

# Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

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## Fare Changes and Conductors' Morale

THE maintenance of good public relations is desirable for many reasons, but one to which attention has not often been directed is that of the effect of good public relations on the morale of the operating force. In those cities where the management and the company are generally considered to be doing the right thing and the railway system is regarded with pride by the community it is but natural that the operating force should reflect this condition by taking a pride in its work. Where the contrary is true, however, it is obvious that the operating force will respond also to this situation, particularly as the men on the cars are the recipients of the greater part of the complaints.

For this reason sources of irritation in the service which are not matters of principle should be avoided wherever possible.

One common cause for complaint with zone systems on an intercommunity line where the zones are on a distance basis is to have the fare limit occur at a point across which there is at times much over-riding in one direction or the other for a few hundred feet or so. Discontent is more apt to be enhanced in a case of this kind, of course, where there has been a recent change in fares. In such cases it will usually be found desirable for the company so to place its zone limits that they fall as far as possible between community limits rather than within them. If this is done it obviates discrimination of passengers that live close to the zone line, adds very much to the maintenance of good public relations with the inhabitants of that district and is likely to increase car revenues.

Suggestions as to what constitute such causes of irritation can often be obtained to advantage directly from the men themselves. They are the ones who receive the complaints and can often give a new fare plan or even an old fare plan both destructive and constructive criticism.

## Have You an Adequate Program of Publicity?

PUBLICITY, or advertising as it might more properly be called, is a natural and accepted feature of ordinary business. It has been a feature of the electric railway business, but there is a continuous complaint, may it be said, that the industry is not "getting anywhere" fast enough with the present program. There is a call for more education of the public.

Passing for the present the question of national publicity, what is being done by the various companies locally? Some are carrying on most successful work in this line and the "copy" produced is often most attractive and carries suggestions for use elsewhere. The ELECTRIC RAILWAY JOURNAL is trying to reproduce as much of the good material as it can.

There are two suggestions which might be made as

criteria for the coming year, both of which are in use by some companies.

One of these is the suggestion that each railway spend for advertising that revenue which it receives from advertising, from car cards, station posters, etc. It is a legitimate business expenditure, as necessary with electric railways as with other lines of commercial and industrial activity. The electric railway business is a selling business. Over 12,000,000,000 individual sales are made each year, which should amount in 1921 to approximately \$750,000,000. Any other industry with such a business would advertise!

The other suggestion is that publicity and information material be so worded that it will leave a question in the mind of the reader, a question of such a nature that he sees that the subject affects his own interests and he will want to answer it. One criticism of much railway publicity matter now is that it is too much like spoon feeding, too much of mere information, all matter of fact, sealed and delivered. Excite the reader's curiosity! Excite his own self-interest! Ask him questions! President Gadsden strikes a good note with his "Ask the Car Rider" slogan, which can well be capitalized in advertising to the riding public.

Above all, have a plan, study the other fellow's work, exchange information and use advertising to sell your product—transportation.

## Get a Sales Manager and Put Him to Work

AS THE foregoing figures commence to permeate one's consciousness, there is also the inclination to ask what other business with 12,000,000,000 sales annually, or with a gross sales income of \$750,000,000, has no sales management? How some real salesmen would jump at an opportunity where there are already billions of purchasers and where there are other billions of potential customers in the pedestrians, auto riders, stay-at-homes, etc.!

Many companies have done a good deal, when operating and financial problems were temporarily not too pressing, to "merchandise transportation," but usually this has been only when other problems didn't press. This work has devolved, from time to time, on the superintendent of transportation, on the public relations representative, or some one else temporarily available.

What is needed is a sales manager.

A sales manager is primarily, and solely, a salesman and an organizer of salesmen. He ought to have no other duties than to sell rides and to "sell" the idea of the value of a ride. He ought to be a salesman who has been taught the railway game; a salesman first, a railway man second. Most often, railways try to train a railway man to be a salesman. If he has a salesman's instinct, all right, but usually he remains an operator.

Moral: Get a sales manager and sell more rides.



### Sloughing Off Detail in Administrative Work

EVERY man who has any executive responsibility finds his time taken up with two distinct types of duties; one covering the broad general principles of his business, the other details largely of a clerical nature. In spite of resolve to the contrary, duties of the second type are apt to take a disproportionate share of attention, partly because they are more tangible and seem to be closer at hand, and partly because it is for most people easier to work with the hands than the head. But executives are paid to work with the head rather than the hands, and if they are to be permanently successful they must turn over to others all duties that the others can perform.

This line of thought has been suggested by editorial calls upon hundreds of electric railway executives, from foremen up. Possibly it is too much to say that most of these men are being hampered by too close attention to detail, but certainly many are. And their departments as well as properties as a whole reflect the influence of undue absorption of the executives in things rather than ideas.

If manufacturers used for any purpose material unnecessarily expensive, the wastefulness of the practice would be obvious. The same principle holds, of course, in the personnel of an organization, although it may perhaps not be so easily detected. One factor in the efficient conduct of every business, therefore, is so to assign the work that expensive men will not be engaged on things which others at lower salaries can do just as well. Another advantage of this plan is that it will usually develop the assistants to take positions of greater responsibility as time goes on.

### Nothing Venture, Nothing Win

THE carefree way in which the London County Council Tramways, and later the London General Omnibus Company, could announce so far reaching a change as a reduced off-peak fare, or one good from 10 a.m. to 4 p.m., in the largest city of the world calls for admiration at their courage quite regardless of the economic value of an experiment that has been in force since May, 1920, on the entire tramway system, and since Sept. 27, 1920, on the motor bus lines. With all the enterprise that is associated with the adjective "American" the railway industry as a whole has often been most timid about adopting innovations which later proved their worth.

Thus even the youngest electric railway men today can recall the general belief that there was no better way of collecting fares than that of having a conductor work his way through the car while the then open rear platform remained unguarded. Many had suggested pay-as-you-enter before MacDonald and Ross, but it remained for them as daring operators to prove that the public would appreciate its superiority. This is history known to all. Less known is the fact that W. S. Twining, then chief engineer of the Philadelphia Rapid Transit Company and now Philadelphia's Director of City Transit, designed a pay-leave car as early as 1907 (see *Street Railway Journal*, Jan. 18, 1908). Apparently the idea made no appeal to the then Philadelphia management, nor did the average operator believe that it would be as practicable or desirable to get the fare after the ride was taken rather than before. It conjured up in his

mind visions of people leaving cars en masse during a blockade and refusing to pay any fare even after a long ride.

Mr. Twining was simply ahead of the group imagination of his day, for after Peter Witt, as Street Railway Commissioner of Cleveland, had persuaded the Cleveland Electric Railway in 1911 to try several types of pay-leave cars, the idea took hold and made good in a large number of cities. The honest belief of many operators that their patrons would be unalterably opposed to modern one-man car operation is too fresh in memory to require recalling.

Knowledge of these incidents in the history of the industry should drive groundless fears out of the heart of the operator who wants to try something new in the way of equipment or fares practice. He may rest assured that if his idea holds something of worth to his patrons they will put up with the inconvenience involved in the change, provided always that his plan and motives receive due publicity.

### Do the Electric Railways Need Any More Technical Graduates?

AT THIS time of the year the prospective five thousand graduates, more or less, of a hundred technical schools are beginning to wonder what they are going to do after commencement. Already the manufacturing and some other industries are planning to send representatives to the colleges to explain to the young men, and young women too in some cases, the attractions of their several fields of activity. The electric railways will not be so represented. This is partly because there is no central organization for the electric railways which takes up matters of this kind, and individual railways do not need enough men to warrant them in going to the expense of sending "scouts" to the colleges. It is doubtful, also, if the value of a technical education applied to the right kind of an individual is appreciated as much by the railways as in manufacturing. Possibly the value is actually higher in the latter field, but this ought not to be so.

At any rate, the manufacturers and a few others will get the choice of the educational crop and the railways will take what is left, including, however, those young men who have heard the "call of the rail" and will insist on going into transportation work in spite of lack of invitation and even, if necessary, of opposition. Luckily, this number is considerable.

There are many excellent opportunities for technical graduates in the electric railway and related fields. The whole business is founded upon civil, mechanical and electrical engineering. Of course, the focus of interest has shifted somewhat in recent years from track, power plant and line to fares, schedules, accident reduction, etc. But fundamentally transportation is a proposition of moving people and goods from one point to another with a maximum of speed, economy and safety. As long as this is so the business will need engineers.

Furthermore, the principles underlying engineering have application far outside the engineering divisions of the field and engineers are making themselves useful in the transportation, purchasing, accounting and other departments. They are especially useful in the making of appraisals, either in the railway organization or without, a phase of the work which is bound to become more and more important.



It is too bad that some systematic way has not been provided by which the electric railway field can be explained to engineering students. Some schools have courses in transportation engineering, which serve an excellent purpose, but they need to be supplemented by talks from competent railway executives or their representatives. This would seem to be a line of work for the American Electric Railway Association and American Railway Association to take up on behalf of their respective clienteles.

### Refunding Is a Problem in the Face of Present Tax Exemptions and Income Tax Laws

ONE of the big financial problems in the electric railway field during 1921 is how bond issues maturing this year will be refunded. The topic is one which is to be considered at length at the mid-year meeting of the American Electric Railway Association and the thought here is not to anticipate the subject as presented at that meeting but to give a few figures to emphasize the importance of the topic to the electric railways and the communities which they serve.

According to the census report in 1917, there was in that year outstanding in funded debt \$3,068,377,167 on which the annual interest paid was \$110,506,977. If twenty years is assumed as the average life for these bonds, those maturing each year would aggregate about \$150,000,000; this average would be reduced to about \$100,000,000 if a thirty-year average life of bond was assumed. Actually, the figures would not be quite so large as these, since the companies in the hands of receivers may be considered as being relieved of the necessity of caring for their maturing issues. Practically 15 per cent of the funded debt of the electric railways mentioned above was issued by companies now in receivers' hands.

It is obvious that all refunding issues of bonds issued now will have to carry interest rates much higher, to make them sell at par, than those bonds whose place they take. Most of the earlier bonds were put out at a time when the common interest rate for the average utility bond was 5 per cent. Some of the longer seasoned issues bore only 4 per cent interest. Now, when government bonds with many tax exemption features sell on a basis of from 5.20 per cent for the longest term to 6.40 per cent for the 1928 maturity, it is easy to see that electric railway bonds will have to carry a considerably higher rate. Another difficulty which utilities will meet in endeavoring to sell their bonds is that under the present income tax law surtaxes, the purchase of any securities which are not tax exempt is practically out of the question for those with large incomes. It has been determined, for instance, that a man with \$100,000 taxable income can pay only 68.08 for a 5 per cent bond to have it net him 5 per cent, while a man with a taxable income of \$300,000 can pay only 26.51

for the same bond to get a 5 per cent net yield. Hence, a considerable market which formerly existed for public utility bonds has now been practically cut off. This emphasizes the necessity for electric railway companies to develop local markets for their securities.

It is to be hoped that in any modification of the income tax effected by Congress this handicap will in some way be overcome, but, until that is done, even electric railways with a good income and "credit re-established" will have difficulty in selling bonds except at a high rate of interest. This means that many conceptions by the public of what constitutes a "reasonable rate of return" on the value of electric railway property will have to undergo modification.

### Anticipate the Automotive Age in Your Building Plans

THERE is so much more hindsight than foresight in this world that we may be pardoned for making a suggestion that may seem a little premature today, namely: Try to make sure that the shop or storage plant you plan today will not have to be reconstructed at great expense to care for a corps of automotive vehicles. By the latter we do not mean merely the gasoline utility trucks, of which electric railways already operate hundreds, but we also would make provision for future motor buses and freight-carrying motor trucks.

This does not imply that electric railways should forthwith arrange for the special equipment that goes with gasoline operation. What is suggested is that due consideration be given to the character of cellarage, foundation and partition walls, flooring, etc., for two purposes: First, that of easy rearrangement of spaces; second, that of better protection against fire and freezing than is required in a purely electric installation. Furthermore, whether gasoline or trackless trolley buses are in the offing, it will be well to consider what clearances in height and width should be allowed—a matter that may cost little yet save much—and also what conveniences are required to make easier the inspection and repair of equipment. Probably a study of layouts in the larger, high-grade garages and of the practices of the New York and Chicago motor bus companies would prove helpful in this respect.

Neither would it be a bad plan to see what local garage storage and maintenance facilities could be used without going to the expense of putting up a lot of gasoline equipment buildings. An electric railway equipment structure is necessarily special and has to be built at the railway's expense, even if only a dozen cars are to be housed. A few score automotive equipments, on the contrary, if scattered about the system, might be cared for most advantageously by large public garages if the electric railway management secures the wholesale rental and repair rates to which a big, steady customer is entitled.

### Quotation from the Federal Electric Railways Commission Report

No. 8

WHILE the electric railway industry is essentially local, it has certain national characteristics. Its difficulties cannot be regarded simply as the isolated problem of a local system repeated hundreds of times all over the country in varied forms and degrees, each problem being independent of all the others. On the contrary, . . . a local traction system . . . is . . . inseparably connected with all of the others, . . . The close industrial and financial interdependence of the hundreds of physically unrelated local traction systems, the millions of dollars of capital placed by thousands of investors in plants which manufacture electric traction equipment and the five billions of electric traction bonds and stocks to be found scattered all over the country in banks, insurance company reserves and in private investment translate the many local problems into a national problem.



# St. Louis Plans Rapid Transit

**Two Independent Reports for the Development of High-Speed Service and for the Relief of Metropolitan Congestion—Subways for Surface Cars Are a Feature of Each Plan—A Direct-Payment Plan of Charging One Cent Extra on Each Fare Is Suggested as a Means of Financing**

**T**WO independent plans presented last fall in St. Louis deal with the future rapid transit development which is felt to be necessary in that city. One of these plans is a report on a "Proposed Rapid Transit System for the City of St. Louis by the Department of Public Utilities of the City," James A. Hooke, director; C. E. Smith, consulting engineer. The other plan is in the form of a preliminary report by the City Plan Commission of St. Louis, Mo., which is making an all-inclusive study of a general city plan for St. Louis and is proceeding on the basis of making preliminary special studies on each phase of the plan. This present rapid transit report is, therefore, one of these preliminary special studies. The latter report does not discuss the financial side of providing the rapid transit facilities, but refers to what it calls the "interesting discussion and proposal for financing rapid transit construction," which forms a part of the Department of Public Utilities' proposed system.

Naturally, all preliminary plans, such as both of these are, are subject to material modification before a system is in actual existence and operation. The studies, in the present stage, however, afford an opportunity to analyze and appreciate some of the difficulties of laying out a rapid transit system where none now exists, and also some of the possibilities where present rapid facilities offer no limitations to a comprehensive scheme.

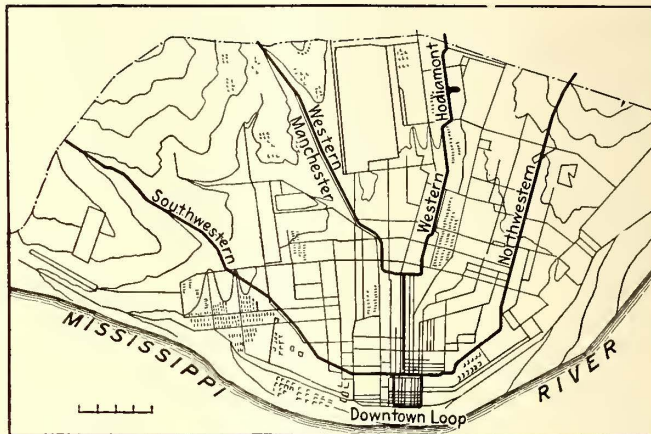
## THE PUBLIC UTILITIES DEPARTMENT PLAN

Considering the plans in the order in which they were presented to the city, the plan of the Department of Public Utilities apparently looks further into the future than the preliminary plan prepared by the City Plan Commission. Both studies are based upon the same traffic investigation figures, namely, those made by the City Plan Commission.

The Public Utilities plan mentions three principal means of separating automobiles and street cars: (1) By improving paved streets for the exclusive use of automobiles and concentrating the street cars in the fewest possible streets consistent with good service; (2) by widening streets containing street cars, more particularly where these streets are paved for heavy automobile traffic; (3) by placing street cars in underground subways in the congested business districts and providing subways and elevated lines for rapid transit trains between the business and residential districts.

This report points out that there has been no real extension to the system for the past fifteen years, during which the city has increased about 25 per cent in population and the suburban communities have increased more than that. Accordingly this plan includes not only a bettering of the present transit facilities but also the necessary growth to handle the increased population and its modified geographical distribution.

The proposed development has six phases, the first of which is an immediate procedure, the five others fol-



RAPID TRANSIT ARTERIES PROPOSED BY CITY PLAN COMMISSION

lowing gradually but simultaneously. The first development is an immediate rerouting to expedite movement of cars and give better service. The details of this are largely of local interest and follow in principle rerouting studies made in other urban centers. It is interesting to note, however, that the proposed rerouting would make it possible to remove about 35 miles of single track of the present system, and the abandonment of this trackage would make possible the construction of about 15 miles of double-track extension with the money that would be spent in renewal of abandoned tracks.

The other developments are: Extension of radial and crosstown lines; subways for surface cars in congested districts; rapid transit subways and elevated lines; downtown stations for steam railroad suburban trains, and subway loops for Illinois interurban cars. The extensions of surface lines include both additions to radial lines and construction of some new crosstown lines, totaling approximately 65 miles of double-track extensions in the preliminary estimate.

The recommendations for subways for surface cars in the congested districts and the development of rapid transit subways and elevated lines are clearly indicated by the accompanying map. A total of 10 miles of surface car subways is shown on the plan, about 3 miles of which it is recommended be provided within the next five years. After the completion of the rerouting and the surface car subways, a total of about 95 miles of single track surface lines could be taken up.

It will be noted that the rapid transit plan contemplates double track in most of the mileage, but suggests three tracks to provide express service in the direction of heavy travel in some parts of the system. No differentiation is made between elevated and subway rapid transit lines as this is impracticable at the present time. Ornamental reinforced concrete viaducts are recommended for whatever elevated lines are built.

The estimated cost of three-track subways is \$6,000,000 per mile and three-track elevated \$1,500,000 per mile.



One of the elements of this transit development plan is the continued use of suburban steam railroads rather than surface or rapid transit electric cars. Those who are familiar with St. Louis will appreciate, however, that the present Union Station is too far removed from the business center to be useful as a commuter station. A double benefit would therefore be derived by building a separate station for trunk line suburban traffic in that this will be brought close to the business center and at the same time the elimination of the suburban trains from the Union Station would increase its capacity for handling through trains. Naturally, future electrification of the suburban trains and the area occupied by the Union Station is anticipated.

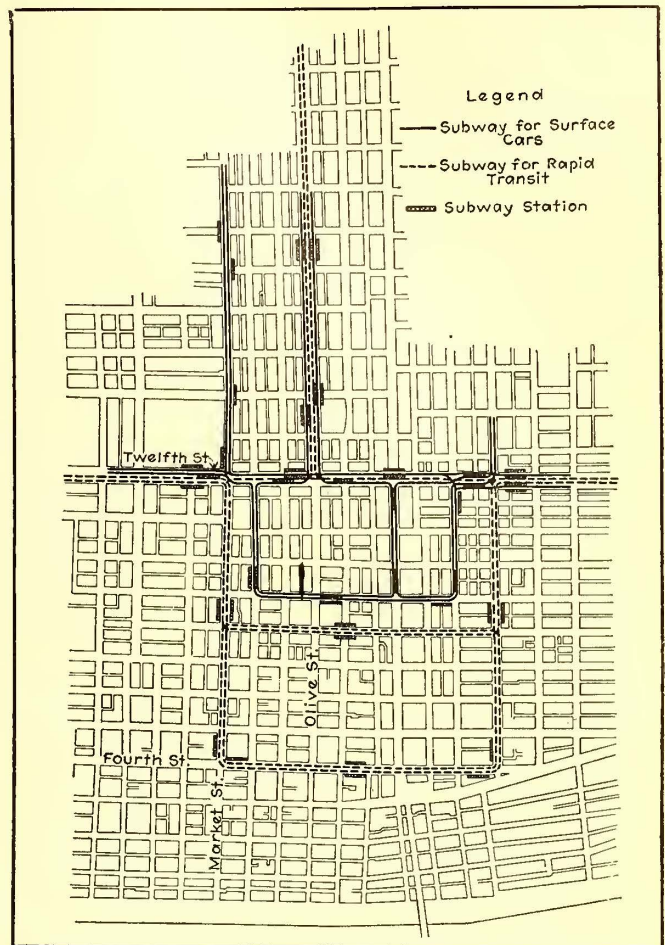
As indicated by the plan, it is contemplated to bring the interurban railways entering St. Louis across the river from Illinois onto an interurban loop which will be principally underground.

This report points out that the system of surface lines and rapid transit lines should be operated as one, similar to the Boston Elevated Railway, remarking on this point as follows:

It is not possible for St. Louis to have such a rapid transit system unless it be operated as a part of a surface system. If each were operated separately the rapid transit system would experience great difficulty in securing enough traffic to pay expenses except at high fares. The resulting decrease in travel on the surface lines would make necessary an increase in fares to pay their expense. By operating them as one, with universal free transfers, the surface lines become able to give the rapid transit lines the necessary density of travel and the service and cost of operating the surface lines can be reduced as passengers are turned over to the rapid transit lines.

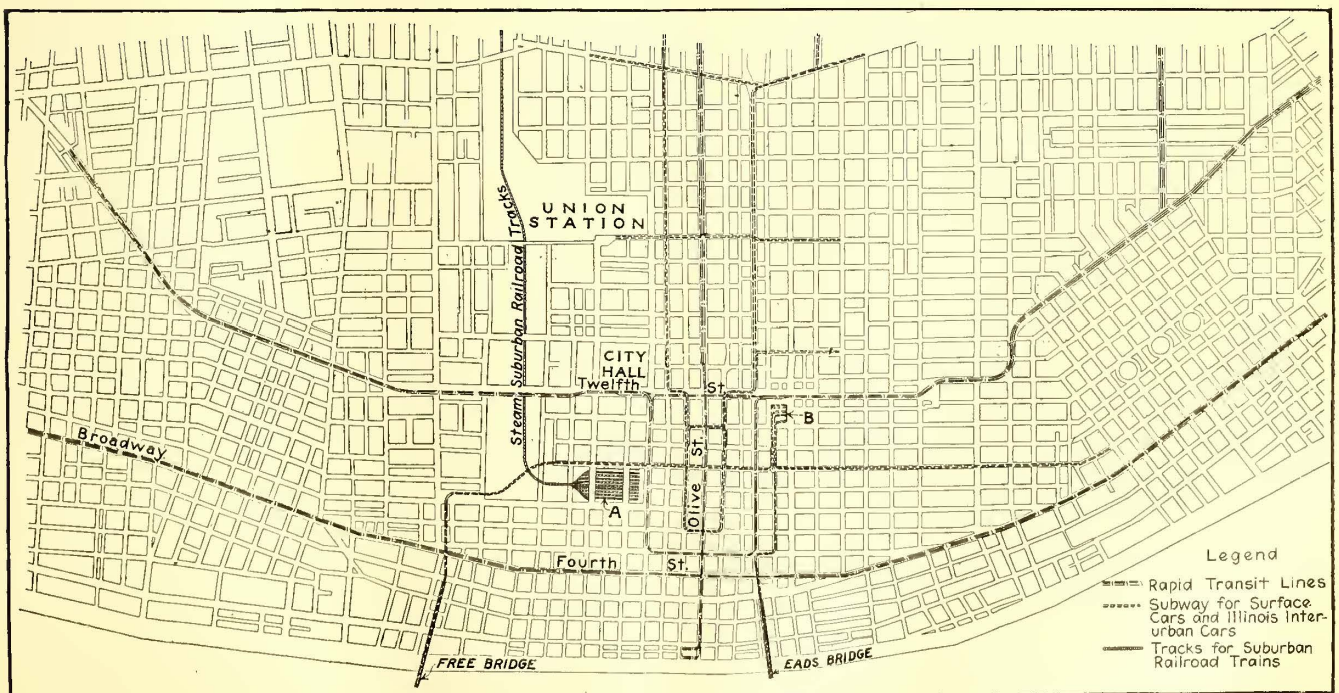
FINANCIAL PLANS

It is estimated that the total cost, not including the suburban railroad station nor the interurban subways, would be somewhere in the vicinity of \$200,000,000. Naturally, this could not be spent at once, nor could it be provided at once. A direct payment plan is recommended to finance the construction contemplated in the



DOWNTOWN RAPID TRANSIT LOOPS PROPOSED BY CITY PLAN COMMISSION

plan. By direct payment plan is meant the collection of one cent with each street car fare and the application of this money to the construction of the system. In the beginning it is stated that this amount, one cent, would have to be added to whatever other fare might be con-



DEPARTMENT OF PUBLIC UTILITIES PLAN FOR RAPID TRANSIT DEVELOPMENT



sidered necessary, but as various improvements become effective, it is predicted that the charge would be partly and perhaps wholly offset by decreased cost of operation, with the ultimate result that the fare on the rapid transit system would be no higher, and probably considerably lower, than if the facilities had not been provided.

