Rates of fare.

Transmission and trolley voltages.

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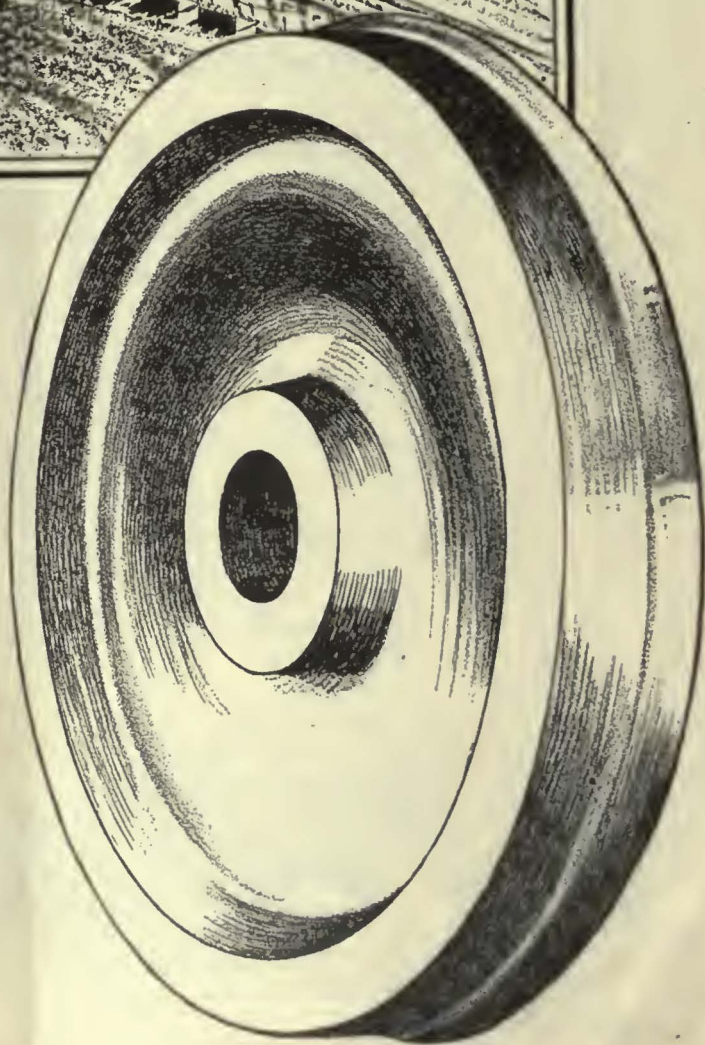
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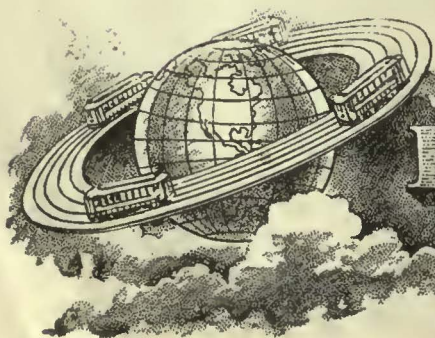
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Mr. Beeler says that in printing and auditing, this register seems to possess every convenience that human ingenuity can devise—performing with almost human intelligence.



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The operator simply sets the levers and turns the crank. That prints and issues a ticket—and from the same type prints a duplicate record of the data on a tape locked in the register. Both the ticket and record show

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OHMER FARE BOXES, convenient and durable receptacles for fare collections.
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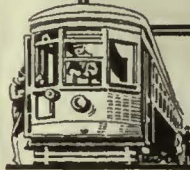
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—the only panel board made in one piece. It is homogeneous and waterproof. Will not separate, warp or blister.

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Le Carbone? Carbon Brushes!

Reason No. 8

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We consider this method right, because it is virtually the Morganite method of giving you information of carbon brush characteristics.

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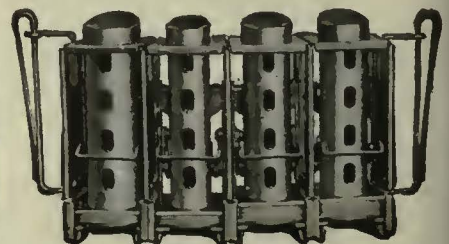
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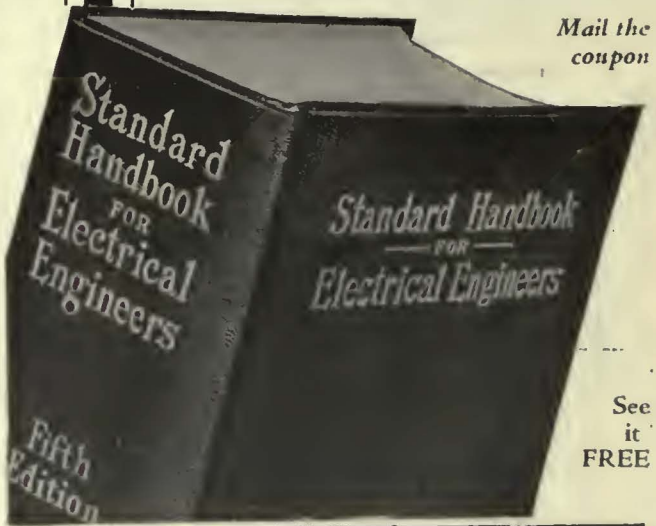
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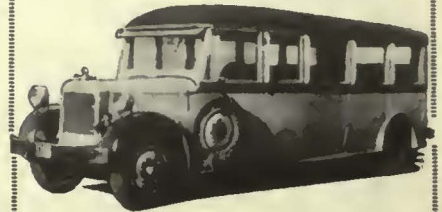
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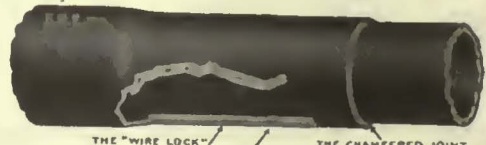
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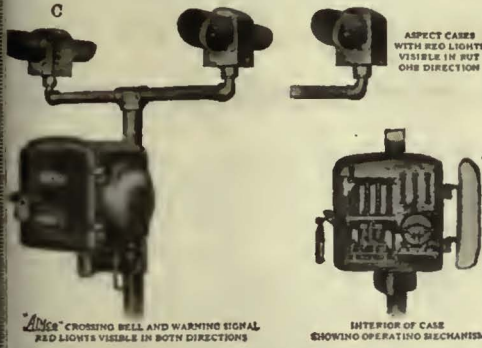
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