From the traffic studies made in St. Louis it is estimated that the sums given below would be available for rapid transit construction. This table contemplates an increase of 2½ per cent each year to the number of fares collected in the preceding year, which estimate is apparently borne out by past experience.

Year	Amount Each Year	Total to Date Without Interest
1920	\$3,000,000	
1925	3,394,225	\$16,163,311
1930	3,840,254	34,450,402
1935	4,344,894	55,140,676
1940	4,915,848	78,549,818
1945	5,561,830	105,035,110
1950	6,292,701	135,000,788
1955	7,119,613	168,904,203
1960	8,055,188	207,262,801
1965	9,113,707	247,662,036
1970	10,311,324	299,764,273

On the above basis there will be provided in the next twenty-five years about \$100,000,000. Mr. Smith estimates that the rate of increase will be greater and that one cent will amount to \$200,000,000 in less than forty years, and in the meantime construction could start immediately and proceed at the rate of \$3,000,000 for the first year, \$3,500,000 per year by the second year, etc.

Three methods of financing by bonds are suggested as alternates: (a) City to raise the money for the sale of bonds to be paid off in twenty years according to the present practice; (b) city to raise the money by the sale of bonds and create a sinking fund to pay them off in thirty to fifty years; (c) private company to raise the money by the sale of bonds and create a sinking fund to repay them in fifty years. An extended analysis of the working of each of these three schemes is given.

It is recommended that the city proceed immediately upon a program which would contemplate some such construction as outlined, and it is stated that the city has the necessary legal authority to proceed with the program outlined without any change in the city charter or the state constitution. It is further stated that the ownership of the rapid transit facilities should be held in the city. They should be operated by the city if municipal ownership and operation comes to pass, otherwise their use should be permitted in the same manner as the streets which they supplant under such conditions as seem appropriate.

#### THE PLAN OF THE CITY PLAN COMMISSION

The report of the City Plan Commission is of course similar in character to that of the Public Utilities Department in that it quotes the traffic study and shows the limitations of the present system. It is accompanied by some very illuminating maps showing graphically the results of the traffic studies and also picturing regions not now reached by any satisfactory transportation service. It also shows the proposed car lines and isochronal zones for present and proposed routing.

The physical difficulties peculiar to St. Louis on account of the elliptical shape of the city, with the business district located at the extreme outer edge, are emphasized. The commission states that present tendencies with respect to the distribution of population seem to

indicate that these difficulties are becoming more pronounced than ever before.

The City Plan Commission recommends that a rerouting of street car lines producing more direct service will meet the present needs of the city without the construction of rapid transit lines. St. Louis is a sprawling city and needs a greater intensity of development within the intermediate central areas before rapid transit facilities will be justified. Eventually St. Louis will need rapid transit facilities, though that day may be ten or twenty-five years hence. The commission therefore recommends in anticipation of this time and in order to relieve one of the more acute transit conditions of today in the congested business district that there be a subway constructed for surface lines, which subway may be so designed as later to form a part of a comprehensive subway system for rapid transit services.

There seems to be no difficulty, according to the commission, of locating satisfactorily at this time the necessary rapid transit lines of the city. Following out this thought, the commission laid out a proposed rapid transit scheme, which is shown in an accompanying map, the details of the downtown or congested district part of the map being shown in a separate drawing. It will be noted that the area covered by the City Plan Commission map is much greater than that covered by the part of the map of the Public Utilities Department.

The City Plan Commission report also calls attention to the fact that the development must be gradual and that the first step is an immediate rerouting of some of the present surface lines. Even this move is divided into three steps, a primary and immediate rerouting, secondary rerouting of transit lines, and a third or final step giving the complete rerouting of surface cars and the installation of subway routes in the business district. There is considerable discussion of the theory of loops, particularly subway loops for all surface cars, in the report. It is estimated that the initial short loop subway for surface car operation would cost about \$17,000,000, and the complete rapid transit scheme including the downtown rapid transit loop and route to the various parts of the city as shown on the map would cost \$80,000,000, making a total of \$97,000,000 for all of the construction for rapid transit purposes and for removing practically all of the surface cars from the surface of the streets in the business districts.

It is planned that there will be no contact of the two systems, namely, the subway for surface cars and the distinctive rapid transit system, except that the systems may be operated in common. The two systems would operate in separate streets, so that they would both be as near the surface as possible.

Under the final plan it is estimated that there will be a possible abandonment of 66.97 miles of single-track surface and the construction of about 33.45 miles of new single track (exclusive of track in subways). Extension of existing lines amounting to 62.67 miles of double-track construction is also proposed.

As a result of a year's experience, the American Engineering standards committee has completely redrafted its rules of procedure. Copies of the revised rules can be obtained by addressing the committee at 29 West Thirty-ninth Street, New York City. The rules are brief and are confined to definitions of the several types of co-operating bodies and to the ways in which the committee functions in the development of a standard.



# Unit Idea in Power Station Design

The Author Shows How the Unit Principle, Which Has Produced Good Results in Equipment Construction, Can Be Fruitfully Applied to Generating Plants as a Whole—The Plan Described Differs from the Designs Which Have Usually Been Known as Unit Designs in that a Unit Is Considered as Complete in Every Part

By LOUIS R. LEE

Chief Engineer E. W. Clark & Company Management Corporation, Columbus, Ohio

UNIT power plants, as designed and built by this company, are the outgrowth of experience gained in the operation and construction of steam plants over a long period of years. Also as operators of steam power plants we have become familiar with the common run of limitations of old and new plants built according to the cut-and-dried method. These limitations consist largely of high generation costs and the difficulty of making extensions at reasonable unit cost. Within their scope these experiences have not been materially different from those met by other utility operators.

The steam power plant for the generation of electric current has necessarily experienced a great many changes in the past twenty years due to the improvements in the equipment offered for this class of service. However, the equipment now offered by various manufacturers has reached a similarity in design which shows that a certain standard of development has been reached, and it is now not so likely to undergo radical change.

We must expect and hope, of course, that there will be detailed improvements in the make-up of various kinds of equipment. Some of these changes will be called for due to change in natural conditions, others due to characteristics of electrical load which must be carried, etc. However, we have today a much better line of equipment to select from than formerly, all of which can be purchased in a variety of sizes without much change in the efficiency, quality or general make-up of the piece of equipment itself. It is possible today to purchase turbines of from 7,500-kw. to 35,000-kw. capacity that do not differ materially in economy, operating characteristics, shape and general make-up.

We may even extend this generalization to unit first cost. The same truth may be told about other lines of equipment, the difference being only in degree, according to the nature of the service for which the equipment is used. To date, however, no such result has been secured for plants as a whole, but it seems to the writer that the time is ripe for such application.

## WHY NOT STANDARDIZE THE POWER PLANT?

Progress has been made in standardization of equipment. We now need to secure similar benefits in power-plant assembly. Not much general progress has been made toward getting away from the idea that the plant must be a complete structure built especially for each particular locality. In other words, the design of plants has not kept pace with the design of equipment which has been used in the plants.

Standardization of assembly and general simplicity in arrangements are both badly needed. In some directions progress is being made. For example, it is becoming more or less apparent that we are going to arrive somewhere in the standardization of the use and application of electric current for all localities. For example, we

have fewer frequencies than we used to have, there being practically only one standard for new plants, that is, 60 cycles. Other frequencies are used only where necessary to conform to existing conditions. Anything other than three phase and single phase is considered freakish. Much in the same way voltages are approaching uniform standards, and like improvement along other lines of standardization could be cited. Therefore, it is becoming more and more possible, feasible and practicable to look upon any and all electric power plants as simply sources of supply for so much electrical energy, the essential aim of the plant being to produce electrical energy at the lowest possible cost, reliability and continuity of service being accepted as a matter of course as among the prime requisites in all power plants.

## THE TERM "UNIT" IS APPLIED TO OTHER THAN PRIME MOVERS OR BOILERS

In the unit design which this company has evolved the principal essential is that a plant is built up of units which are complete in every part and will operate and function as units, furnishing some fractional part of the total requirements of the power plant.

A power plant may be divided into several parts, depending somewhat upon the service given, but the plant as a whole naturally falls into two divisions, the first being the part which generates steam and the second that which generates electrical energy by the use of this steam. In other words, we have the boiler plant and the turbine plant. The turbine, with condenser, must be the principal unit of the turbine plant, with other units taking care of circulating water, air washing, electrical connections and other lesser units required for the complete functioning of this turbine plant. In the boiler plant there are boiler, economizer, furnace and draft equipment, as the greater unit with the lesser units that take care of coal supply, ash removal, feed-water supply and so on.

In unit plants so far built the term "unit" has usually been applied to the plant as a whole. Thus a 75,000-kw. plant made up of three 25,000-kw. turbines would be styled a three-unit plant, a certain number of boilers, auxiliaries and a turbine being one unit. In our plan the scheme is different, in that the "units" are independent of each other, but may be used collectively to accomplish some desired result. Thus we have boiler units, turbine units, coal supply units, and so on, each unit being a complete entity in itself with minimum interconnection with the plant as a whole. Similar progress in the design of automobiles may be cited. The engine, change gears and electrical equipment are now a unit on the modern car; the chassis, the frame and the rear axle are other distinct units which may be separated with minimum effort from the car as a whole for purposes such as repairs.



In the "unit power plant" design referred to the size of the individual units will vary according to the forecast of the ultimate size of the whole plant, but otherwise their characteristics will remain unchanged. The essential features of the designs of the different units are the same, and the benefits of standardization and design of details are achieved and made use of in a small plant as in a large one. Also there is in the small plant, and in the large one as well, a minimum investment involved in interconnection, in assembly and in total space required for the equipment.

#### FIXED CHARGES CAN BE KEPT DOWN BY CAREFUL PLANNING

One of the greatest burdens of the steam plant are fixed charges which result from a large investment, this investment having grown up gradually due to a chain of circumstances which result in a very large fixed charge made up of interest on the investment, taxes, insurance and depreciation. It would only be fair to say, of course, that up to this time much loss has been experienced due to change in design and improvement in the art. However, a great deal of unnecessary investment has been caused by lack of comprehensive plans; by too much tacking on the auxiliaries, piping, by-passes and other agents for interconnection of auxiliary equipment to provide for freak operating schedules. The result of this lack of clean-cut simplicity in design in power plants has been that repair costs have been high, reliability has been endangered and the economies have not been as high as they should have been if the equipment had been properly installed.

Much has been accomplished in recent years in the operation of mills and various manufacturing operations under scientific management. Not a little of the gain has been secured by planning systems, in other words maintenance work has been systematically taken care of under a planning scheme. The unit power-plant plan lends itself wonderfully well to a planning scheme. For example, the boiler units, made up of draft, stoker, boiler, economizer and feed-water equipment, can be repaired, inspected and thoroughly overhauled in a single operation by a comparatively small crew of men. As all of this work is done with the entire unit shut down, isolated from the rest of the plant and in no way endangering the reliability of service, these repairs can be made at minimum cost with convenience to the operators and to the operation of the station as a whole. This same holds true of any unit in the plant, including the turbine, the coal handling and other features.

Our plan is designed to insure low labor cost. In accordance with it the plant is made up of a number of units of predetermined size, any one of which will function as a fractional part of the plant as a whole. Thus, there is a minimum expenditure involved in interconnecting the units with each other, and in providing housing for the units. All units are so arranged that practically all operation can be taken care of from one floor level and all repairs can be taken care of with minimum interference with other units which remain in operation.

There are also many collateral advantages that result from building up a plant of complete units. As improvements in equipment are brought out by manufacturers, the new units which may be added to the plant can embody these improvements without interfering with or curtailing the full value obtained from the existing

equipment. In plants with which we have had experience it has sometimes not been thought feasible to take advantage, from time to time, of improvements in equipment due to the fact that this would make it necessary to make radical changes in the arrangement of the equipment already installed. The unit idea has enabled us to get around many of these difficulties. It has also been possible to make more compact assembly of equipment, making important savings in building space. Practically every feature employed in unit power-plant design has been used in one or more plants, although there are many improvements in the latest designs that have not all been made use of in the same plant.

The unit design lends itself to rapid construction and allows taking advantage of many of the benefits in construction methods which heretofore have only been secured in the manufacturing plants. Also, standardization of assembly of equipment simplifies operation, requiring less study on the part of the operators of the arrangement of the station, because with all units of each class similarly constructed it is only necessary for an operator to understand the operation of a single unit of each class to understand the operation of the plant as a whole.

Any one who has had long experience in steam-plant operation appreciates that a great deal of the unlooked-for expense in steam-plant operation has come from expensive repairs which have been called for due to special arrangement, the repairs having to be made in a very short space of time. Furthermore, curtailment of output has frequently been caused by the necessity of shutting down certain parts of the whole plant in order to make repairs to individual pieces of equipment. The plant that is built up as a complete structure rather than as a group of complete units will be subject to much interruption of service, high maintenance cost and general unsatisfactory operation. This is illustrated by the fact that individual electric-motor drive owes much of its merit and popularity to the fact that it makes units of the machines to which it is applied.

#### SITE SHOULD NOT EXERT TOO GREAT AN INFLUENCE

Special conditions, such as real estate limitations, have called for extraordinary effort in design along some lines, but in many cases the limitations which existed have been accepted too complacently and allowed to influence the great investment in the plant as a whole, with very bad effect on economy in the long run. Limitations peculiar to a locality should receive careful study before they are allowed to increase unit investment costs. Fixed charges run on for all time and no amount of engineering talent can reduce the fixed-charge part of the total power cost except by increasing the load factor of the plant. After the initial investment is made the total will always be increasing if the plan which has generally been followed up to this time is continued; in other words, if a plant after being built is constantly receiving additions in the way of piping, auxiliary equipment, small changes in buildings, etc. On the other hand, if the plant is laid out in a simple, clear-cut manner, and if changes are made only as additional capacity is needed, each part of the plant being originally built at minimum cost, the fixed-charge burden then on the output will be a minimum.

Under present conditions the fuel item of power-plant operating cost is a very large one, and much thought must be given to the boiler plant to insure that all



available heat generated by expensive fuel is used to the very best advantage. However, it is probable that fuel costs are now as high as they will be for a number of years and most localities have probably experienced their maximum fuel costs. But even with these high fuel costs, fuel economies have been emphasized too much and total investment too little. If we would have minimum total generating cost we must have low investment per unit of capacity.

Every power plant problem has in it certain distinctive ele-

(f) Good quality of labor should be available, or there should be sufficient and satisfactory space where labor quarters may be built.

(g) Space for adequate fuel storage, and expansion for future requirements.

(h) In general plant should be located as near center of distribution as possible while meeting the conditions given above.

3. Investment:

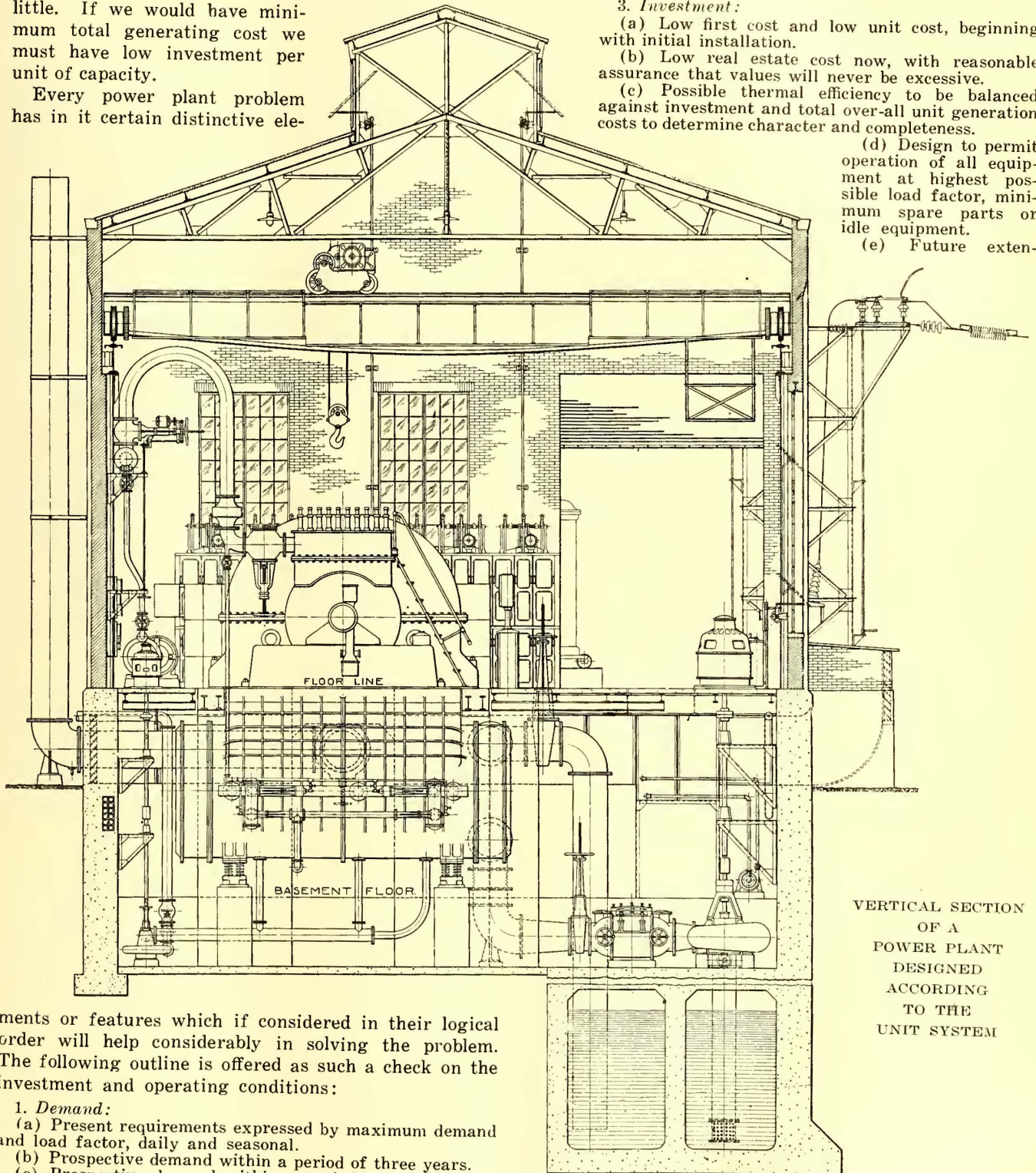
(a) Low first cost and low unit cost, beginning with initial installation.

(b) Low real estate cost now, with reasonable assurance that values will never be excessive.

(c) Possible thermal efficiency to be balanced against investment and total over-all unit generation costs to determine character and completeness.

(d) Design to permit operation of all equipment at highest possible load factor, minimum spare parts or idle equipment.

(e) Future exten-



VERTICAL SECTION OF A POWER PLANT DESIGNED ACCORDING TO THE UNIT SYSTEM

ments or features which if considered in their logical order will help considerably in solving the problem. The following outline is offered as such a check on the investment and operating conditions:

1. Demand:

(a) Present requirements expressed by maximum demand and load factor, daily and seasonal.

(b) Prospective demand within a period of three years.

(c) Prospective demand within a period of ten years or more.

2. Location:

(a) Railroad or shipping facilities.

(b) Good water supply.

(c) Low freight rate on fuel.

(d) Earth that will allow permanent foundations to be constructed at reasonable cost.

(e) Freedom from floods or other natural disturbances.

sions taken care of by design and plans with least investment possible in building or other material provision for such extensions.

4. Fuel Supply:

(a) Value of fuel or waste heat available, to be determined by unit cost per kilowatt-hour of output, giving due consideration to probable boiler capacity that it may be practicable to obtain.



(b) Supply should be permanent and not liable to seasonal shortage.

(c) Some fuels may generally fill these requirements but have other peculiarities or disadvantages.

#### 5. Labor:

(a) Design that will permit use of least number of men and of least highly skilled men, while giving uniformly satisfactory results.

(b) One-level operation with controls centralized or grouped, enabling labor to produce best performance with least effort.

(c) All equipment of like nature similarly arranged, enabling all operators to have clear understanding of plant requirements.

(d) Accessibility of chief requisite, facilitating inspection and maintenance.

(e) Good working conditions, considering light, ventilation, temperature, sanitation, transportation, facilities or proximity to good living quarters.

#### 6. Supervision:

(a) Complete complement of indicating and recording instruments to give ready check and record of performance.

(b) Facilities should be such that unit quantities of fuel, steam and electrical energy may be obtained, recorded and be available for comparison and checking at all times.

(c) Facilities to be provided for keeping plant records, storing supplies, tools and repair parts.

(d) Plant must have best possible means of communicating with distributing centers and of communicating or signaling within plant.

While every item in the above outline deserves careful consideration, it is believed that there are some which are generally overlooked or their importance minimized. For example, referring to 1, "Demand," the future for, say, ten years is either ignored or too much emphasized, often resulting in poor ultimate layout or a carrying of much idle investment. The future must be considered, but should be taken care of as far as possible by design rather than by material investment.

Fuel is only cheap when its use results in cheap power and allows a minimum investment in boiler plant. We should not be concerned over thermal efficiency so much as plant efficiency, which takes into consideration fixed charges as well as the operating costs. For example, a certain boiler installation when operating at 175 per cent of boiler rating may have a very high efficiency, but if the boiler cannot be pushed to at least twice this rating and still maintain a good efficiency for boiler plant as a whole then the layout is undesirable by the amount it may fall short of some such result.

### Some Very Large Electrical Apparatus

IN ITS annual review of engineering accomplishments the Westinghouse Electric & Manufacturing Company this year mentions several pieces of electrical equipment as the largest of their several kinds.

For example, at the Colfax power station of the Cheswick Power Company, a subsidiary of the Duquesne Light Company, a 60,000-kw., 60-cycle, triple-element turbine unit was started on Dec. 18. This is the second unit of this type which has been put in operation. Again, a 32,500-kva., 25-cycle, 150-r.p.m. vertical water-wheel generator was also put in commission at Niagara Falls, one of the group of three units there which are the largest in the world.

For the Colfax plant the company also supplied a record-breaking transformer. This is a single-phase, oil-insulated, water-cooled transformer of 23,600-kva. capacity. It transforms 60-cycle current from 12,000 to 132,000 volts. There are also under construction in the shops a group of seven 12,000/220,000-volt, 60-cycle transformers of 16,667-kva. capacity for the highest commercial voltage yet adopted for power transmission. They are for the Pacific Gas & Electric Company.

To the Philadelphia Electric Company two 1,750-kva. induction-type regulators were supplied for use on the low-tension side of the transformers supplying the two 66,000-volt tie lines between the Schuylkill and Chester power plants of this company.

The review refers also to a new face-plate type of voltage regulator which has been devised to perform the same service as that furnished by the vibrating relay type of regulator.

### 1,750 at Dinner of New York Railroad Club

THE second annual dinner of the New York Railroad Club was held at the Hotel Commodore Thursday evening, Dec. 16, and there was an attendance of more than 1,750 members and guests. An introductory address was made by John A. Droege, general superintendent of the New York Division of the New York, New Haven & Hartford Railroad, who has recently been elected president of the club. The toastmaster of the evening was William G. Besler, president of the Central Railroad of New Jersey. The principal address of the evening was made by James A. Emery, counsel of the National Industrial Council, who presented a paper on "Transportation Combinations and the Public Interest." The principal theme of Mr. Emery's address was contained in the questions, Do our modern industrial societies possess adequate powers of self-defence? and Are the people of the United States powerless to restrain a combination of those voluntarily engaged in the public service within the limits of social safety or must they submit to the unrestricted exercise of its collective power even though it imperils their social structure? He discussed the matter of national labor boards of adjustment and in concluding submitted four tests which appeared to him to determine whether the purpose of Congress as stated in the transportation act is being executed and the supreme interests of the public protected. The tests are:

1. No mode of adjustment or agreement should receive approval that does not assure a review, participated in by representatives of the public, of every serious controversy or negotiation. Any proposal to establish relations between carriers and their employees the purpose or effect of which is to eliminate review or supervision by the representatives of the public should be rejected.

2. No form of adjustment or agreement is in conformity with the purpose of Congress nor should be approved by the board that does not equally recognize and protect the rights of employment, adjustments and representations of unorganized employees of the roads.

3. No form of adjustment or agreement should be approved that does not safeguard the efficient and continuous operation of train service. To this end each road should be considered as the unit of operation and self-interest, management and men stimulated to the cultivation of personal relations by continuous contact between executives and employees, that each man may find in the road which he serves the prompt means of protecting his interests and the opportunity of advancement through merit.

4. Since the public interests require the assurance of uninterrupted service, the board should ask the carriers and their employees, in whatever form agreement between the respective roads and their employees take, to accept without strikes or lockouts the ultimate decision of the board upon any question within its jurisdiction.



# Trackless Trolley in Two British Cities

**Bradford, with Three Routes in Operation, Is Planning Three More—The Buses Are Used as Feeders for the Trolley System—A Double-Deck Trackless Trolley Bus Has Just Been Put in Service—  
Keighley, After Five Years' Experience, Has Added to Its Equipment and Now Has Nine Buses in Service**

**A** REVIVAL of interest in the trackless trolley is apparent in this country, although it is not clear whether this interest is sufficiently deep-seated to lead to the construction of many roads of this type in the early future or not. For our experience with the trackless trolley we must go to Europe, for there, as in the case of the motor bus, much more has been done than in this country. The chief reasons are fourfold: The early advent abroad of smooth paving, the larger proportion of narrow and curved streets in the older city districts, the difficulty of securing right of way for tracks under British laws and the higher price of gasoline. Yet, in spite of these favorable conditions, the development in Europe has not been large, though with the increasing cost of gasoline the advantages of the trackless trolley become greater.

One of the largest trackless trolley installations in England is in Bradford, where both track and trackless electric operation are under one management, the municipality. For the fiscal year ended March 31, 1919, the Bradford Corporation Tramways earned a traffic revenue of £456,818 from the cars and of £15,121 from the trackless trolley buses. As to capital charges and operating expense, R. H. Wilkinson, general manager, made the following comparison before the 1919 Conference of the Municipal Tramways Association:

TABLE I—COMPARISON OF CAR AND TRACKLESS BUS ON VEHICLE-MILE BASIS IN PENCE PER MILE

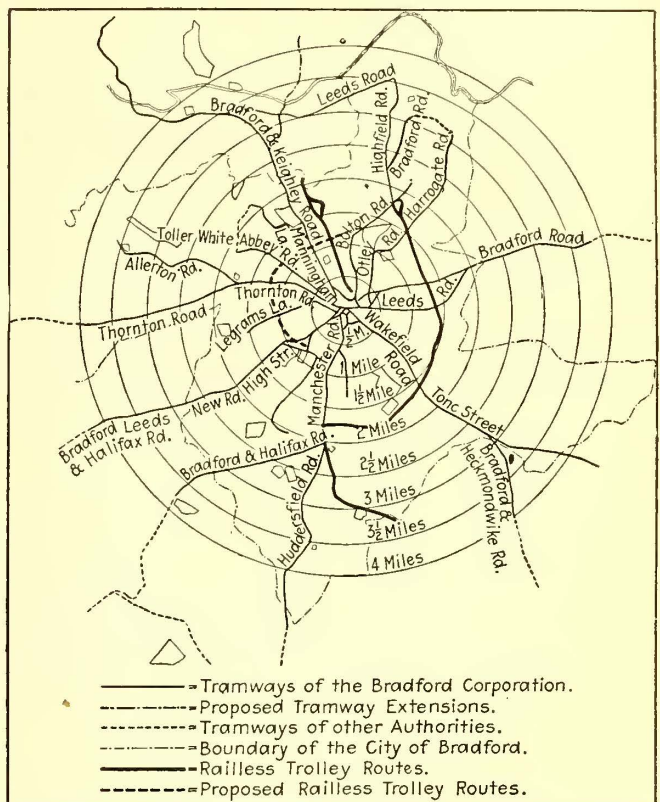
Fixed charges.....	2.675 for car and 1.50 for Bus or 43.9% less
Operating expense..	16.542 for car and 11.97 for Bus or 27.6% less
Total charges.....	19.217 for car and 13.47 for Bus or 29.8% less
Comparison of Car and Trackless Bus per Passenger Carried in Pence per Mile	
Fixed charges.....	0.18 for car and 0.16 for bus or 11.0% less
Operating expense..	1.11 for car and 1.28 for bus or 16.4% more
Total charges.....	1.29 for car and 1.44 for bus or 11.6% more

It will be apparent from Mr. Wilkinson's comparison that the superiority of the trolley car is due chiefly to its greater capacity. The present bus is a twenty-nine-seat single-decker weighing 5 long tons (11,200 lb.), which limitation is due to roadway rules. Mr. Wilkinson has lately designed a fifty-one-seater, including smoking compartment, for which he is seeking approval. Should the new design be acceptable to the authorities, he will have a bus approaching more nearly the capacity of his double-deck cars and perhaps less costly per passenger carried on the basis of overhead and operating costs combined.

Although only three trackless routes are shown on the accompanying map of Bradford as in operation, plans are in prospect for three more. The characteristics of present and future lines can readily be judged from the map as well as from the comparative revenues of tram and bus. One route (Frizinghall) starts from the city center at the Midland Railway station, sandwiched by two trolley lines for about one-half of its length of 2.6 miles. Its earnings were 10.6d. (21.2 cents) per mile. The second route (Okenshaw), 1.6

miles long, is obviously a suburban feeder which ties in with two trolley routes just 4 miles from the center of the city. This route earned 10.8d. (21.6 cents) per mile. The third route, 4.7 miles long, is a cross-town service which ties in with half a dozen radial trolley lines at points 1.5 to nearly 2 miles from the center of Bradford. This line earned 10.88d. (21.76 cents) per mile.

The three new lines would comprise a second cross-town line, a tie between two trolley terminals and an



PRESENT AND PROPOSED TRAMWAY AND TRACKLESS TROLLEY LINES, BRADFORD, ENGLAND

extension to an existing trolley line. From this, it is clear that the trackless trolley development at Bradford is along the lines to be expected in supplementing an existing tramway service with either the trackless trolley or the gasoline motor bus to take care of light-traffic routes. Although the Bradford Corporation Tramways operates gasoline motor trucks for municipal utility purposes, it has not acquired any gasoline passenger vehicles, perhaps because it has not arranged to serve conditions where the traffic routes might be subject to change.

Inasmuch as the gross earnings per car-mile were 22.257d. (44.514 cents), compared with less than half that figure on the trackless routes, we need not be astonished to find that the fares on the trackless trolley



routes are somewhat higher, as indicated in the accompanying Table II.

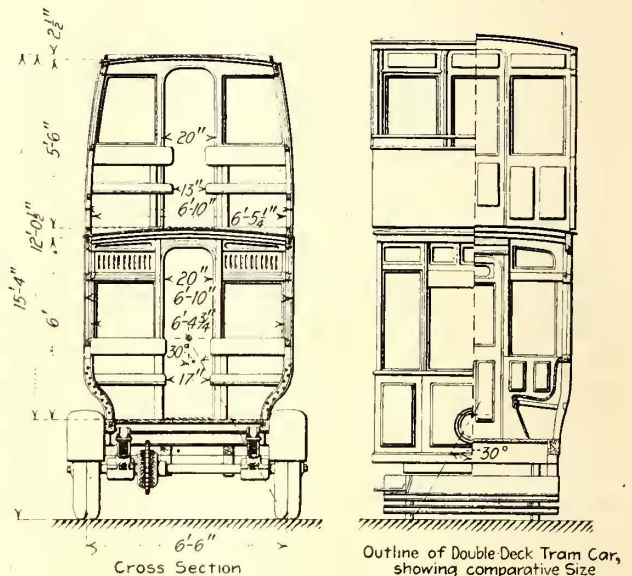
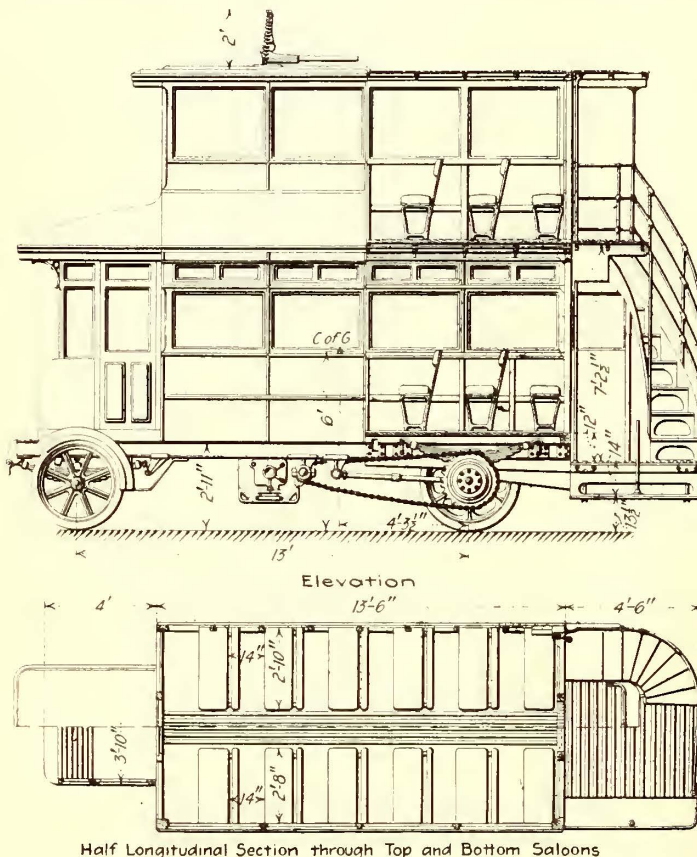
TABLE II—COMPARISON OF CHARGES IN BRADFORD

Average Distance for Stated Fares on Car	Average Distance for Same Fare on Bus
1. 66 miles workman's 1d. special-hour rate	1. 55 miles
No 1d. fare	0. 70 mile
1. 66 miles regular 1. 5d. fare	1. 55 miles
2. 48 miles regular 2. 5d. fare	2. 00 miles
3. 52 miles regular 3. 0d. fare	2. 64 miles
4. 14 miles regular 4. 0d. fare	3. 34 miles
5. 09 miles regular 4. 5d. fare	4. 85 miles
6. 96 miles regular 6. 0d. fare	

The average fare charged per mile on cars was 0.868d. (1.736 cents) and on the trackless trolley buses 1.078d. (2.156 cents). The figures of trackless trolley service by the Bradford Corporation Tramways are arranged in accordance with the standard system of

trolley, on the other hand, had to pay a road upkeep charge of only 0.374d. per vehicle-mile, whereas each car operated was assessed 1.289d. per car-mile for general repairs and maintenance of permanent way. In this last instance the trackless trolley has to pay approximately half as much per seat as the car.

From a vehicle maintenance standpoint, the car had the better of the comparison, averaging 2.678d. per mile against 3.201d. per mile against the newer and half as large trackless trolley bus. The energy consumption of the bus was 1.509 kw.-hr. per mile compared with 2.717 kw.-hr. for the bigger cars. Considering also that the trackless trolley buses must have averaged a smaller number of stops per mile and that they were not operated over the busiest and steepest streets, it is reasonable to assume that for Bradford paving conditions they would require almost twice as much energy



DOUBLE-DECK TRACKLESS TROLLEY BUS IN EXPERIMENTAL SERVICE IN BRADFORD

per seat if single-deck bus remains pitted against double-deck car. This would not be true if double-deck trackless buses succeed. However, a comparison of the twenty-nine-seat bus at 1.509 kw.-hr. with a thirty-two-thirty-five-seat safety car averaging 1 kw.-hr. per mile indicates that a substantially higher energy consumption must be reckoned with on the part of a trackless trolley bus even though its weight per seat is below that of the lightest American trolley car.

COST OF GASOLINE OPERATION HIGHER

Mr. Wilkinson's new double-deck trackless trolley bus is the first to be built of that type so far as is known. It is difficult, therefore, to make an exact comparison with the double-decker thirty-seven-seat gasoline bus as used extensively at Sheffield. However, the operating cost of the Sheffield bus averaged 17.896d. for the year ended March 31, 1919, compared with the 11.970d. operating cost of the twenty-nine-seat trackless trolley bus at Bradford as previously detailed. For the same period, the operating cost of the fifty-two buses at Birmingham averaged 18.944d. per bus-mile. The Edinburgh Corporation Tramways expect a thirty-two-seat single-deck bus to cost 20.75d. per mile, but this

accounting used by British municipal railways, so that comparisons with Bradford's cars can be made in a number of items showing the following:

On a vehicle basis, wages of platform men appear to be practically alike, the trackless bus averaging 4.415d. per mile against 4.312d. on the larger cars. Cleaning and oiling a trackless bus is apparently less costly per vehicle than a car, the relative figures being 0.399d. and 0.794d. Fire insurance is no greater than for the electric car, but the accident and compensation insurance item of 0.045d. per mile is double that for the car (0.233d), probably because any trackless vehicle is a bit of a vagabond.

The relative maintenance charges for the electrical equipment of line are 0.041d. for the trackless trolley and 0.267d. for the double-track car routes, a difference which can be ascribed to the fact that a trackless trolley requires a return circuit as well as a contact wire and some special features here and there. The trackless



makes allowance for the higher wages that will prevail in 1920 as compared with 1918-1919. In any event, the extraordinarily high price of motor fuel in England (89 cents per gallon in March, 1920, and 1.10 cents in October, 1920) is putting the trackless trolley in a more advantageous position wherever there is enough traffic for something better than hourly or half hourly headways.

In the case of the 5.1-mile Tees-Side Rail-less Traction System, opened as recently as Nov. 8, 1919, the trackless trolley won out over the gasoline bus because of its lower power and upkeep costs, while it won out over the track trolley because the intended average headway of 15 minutes (30 to 7.5 minutes) did not warrant a construction cost of £12,500 to £15,000 per mile of single tangent track compared with the pre-war price of £4,500. This Tees-Side installation is worth mentioning because it is for conditions that in this country have hitherto led to the construction of highway trolley lines, necessarily of single-track construction and therefore none too adaptable to sudden accretions of traffic.

#### TRACKLESS TROLLEY COSTS HAVE RISEN LESS THAN BUS COSTS

Another British enthusiast for the trackless trolley is Harry Webber, general manager Keighley Corporation Tramways. On March 19, 1915, after five years of gaso-

## Trolley Freight Service Will Pay

Why It Can Successfully Compete with Steam Railroads and Motor Trucks—Practical Hints on Operation Are Given—Selection of Freight Manager Most Important Step

BY G. W. RAVERT

General Freight Agent Philadelphia Rapid Transit Company

THE emphasis placed upon the importance of the development of the electric street railway as a freight carrier, at the recent convention, should be very significant to all electric railway companies which are not operating a freight service. Pages and pages have been written on this subject, but its real importance, its financial possibilities and the principles underlying its management are not widely known and recognized. This is evident from the following quotation from the address of Mr. Graham, vice-president of the Pierce-Arrow Motor Car Company:

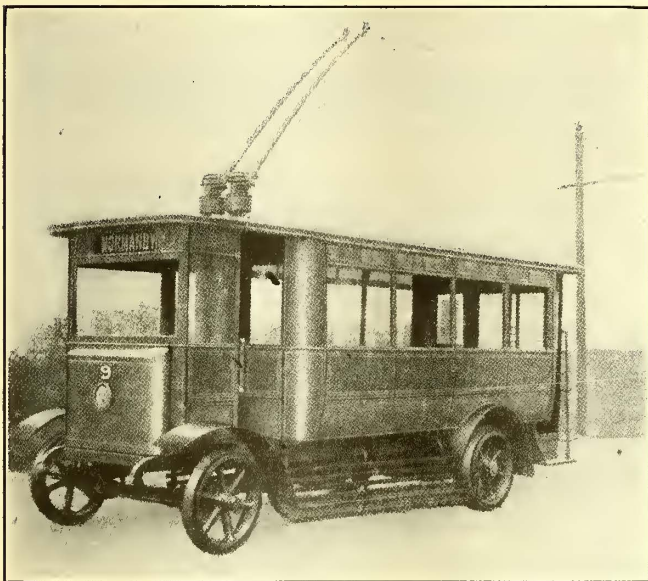
In long-distance movements of heavy tonnage they [the electric railways] are surpassed by the steam roads; in short-distance transit of less than carload lots, up to 100 miles, they cannot compete with the motor trucks.

In short hauls up to 15 miles the electric street railway pays homage to and will gladly surrender such business to the motor truck, but in movements of heavy tonnage or less-than-carload lots, ranging from 20 to 200 miles, neither motor truck, steam road nor any other land carrier can successfully compete with the electric street railway from the standpoints of economy, reliability, dispatch and financial return.

The possibilities of the electric railway as a freight carrier are very great, yet it is a curious fact that this valuable form of transportation has hardly passed beyond the experimental stage. This condition is largely due to the shortage of managers capable of directing such traffic and the lack of competent counsel along freight lines, thus preventing the trolley freight from assuming its proper status. The general managers of the roads too often are completely absorbed in the passenger service, unconsciously letting a veritable gold mine lie unnoticed in their own back yards.

Most of the writers on this subject advocate the application of railroad principles. This was a good policy while the business was in its infancy, as every one realized the value of standardization, but now that the electric railway is emerging from the general class of freight carriers and stepping into a class by itself, it is absolutely natural and necessary that it should adopt methods and principles peculiar to its condition.

Economically, the advantages of the trolley freight service transcend those of the passenger service, yet it does not in any way interfere with such service. Financially, it is a better investment than the passenger service, for the reason that a carload of passengers represents from \$5 to \$10 in receipts, while a carload of freight, at a lower operating cost, represents from \$50 to \$75 in receipts. A striking example that the steam roads, old-time express companies and motor trucks are not considered successful competitors financially is shown by the fact that many large firms having their own motor trucks know from accurate cost records that it is cheaper to ship via trolley freight. The railroads are slower, express companies are more expensive and not so efficient, and the motor truck is essentially a fair-weather carrier and its rates are high. The trolley freight runs rain or shine, and, excepting in rare cases, all through the heavy winter storms, and delivers to



A TYPICAL TRACKLESS TROLLEY BUS

line motor bus operation, he inaugurated a trackless trolley system comprising nine vehicles running over 8½ miles of route in rather hilly country. At that time gasoline cost but 2d. per mile for a thirty-eight to forty-seat double-deck bus, while power for the twenty-eight-seat electric single-decker which replaced it cost one-half as much. An operation of 100,000 miles per annum was sufficient in power saving alone to cover interest and depreciation on the electrical overhead equipment. Owing to the uneven torque and the greater weight of the gasoline bus, the tire upkeep of the gasoline bus had cost practically four times as much as that of the electric bus, according to Mr. Webber.

Perhaps the most interesting fact is that although the electric buses were smaller, their greater cleanliness, smoother running and better lighting increased the passenger earnings from 24 cents to 28 cents per mile.



more points convenient to consignees than any other carrier. In fact, its possibilities in this direction are unlimited. Ultimately goods will be delivered directly to the consignee's place of business.

#### NEEDS OF BUSINESS DESCRIBED

By far the most important first step in the promotion or expansion of the trolley freight is the selection of the freight manager. He should be a practical man, possessed of sound common sense and must be able to deal with men who work with their hands. He should be one who could go out and sell a service, not rates, as is the case with many freight-transportation companies. For example, a freight manager well known to the writer put forth the argument that trolley freight rates should be about 10 per cent lower than those of the steam roads in order to secure business. He also made a practice of encouraging his company to settle freight claims in favor of his shippers, as an inducement. This reminds one of the old-time cut-throat methods, and the disastrous effects it has on the business can be readily appreciated. In reality, the rates should be from 10 to 15 per cent higher than on the steam roads, in view of the more prompt and efficient service given, and all classes lower than fourth should be eliminated. Rules reducing the second and third-class rate should also be removed. This can be consistently done by taking an exception to the official classification, provided the business is based upon the rules and laws set forth by the steam road official classification.

An adequate terminal consisting of inbound and outbound platforms, together with a team yard, within easy reach of the big shippers, so built and located as to permit its keeping pace with the expansion of the business, is another prime essential. Two or three freight cars (according to local conditions) are all that are necessary at the start. These cars will pay out of their earnings for all additional equipment as it is needed by the ever-growing business. Here again, the manager proves a valuable asset. If he is not getting 100 per cent of use out of his equipment before shouting for more, he is wasting money.

It is advisable, of course, to use equipment especially adapted to freight traffic. Cars should be of modern type, built specially for interurban freight service and capable of hauling one or more trailers. Of course, many roads are operating with abandoned passenger cars, revamped, and are making money, but the time lost in the repair shop and the lower standard of efficiency cut their net profit considerably. Such cars are too small and ungainly, sacrificing strength for misplaced economy, and as they naturally are of all sizes and shapes, they do not permit a standardizing condition.

Reliable and adequate records are a strict essential in any business, but in the freight business they are a vital necessity. Probably most transit companies fail to realize the possibilities of the freight through their lack of reliable cost records. Briefly, the following outline covers most of the essentials and gives an accurate method of checking freight from the receivers into the freight cars. This plan cuts down claims to a negligible minimum and at the same time insures despatch.

A modern rating and billing system is of first importance, that is to say, each shipment must be covered by a waybill which should accompany the goods to its

destination. Most roads have their bills made out by hand, using copying pencils and carbons, each biller rating his own bills. Many errors and subsequent loss of time and efficiency result from this practice. A special rate clerk doing rating exclusively can accomplish more work efficiently and accurately than by the former diffused method. At the inbound office, the procedure is somewhat similar. The goods should be checked from the cars against the bills received from the point of origin.

Aside from these salient points the rest of the office work can be governed by any modern standard method. It is of the utmost importance that proper cost records be kept and that a proper distribution of charges for maintenance and operation be made, in order that the freight is not charged with a host of unwarranted accruals.

These facts and suggestions are merely a few of the high lights in the proved advantages and possibilities of electric trolley freight, and, springing as they do from the comparatively short career of trolley freight, hold a promise of an unlimited future for this system of freight transportation.

### Some Aspects of Electric Railway Progress in 1920

W. D. BEARCE, of the railway and traction engineering department, General Electric Company, has prepared an analysis of that company's experience in connection with railway work in 1920. He states that the most notable activity has been in connection with the safety car, automatic substations and steam railroad electrification.

As to automatic control, the 2,000-kw. motor-generator set with complete automatic control furnished for the Detroit River tunnel electrification has been in operation for several months. This is the largest unit yet operated automatically in railway service. A notable order for automatic equipment was that for eight 1,000-kw. control equipments and transformers for the 1,500-volt, direct-current substations of the Victorian Railways at Melbourne, Australia. In New Zealand the 300-kw. automatic substation ordered last year was put in operation on the Christ Church Tramways and this company has ordered two more.

The company's electrification work in the United States has been confined to the Milwaukee extension, for which five gearless locomotives were furnished. Outside of the United States work on the electrification of the Paulista Railway in Brazil and the electrification work for the Montreal Harbor Commission are well under way. In addition to the Paulista Railway electrification, another important project in South America is the equipping of the Santa Catharina lines in Brazil for 1,500-volt operation with multiple-unit cars. About 50 miles of these lines are being equipped for such service.

In a bulletin on automatic station control equipment recently issued by the General Electric Company, the following features of automatic stations are summarized: Minimum operating personnel required, better protection provided, maintenance cost reduced, distribution pressure improved, feeder loss decreased, standby loss decreased, electrolysis mitigated, insurance increased, reliability increased, development of small power sites made feasible.



# The Bus and the Trolley

The Author Takes Issue with the Statement of the Motor Truck Manufacturer that the Electric Railways Cannot Hope to Compete with the Steam Railways and Motor Trucks in the Transportation of Freight—He Bases His Conclusions on the Situation in Southern California, Where the Conditions Are Most Favorable to the Operation of Motor Trucks

By H. B. TITCOMB

Vice-President Pacific Electric Railway, Los Angeles, Cal.

I HAVE read the editorial in your issue of Nov. 6 under the caption "Shall We Turn the Freight Business Over to Motor Trucks?" as well as the statement of George M. Graham, vice-president of the Pierce-Arrow Motor Car Company, in his address before the American Electric Railway Association, that electric railways should not figure too hopefully on freight revenue, as they cannot successfully compete with steam railways and motor trucks.

I most emphatically take issue with Mr. Graham's statement. If there is any place in the United States where conditions are favorable to the successful operation of motor trucks in competition with rail lines it is in southern California, where there are more miles of paved highways than there are in any other state in the Union with the possible exception of New York State.

Good roads are essential, and it is proper that they should be built, but it was never intended by the taxpayers of any state that these good roads should be turned over to any individual or group of individuals for private gain, yet the anti-corporation feeling of the public has been used as a cloak to build up under this subsidy plan a competitive system that is not just and is out of line with the American spirit of fair play. Every industry, every public utility and every form of business must be remunerative within itself; otherwise it should not exist. Any such facility that cannot be made self-sustaining must not, under any stretch of the imagination, be subsidized out of general taxation. Such socialistic tendencies are not in line with the American spirit and should not be tolerated by the American people.

## WHY BUS DEVELOPMENT HAS TAKEN PLACE

Mr. Graham also says: "The motor bus can never eliminate the trolley." With this I agree, but I cannot agree with his further statement that "the public is eager to use the bus." The American public has come

### To the Trade

WE are frequently requested by our customers to forward their orders by truck. It is immaterial to us how the goods go forward, as our responsibility ends when we get the carrier's receipt. There is, however, a condition surrounding truck shipments to which we wish to call your particular attention.

Since the beginning of the war, and the resultant delays in railroad freight deliveries, there have come into existence a multitude of trucks for freight haulage between interurban points. The people operating a great many of these trucks are absolutely irresponsible financially. Freight is intrusted to them without any guarantee whatever that it will ever be delivered at destination, or, if short, that any claim will be paid. A great many of these people have only a small equity in their trucks. If a serious shortage should occur it would be utterly impossible to collect the claim, owing to the carrier's lack of tangible assets.

In view of the above facts we wish to impress on our trade that we ship by truck only when so instructed by our customer, and that our responsibility ceases absolutely when we secure the carrier's receipt for the shipment in good order. When shortages occur we will not assume the claims for the customer. He must make his own settlement with the carrier.

This is no reflection whatever on the many reputable companies operating freight trucks, but is intended as a warning to protect both our customers and ourselves against loss through irresponsible carriers.

Be sure that your carrier is responsible before you intrust your goods to him.

—Notice which a Los Angeles heavy hardware concern sent out to its customers.

to use buses simply for two reasons: (1) Prejudice against corporations in general and the railroad corporations in particular, and (2) the inability of some railroads to give service to developing communities.

As to the first reason, the experience of the traveling public with the corporations that control the motor bus lines has been to show that after all the rail line corporations were not as grasping and as dictatorial as had been pictured.

As to the second reason, financial difficulties have been responsible for lack of development on the part of electric railway transportation companies. The people have had an idea that the coffers of these companies were of unfathomable depth and that money could always be obtained for the development

of railroad facilities. Pyramided prices of labor and materials and reluctance on the part of politicians and soap box orators to recognize the necessity for higher fares have in many cases kept conscientious railroad commissions from doing the fair and reasonable thing that justice demanded. In other words, the general thought seems to have been that if these corporations were impoverished they could give better service. But the effect of this policy has simply been to drive money into more remunerative lines. To a great extent, however, this is being overcome. I believe I am not too optimistic in saying that the pendulum is swinging back, and I believe there is a bright future for the electric transportation concerns of the country.

The motor bus will not become a thing of the past. It is performing a service that is necessary in many cases, but it cannot supplant the electric or steam lines. It can be made an adjunct to such lines on a business-like and remunerative basis. The railroads can no longer play the "dog in the manger," and where communities develop and warrant the establishment of service, these transportation companies must extend their rail lines or put in feeders that will reach the nearest



point of existing rail transportation and, by a system of through fares and tickets, give the people dependable and positive service that can be properly regulated by governing bodies. This can be accomplished by contracts with bus concerns or the formation of bus corporations to operate in conjunction with existing transportation lines.

The Pacific Electric Railway started handling freight in a small way more as an accommodation to its patrons than with any idea that the business would prove remunerative, but as conditions changed and the public became acquainted with the service we were able to render the demand for it became more general and our freight revenue has shown a steady increase.

The Pacific Electric system radiates from Los Angeles, the longest interurban line being approximately 70 miles. We have a roadway mileage of 615, but, as there are certain points where our old franchises did not contemplate the handling of freight, we have a freight road mileage of 519, and we find that the revenue derived from the transportation of freight today is equal to approximately 24 per cent of our total revenue.

#### WHAT RAILWAYS AND BUSES PAY FOR ROADWAY

The Pacific Electric Railway is typical of the better class of interurban railroads of the United States. It has come out of the war period with its tracks, its equipment and its service in better shape than any other interurban railroad, barring none. We have the highest skill that can be obtained in railroad management, and our operating personnel, from the section foremen through the train service and all departments, is of high class, with good esprit de corps, better feeling and higher efficiency than any similar transportation company in the country. But this has been accomplished by the optimism of the financial backers of this splendid property. Through this war period and through the competitive period brought about by the advent of the automobile they have stood by this property, knowing that it would ultimately realize the dreams of its founders, although there is an accumulated deficit of upward of \$11,000,000 loaned to this company to tide it over. The public should know and should appreciate this in order that it may bear with us in the readjustment that is necessary to "get on our feet" again.

Our property is worth far in excess of the \$70,000,000 on which we are trying to pay interest. The following figures may be of interest:

#### FINANCIAL REPORT OF PACIFIC ELECTRIC RAILWAY, FOR TEN MONTHS ENDED OCT. 31, 1920

Gross operating income.....			\$12,630,000
Operating expense:			
Way and structures.....	\$1,241,000	or 9.1 per cent of gross income	
Equipment.....	1,596,000	or 12.6 per cent of gross income	
Power.....	1,430,000	of 11.3 per cent of gross income	
Conducting transportation.....	3,783,000	or 29.9 per cent of gross income	
Traffic.....	133,000	or 1.0 per cent of gross income	
Auditing expense, store, supplies, damages, etc.....	1,046,000	or 8.2 per cent of gross income	
Summary:			
Wages.....	\$6,205,000	or 48.0 per cent of gross income	
Material charges.....	3,024,000	or 23.9 per cent of gross income	
Depreciation and taxes.....	742,000	or 5.9 per cent of gross income	
Interest on bonds and borrowed money, and other miscellaneous deductions.....	3,487,000	or 27.5 per cent of gross income	

These figures show that maintenance of way of our tracks, bridges, private rights-of-way, etc., eliminating all rolling equipment, building, stations, power stations, overhead equipment, trestles, etc., is \$958,000. This is

7.5 per cent of the gross income. Our state taxes are 5.25 per cent of our gross income.

We have invested approximately \$45,000,000 in private rights-of-way, paving, bridges, trestles, culverts, switches, ballast, fences, etc., not including rolling stock, buildings of all description, electrical equipment of all description, etc. Six per cent on this amount is \$2,700,000 and on the basis of a \$15,000,000 income this sum would represent 18 per cent of our gross income. If to this percentage the percentage for maintenance, 7.5 per cent, and for taxes, 5.25 per cent, is added, a total of 30.75 per cent of the gross income is required to furnish a roadway on which to operate.

As against this we know that the ordinary auto truck or interurban bus must do upward of \$30 a day in business, or \$10,000 annually, or it cannot operate and live. We further know that the personal property tax on each of these buses, its license and the percentage of any gross that may be turned over to the state does not total more than 3 per cent, or \$300 a year.

This leaves a difference of 27.75 per cent, which is the subsidy that is being given these trucks that are using our highways for profit and destroying the value of the electric and steam railroads of this country. It is no wonder they can make the short hauls and deliver from business house to business house more cheaply than the freight can be handled by a rail line. But the answer is that it cannot be done if no subsidy of the extent indicated is paid.

Since May 1, 1917, a California statute has required new truck lines to secure a certificate of public convenience and necessity from the State Railroad Commission before service can be established, and at the present time there are operating in competition with the Pacific Electric Railway thirty-five common carriers by truck, operating 130 trucks and trailers. We estimate the revenue they deflect from this company approximates \$300,000 per year. There are also numerous "contract" carriers which are not required to file their rate schedules with the commission and we estimate that they deflect an additional \$100,000 per year.

As I have already said, the taxpayers did not contemplate that \$40,000,000 of the state's money should be put into roads for the pecuniary benefit of individuals or for those who use such investment for their private gain, with the resultant destruction of our highways.

Our State Highway Commission is greatly alarmed at the deterioration of these splendid highways. Our cities are demanding that the damage done to the streets and highways within their limits be maintained out of the fund accumulated through the automobile licenses. Our state officers are greatly perturbed over the lack of revenue that should come to the state from the gross income that should be earned by the rail corporations. Millions of dollars would pour into the state treasury were it possible to tax these automobiles 5½ per cent of their gross revenue and let it go to the state, as exacted from the rail lines. Some system to accomplish this must be devised.

#### LEGISLATION RECOMMENDED

Summarizing, we do not ask for anything unreasonable, but we do say:

1. We advocate the repeal of Section 498 of the California Civil Code, which relates to the paving of portions of street occupied by tracks, which would leave



the question of paving to municipalities and the electric railways operating therein. It goes without saying that the day when these rail transportation companies should maintain their paving is past.

2. We feel that an indeterminate franchise act which would repeal the existing cumbersome statutes should be passed by our state legislature. This would lend financial stability to the companies and allow them to proceed with improvements that otherwise will not be undertaken where the conditions of succeeding franchises may be so exacting as not to warrant the expenditure of large sums.

3. We want a fair and reasonable tax on automobile carriers using the highways for commercial purposes, also an amount which would be equivalent to the percentage of gross receipts paid by the rail carriers.

4. The jitney law should be amended so that it will require jitney operators to obtain permits from local authorities before applying to the Railroad Commission for a certificate of necessity and convenience.

5. "Contract" carriers should be placed under the jurisdiction of the Railroad Commission, and all automobile carriers should be required to make full and complete reports of their operations to the commission, as is done by the railroad companies.

6. Urban auto carriers should come under the jurisdiction of the State Railroad Commission, particularly where they operate in competition with interurban systems of transportation.

#### MOTOR TRUCKS SUITABLE ONLY AS FEEDERS

I do not share the views of the Graham reference to the relative merits of the bus and the electric railway for freight haulage. The electric railway does, and will continue to, handle the bulk of short-haul freight movement. The future will see trucks as feeders to haul freight to central points, thence to be transported to cities by trolley or steam lines. The cost of unloading from trucks and loading onto the trolley freight car, etc., will be more than offset by the higher operating cost per ton-mile of such auto trucks, if we add to the present high operating cost of such trucks approximately 25 per cent, which is a just amount as taxes and interest on investment in the roads that they are destroying. This at first glance may seem large, but if any stretch of the state highways, which have cost as high as \$20,000 a mile, is examined and note is made of the destruction, as well as of the comparatively small amount of auto travel which they have carried, it will not be far wrong to say that the damage to these roads will probably reach the astounding figure of one cent a ton-mile.

Mr. Graham would lead us to believe that for such factories, farms, mills, stores and warehouses as are located directly along the lines of rail transportation the railway companies handle only a very small amount of the total freight moved. If he had collected a few statistics he would have found that the great movement of freight goes to and from the great wholesale business houses and factories that have necessarily located on the lines of these transportation companies simply as a matter of economy and business prudence in providing facilities that will give them the quickest, most dependable and most economical method of doing business.

The haulage of freight has become a very great

revenue producer for the Pacific Electric and other railroads and will grow, provided the trucks are obliged to charge for their service in proportion to their costs and the damage they do to public property.

#### SAN PEDRO-LOS ANGELES SERVICE MOSTLY ELECTRIC

Eighty-five per cent of the freight moved from Los Angeles Harbor to Los Angeles is done by the electric line and not by truck, as many seem to believe. The present highway is not congested; it could take four times the truck business it now handles, but the shipping public knows that the facilities cannot be provided alongside a ship that would adequately take care of the great strings of auto trucks that would be required to handle the freight carried by one of the large ocean-going vessels that dock at our far famed harbor.

I firmly believe that freight haulage is a big problem for the electric railroads. Profits of business houses are made by the volume that they handle, and large volume can be handled only in large units. Where the average car can handle 25 to 30 tons of merchandise and 50 to 55 tons of grain in a unit, it is hard to conceive of motor trucks supplanting them. We also know that every first-class and far-seeing business concern is locating its facilities, especially at wholesale points, along railroad lines and building its warehouses and supply depots at such points as can economically handle this volume of traffic.

It is a common daily occurrence on the Pacific Electric Railway to move 100 cars of freight from San Pedro with about 25 tons to the car, or a total of 2,500 tons. If this business was done instead by motor trucks with from 3 to 5 tons capacity, or an average of 4 tons, 600 automobiles would be required to take care of one day's business and operating in but one direction. Such an idea is preposterous. It will never be done.

An interesting side-light on this situation is thrown by the notice, which is reproduced on page 81. This notice was sent to all of its customers by a Los Angeles heavy hardware concern and is of interest.

#### Austria Planning Electric Railways

NEWS has recently reached this country that the plans for the electrification of about half the railway lines in Austria have been approved. The project covers approximately 400 miles of railway, mostly in mountainous country, and will cost about 5,000,000,000 crowns. The reason for the sudden undertaking of the work projected more than twenty years ago was the breaking up of the old Austria, which was comparatively rich in coal. The present Austria finds itself almost without coal. To reduce its dependence on outside countries for coal, the development of potential water power and railway electrification offer the only solution.

A conservative estimate places the saving through the employment of electricity at 7 per cent of the total outlay, because much equipment for hauling the coal from the Czech frontier 420 miles to the Austrian Alpine roads will no longer be necessary. The development of about 76,000 hp. of water power will be required for the first undertaking of 400 miles of line. Later it is proposed to electrify an additional 680 miles of lines, which will necessitate other developments totaling approximately 150,000 hydraulic horsepower.



## Getting the Best Results with Steel Poles

Manufacturer Makes Suggestions to Users Which Show How Special Requirements Sometimes Cause Unnecessarily High Cost—Some Practical Hints on Pole Testing Are Also Given

IT IS highly desirable that the users of a manufactured product appreciate fully the relation of manufacturing processes and characteristic qualities of materials to the finished article which they procure from the manufacturer. To this end such publications as the issue of the "National Bulletin," of the National Tube Company, dated 1921, is very useful. A few suggestions from this bulletin are given below.

This company has developed a grade of mild steel that has proved in service especially adapted to the manufacture of welded tubular holes. The average composition of this bessemer steel is carbon 0.07 per cent, manganese 0.35 per cent, sulphur 0.045 per cent, phosphorus 0.1 per cent. The variations permitted are: Not more than 0.09 per cent carbon, 0.065 per cent sulphur, 0.11 per cent phosphorus; while for the manganese the range is from 0.3 to 0.6 per cent.

### REGARDING POLE TESTING

The company states that while something may be gained from any test that will show the ultimate strength of a pole, some tests, such for example as the deflection test, are practically useless. Users sometimes claim that flexibility is of advantage in practice, although the specifications contain a clause limiting the deflection of the steel poles to less than is permitted for other materials. In any event the deflection can be calculated with great accuracy.

In contrast with the doubtful usefulness of the deflection test is the effective drop test, which determines whether the joints have been properly and securely assembled. Sectional poles are usually dropped, butt down, three times from a height of 6 ft., on a solid hardwood block supported by a rigid base.

Another practical test is the pulling or pushing test applied in the direction of the pole length. In this test short-jointed sections on several poles are cut out and tried in a testing machine. Tests have shown that many joints will carry, without slipping, substantially a push or pull nearly equal to the load the smaller pipe in itself would withstand.

The steel used for National poles has a minimum elastic limit of 30,000 lb. and the test for yield point is carried out at 10 per cent below that value. The set under this load is measured. Another and quite common flexural test is made when poles are inspected. It is carried out after the manner usually employed in determining the elastic modulus of the material. In this test both load and the corresponding flexure (or deflection) are recorded. It is usually made at the rather high stress of 18,000 lb. per square inch. This is two-thirds of the stress which is used for maximum load.

### ALL POLES SHOULD NOT TAKE SAME SET

Many specifications have been drawn up requiring poles of widely differing lengths and diameters to stand the same deflection, commonly 6 in. Now, a pole 22 ft. long made of 13-in. and 12-in. pipe should not be

deflected more than about 1 in., while a pole 39 ft. long of 4-in., 3-in. and 2½-in. pipe should be deflected about 18 in. when tested for deflection. It is evident that a constant figure like 6 in. for deflection may be much too large in one case and too small in another. A deflection of 6 in. is about right for a pole 31 ft. long, of 6-in., 5-in. and 4-in. pipe.

Some framers of specifications have attempted to overcome the difficulty by reducing the limit of deflection to 3 in. and some to 1½ in. Against such practice it is proper to urge that 1½ in. would not strain a pole 39 ft. long, of 4-in., 3-in. and 2½-in. pipe sufficiently for the test to give any indication of the quality of the pole. It is more rational to use such load as will produce about a constant stress in the material and then to fix the deflection limit to correspond.

Tubular steel poles are designed for a certain maximum load which may be applied without producing appreciable permanent distortion. The load to be applied should not produce a fiber stress above the yield point, say not over 90 per cent of that for safety. After such loads are applied there usually remains a small fraction as a permanent set, which some specifications have limited to a constant figure, such as 1 in. or ½ in. This constant figure is as inappropriate for set as a constant figure is inappropriate for deflection.

Tests have shown that the set on first loading seldom reaches 10 per cent of the distortion produced by that load. The practical difficulties of making the tests and measures impose a limit to such measures, which for commercial testing of poles is usually agreed on as ½ in. of permanent set. Thus a pole which is deflected 5 in. on test should not show a permanent set exceeding ½ in., but a pole that is deflected 15 in. on test may show a set of 1½ in. without exceeding rational limits.

The length of the sections of a pole has but little effect on strength, stiffness or weight. As long as the size and thickness of pipe remain unchanged, the strength, stiffness and weight do not change by more than approximately 6 per cent.

### SPECIAL MANUFACTURING PROCESSES INCREASE COST

The use of odd sizes, thicknesses and weights should be avoided as it involves special production, delay and increased cost. Considerations of strength, stiffness, etc., at times suggest the advisability of such combinations as 4½-in. in 5-in. pipe, but such combinations necessitate assembling in a machine capable of forcing the smaller into the larger pipe. A forcing machine of this kind is expensive to change and such joints should be used only where it will be possible to order a large number of poles identical in dimensions, unless the use warrants paying the extra assembling costs when only a few are made at one time.

When only a few poles are ordered, it is better to use such sizes and thicknesses as will allow the insertion of the smaller pipe to be made by hand, say at least ¼ in. difference in diameter between the outside diameter of the inserted pipe and the inside diameter of the larger pipe. The difference should never be less than ⅜ in. unless the quantity justifies the use of the forcing equipment, say when 1,000 or more identical poles are to be made and shipped at one time.

Sometimes considerations of strength, stiffness and limit of least thickness lead to the choice of sizes of pipe that entail great reductions at the joints. These require heavy swaging before assembling. After the



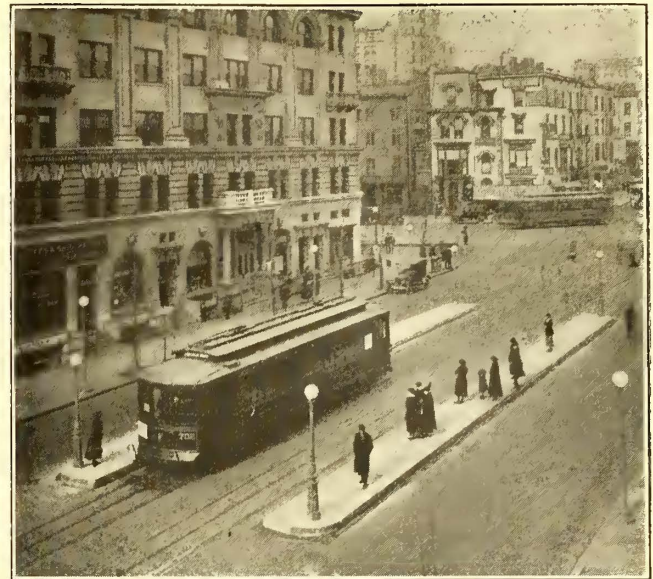
poles are assembled, there is great risk of injury to the smaller sections in transit or erection. It is frequently possible to obtain an equal or even a slightly greater strength by the use of larger and thinner pipe for the upper section, and to do this without increasing the total weight appreciably.

To protect the poles near the ground line where deterioration is most rapid, a dog guard may be applied. This is made of a piece of larger and thicker pipe put over the pole from the butt end and swaged and shrunk on so that one-third of the length will be below and two-thirds above the ground line. These guards are applied at red heat. While cooling they shrink tightly. They at least double the life of a pole of extra-heavy type and frequently triple the life of a pole of standard type. Dog guards are usually made 2 ft. long.

## Permanent Loading Platforms in Washington

Wooden Structures, Which Have Proved the Usefulness of Loading Platforms in Congested District, Being Replaced by Permanent Type—Construction Conforms to Street Paving

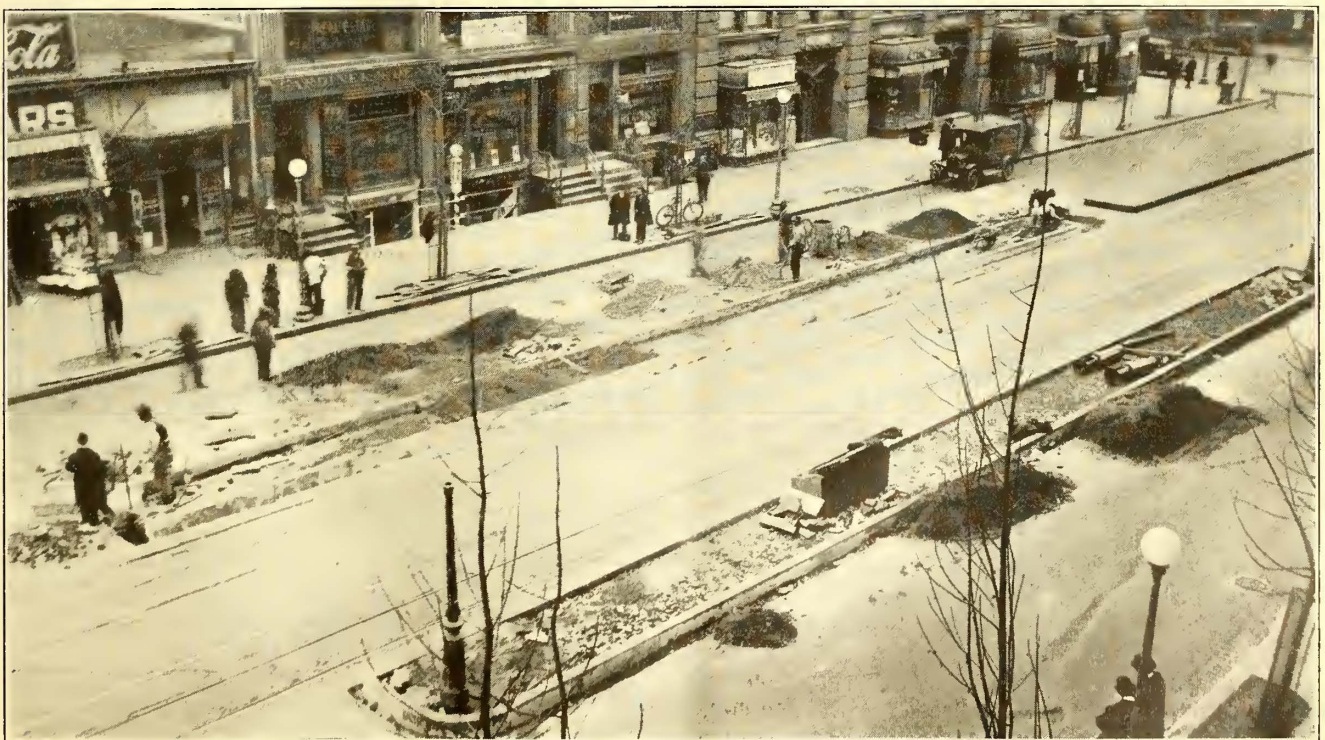
THE highway authorities in the District of Columbia have begun conversion of the wooden loading platforms used for the past two years to a permanent concrete form. The loading platforms in Washington, which were installed in 1918, following the recommendations of John A. Beeler, have given excellent satisfaction from a traffic standpoint. A description of these platforms, with illustrations, was given in the *ELECTRIC RAILWAY JOURNAL*, May 4, 1918, pages 848 and 849. At the same time an analysis of the skip-stop or rearranged stops in the downtown districts was given. On July 13, 1918, page 64, was given an account of the results obtained in the way of speeding up traffic following the installation of these loading platforms.



COMPLETED LOADING PLATFORM ON FOURTEENTH STREET, SHOWING LIGHTING STANDARDS SIMILAR TO STREET LIGHTING UNITS

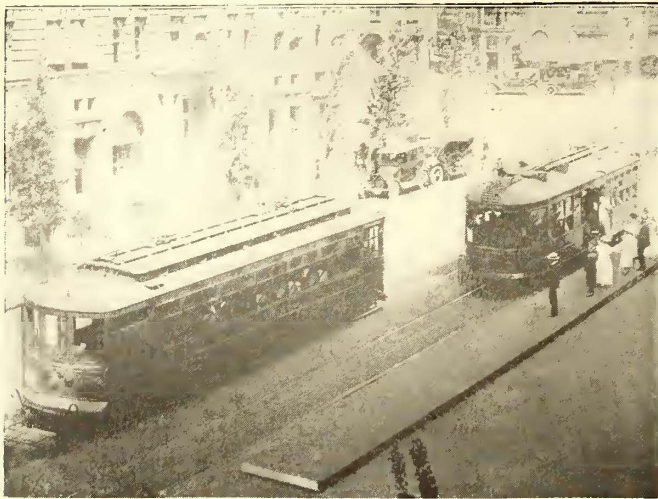
The principle of the loading platform has now become so firmly established as a part of Washington practice that the highway authorities have decided to eliminate the wooden platforms and install a more artistic and permanent form. The first pair of platforms converted are about 6 ft. x 96 ft. over all. They are built with a 6 in. x 20 in. granite curb set in the asphalt pavement in the form shown in the diagram. Within the curb a cinder fill is rolled directly on top of the old asphalt and this is topped with about 2½ to 3 in. of surface asphalt similar to the standard paving material used in the District of Columbia.

The lighting of each platform is by two pedestal lamps surmounted by standard series lighting unit and



LOADING PLATFORM UNDER CONSTRUCTION, SHOWING RETAINING CURB READY FOR FILL

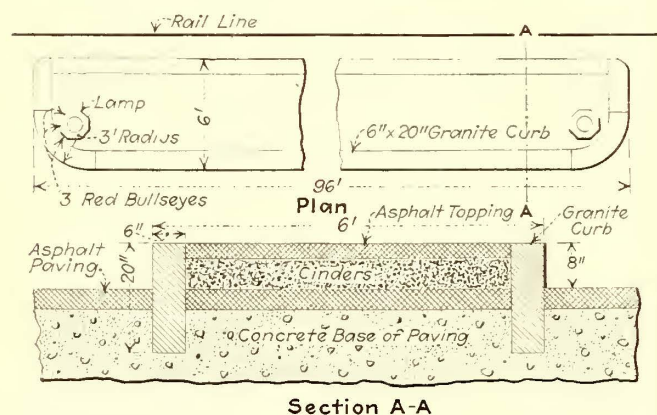




STYLE OF WOODEN PLATFORM ORIGINALLY INSTALLED IN 1918, NOW BEING REPLACED BY CONCRETE PLATFORMS

with a special low-voltage lamp to light the red bullseyes in the base. The three bullseyes in the base of the lamp are lighted by a single lamp centered on the axis of the post supplied with current at low voltage from the lighting circuit of the nearby alley. It was considered dangerous to have this lower lamp one of the high-voltage series lights similar to that used on the top of the post and for the regular street lighting units. It was argued that the bullseyes might become broken and some one poke in through the open bullseye with an umbrella or metal rod and break the high-voltage series lamp, with possibly serious results to himself through electrical shock.

The base of the lighting unit is a standard octagonal post with red bullseye lenses on three of the eight faces. At the end nearest to approaching traffic the lenses are on three faces toward approaching traffic. On the far



PLAN AND SECTION SHOWING CONSTRUCTION DETAILS OF NEW PERMANENT LOADING PLATFORM

end of each platform the lenses are on the three faces most distant from the track. This arrangement offers marker lights to guide an approaching motorist at the near end of the platform and a marker by which he may gage a turn if he wishes to circle about the far end. In other words, as Mr. Hadley, electrical engineer of the district, puts it, "the motorist is guided by a red light from any angle of legal approach." A somewhat similar problem was solved elsewhere in the district by using red bullseyes in five of the eight sides on a lamp on an island of safety at an irregular crossing where

numerous possible angles of approach had to be guarded.

The material improvement in appearance of the loading platforms as compared with the old wooden structures is obvious from the two illustrations showing conditions before and after conversion.

## What Is an Interurban?

The United States Railroad Labor Board Sets Forth Its Characteristics in Lengthy Decision—Board Rules Adversely on Point of Jurisdiction in View of These Characteristics

A SHORT reference to the decision of the United States Railroad Labor Board handed down on Dec. 18 discussing the meaning of the term "interurban" as contained in Section 300 of the transportation act of 1920 was published on page 1297 of the issue of this paper for Dec. 25. The full text of the decision shows that the board made an interesting analysis of what characterizes an interurban railway before rendering its opinion. The case came before it through appeals from employees on various electric railways asking the board to hear their grievances. The petitioners represented sixteen unions in all and the respondents were the following eleven railways:

Spokane & Eastern Railway & Power Company (Inland Empire Railroad), Inter Urban Railway, Fort Dodge, Des Moines & Southern Railroad, Piedmont & Northern Railway, Lackawanna & Wyoming Valley Railroad, Pacific Electric Railway, Denver & Interurban Railroad, Hudson & Manhattan Railroad, Chicago, Lake Shore & South Bend Railway, New York, Westchester & Boston Railway and Washington & Old Dominion Railway.

In reciting the reasons for the case before it the board said:

Representatives of employees on the electric railways named herein have brought before the Labor Board for consideration and determination disputes between these railways and certain of their employees. All the organizations which are petitioners do not have a dispute with every respondent railway, but each petitioner has a dispute with one or more of the respondents and each respondent has a dispute with one or more of the petitioners. The railway representatives having questioned the Labor Board's jurisdiction, this decision is upon that question solely.

The ground upon which jurisdiction is questioned is that these railways are interurban electric railways not operating as a part of a general steam railroad system of transportation, and that they are therefore excepted from Section 300 of the transportation act, 1920, Sub-section 1 of which is as follows:

"1. The term 'carrier' includes any express company, sleeping car company, and any carrier by railroad, subject to the interstate commerce act, except a street, interurban or suburban electric railway not operating as a part of a general steam railroad system of transportation."

It is clear that Congress intended to exclude certain kinds of transportation facilities from the jurisdiction of the Labor Board. So far as the railways here in question are concerned, if they either are not interurbans or are operated as a part of a general steam railroad system of transportation, then they are not excluded and remain within the Labor Board's jurisdiction.

The eleven railways divide themselves, roughly speaking, into two groups. In one are the Hudson & Manhattan Railroad, the New York, Westchester & Boston Railway and the Denver & Interurban Railroad, which do almost exclusively a passenger business. In the other group are the eight remaining railways, which, in addition to a passenger service, do a more or less extensive freight interchange business with steam trunk lines, carry mail and express, and, in general, perform the same public service as steam lines. In each group are roads which operate equipment jointly with steam trunk lines. They range in size of road operation from the Lackawanna & Wyoming Valley Railroad with 20 miles of road to the Pacific Electric Railway with 600 miles. Several are interstate in their operation.

While no two railroads are exactly alike, they are generally similar as to method of operation and character of



employment, except for the Hudson & Manhattan Railroad, whose equipment and operation are similar to that of the Interborough and the Brooklyn Rapid Transit Companies of New York. There are also certain other features characterizing one or more of the railways which, being emphasized by the petitioners to prove that particular railways are within the jurisdiction of the Labor Board, deserve careful consideration. Such consideration will obviate the necessity of presenting in detail the facts about each railway. The points to consider are as follows:

1. That this or that railway is physically an interstate property.
2. That it performs the principal functions of a steam railroad.
3. That its charter permits it to operate either by steam or by electricity.
4. That it has at some time in the past operated by steam.
5. That to a certain extent it operates jointly with a steam trunk line certain equipment and makes certain joint use of track.
6. That its stock is entirely or partially owned by a steam trunk line.
7. That it does a considerable interstate business.
8. That it has received a freight increase from the Interstate Commerce Commission under ex parte 74.

The board then considered these points seriatim, after noting that none of the correspondents is under the same operating management as any general steam railroad system, and that certain court decisions had already declared that the Spokane & Inland Empire Railroad and the Fort Dodge, Des Moines & Southern Railroad were "interurban" roads. This analysis of the eight points showed that none of them was controlling in deciding that a road was not an "interurban" railway. In connection with points 5, 6 and 7, the board also declared its understanding of the words in Section 300 "a part of a general steam railroad system of transportation." This phrase means, it says, operating as an integral part of such a system and under unified control. If there is a physical connection and a common control and the lines are used together as one general system the act would cover and include such a road. But when there is separate control and management, mere contiguity at points of connection or even some common officials would not be a decisive test. If the road is under such separate control that its officials can manage its own business, make its own contracts and regulate its own affairs it is not a part of another.

#### WAYS IN WHICH ELECTRIC RAILWAYS ARE EXCLUDED FROM ACT

The board points out that interurban electric railways are excluded from the provisions of the transportation act under three heads, namely:

(a) In all matters pertaining to federal control, namely, Section 204-A, "reimbursement for deficits," and Section 209-A, "guarantee to carriers," the exclusion covers an "interurban electric railway which has as its principal source of operating revenue urban, suburban or interurban passenger traffic, or sale of power, heat and light, or both."

(b) In Section 1, Sub-section 22, forbidding extension and further construction without authority from the Interstate Commerce Commission; in Section 20-A, requiring the assent of the Interstate Commerce Commission to the issuance of securities, and in Section 300, giving the Labor Board jurisdiction, the exception is "a street, interurban or suburban electric railway not operating as a part of a general steam railroad system of transportation."

(c) In Section 15-A, dealing with rates, are excluded "interurban electric railways, unless operated as a part

of a general steam railroad system of transportation or engaged in the general transportation of freight."

The phraseology used in these paragraphs, the opinion points out, differs to some extent, but the same language is used in Section 20-A and in Section 300, and the board points out that under Section 20-A the Interstate Commerce Commission has not felt itself warranted in assuming jurisdiction over the issuance of securities by interurban roads, including some of those concerned with the present case. The board also points out, as a practical matter, that the granting by the Labor Board of a wage increase without corresponding authority to the Interstate Commerce Commission to raise rates would result in serious complications, that the Labor Board and the Interstate Commerce Commission were clearly intended to be interdependent in this matter and that such intention would be nullified if the Labor Board assumed jurisdiction where the Interstate Commerce Commission was without it.

In conclusion, the board, in declaring that it has no jurisdiction over the respondents, says:

It is plain that Congress has dealt in discriminating language with interurban electric railways throughout the interstate commerce act and the transportation act, 1920, and has consistently treated them differently from steam lines. Congress has done this because there is a material difference, generally speaking, between steam and electric roads in the matter of equipment, nature of service and standards of employment. With a few exceptions, one service is general, the other is local. The difficulty is that a few electric railways have developed far beyond the original idea of an interurban. They have now come to rival many steam lines in service and size. And still the definition of what is an interurban has likewise broadened, not only by popular conception, but by legal, statutory and executive decree, so that the Pacific Electric Railway, operating upward of 600 miles of road; the Fort Dodge, Des Moines & Southern Railroad, owning 2,400 box and coal cars, and the Spokane & Inland Empire Railroad, crossing state lines and operating passenger and freight trains, are all judicially labeled "interurban." It is difficult, if not impossible, to get away from this definition.

### Vibration Due to Electric Locomotive Side Rods

IN AN article in *le Génie Civil* for Dec. 11, 1920, attention is directed to the critical velocity of locomotives of the side-rod type. While the importance of the development of the gearless drive is recognized in the article, the fact is pointed out that for some time to come the greater number of locomotives equipped with one or two large motors coupled by means of cranks and connecting rods with the driving axles must be reckoned with. Examples of this drive are found in the Simplon, the Loetschberg and the St. Gotthard locomotives.

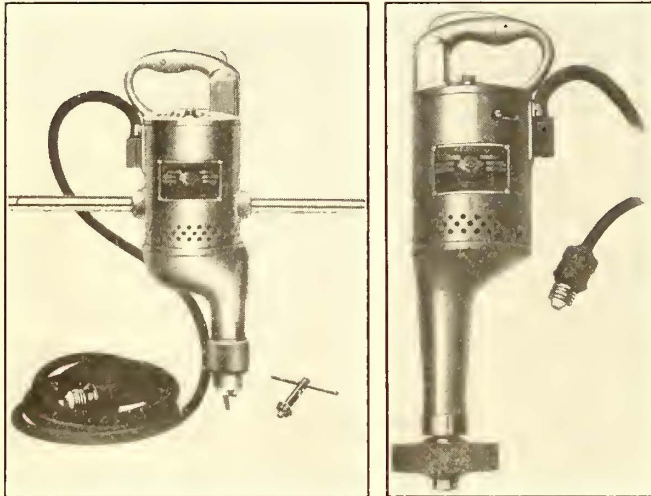
There is for each locomotive a critical speed at which injurious vibrations will be set up, and this is calculable from the mechanics of the oscillating parts. This article gives the method of analysis used by W. Kummer and the results of experiments made by K. E. Müller.

From the experiments made it appears that resonance (the condition for the occurrence of vibration) developed in the following locomotives at the respective speeds given: Valtellina, type 38 of 1906, 40 m.p.h.; Milan-Varese, type 1-C-1 of 1912, 48½ m.p.h.; Loetschberg, type 1-E-1 of 1913, 25½ m.p.h.; Silesia, type 2-D-1 of 1917, 25 m.p.h. When vibration actually occurred on these locomotives conditions were changed so as to eliminate it.



## New Line of Electric Drills and Grinders

THE Wodack Electric Tool Corporation of Chicago, Ill., is manufacturing a new line of electric drills, hammers and grinders. Its portable drill is motor driven, using either alternating or direct current, which is automatically shut off when not in use. This is brought about by the use of current contacts actuated through a spring lever in the handle, which is released as soon as the pressure of the operator's grip is removed, much in the same manner as with the dead man's handle used with railway controllers. Wodack drills are made in six sizes,  $\frac{1}{8}$  in.,  $\frac{1}{4}$  in.,  $\frac{3}{8}$  in.,  $\frac{1}{2}$  in.,  $\frac{5}{8}$  in. and  $\frac{3}{4}$  in.



PORTABLE ELECTRIC DRILL AND GRINDER

In addition to drills the company is manufacturing a portable grinder equipped with the same style of current control. These grinders are made in three sizes depending on the wheel capacity: 3 in. x  $\frac{1}{2}$  in.; 4 in. x 1 in., and 8 in. x 1 in. The motors used with both types of tools are made of high grade aluminum and are equipped with SKF ball bearings throughout. The manufacturers claim to have developed a very rugged motor which will stand severe overloading and their guarantee includes repairs and rewinding of motors free of charge should they burn out for any reason within one year from the date of purchase.

## Gasoline Substitute for Motor Vehicles

IN A RECENT issue of *Engineering*, London, G. J. Shave gives the results of experiments on omnibuses carried out by the London General Omnibus Company, Ltd., using benzole-alcohol for fuel. The purpose of these tests, he states, was to find a suitable substitute for gasoline. Benzole and gasoline contain about the same number of B.t.u.'s per gallon, but gasoline has the higher calorific value per pound. Alcohol by itself has about half the heating value of either of the other fuels. Compared with gasoline, both benzole and alcohol are slow-burning fuels, and consequently engine design must be modified to suit them. In the first place, compression had to be increased in proportion to the slowness of the burning of the mixture and within the limits of the detonating temperature of the fuel and air mixture.

Elaborate bench tests, made on a standard bus engine with various mixtures of fuel and different carburetor settings, showed that the 50 per cent mixture of benzole and alcohol with 123 lb. compression gave the best

results. The whole series of tests showed that the greater the percentage of alcohol the higher are the possible thermal efficiencies for the same compression, and that higher efficiencies are possible due to the allowable increase in compression. However, at low throttle openings, with accompanying low compression, the economy was very poor. The importance of thoroughly vaporizing the mixture by heating cannot be over-emphasized.

Due to the presence of water in the alcohol and to its being more volatile than gasoline, some trouble was experienced in starting the motors. An unexpected difficulty arose when, after a bus had been running about a month, the fuel tank and lines were found to have been badly corroded by the benzole. Also a thick tar-like deposit was found on the valve head and in the intake manifold. After the elimination of some of the preliminary difficulties the experiments were successful.

## Universal Change Maker

THE advent of the odd-cent fare and the use of metal tickets selling at fractional cent rates have greatly complicated the work of the conductor in making change. The usual form of change maker ejects but one coin at a time, hence with a 6-cent rate of fare in force, it is necessary for the conductor to operate the device four times to eject four pennies in making change for a dime. An improvement on this style of change maker provided for ejecting the four pennies at one operation. This was satisfactory as long as fare remained constant. However, the frequency with which the rate of fare has changed on many properties has made a further refinement in the change maker highly desirable.

Working along this line, the Johnson Fare Box Company, Chicago, has placed on the market a new universal change maker that is adjustable; that is, any barrel may be readily adjusted to eject from one to five coins, or one to six tickets, at one operation. Only a screw-driver is needed to change the adjustment. This arrangement does away with the necessity of discarding a change maker should a new rate of fare require the ejection of a different number of coins or tickets.

The flexibility of the device is further enhanced by the unit construction employed. Each barrel is complete in itself and may be used separately or as one unit of a group made up with whatever number of units are needed to meet local conditions or a conductor's notions. Barrels are designed to handle dimes, nickels, pennies, and metal tickets of two denominations.

The framework and slides are made up of 18 per cent nickel silver, which is exceptionally rigid and will not corrode or tarnish. All parts not subject to wear are made of aero metal to provide increased mechanical strength with light weight.

A new preparation, known as "Meno" Rust Remover and Cleanser, has recently been placed on the market by Peter A. Frasse & Company, New York, N. Y. It is a scientific combination and blending of certain chemical ingredients, which in combination produces an electrochemical action that rapidly loosens and dissolves rust, corrosion, grease, oil, dirt, carbon, paint or any other foreign substance adhering to the metal. Not only are the above virtues claimed by its manufacturer but also that its action automatically ceases when contact between the cleanser and the metal is established.



## Soft Metal Bearings

Compositions Containing a Large Percentage of Lead Wear Rapidly, Are Easily Distorted Under Pressure and Do Not Transmit Heat Readily—Practical Limitation of Lead for Car Bearings 15 per Cent

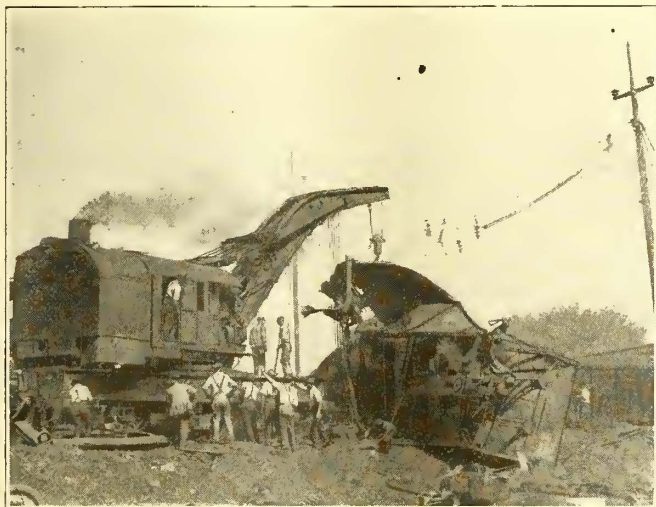
DISCUSSING the properties resulting from different bearing compositions, W. K. Frank, in the *Railway Mechanical Engineer*, says that bearing metals are essentially a mixture, the components of which are distinctly different in hardness. In these metals the softer crystals are abraded faster and develop into depressions, allowing the harder ones to stand above them and support the load. These softer crystals also perform the function of allowing the bearing to be plastic to a limited degree, since fitting is more or less an approximation. As wear is an attendant evil of motion, it is preferable that the bearing wear rather than the shaft, since it is less costly and more easily replaced.

Compositions containing as high as 30 per cent lead find limited application because of their high plasticity and consequent distortion. They answer well the requirement of protecting the shaft, but do not, on the other hand transmit heat readily. They show rapid

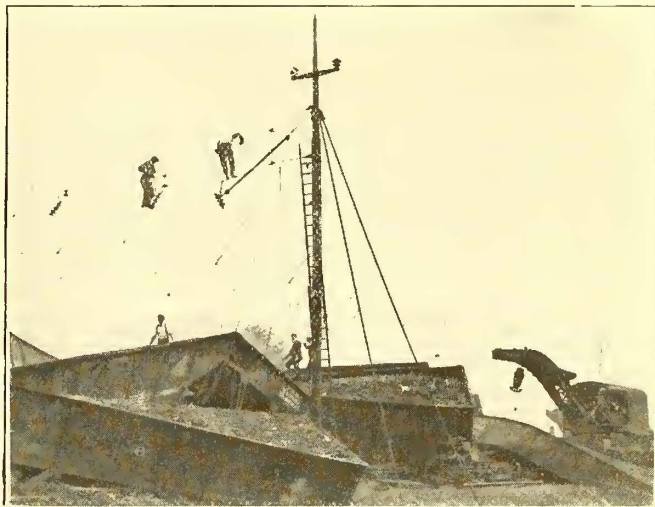
and that of tin to be 8 per cent. It should be remembered, however, that while the 12½ per cent lead and 15 per cent lead alloys wore more slowly than phosphor-bronze in railroad car bearings, this is not conclusive proof that the lead is in itself a wear-retarding element. Lead furnishes the means of allowing the bronze to conform more readily to varying alignment and, by preventing localized pressures, reduces wear. Under comparatively low pressures and absence of impact, but with changing alignment of car axles, the 15 per cent lead alloy shows superiority, whereas under high pressures and impact the phosphor-bronze shows slower wear. A comparison between the pressures of car axles of 325 lb. per square inch and that of 3,500 lb. per square inch encountered in rolling mill practice shows why such alloys are unsuitable for the latter condition.

## Moving Day for Catenaries

WHEN a wheel broke on an eastbound freight train on the main line of the Pennsylvania Railroad recently, about a thousand yards west of Wayne Station in the Broad Street-Paoli electrification zone, twenty-three loaded coal cars were scattered over the four tracks. The services of four cranes, two at each end of



THIS FREIGHT WRECK ON THE P. R. R. WAS DISTURBING TO THE OVERHEAD



BUT THE OVERHEAD, AT THAT, SUFFERED LESS THAN THE RAILS

wear, as is evident to any one who has examined a pile of scrapped railroad car bearings. The high lead bearings can readily be distinguished from the moderately leaded ones by the extent to which the axle collar has worn into the ends of the bearings of the two classes. High-lead mixtures were originally designed to replace the babbitt-lined railroad car bearings, but do not possess sufficient plasticity to accomplish this and are used with babbitt linings. Because of this lining they seldom come in contact with any part of the journal, excepting the collar, and their length of service is determined by the life of the lining, distortion of the back and collar wear.

Mr. Frank also says that as far back as 1892 Dr. Dudley of the Pennsylvania Railroad determined the practical limitation of lead content for car bearings to be in the neighborhood of 15 per cent. Later work on this subject has not altered the conclusions he reached in this respect, and it may be of interest to note that twenty-seven years later a table of railroad specifications shows the net average content of lead to be 15 per cent

the wreckage, were required for thirteen hours before one track could be restored to service.

The work of removing the entangled wreckage was somewhat impeded by the 11,000-volt overhead contact system, as it was necessary to raise large cars within a very limited headroom. However, two of the four tracks were cleared from the overhead obstruction as shown in the illustrations. The wreck occurred at a sharp bend in the right-of-way. The messenger cables were detached from the cross catenary suspensions at the insulators and the contact wires with their messengers were allowed to straighten out, thus reducing the tension in this part of the system and at the same time grouping all four of the contact wires over two of the four tracks. This resulted in increased working space on one side of the right-of-way without appreciably reducing the headroom on the other side.

A peculiar freak of this wreck was the fact that the relatively delicate electric equipment was scarcely damaged, while heavy steel rails were torn completely free from the cross-ties.



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# ELECTRIC RAILWAY PUBLICITY

Devoted to How to Tell the Story

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## More Comment on Railway Movie

### Advantages Measured by Cost

THE CAPITAL TRACTION COMPANY  
WASHINGTON, D. C., Dec. 23, 1920.

To the Editors:

I have read with much interest the editorial suggestion in your issue of Sept. 25, and also the comments made by the JOURNAL and in various letters which have been published since that time by prominent men.

No one nowadays questions the value and necessity of bringing before the people the real situation of the street railway business. My own thought is that while all of the various publicity methods and policies are good, the most important thing is to make sure that the public knows all the facts in relation to the operation of the properties.

I do not feel competent to make a statement on the value of publicity through the movies, but believe that specific local problems could very advantageously be covered in this way if the expense is not too great.

J. H. HANNA, Vice-President.

### "First, Catch the Hare"

DETROIT UNITED RAILWAY  
DETROIT, Dec. 23, 1920.

To the Editors:

Assuming for the moment that film publicity would be an excellent vehicle of expression for street railways, comes the problem of how are the pictures, when made, going to be displayed?

First, catch the hare. It is not by any means certain the houses will show them in the form you desire. Get-

ting them made and having them shown are entirely different propositions.

It should not be forgotten that in nearly all communities motion picture houses operate under municipal licenses, and it takes no stretching of the imagination to realize that any group of picture places will prove gun shy for fear of offending the municipal authorities and, as a result, jeopardizing their rights to operate. This I know to have been the experience not more than a million miles from here.

All this is aside from the very debatable question if people want to be instructed when they go to be entertained.

A. D. B. VAN ZANDT,  
Publicity Agent.

## Attractive Posters from London

THE London Underground Railway system was the pioneer company to use traffic posters on a large scale, and the pamphlets, posters and other traffic literature issued by this company still represent the high mark in electric railway publications of this kind. Reproductions have been published in previous issues of this paper of a number of the posters, pages from the traffic pamphlets and other publications of the company to illustrate the wide variety issued, and the accompanying illustrations show six typical posters recently published. The three reproduced on this page belong to what is known as the "character" group. That is to say, they represent individuals supposed to be characteristic of the underground stations whose names appear on the posters. The three posters on the opposite page are of a different nature and represent characteristic scenes of resorts reached by motor, tram or underground, all three systems being operated in conjunction.



THE LONDON UNDERGROUND USES THESE NOVEL "CHARACTER" POSTERS



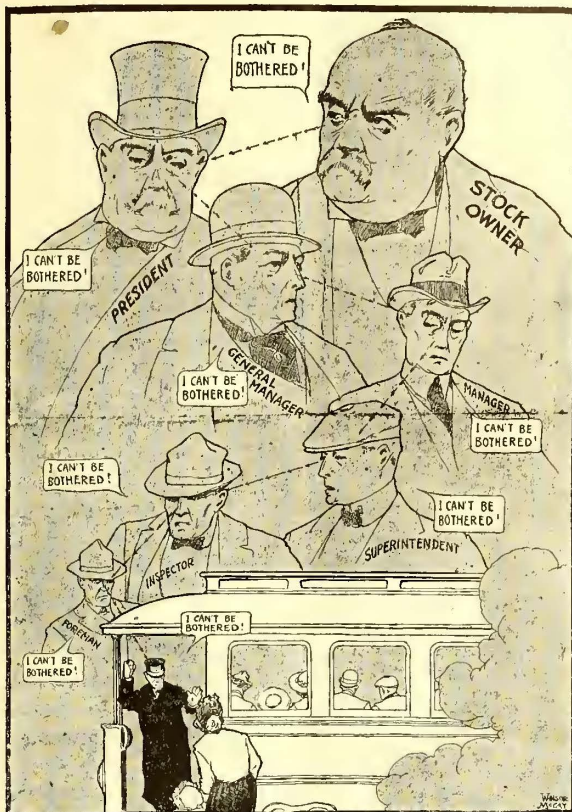
## How Bad Relations May Be Promoted

**I**N THIS department of the *Electric Railway Journal* many articles have been published on how to promote good relations between a utility and the public. The accompanying reproduction shows how bad relations between a utility and the public which it serves may be developed through what was evidently an unfortunate selection by a cartoonist of a subject to illustrate a good editorial idea. The cartoon is from the Washington (D. C.) *Times* for Sunday, Dec. 5.

The picture shows the "stock owner" and each official of an electric railway company, from president to platform man, as being indifferent to the comfort of the public. The "stock owner," a corpulent and plutocratic man, throws this duty on the president, saying, "I can't be bothered." The president repeats the same message to the general manager, and so on down the line. Finally, the conductor refuses to help an old lady with a child upon the car.

The text of the editorial accompanying the cartoon bears no evidence that the editor considers the attitude illustrated in the picture is characteristic of the average electric railway. It urges efficiency, attention to duty and individual responsibility upon every member of every business organization—a very good message. Nevertheless, the reader who only glances at the page might easily gather the conclusion that, in the opinion of the editor, the scene pictured is characteristic of electric railways.

During the last four or five years utilities have had to contend against many difficulties in the way of high prices of all supplies used by them—conditions brought about by the war. These conditions may be considered as unavoidable, being worldwide. It is most important for newspapers and cartoonists not to make the work of utility rehabilitation more difficult by exciting unwarranted prejudice. We hope that the next time Mr. McCay wants to use an



Cartoon from Washington "Times" showing "I can't be bothered."

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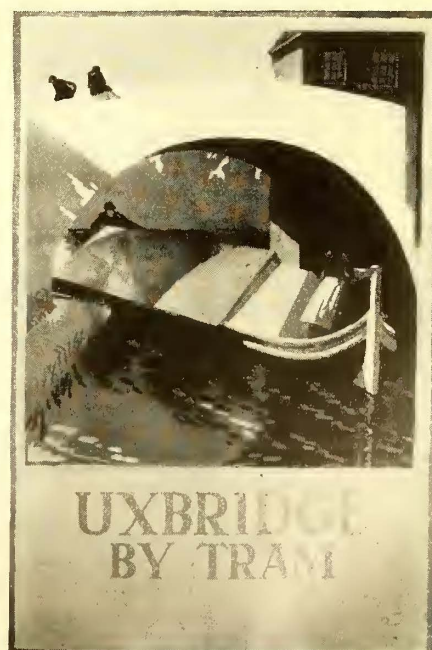
electric railway simile to illustrate an editorial on organization he will give a pleasanter expression to the officials and have them repeating to each other some such expression as "the public be pleased." The caption for such a cartoon might be the opening words of the code of principles adopted by the American Electric Railway Association in 1914: "The first obligation of public utilities engaged in transportation, is service to the public."

Here is another suggestion as to how Mr. McCay might have made his picture of an electric railway organization more true to life. It is in connection with his portraiture of the "stock owner." Statistics of the proportion of electric railway securities held by men, women, estates, savings banks, insurance companies, charitable institutions and the like for the entire country are not available, but they have been compiled in a few cases, as in Brooklyn. The recent report by Stone & Webster on the Brooklyn Rapid Transit System gives these figures for that property, and there is no reason to believe that the percentage in that case would vary greatly from the percentage on other property. The figures given in that report cover the ownership of all of the securities of the Brooklyn Rapid Transit System, including the securities of the Brooklyn City Railroad and the Prospect Park & Coney Island Railroad, leased lines.

Of the total of 23,985 holders of these securities, 7,247 were women and estates, and 2,034 were fiduciary and philanthropic institutions of the type mentioned. A later report of the Brooklyn City Railroad shows that of its 1,472 stockholders more than a half were women and of the remainder more than 28 per cent were administrators, executives, guardians, life insurance companies, charitable institutions and colleges.

Our suggestion to Mr. McCay, then, in his next picture of a railway organization, is to substitute as a typical stock owner, for the plutocratic looking man in the upper right-hand corner, the old lady now shown at the bottom of the group.

Here is still another idea for Mr. McCay. In his next cartoon, let him show how important the railways are to the social and business life of the community. Then let him point out the lesson that, for this reason, the authorities should adopt a constructive policy in dealing with them



ATTRACTIVE COLORED POSTERS OF RESORTS REACHED BY LONDON UNDERGROUND



### Gaining Public Confidence

CO-OPERATION with the city authorities to accomplish a real idea in creating good will for the railway company and at the same time performing a service to the community is one of the recent accomplishments of Dan Fisher, assistant to the president of the Dallas (Tex.) Railway Company. Mayor Wozencraft of Dallas conceived the idea of having a children's day at the Great Fair, at which every child in Texas should be invited as the Mayor's guest, and Dan Fisher saw an opportunity to do something big for the community in

We doubt that ever before in one gathering have so many children come together.

From information since obtained, it appears that there were 150,000 children attending the fair that day, a large part of them being carried upon the lines of the Dallas Railway. Private automobiles, buses and trucks were also pressed into service. The handling of such a great crowd, particularly children, was something which probably never before had been done by a state railway in the United States in a city the size of Dallas, at least.

The spirit with which Mr. Fisher entered into the proposition is indicated by the accompanying photograph, where he and Mayor Wozencraft are surrounded by some of the children they made happy.



DAN FISHER AND THE MAYOR AS ENTERTAINERS

### A "Tickler" for the Public

WHEN an efficiency engineer wants to speed things up a bit and make the organization "get a hump" on, he sends out a "tickler." W. B. Strandborg, publicity man of the Portland Railway, Light & Power Company, Portland, Ore., has adopted that same idea and put it on wheels, and the company is now operating a "Trolley Tickler on Wheels," over all the streets in the congested down-town district during the busy hours of the day.

The car is a converted one-man car and is completely smothered and surrounded by cute and gaudy banners, signs, cards, etc. Some of them are slogans to arouse interest in the educational campaign of the National Safety Council, some had to do with early Christmas shopping in the Christmas season, and others relate to "Service Suggestions" to help speed up service through co-operation on the part of the traveling public.

There are two large banners, one on each side along the body of the car, reading: "Don't Park Too Near Car Tracks," and "Help Us Give Safe and Dependable Service."

There are sixteen smaller signs covering the car windows and a set of four smaller cards appear on each end of the car. The accompanying illustrations show both sides of this trolley "tickler" and the ingeniously worded signs which are used. Of timely Christmas interest were the four dash sign cards on early shopping. These cards are to be changed from time to time.

The "tickler" attracted widespread attention and interest from the start and the company plans to keep it in permanent operation. The banners and cards are on cream-colored oil cloth with black and red lettering and can be read from a considerable distance.

this connection. How he accomplished it is indicated by the following editorial, which appeared the day after Children's Day:

Pin a medal on Dan Fisher. Hand a bouquet to Mayor Frank W. Wozencraft!

The boys and girls agree that Children's Day at the Texas State Fair was an unqualified success and that for the pleasure it afforded them they owe a debt of gratitude to these two.

The conception of a children's day on which every child in Texas should be invited as the Mayor's guest, free street car tickets furnished, free everything, almost, is one of the biggest ideas that the Mayor has ever sponsored.

And no more able lieutenant to carry out the details could have been found than Dan Fisher. Fisher went from town to town in North Texas passing out the free tickets and telling the glad news through the public schools, and where he couldn't go, he sent.



TROLLEY TICKLERS ON WHEELS ARE EFFECTIVE IN PORTLAND, ORE.



## Determining Physical Characteristics of Steel Rails by Magnetic Analysis

THROUGH the efforts of several steel experts who recognized the great practical value and immense possibilities of magnetic testing to the metallurgical industry, an apparatus has been perfected and placed on the market which enables one to establish the relation between the magnetic and mechanical properties of steel and detect imperfections. Such an apparatus from Holz & Company, New York.

The principle on which this analysis is based is that there is but one set of mechanical conditions corresponding to every set of magnetic characteristics. There are two separate analyses made, one using a magnetoscope, which gives information about the composition and mechanical and heat treatment of the specimen, but does not give any indication of the existence of flaws, and the other, the defectoscope, which determines whether non-uniformities exist, but does not indicate whether or not a specimen is hard or soft. The analyzer consists of a magnetizing solenoid wound on a brass tube, inside of which is a test-coil unit conforming as nearly as possible to the section of the specimen. The unit consists of two coils of fine wire having an equal number of turns and connected with ballistic effects opposed. This outfit, which surrounds the specimen, is driven at a constant speed along it and whether used to analyze quantitatively or to detect imperfections depends on the connections and circuits, for which two separate control boxes are furnished.

Magnetic surveys and analyses, it is claimed, will furnish information impossible to secure by any other means of testing. The fact that materials can be tested without destruction is of prime importance, and it is this feature of magnetic analysis which makes it possible to find in advance those rails which, after injury under straightening presses, would develop in service a complete interior transverse fissure. It is also suggested that this test would eliminate the occasional defective rail before it leaves the mill or is put in the track.

## Automatic Control of Humidity in Shops

THE United States Forest Products Laboratory has developed a plan for conditioning the air in shops, particularly for woodworking shops, although it is applicable elsewhere.

The apparatus consists of a small cabinet, or chamber, through which the air is drawn as often as it needs to be conditioned. The conditioning chamber contains water sprays whose temperature is kept constant by a mixing valve. These sprays suck in the air by their own action, cool it to the temperature at which it should be saturated and give it all the moisture that it can hold.

As the air leaves the chamber it is heated to room temperature by coils, whose steam supply is controlled by a thermostat located in the outlet. Thus, when the air is drawn into the chamber, it may be too hot or too cold, too moist or too dry, but the apparatus automatically humidifies or dehumidifies it and brings it to the correct temperature before allowing it to pass again into the room. Both in the storage rooms, where the air needs conditioning very infrequently, and in the workrooms, where it is completely changed every ten minutes, the recording instruments show that the atmos-

pheric conditions have varied to only a slight extent throughout a three-year period.

Drawings of the apparatus and further details concerning its installation and operation may be had on application to the laboratory at Madison, Wis.

## Association News

### Transportation to the Mid-Year Conference

ARRANGEMENTS are under way by the committee on transportation for special Pullmans to the Chicago conference on Feb. 10.

The committee believes it possible to arrange for special cars from Detroit, St. Louis, New York, Boston, Cleveland, Philadelphia, Baltimore and Indianapolis. R. B. Fisher, chairman of the committee, has made the following assignments: D. W. Smith is to canvass Detroit and vicinity; Col. A. T. Perkins and F. O. Grayson, St. Louis and the southwest; C. R. Elliott, New York City; A. F. Walker, New England, and if the proposed trip from Boston to Chicago via Montreal is undertaken, Montreal as well; Paul Wilson, Cleveland, Buffalo, Toledo and intermediate points; A. H. Englund, Philadelphia and Pittsburgh, and R. B. Fisher, Peoria, Columbus, Louisville, Indianapolis, Cincinnati, Evansville, etc.

All those planning to attend the conference are urged to get in touch with the men assigned to their home territory with the view to joining with others and making special reservations possible.

### December Reports Available

THE following special reports and compilations have been prepared by the Bureau of Information and Service during the last month:

*Record of All Increases in Rates of Fare in Cities of 25,000 Population and Over from 1917 to Date.*—This compilation shows all fare increases that have occurred classified by calendar years in each of these cities.

*Trackless Trolleys.*—Summary of replies to association's questionnaire sent to foreign companies, describing types of equipment, operating conditions and costs.

*Analysis of Agreements with Trainmen.*—This covers a number of the larger electric railway companies and is a comparison of the working conditions relating to hours of labor, extra compensation paid under various circumstances and limitations in the making of schedules and time tables.

*Owl or Night Car Service.*—Based on replies to questionnaire, showing rates of fare, frequency of service, percentage of system included, and comparative financial results.

*List of Cities Having Increased Rates of Fare as of Jan. 1, 1921, Summarized on the Basis of the Cash Rate of Fare.*

In addition to the above, the bulletins on trainmen's wages and cost of living have been brought up to date by means of supplements.

Any of the above compilations will be forwarded to member companies upon request.



# News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION

PERSONAL MENTION

## Wage Discussion in Detroit

**Trainmen Continue Negotiations —  
Officers and Other Employees  
Reduced Jan. 1**

The first of the series of conferences between the officers of the Detroit (Mich.) United Railway and its platform employees to consider the company's proposed reduction in wages was held in the company's offices on Dec. 28. It has been intimated that arbitration on the disputed points and a referendum vote of the men on the wage question would be acceptable. Further conferences will be held.

In a letter signed by officials of Divisions 90, 111 and 26 and the Monroe Branch of Division 26 of the Amalgamated Association the request is made that the company adhere to the terms of the wage contract. The division associations have specific contracts with the company covering the question of wages. These do not expire until May 1, 1921. This fact is pointed out in the letter to the company. It is also contended that after the men agreed to the wage settlement in May, 1919, covering that year, the cost of living kept increasing with the result that the wages agreed to, in a short time after their acceptance, were not sufficient to meet the cost of living during the remainder of the year. The men claim that they lived up to their contracts with the company while suffering losses to themselves and families and now appeal to the company to carry out its part of the agreement.

Replying to the company's intimation that the subject has not been fully submitted to the men employed by the company, it is stated that the representatives would be willing to prepare a circular clearly explaining the propositions the company has made and the replies that have been made by the committee, and submit them to a referendum vote of the membership of the divisions and to abide by the majority vote.

Relative to arbitration of the matter, it is stated that the existing agreements provide how disputes shall be arbitrated. The only question is whether the company has the right to set aside the written contracts that exist. That question the committee members are willing to arbitrate.

### QUICK ADJUSTMENT NECESSARY

The Detroit United Railway states that, fully alive to the conditions in which the company finds itself, executive officers, heads of departments and workers within the departments are co-operating to practice every economy possible. They have accepted decided

reductions in salaries and wages beginning Jan. 1. The conferences with representatives of the several organizations of motormen and conductors have been arranged with the same end in view, that increases granted to meet the growing costs of living may be voluntarily relinquished in part and to such an amount as to have a material bearing in permitting the company to continue without cessation of its service to the public. It is stated that any adjustment other than a speedy one would be detrimental to the community.

## Railway Legislation Likely in Iowa

The Legislature of Iowa meets during the present month for its biennial session. It is expected that the lawmakers will take notice of the present difficulties existing between Iowa municipalities and electric railways. At present there are known to be at least four railway measures which will be introduced in the General Assembly.

Officials of the Iowa League of Municipalities announce that their organization is interested in at least three such bills. One of these measures delegates to cities the right to fix rates of fare in traction franchises. This bill will be introduced only in the event that the decision in the Ottumwa street railway case is reaffirmed when it comes up for hearing late this month.

Another measure will prepare for permissive legislation allowing cities at their own election to relieve traction companies from paying for paving between tracks.

Still another bill will cover the jitney question and would allow cities the right to grant franchises to bus companies under which the companies would be assured of contract protection over a period of years. It is frankly admitted by the backers of this measure that it is a club to hold over the electric railways. At the present time companies operating bus lines are given no assurance of protection.

Backers of a fourth bill propose that electric railway extensions be financed by special assessments against the property in the territory to be benefited. The theory back of both this bill and the one which would require the property owners to pay for the paving between the tracks in front of his property is that the general taxpayer should not be assessed for neighborhood improvements, but that the property owner who is benefited should share the expense. The tendency of late years has been to relieve the general taxpayer of expense which covers benefits of a local character.

## Valuation Act Protested

**New Jersey Commissioners Recommend  
Recent Law Be Amended to  
Give It Review Power**

The annual report of the Board of Public Utility Commissioners of New Jersey, a summary of which was made public on Dec. 29, refers to the increases in fares recently proposed by the Public Service Railway and in this connection discusses the act passed by the Legislature of this year providing for the selection by the Governor, State Treasurer and State Comptroller of a firm of engineers to value the property of the electric railways.

### LIMITATIONS OF BOARD

The report states that, as the act requires it to accept the report of the engineers as to the value of the property in any rate proceeding, the board will be powerless to exercise any independent judgment as to the value. It cannot give consideration to the estimates of value, exhibits and testimony submitted by experts employed by the board, the associated municipalities and the company. The board recommends that the law be amended so it may give due consideration to the engineers' report and other information helpful in arriving at the value of the property.

During the year, owing to the difficulty of obtaining coal on contract deliveries; its high cost; the expiration of contracts for oil, and the inability to renew contracts except at greatly increased prices, all the gas companies in the State have been adversely affected. Companies whose bonded indebtedness is less than the fair values of their properties have been unable to meet operating costs and fixed charges.

The question with respect to such companies has not been what rate will meet operating costs, provide for depreciation and pay a reasonable return on the fair value of the property; but what rate, if any, can be fixed which will enable the utility to continue to supply service at a price commensurate with its worth.

### EXPEDITING LOADING SUCCESSFUL

The inauguration of a system whereby tickets or cash receipts are sold during the afternoon rush hours at two ferry terminals of the Public Service Railway, thereby speeding the loading of cars, has improved service, and the same method recently adopted at several heavy points in Newark, the board states, bids fair to be successful.

During the year approximately 150 one-man cars have been put in operation by the Public Service Railway and forty by the Trenton & Mercer County Traction Corporation.



# Many Suggestions for Relief of Electric Railways

Public Utilities Commission of Connecticut Presents to Legislature Constructive Document Recommending Aid to Railroads and Corporate Reform—Federal Report Quoted

The Public Utilities Commission of Connecticut on Jan. 5 sent to the General Assembly a report of its inquiry into the electric railway conditions under an act of the 1919 session in which it makes many suggestions for legislation to relieve these companies.

An outstanding recommendation is that the Attorney-General be authorized to ask the federal court to vacate a judgment against the New York, New Haven & Hartford Railroad by which the Connecticut Company was taken from the railroad and placed in the hands of federal trustees. The electric railways might then be returned to the New Haven road, as it is a Connecticut company, doing a state business solely, and have the corporate stock and control vested where it was before.

## CORPORATE REFORM URGED

Suggestions for corporation and managerial reforms include: Division of the system into well-defined operation parts under competent managers; separation of operating revenues and expenses of each division; greater attention to routing of cars and maintenance of schedules; supply auxiliary motor vehicles in chartered territory; increase the number of one-man cars in urban service; closer attention to heating and sanitary conditions in cars; greater publicity in operating and financial conditions; closer touch with local conditions; closer co-operation with city officials; quicker movement of cars; obtain co-operation and not antagonism of the public; stricter observance of courtesy; prompt correction of defects and annoyances.

Recommendations for legislative consideration include plans for relief to the companies from statutory obligation on paving, bridge maintenance, etc., to a considerable extent; relief from highway bridge construction and maintenance; extension of time in which to pay taxes due to the State; authorizing municipalities to subsidize local lines, etc.; to operate motor vehicles.

It is recommended that jitneys be declared common carriers and regulated as such, and that municipalities be vested with jurisdiction over jitney routes, schedule and supervision.

Recognition is given in the report to the work of the Federal Electric Railways Commission, and the opinion is expressed by the commission that the benefit of that investigation and report should not be overlooked in the report made by that commission. The Connecticut Commission then quoted certain conclusions and statements by the federal body believed to be applicable to the situation in Connecticut. One such statement was to the effect that "the electric railway furnishing transportation upon rails is an essen-

tial public utility and should have the sympathetic understanding and co-operation of the public if it is to continue to perform a useful public service." The Connecticut Commission then quoted from the federal report in regard to credit, the distance tariff or zone system and jitney bus competition.

The commission did not deem it expedient at this time and in its report officially to decree its concluded fair value of the companies' property for rate making purposes, based upon the different valuations or indices of value submitted, other than to state that such valuation as of this date would undoubtedly equal or exceed the minimum figures submitted, after making due allowance for depreciation. The following table shows the valuations obtained by the commission for the Connecticut Company's owned and leased lines:

	Valuation, 1910-1914	Valuation, 1919	Historical Cost, 1919
Connecticut Company owned lines.....	\$36,135,897	\$65,044,614	\$41,011,815
Connecticut Railway & Lighting Company lines leased to Connecticut Company.....	15,781,829	28,407,292	19,741,537
Connecticut Company owned and leased lines..	\$51,917,726	\$93,451,907	\$60,753,352

The commission said in part:

The success of any utility company depends largely upon the character, efficiency and progressiveness of its corporate management. It is necessary that the company, through its officers, should obtain and retain and merit the confidence and goodwill of the public. If this valuable and essential asset is lacking the corporate management should immediately become exercised, and scrutinize its own conduct, and overcome the defect as far as possible, even if necessary to change the personnel of such management to effect such result. From numerous public hearings and investigations had, pertaining to Connecticut Company matters, the commission is led to the conclusion that the general public does not possess that degree of confidence in the officers and managerial policies of the company which best results require. We say this without intending to cast undue aspersions upon any of the officers of the company, but as a statement of existing conditions, affecting the public welfare.

The lines of the Connecticut Company are divided into operating divisions, each in charge of a manager or superintendent who reports to the vice-president and general manager of the company. Local managers and superintendents are given but limited authority over the operation of their respective divisions. Many matters other than those of minor importance, and which should be decided promptly in order to accommodate the public and render efficient service, must be referred to the general manager or other superior officer at the central office in New Haven. We believe this condition should be remedied, and that local managers or superintendents should be given greater authority and held responsible for the proper conduct of business in their respective territories, as far as operation is concerned.

Owing to economic conditions and a series of events extending down from its early organization and development to the present time the electric railway industry in Connecticut, metaphorically speaking, has become and is a very sick patient, and it is not expected that the remedies administered at this time will immediately transform the patient into a sound, healthy and prosperous being. We believe, however, that its weakened vitality is sufficiently strong to respond to curative remedies, and, when such remedies are administered, that its own recuperative forces, wisely exer-

cised, will enable it to return gradually to a sound, healthy and efficient operating condition.

The commission does not favor or recommend at this time government or municipal ownership, particularly in view of the complications that would now be involved in bringing about such a result.

The commission does not recommend the so-called "service-at-cost" plan, advocated by some railway experts and others as being the sole and only reasonable policy for the benefit of the people and the salvation of the electric railway industry. This plan contemplates a rate which will produce sufficient revenue to pay all operating, fixed and overhead charges and a guaranteed return on the value of the property. It makes dividends a fixed charge, thereby increasing the absolute obligations of the company.

Theoretically, private ownership and operation of a public utility, with public regulation, is on the service-at-cost plan, but practically, when a utility company, through unavoidable circumstances, mismanagement, or other cause, is unable, with a reasonable rate, to obtain sufficient revenue to pay its operating expenses, taxes, and a fair return on the value of the property, the investors in the enterprise must stand the burden of the reverses. Possibly it is unfair to make invested capital stand all the burden,

but it would be equally unfair to guarantee a fixed return on the capital or value of the property and make the public bear all the burdens of business reverses which might, in a measure, be due to corporate errors of extravagance.

A guaranteed return has a tendency to lessen the incentive on the part of the officers of the company for improvement and greater efficiency. Any policy, which immediately transposes a near bankrupt concern into a 6 or 8 per cent dividend-paying business, must of necessity increase the rates to the public.

We believe that electric railway service is a public necessity, and in the rendition of such service for the benefit of the public the company should be relieved of all unnecessary burdens, destructive competition, and too heavy taxation, which ultimately the car-riders have to bear. As a necessary industry, relieved as far as possible of public burdens and unfair competition, it should be self-sustaining from its traffic revenues, and present an inviting field for new capital required for extensions and betterments.

Certain corporate and managerial reforms can be effected without special legislative enactment, and we have, therefore, divided this subject into two groups.

Suggestions as to reforms contained in the commission's recommendations follow:

1. (Applicable to the Connecticut Company). Divide the company's entire system into a suitable number of specifically defined operating divisions (not more and preferably less than the present number of divisions), each in charge of a competent manager.

2. Give each division manager authority and full power to act on all matters pertaining to the efficient operation of cars, and hold him responsible for the successful operation of his division.

3. Keep the accounts pertaining to operating revenues and expenses of each division separate.

4. Give greater attention to the routing of cars and maintenance of schedules.

5. Obtain accurate information relative to non-paying lines and (provided legislative authority is granted) substitute and develop motor-vehicle service wherever and whenever practical on such lines; also supply auxiliary motor-vehicle service in chartered territory when necessary.



6. Increase the number of one-man cars for urban service.
7. Give closer attention to heating, ventilating and sanitary conditions of cars.
8. Give greater and constant publicity to the operating and financial conditions of the company.
9. Keep in close touch with local conditions and requirements, and try to obtain the co-operation and not the antagonism of the public.
10. Endeavor to obtain closer co-operation of city officials in relieving congestion, and for the more expeditious movement of cars.
11. Enforce strict observance of courtesy on the part of employees to the company's patrons.
12. Promptly investigate and correct minor defects and annoyances affecting the comfort and spirit of co-operation of the traveling public.
13. Always bear in mind the fact that the rendition of street railway service is primarily for the benefit of the public, rather than for the profit of the stockholders or to satisfy the demands of employees when detrimental to economical and efficient operation.

Recommendations for legislation contained in the commission's report follow:

1. That street railway companies be relieved from present statutory obligations of paving, surfacing and maintaining public highways used in street railway operation, excepting that portion of the highway next to and within 8 in. alongside of each rail.
2. That street railway companies be relieved from contributing toward the expense of construction and maintenance of highway bridges over which their tracks cross, excepting that portion of the expense involved in the company's own construction and maintenance, which shall be paid for in full by the company.
3. That payment of present unpaid taxes due to the state from street railway companies be extended over a term of years without interest, and that all future assessment of taxes against street railway companies be levied on net operating income, obtained under honest, efficient and economical management, instead of on gross revenue as at present.
4. That street railway companies be permitted to abandon non-paying lines or portions of lines, subject to the approval of the Public Utilities Commission after public hearing.
5. That municipalities be authorized to enter into contracts of guaranty with street railway companies, affecting gross or net operating revenues; also to subsidize or otherwise take over the control and operation of non-paying lines of street railways within their respective corporate limits.
6. That street railway companies be permitted and authorized to operate automobile buses or other form of approved street transportation, through and along highways over which they operate street railway service, either as substitute for or auxiliary to such service; also to operate such buses or other approved form of transportation over and along adjacent and additional highways and routes, upon finding by the Public Utilities Commission, after public hearing, that public convenience and necessity require such operation and form of public service; the operation of such buses in all cases to be common carriers and subject to the regulation and supervision of the Public Utilities Commission and the laws pertaining to motor vehicles and drivers of public service cars.
7. That jitneys, so called, and all public service motor vehicles (excepting legally defined taxicabs), transporting passengers for pay, be declared common carriers and, in addition to the requirements of the general motor vehicle laws, shall be subject to public regulation as follows:
  - (a) All drivers of jitneys and public service automobiles shall first obtain an operator's license therefor from the commissioner of motor vehicles, who shall continue to prescribe the requirements of and have full jurisdiction over the qualification of such drivers, with full power to suspend or revoke such license at any time for cause shown.
  - (b) All public service motor vehicles transporting passengers for hire shall continue to be subject to inspection and approval by and conform to the requirements of the commissioner of motor vehicles, and shall be limited in number of passengers carried at any one time to the number prescribed by said commissioner.
  - (c) Giving to municipalities original jurisdiction to regulate all public motor vehicles operated within their corporate limits, as to public convenience and necessity for such operation, routes, schedules, rates and amount of service required on

any route, together with such other public regulation and traffic requirements as may be deemed proper; provided, however, that any party aggrieved by any rule, order or requirement prescribed by a municipality, pertaining to public convenience and necessity, routes, schedules, rates or amount of service, shall have the right to appeal therefrom within thirty days thereof to the Public Utilities Commission, and the Public Utilities Commission on all matters so coming before it on appeal shall hear the case *de novo* and shall have full and complete jurisdiction therein.

(d) All public service motor vehicles rendering interurban service on through routes from one city or town to another shall be under public regulation within the

exclusive jurisdiction of the Public Utilities Commission as to public convenience and necessity, rates, schedules and routes.

Nothing in the act to be construed as giving the municipality jurisdiction over routes, rates, service or schedules of public service automobiles or buses operated by street railway companies.

8. That the Attorney-General, acting for and in behalf of the State of Connecticut, be authorized to take such action as may be deemed necessary to bring about a termination of federal control of the Connecticut Company, and have the capital stock, property and corporate control and management of said company returned to and reinvested in the owner or owners thereof.

## Temporary Aid Suggested by Governor Chief Executive of Connecticut Urges Remission of Bridge and Paving Charges and Regulation of Jitneys

Governor Everett J. Lake of Connecticut in his inaugural message to the General Assembly on Jan. 5 recommended that temporary aid be extended to the electric railways in the State by relieving them in part or in full from the duty of contributing to the cost of maintaining bridges used by their cars and from bearing the burden of street improvements in thoroughfares occupied by their tracks. The Governor is an engineer. He has, perhaps, on this account had opportunities for the study of the railway problem not ordinarily possible to executives coming from other walks of life.

**T**HE Governor said that he was of the opinion that financial aid could not constitutionally be given to the electric railways. Besides recommending temporary relief in regard to the remission of pavement and bridge expenses, he urged that the Public Utilities Commission be authorized to supervise jitney buses instead of having these vehicles regulated by the cities. Legislation to enable the electric railway to operate motor buses also was recommended by him.

### RAILWAY SITUATION ACUTE

In that part of his address dealing with the electric railways the Governor said:

The electric railway situation in the State is acute and demands your early attention. The situation is one which concerns not only those of you who come from the centers of population, but it is of vital importance to every section of the State and to the tax-paying public as a whole.

Some of the electric railway systems have been abandoned, others are being continued in operation under the supervision of the state courts, and one is being operated by trustees appointed by the United States court. Few, if any, have paid any dividends to their stockholders in recent years and, indeed, it is a vital question as to whether they can under present economic conditions continue even to exist and operate.

Fares have been increased after investigation by and with the permission of the Public Utilities Commission, but still the receipts have not kept pace with the increased expense of operation, regardless of the costs imposed upon such companies under existing laws for taxes, for contributions to paving, for bridges and for other public improvements.

This condition exists not only in Connecticut but in every other State, and the subject has been extensively investigated by various independent associations, state commissions and federal agencies.

The last Connecticut General Assembly directed the Public Utilities Commission to make a full investigation of the situation in this State and report its conclusions and recommendations to your body. At the earliest moment after you consider them together with the other sources of information I have mentioned, give the subject thorough investigation, and determine what measures are necessary for relief.

### GOVERNOR HIS OWN INVESTIGATOR

My own investigation leads me to recommend the following:

1. I am strongly of the opinion that financial aid, whether temporary or otherwise, cannot constitutionally be extended to electric railway companies from the public

treasuries, either from state funds or from those of municipalities or communities served by them.

2. I recommend that electric railways be relieved in part or in full, for a limited period, from the duty now imposed by statute of contributing to the cost of street improvements. This should not, however, include the releasing of such companies from the obligations of replacing such portions of the pavement as are taken up in repairing or constructing their own property by the companies themselves.

3. The present contribution required of such companies to the cost of highway bridges over which their tracks pass may fairly be cancelled in whole or in part.

4. Until it has been convincingly shown that the motor bus or jitney as a transportation medium can fully and at all times fill the place of the electric car, running on defined tracks throughout the congested sections of population in the State, and that it can do so with the same measure of safety to its passengers and to other users of the highway, I believe it to be your duty to see that the present electric railway service is rendered possible, and to prevent by all reasonable methods any interruption of such service. This entails the regulation of the public motor bus, its routes of travel, and the inclusion of it among other classes of common carriers with similar duties and responsibilities. Regulation of this sort by separate municipalities, each acting independently and each case involving local questions aside from the main issue, has provoked exasperating delays and precipitated a crisis in many communities, and has, I believe, been satisfactory to no one. This supervision and regulation should be given to the Public Utilities Commission, and a finding from this commission of public convenience and necessity should be a necessary prerequisite for the operation of any public service motor vehicle upon any route of travel.

5. Any additional legislation deemed necessary to enable the electric railway to operate motor bus lines, and particularly as connecting links with or feeders to their regularly maintained lines, should be enacted.

6. Believing as I do, that many of the troubles of the electric railway are due to the abnormal economic conditions of the present time and that more normal conditions will prevail in the not very distant future, I recommend that the various measures of relief be, in so far as possible, of a temporary rather than a permanent nature.

### RAILWAY A MONOPOLY

7. Costly experience has taught that the public is better and more economically served in the public utilities under well regulated monopolies than under irresponsible competition; and this, I believe, holds true with our transportation situation.

8. You should bear continually in mind that this investigation and the desired measures of relief have for their prime object, not to further the financial interests of either electric railway owners or jitney proprietors but to promote the public welfare and to assure by fair means ample transportation facilities.



## Detroit Case Before Supreme Court

### Detroit United Railway and City Present Arguments Before Highest Tribunal to Establish Their Respective Rights

The case of the Detroit (Mich.) United Railway, to stop the construction of municipal lines in Detroit, was scheduled to open on Jan. 3 before the United States Supreme Court in Washington with Charles Evans Hughes and Elliott G. Stevenson representing the Detroit United Railway and Clarence E. Wilcox, Corporation Counsel, and Alfred Lucking, special counsel, appearing for the city.

ACCORDING to a statement by Mr. Stevenson before leaving for Washington, victory for the Detroit United Railway in the pending suit would put an end to the construction of a municipal system under the present Couzens plan. If the suit is won by the city, and the city proceeds under the present plan as approved by the voters last April, it is contended that chaos will result during the time the Detroit United Railway tears up its tracks on streets where franchises have expired, and while new lines are being constructed by the city.

#### CASE SET FOR JAN. 3

City street railway officials contend that the hearing before the Supreme Court represents the last stand of the Detroit United Railway against the construction of the municipal lines voted last April. An injunction sought in the District Court by the company immediately after the election was denied by Federal Judge Tuttle. When a temporary injunction was sought from the Supreme Court, the court advanced the hearing of the appeal to Jan. 3.

In discussing the bearing of the outcome of the case on the street railway situation in Detroit Mr. Stevenson explained that it may have a very important bearing on the situation, and it may have no bearing but to turn the whole subject and controversy back to the local and state courts for determination.

The attack made by the railway had for its principal object the amendment of the municipal ownership proposition adopted last April, upon the ground that this adoption was brought about by the electors being imposed upon as to what was involved in the proposition submitted.

#### INCREASED TRANSPORTATION PROPOSED

The proposal, according to Mr. Stevenson, was to increase transportation facilities for passengers in Detroit, not to destroy the most important part of those existing, and replace them with similar tracks and equipment at greatly increased cost. The methods employed in obtaining the adoption of the proposition, the railway contended, were such that they rendered the proceedings invalid.

This question ordinarily would be held to be a local or state question and not a federal question, but counsel for the railway claimed that in other respects the rights of the company, guar-

anteed under the federal constitution, were invaded. Moreover, it associated with the claim the alleged invalidity of the submission of the proposition presented to the local or state question referred to. This it had a right to do if there was, in fact, a federal question also involved and this even though in the end the federal question might be decided against the company.

The city has contended from the beginning, Mr. Stevenson stated, that there was no federal constitutional question involved in the suit commenced by the company in the federal court and, although Judge Tuttle held that the company's allegations were sufficient to confer jurisdiction on the federal courts, the city counsel in the Supreme Court still are insisting that there was no jurisdiction in the federal court to pass upon the question presented.

#### ISSUE COMPLICATED

It will thus readily be seen that if the city's contention as to the lack of jurisdiction of the federal court shall be sustained, the other questions, particularly the question of the alleged invalidity of the municipal ownership proceedings, will not be decided, but will be left for the state courts to decide. If, on the other hand, the company's contention with reference to the jurisdiction of the federal courts shall be sustained, the Supreme Court will proceed to decide the other questions presented and the decision of the court in that event will be of very great importance, Mr. Stevenson states, in determining the relative rights of the company and the city with reference to the cessation or continued operation of the existing street railway.

The first question that will then have to be considered and the question upon which depends the determination as to whether any rights of the company will be involved in carrying out the municipal ownership plans is this: "Has the company now the right to continue to operate its system on the streets when franchises have expired?" The Denver water case and the Kronk ordinance case are cited as involving similar questions.

According to Mr. Stevenson, the Detroit United Railway is not contending that it has any perpetual or other rights except the right conferred with the duty referred to; that duty is to continue to occupy the streets and operate its service until such time as the city has made lawful provision for the transportation needs of the public being

met, and it claims that the time has not come when they can require the company to discontinue its service and vacate the street it occupies, no other provision for the public need having been lawfully provided.

## Wages Cut in Cleveland

### Pay of Track Laborers Reduced Twenty per Cent—Cut for Shopmen Announced

A general reduction of 20 per cent in the wages of track laborers, effective on Jan. 1, has been announced by John J. Stanley, president of the Cleveland (Ohio) Railway. There are now about 200 track laborers in the maintenance of way department who have been getting 50 cents an hour. Hereafter they will receive but 40 cents an hour. Before the war the wage was 26 cents an hour. During the summer the number of employees of the maintenance of way department runs as high as 1,500 men.

A reduction of approximately 15 per cent in the pay of shop department employees of the company has also been announced for Feb. 1. John J. Stanley, president of the company, said:

This reduction in wages is a forerunner of what we expect to do to trainmen's wages when our agreement with the local of the Amalgamated Association of Street & Electric Railway Employees expires on May 1.

Trainmen in Cleveland now receive 70 cents an hour for the first three months, 73 cents for the next nine months and 75 cents an hour after the first year of service.

The contract with the union can be opened by either party on April 1. Mr. Stanley, it is expected, will serve his formal demand for a reduction in wages of the trainmen about that time.

The maximum rate of fare allowed by the Tayler service-at-cost franchise, namely, 6 cents cash or nine tickets for fifty cents, with a 1-cent charge for transfers, has been in effect in Cleveland ever since the middle of November.

The reduction in wages is due to the fact that receipts under the maximum rate have not come up to expectations. The directors are dubious as to the company's ability to maintain the present service and pay the present wage at the maximum rate of fare.

## Three Killed and Fifty Injured in Trail Car Accident

Three persons were killed and more than fifty injured on Dec. 27 in Pittsburgh, Pa., when a trail car of the Pittsburgh Railways broke from the pilot car, dashed four squares down a steep grade and crashed into another car ascending the grade. The accident occurred in Forbes Street, when the coupler broke.

The passengers were thrown into a heap in the center of the car and many were trampled in the mad rush of those uninjured to escape from the car. The passengers in the car following the trailer were thrown to the floor by the impact and many were cut.



## Brooklyn Lines Reviewed

Manager of Surface Properties Deplores  
Attitude of Local Administration—  
Fare Increases Planned

In a statement to the board of directors sent to the stockholders on Dec. 31 H. Hobart Porter, vice-president and general manager of the Brooklyn City Railroad, reviews the condition of the property as well as the situation of the electric railway industry generally in the United States.

### FIVE-CENT FARE CONFISCATORY

He asserts that a fair return on the Brooklyn City lines is impossible at a 5-cent fare and that "under existing conditions the sole hope of the stockholders must be that their property may be preserved until such time as the transportation problems of the city shall be taken up and considered by fair-minded men to the end that the people of the city may have a well-developed transportation system which can continuously provide for their needs."

Mr. Porter states that the electric transportation systems of the city of New York have been confronted not only by the problems which have seriously embarrassed the operations of electric railway companies all over the United States but also by special difficulties due to the attitude of the municipal administration which, he adds, has steadfastly refused to co-operate to solve these problems. He contrasts the position of the New York municipal authorities with that of other cities whose co-operative attitude, he declares, has resulted in increased fares being granted in almost every important city in the country.

### MANY QUERIES FROM STOCKHOLDERS

Supplementing his statement to the directors Mr. Porter said that it was made necessary by the many inquiries which the officials of the company were receiving from the stockholders, who were unable to understand why this property, always considered one of the most conservatively capitalized public utilities in the United States, with a record of paying dividends for many years, should, since the termination of the lease with the Brooklyn Heights Railroad, have failed to make any distribution to the stockholders.

It is being constantly pointed out to the management of the Brooklyn City Railroad by these stockholders, Mr. Porter continued, that the stock had been purchased as a safe and conservative investment for women, trustees and estates and that the failure to pay dividends was working great hardships. Mr. Porter pointed out that out of approximately 1,500 stockholders one-half were women and that in addition much stock was held by trustees, administrators, guardians, life insurance companies, charitable institutions and colleges. As a matter of fact, Mr. Porter said, approximately two-thirds of the stock of the company is so held, the remaining third being

divided between individuals and other corporations.

Mr. Porter says that the fiscal year of public utilities companies in New York State ends on June 30, and that it will not be possible until after June 30, 1921, to make a report which will show the results of independent operation of the Brooklyn City Railroad for a full year.

The company has recently announced its intention to collect a second 5-cent fare on other lines than the Flatbush Avenue branch, but it is explained that the Mayor in the public press has given instructions for new and further litigation, the only apparent possible object of which, in view of the decision referred to by Mr. Porter, is to cause further delay, embarrassment and expense to the company.

### BROOKLYN CITY RAILROAD OPERATED SEPARATELY

The receivership of the Brooklyn Heights Railroad resulted in breaches in certain covenants of the lease under which the Brooklyn City Railroad was operated and in consequence Judge Mayer, in the United States District Court, ordered the receiver of the Brooklyn Heights Railroad to return the Brooklyn City Railroad's property to it on Oct. 19, 1919, since which time the Brooklyn City Railroad has been operated under the direction of its own officials.

### Mr. Milner Represents City on New Traction Board

William L. Milner, author of the cost-of-service ordinance at Toledo, Ohio, has been appointed by the board of sinking fund commissioners to serve on the board of directors of the Community Traction Company, which will begin to function as soon as the new ordinance is legally put into operation.

The board is composed of five members, four of whom will represent the Toledo Railways & Light Company, to which concern the bonds of the Community Traction Company are to be issued.

Mr. Milner will represent the city, which will gradually acquire an equity in the property of the Community Traction Company, through the issuance of paid-up common stock to it at the retirement of any of the bonds through the sinking fund which is made up of a certain portion of the income from railway operation.

It is understood that officials of the company would welcome the addition of several such members of the board to give more public interest to the operation of the lines and to create a larger degree of liaison between the company and the people of the community. Action to increase the membership may be proposed at a later date.

Several more applications for appointment to the office of street railway commissioner have been received by the street railway board of control. It is understood that the choice will be made in the next two weeks.

## Suspension of Service Explained

The British Columbia Electric Railway, Vancouver, B. C., experienced a shutdown of four to ten minutes on its light and power system and twenty minutes on its railway system on Dec. 20. The shutdown extended over the entire Vancouver district on both the British Columbia Electric Railway lines and Western Power Company lines, tied in together. Small boys throwing stones broke some insulators which caused the trouble. The suspension occurred at 2 o'clock in the afternoon while the streets were filled with Christmas shoppers. The short circuiting of high tension lines caused a surge on to the other circuits and resulted in the interruption.

In order to explain the situation to the public the railway took space in the newspapers to offer a reward of \$100 for the arrest and conviction of the persons causing the damage. One of the advertisements follows:

### WHY THE POWER WENT OFF

The British Columbia Electric Railway regrets the shutdown of electric power on its and the Western Power Company's whole system yesterday afternoon.

The cause was the mischievous breaking of ten insulators on high-tension poles in North Vancouver by boys, according to the evidence available.

As a result, light and power circuits were out four or more minutes, depending upon the district, and the railway lines up to twenty minutes.

Such willful destruction of electrical apparatus, on which the life of the community depends, is punishable under the criminal code, because the cessation of electric current for a moment is liable to cause death (in hospitals), injury to person and loss and destruction of property.

We take this opportunity to acquaint the public of the circumstances surrounding this case, in order that they may co-operate in safeguarding the public service and preventing any recurrence of such criminal interference with the service on which the community relies.

### Traction Board Appointed at Portsmouth

A "traction board" for the information, advice and guidance of the city manager in his handling of matters affecting the local railway is the latest move on the part of the city government of Portsmouth, Va.

When Gen. J. P. Jervoy, U. S. A., went to Portsmouth as city manager a few months ago he was favorably impressed with the operation of the city utilities commission of Norfolk across the Elizabeth River, and the "traction board" just named is the result of his observation of the operations of the commission in Norfolk. The board appointed by the city manager is composed of J. Davis Reed, director of public safety, as chairman; W. L. Davis, superintendent of the water department, and John C. Neimeyer, commissioner of the revenue of the city of Portsmouth, with M. E. Haugh of the office of the city engineer as secretary.

It will be the duty of the board to study the traction situation in Portsmouth, employ a competent engineer if deemed expedient, to make recommendations for the betterment of the service, to receive and consider suggestions from the public, to hear complaints



concerning service rendered and to report to the city manager its findings, conclusions and recommendation for the guidance of the city manager in his associations with the members of the City Council.

The personnel of this "traction board" is of an unusually high type. The appointment of the members by the city manager is heartily approved by the citizens. The board began to function on Jan. 1.

## News Notes

**To Supplant Weekly Bulletins.**—*Byllesby Monthly News* is the name of a new publication issued by H. M. Byllesby & Company, Chicago, Ill. This monthly pamphlet will contain all the news of the preceding month which appeared in the weekly bulletins. It will be confined to four pages. This publication is issued primarily for the information of all holders of securities of the companies controlled by the Byllesby interests.

**Offer Made to City.**—The Monterey & Pacific Grove Street Railway has offered its properties to the city of Monterey, Cal. A written proposal in the form of an option gives the city the privilege of purchasing the road provided the purchaser shall assume the outstanding indebtedness of the company and compensate the stockholders for their holdings.

**Motor Buses for Suburban Traffic.**—The City Electric Company, which operates the railway system in Albuquerque, N. M., has announced that motor bus service will be put into effect during this month in order to relieve suburban traffic. The buses will be operated strictly on a fixed schedule and will route just the same as the street cars.

**Lease to City Proposed.**—A contract has been sent to the city authorities at Elwood, Ind., by the Union Traction Company, offering to rent the Ninth Street and Twenty-eight Street tracks in Elwood and to provide a car to enable the city to operate to the tin plate and glass factories. The city has been without local railway service for the past year.

**Civic Organizations Urge Purchase of Railway.**—Fifteen civic organizations in San Francisco, Cal., have written the Mayor within a week, according to the *San Francisco Municipal Record* of Dec. 23, urging action on amendment 30, which was carried on the November ballot. This amendment, described in the *ELECTRIC RAILWAY JOURNAL* of Nov. 6, page 983, is an enabling act which provides a method whereby the city could purchase the system of the United Railroads after that action is approved

by popular vote on the plans advanced by the city.

**Another Motor Bus Failure.**—The Lambeth Motor Bus Company, organized after the failure of the London & Lake Erie Radial Railway to provide service between Lambeth and London, Ont., has gone into voluntary liquidation. The motor bus used was a thirty-two-passenger body on a 3½-ton chassis. In winter, however, it was frequently necessary to suspend the bus service and carry passengers in a horse-drawn sleigh. Fares were raised to a point much higher than the old radial tariffs and a considerable portion of Lambeth's population removed to London. The bus service was entirely too unreliable for them.

**Improvement in Quality of Applicants.**—J. B. Hayner, superintendent of employment of the Los Angeles (Cal.) Railway, reports that for several weeks past there has been noticed a very great daily improvement in the class of applicants. George Baker Anderson, manager of service of the company, writing in *Two Bells*, said: "The employment offices, once filled daily by groups of men, many of whom were most apparently not fitted for service on the street cars, are now occupied by men numbering among them some of the finest specimens of humanity that one would care to see—men physically strong, alert, ambitious, and frequently well educated—many of them gentlemen in every sense of the word."

**A Plea for Public Utilities.**—H. M. Addinsell, a member of the Public Utilities Securities Committee of the Investment Bankers' Association, has recently contributed an article to the *American Review of Reviews*, entitled "Why the Utilities Are the People's Business." In this account he tells of the overwhelming duties and responsibilities of the utility agency and describes the attitude of the average person toward public service in general. Mr. Addinsell spoke along this same line in New London on Sept. 15, when he addressed the annual convention of the Association of Edison Illuminating Company. Reference was made to this speech in the *ELECTRIC RAILWAY JOURNAL* for Dec. 18.

**Mutual Aid Pays Christmas Dividend.**—Members of the Traction & Power Mutual Aid Association, composed of employees of the Utah Light & Traction Company, the Utah Power & Light Company and the Phoenix Utility Company, Salt Lake City, Utah, recently held their annual meeting and elected the officers for the coming year. During the year the association paid death claims amounting to \$2,300, and sickness, accident and refund claims to members totaling \$3,520. A surplus amounting to \$4,085 was divided among the 615 members of the association and was pro rated according to length of membership. The employees who were members in good standing of the mutual aid association throughout the past year each received a Christmas dividend of \$7.20.

## Programs of Meetings

### Iowa Engineering Society

The annual meeting of the Iowa Engineering Society will be held at the Chamberlain Hotel in Des Moines on Jan. 18-20. There will be an exhibit of apparatus in connection with the meeting.

### Conference on Highway Traffic Regulation

A national conference on highway traffic regulation will be held at the Hotel Washington, Washington, D. C., on Monday, Jan. 10, at 10 a.m. The meeting is the outcome of the discussion on the proposed national traffic law considered at the meeting of the National Traffic Officers Association at San Francisco last summer.

In addition to the fifteen associations which met recently at Cleveland and issued the call for the Washington conference, representatives have been appointed or are being appointed by such important interests as the American Association of State Highway Officials, Council of National Defense, Federal Highway Council, National Automobile Underwriters' Conference, National Conference of Commissioners on Uniform State Laws, National Highway Traffic Association, Society of Automotive Engineers, and U. S. Chamber of Commerce (attending unofficially).

S. J. Williams, secretary and chief engineer of the National Safety Council, Chicago, is assistant secretary of the National Conference on Highway Traffic Regulations.

### Indiana Public Utility Association

Philip H. Gadsden, president of the American Electric Railway Association, will be one of the speakers at the annual meeting of the Indiana Public Utility Association in Indianapolis on Jan. 13. The session will be the first ever held in all branches of the industry. Plans for it are being made by a committee headed by Harry Reid, president of the Interstate Public Service Company.

Charles L. Henry, president of the Indianapolis & Cincinnati Traction Company, is president of the Indiana Public Utility Association. He will preside at all the sessions, including luncheon and dinner meetings in the Riley room of the Claypool, and a general session in the Assembly Hall. In announcing the date for the meeting Mr. Henry said:

We are adopting a new idea by planning to have our sessions semi-public. We cannot, of course, hold public meetings within the time and space available, but we are asking all utility company operators who attend to bring with them representative men from their respective communities. We hope to have the list of guests include leaders in public thought from all parts of the State, such as newspaper editors, city and county officials, bankers and business men generally. The public utility industry is the people's business. It is part of our task, therefore, to accommodate ourselves to the public wish. On the other hand, we feel that the public should know our problems and understand our difficulties.



# Financial and Corporate

## America's Biggest Bus Company

Income from Operation of Fifth Avenue Coach Company, New York, Decreased \$90,581

The annual report of the Fifth Avenue Coach Company, New York, America's biggest and oldest motor-bus system, shows that the company is still getting on with its 10-cent flat fare despite large increases paid for wages and gasoline. The operating expenses per bus-mile, exclusive of taxes, rose from 29.03 cents in the year ended June 30, 1919, to 35.54 cents in the following year, and inclusive of taxes the corresponding costs were 35.05 cents and 40.2 cents. This was offset partly by improvements in short-routing and other schedule features which raised the operating income from 46.28 cents to 49.50 cents—an extraordinary record for the last decade of this company. However, the difference between revenue and total operating expenses per bus-mile declined from 11.23 cents to 9.3 cents.

The following comparison is drawn from the preliminary synopsis issued by the Public Service Commission of the First District of New York.

(a) The rule of the company concerning depreciation of equipment, as filed with the commission, provides for a charge to expense from Jan. 1, 1919, "equal to 9.17 cents per bus-mile, which is estimated to be sufficient and necessary to cover such wear and tear and obsolescence and inadequacy as may occur on all equipment." The basis includes the non-revenue miles (39,698). The amount reserved after deducting the cost of repairs comprises \$186,304 for depreciation of equipment, \$16,686

for buildings and \$10,019 for shop tools and machinery.

(b) Reported as "depreciation of tires" is based on the "bus-tire mileage" at the guaranteed tire cost per mile, credit being made for tires which exceed the guaranteed mileage and for scrap.

(c) For payment of claims the company charges expenses (and credits reserve) at the rate of 1 cent per bus-mile. Payments in current year exceeded this allowance by \$40,234, which was drawn from the reserve.

(d) Includes balance on unamortized cost of equipment retired during year, obsolete bus parts scrapped, loss on sale of securities, depreciation of vehicle equipment and buildings, etc., and other debits, and credits, such as adjustment of Federal taxes, bad debts collected, etc.

The company employed as of June, 1920, 400 conductors, 382 drivers and 412 "others," a total of 1,194. Total salaries and wages were \$2,049,682, an increase of \$528,702 over the preceding years. During the year four persons were killed and forty-seven injured.

### "Save with a Smile"

"Save with a Smile" is the name of a pamphlet issued by H. M. Bylesby & Company, Chicago, Ill., as a further effort on the part of the company to promote thrift and economy. In this booklet of fifteen pages are contained quotations of Abraham Lincoln, Benjamin Franklin, Thomas Jefferson and others on the principles of saving and accumulating money. An interesting account on the subject of investment is given accompanied by a chart which shows the minimum amount of money one can possess at the end of one to twenty-five years if a certain amount of income is saved and invested to yield 7 per cent. The appeal is to "Save With a Smile."

OPERATIVE STATISTICS OF FIFTH AVENUE COACH COMPANY

	1920		1919	
	Per Bus-Mile (Cents)	Total	Per Bus-Mile (Cents)	Total
Number of revenue buses.....		271		279
Round trips made during the year.....		569,132		513,416
Revenue bus-hours (including 6,084 special).....		1,105,935		1,011,939
Revenue bus-miles (active 8,592,277; idle, 166,216; private hire, 37,702).....		8,796,195		8,087,127
Number passengers carried at 10 cents.....		42,552,709		36,488,447
	1920		1919	
	Per Bus-Mile (Cents)	Total	Per Bus-Mile (Cents)	Total
Receipt from fares.....	48.37	\$4,255,271	45.12	\$3,648,845
Rent from livery service.....	0.33	28,710	0.66	53,659
Advertising and miscellaneous.....	0.80	69,970	0.50	40,194
Total revenue from operation.....	49.50	\$4,353,950	46.28	\$3,742,697
Maintenance (a):.....				
Superintendence, (\$75,376; shop expenses, \$27,006).....	1.17	\$102,383	0.77	\$62,421
Repairs (bus bodies and chassis, \$383,276).....	4.61	406,239	3.71	299,626
Tires (b).....	0.98	86,065	0.95	76,596
Depreciation (reserved).....	2.42	213,008	1.02	82,503
Total maintenance.....	9.18	\$807,694	6.45	\$521,146
Conducting transportation.....	23.23	\$2,043,894	19.68	\$1,591,640
Accidents and damages (c).....	1.35	118,656	1.28	103,682
Traffic—Advertising.....	0.16	13,908	0.11	8,767
General and miscellaneous.....	1.62	142,340	1.62	122,360
Total operating expenses.....	35.54	\$3,126,493	29.03	\$2,347,594
Taxes.....	4.66	409,726	6.02	486,790
Total revenue deductions.....	40.20	\$3,536,218	35.05	\$2,834,384
Income from operations.....	9.30	\$817,732	11.23	\$908,313
Non-operating income (rent, \$26,500, interest \$23,948).....				\$50,448
Gross income applicable to corporate and lapsed properties.....				\$868,180
Income deductions (interest, \$8,917 and rent).....				85,052
Net income for year.....				\$783,128
Surplus adjustments — net deduction (d).....				144,322
Net increase in corporate surplus.....				\$638,806

## Receiver for Maumee Line

Appointment Made Following Investigation of Committee Representing Bondholders

Following an investigation by the bondholders' committee of the affairs of the Maumee Valley Railways & Light Company, Raleigh D. Mills, assistant cashier of the Home Savings Bank, Toledo, was made receiver for that electric railway by Judge Brough in Common Pleas Court at Toledo, Ohio, during the week ended Jan. 1.

### VERDICT OF \$1,675,000 SOUGHT

A verdict of \$1,675,000 is also sought against the Toledo Railways & Light Company and other stockholders of the railroad. It is charged that there are unpaid stock subscriptions and that stockholders have double liability in some cases.

The suit was filed in the name of Ella Van Deusen, a creditor of the company. The case goes back into the history connected with the consolidation of the old Toledo & Maumee Railway and the Toledo, Waterville & Southern Railway when the two lines, capitalized at less than \$325,000, were merged into a company with a capitalization of \$1,000,000.

Attorneys Barton Smith and Rufus H. Baker, who are fighting the Toledo Railways & Light Company, in the present case, were attorney and president respectively of the company which brought about the consolidation in 1902. They repudiate the legal steps taken by their own board at that time.

The claim of the plaintiff in the action is based upon the first mortgage bonds of the old Toledo & Maumee Railway, of which there are \$300,000 outstanding. They became due and payable on March 1, 1920, but were not met at that time.

A bondholders' committee was formed with Marion M. Miller, president of the Home Savings Bank, Toledo, as chairman. C. L. Reynolds, of the First National Bank; J. D. Biggers, of the Owens Bottle Company; Frederick W. Stevens, Ann Arbor, Mich.; and George B. Storer, deceased, late of the Standard Steel Tube Company, were appointed members of the committee.

### ROLLING STOCK RENTED

The line owns only three cars. The rest are rented from the Toledo Railways & Light Company at \$5 each a day. Power is secured from the Toledo Railways & Light Company, and the Toledo, Bowling Green & Southern Traction Company.

Although higher rates and fares were put into effect nearly a year ago the Toledo Railways & Light Company has lost money on the operation of the road for that time.

The road connects Toledo, Maumee and Perrysburg. Included in the system are 23.21 miles of track. Frank R. Coates, president of the Toledo Railways & Light Company, is president of the Maumee Valley Railways & Light Company.



## \$207,617,530 in Maturities

Sixty-eight per Cent of Grand Total of \$305,110,350 of Utility Maturities in 1921 Fall to Electric Railways

Public utility securities falling due for payment during 1921 aggregate \$305,110,350 against \$196,296,800 in 1920 and \$261,887,600 in 1919, according to the *Wall Street Journal*. This unusually large amount is due in a great measure to the fact that many issues maturing in 1920 were extended because of the tight money market and unfavorable conditions for financing public utility corporations. Of the grand total for all the utilities the amount maturing in the electric railway field is \$207,617,530.

**T**HE heaviest maturities in the railway field are in New York City. Among these issues are Interborough Rapid Transit three-year 7 per cent notes amounting to \$39,199,000, due Sept. 1, 1921, Brooklyn Rapid Transit three-year 7 per cent notes for \$57,230,000, due July 1, and Brooklyn Rapid Transit Company \$18,000,000 two-year 6 per cent receivers' certificates, due Aug. 1, 1921.

Below is given in detail as compiled by Dow, Jones & Company, the various electric railway issues of more than \$200,000 maturing in 1921 in the order of their date:

January	
East St. L. & Suburban conv. ....	7 \$2,116,000
Little Rock Ry. & E. 1-yr. notes. . .	7 1,000,000
Mid. West Util. ser. D notes. ....	6 1,000,000
Pueblo Traction & Ltg. Ist. ....	5 990,000
Rockland, Thom. & Camd. St. Ry. . .	4 800,000
Peoples Railroad Ist. ....	5 750,000
Dallas Electric 5-yr. notes. ....	6 750,000
Pensacola Electric 2-yr. notes. ....	7 500,000
Oklahoma, Railway sec. notes. ....	7 450,000
Decatur Trac. & Elec Ist. ....	5 212,000
Bristol County St. Ry. Ist. ....	5 200,000
Winnipeg Elec. Ry. 2-yr. notes. . .	6 750,000
<b>Total</b> .....	<b>\$9,518,000</b>
February	
St. Louis & Suburban Ry. cons. ....	5 2,000,000
Un. Rys. & Elec. of Balt., notes. . .	5 1,222,000
Unid. Ry. Investm't 4-yr. notes. . .	5 1,000,000
Wis.-Minn. Lt. & P. 1-yr. notes. . .	7 600,000
Fitchburg & L. St. Ry. cons. ....	4 300,000
Connecticut Co. prov. debents. ....	5 250,000
<b>Total</b> .....	<b>\$5,372,000</b>
March	
Rhode Island Co. 5-yr. notes. ....	5 1,662,000
Amer. Gas. & Elec. 3-yr. notes. ....	6 1,390,000
Public Service of Nor., Ill., deb. . .	6 1,000,000
Oklahoma Ry. Series F notes. ....	8 375,000
Com'nw'th Pub. Ser. 2-yr. notes. . .	6 300,000
Charles City West'n Ry. notes. ....	7 240,000
<b>Total</b> .....	<b>\$4,697,000</b>
April	
Wilkes Barre & Wyo. V. Trac. Ist. . .	5 \$1,500,000
Birmingham R. L. & P. ext. notes . .	6 1,200,000
Interurban Railway Ist. ....	5 1,160,000
Manchester Trac., Lt. & P., Ist. . .	5 914,000
Everett Railway & Electric Ist. ....	5 825,000
Portland Light & Power Ist. ....	4 500,000
Rapid Tr. St. Ry., Newark Ist. ....	5 500,000
<b>Total</b> .....	<b>\$6,599,000</b>
May	
Evansville Electric Ry. Ist. ....	4 \$1,200,000
Tol., Bowl. Green & So. Trac. Ist. . .	5 1,003,500
Detroit & N. western Ry. Ist. ....	4 853,000
Columbus, Del. & Marion R.R. Ist. . .	5 289,000
West End Street Ry. Ist. ....	5 225,000
Kansas City Rys. 3-yr. A notes. . .	7 7,750,000
Monongahela Val. Trac. 1-yr. notes . .	7 2,000,000
<b>Total</b> .....	<b>\$13,322,500</b>
June	
Puget Sd. T., Lt. & Pr. 3-yr notes . .	7 \$14,601,000
Ohio Cities Gas ser. cv. notes. ....	7 2,000,000
Chattanooga Ry. & Lt. 1-yr. notes . .	6 750,000
Chi., No. Shore & Milw. R.R. nts. . .	7 260,000
<b>Total</b> .....	<b>\$17,611,000</b>
July	
Brooklyn Rap. Transit 3-yr. notes. . .	7 \$57,230,000
Consolidated Ry. & Power Ist. ....	5 1,401,000
Hartford & Springfield St. Ry. Ist. . .	5 600,000
Dover, Somer. & Roch. St. Ry. ....	5 300,000
Virginia Rwy. & Power notes. ....	6 200,000
<b>Total</b> .....	<b>\$59,731,000</b>

August	
B. R. T. 2-yr. receiver's cts. ....	6 \$18,000,000
Am. Power & Lt. 10-yr. notes. ....	6 2,200,000
Lindell Railway extended Ist. ....	4 1,500,000
Detroit & Flint Railway cons. ....	5 1,400,000
Salt Lake & Utah R.R. notes. ....	7 562,500
Iowa Ry. & Light 2-yr. notes. ....	6 731,500
<b>Total</b> .....	<b>\$24,394,000</b>
September	
Interborough R. T. 3-yr. notes. ....	7 \$39,199,000
Elgin, Aurora & Sou. Trac. cons. ....	5 1,546,000
Aurora, Elgin & C. 3-yr. notes. ....	7 1,219,000
Mid. West Util. Series E notes. ....	6 800,000
Standard Gas & E. 3-yr. notes. ....	7 710,000
South Car. Lt., P. & Rys. notes. ....	7 650,000
<b>Total</b> .....	<b>\$44,124,000</b>
October	
Ottumwa Traction & Light Ist. ....	5 262,500
Hagerstown & Fr. Ry. 1-yr. notes. . .	8 1,050,000
<b>Total</b> .....	<b>\$1,312,500</b>
November	
Western Ohio Railway Ist. ....	5 \$2,500,000
Columbus, B. L. & N. Traction. ....	5 1,243,000
Trumbull Public Service notes. ....	7 1,200,000
Seattle Railway Ist. ....	5 335,000
Standard Gas & E. 2-yr. notes. ....	7 4,349,000
<b>Total</b> .....	<b>\$9,627,000</b>
December	
Toledo Tr., L. & P. 2-yr. notes. ....	7 \$10,000,000
Portland Ry., L. & P. ser. notes. ....	7 500,000
Wheeling Traction p. m. notes. ....	7 309,530
Mass. N. E. St. Ry. 1-yr. notes. ....	8 230,000
<b>Total</b> .....	<b>\$11,039,530</b>
Public utility bonds and notes maturing in:	
January.....	\$9,518,000
February.....	5,372,000
March.....	4,967,000
April.....	6,599,000
May.....	13,322,500
June.....	17,611,000
July.....	59,731,000
August.....	24,394,000
September.....	44,124,000
October.....	1,312,500
November.....	9,627,000
December.....	11,039,530
<b>Total electric railway maturities. . .</b>	<b>\$207,617,530</b>
<b>Grand total public utility issues maturing in 1921.....</b>	<b>\$305,110,350</b>

### Receivers Appointed for the Toledo & Western Railroad

Harry A. Dunn, assistant trust officer of the Ohio Savings Bank & Trust Company, Toledo, and J. Franklin Johnson have been named receivers of the Toledo & Western Railroad, Toledo, Ohio, by Federal Judge John M. Killits, on complaint of Henry L. Doherty & Company.

The bill of complaint charged that the interurban owed \$324,902 to the Doherty interests. A part of this amount was a loan from the Toledo Railways & Light Company, and the remainder from Henry L. Doherty & Company, direct. It was also alleged that many suits were pending in court against the company.

The main line of the company runs west from Toledo to Pioneer and with a branch to Adrian, Mich. The principal business of the company is handling freight. Many manufacturing

plants would be deprived of facilities if service were stopped and the line abandoned.

There are \$2,500,000 of bonds outstanding against the property. Interest on these bonds is in default.

During the six months' period the receivers are instructed to keep the line in operation, marshal the liens, and test the condition of the road. After that period the property may be turned over to the bondholders, the principal creditors, or junked.

J. Franklin Johnson, one of the receivers, has been general manager of the road for the last eight months.

### St. Louis Valuation Between \$50,000,000 and \$60,000,000

Word reached St. Louis, Mo., on Jan. 4 that the valuation of all the physical properties of the United Railways, St. Louis, including subsidiary and county lines, has been fixed by the Missouri Public Service Commission's experts at a figure between \$50,000,000 and \$60,000,000.

The valuation figures were arrived at after nearly two years' work by engineers of the commission, going over all the lines in St. Louis and verifying the findings from the company's books. The results are now being tabulated, but will probably not be ready to give out in detail for several weeks.

The fixing of the valuation at between \$50,000,000 and \$60,000,000 ends all chance of reduction of fare in St. Louis. The present 7-cent fare is based on an arbitrary valuation of \$50,000,000 fixed by the commission several months ago. The valuation arrived at by the commission is based on the actual cost of property and not on its present or replacement value.

### Purchase Deal Approved by Toronto Ratepayers

By a vote of 28,609 to 1,864, the ratepayers of Toronto, Ont., decided in favor of the purchase by the Hydro Commission of the Toronto and Niagara power and radial railway interests controlled by Sir William MacKenzie. Details of this purchase, known locally as the "\$32,000,000 cleanup deal," were published in the *ELECTRIC RAILWAY JOURNAL* for Dec. 11, page 1209.

The necessary agreements are now being prepared and it is hoped to have them ready for execution upon the return of Sir Adam Beck from England, on Jan. 21. Application will then be made to the Ontario Legislature for the necessary legislation validating the various agreements. The negotiations were in progress for a period of more than two years.

On Jan. 1 the ratepayers of Guelph, Ont., by a majority of 680 voted in favor of turning over to the Hydro-Electric Power Commission the operation and management of the municipal electric railway system. The commission will take possession on April 1 next.



**Assessed Valuations Reduced Slightly**

The assessed valuations of electric railways in the State of Utah, for the year 1920, have been announced. Of the intercounty electric railways the Utah Light & Traction Company has the largest assessed valuation per mile, exceeding in this respect some of the big steam lines. The board of equalization values it at \$49,093 per mile, a reduction from \$49,445 a year ago. The total valuation of the company's system is \$4,570,590, compared with \$4,619,210 a year ago.

Of the interurbans, the Bamberger Electric has by far the highest valuation per mile, \$42,492, compared with \$40,124 a year ago. The total figures are \$1,567,554, compared with \$1,476,185 a year ago. The Salt Lake & Utah is valued at \$30,349 a mile for its main line, and \$24,339 a mile for its branch, the figures comparing with \$29,973 and \$23,654 a year ago. The total assessed valuation is \$2,225,470 this year and \$2,194,425. The Utah-Idaho Central is valued at \$23,841 a mile and pays taxes on \$2,560,070, the figures comparing with \$21,179 a mile in 1919, and a total valuation of \$2,863,312.

**Cincinnati Traction Would Issue \$3,750,000 of Notes**

Approval of an issue of \$3,750,000 of 7 per cent three-year collateral trust gold bonds is sought in a communication from the officers of the Cincinnati (Ohio) Traction Company to W. C. Culkins, Director of Street Railroads.

Approval of Mr. Culkins is required under the terms of the amended franchise under which the company is operating. The approval of the State Public Utilities Commission also must be obtained before the securities can be marketed.

The letter explains that of the amount sought \$2,250,000 is to be issued as of Jan. 1, 1920, and is to replace temporary notes issued as of that date. The remaining \$992,000 is intended for improvements to be undertaken next year. These will include the extension of the Warsaw Avenue line to Covedale, remodeling carhouses, relaying of track on streets to be improved by the city, and other betterments to the lines of the Cincinnati Traction Company.

**Traction Notes Fetch Ten Cents on the Dollar**

Five per cent five-year collateral trust notes of the Rhode Island Company, Providence, R. I., to the face value of \$72,000, were sold on Dec. 29 by G. L. & H. J. Gross at a public auction for \$7,200, or 10 cents on the dollar. The purchaser was Benjamin R. Jackson, for the Providence Banking Company.

The notes were part of an issue of \$1,662,000 issued by the Rhode Island Company, March 1, 1916, against 20,783 shares of United Traction & Electric Company stock deposited under a

Trust Company. The interest on these notes has been defaulted since March 1, 1919.

After the Rhode Island Company went into the hands of receivers the collateral for the notes was deposited with the United Traction stockholders' committee by permission of the Superior Court, to be held subject to the developments of a reorganization. If the traction properties are taken over by the United Electric Railways under the terms of the existing reorganization agreement, each \$1,000 note will be secured by approximately 10 1-3 shares of stock of the United Electric Railway.

**3,500,000 Fewer Passengers in Philadelphia at 7-Cent Fare**

The total number of riders on Philadelphia (Pa.) Rapid Transit Company cars last month, with the 7-cent fare in effect, was 3,500,000 less than the number in December, 1919, at the 5-cent rate, according to W. C. Dunbar, vice-president of the company.

Mr. Dunbar also says that the sale of tickets at four for a quarter made the company's revenue last month exceed that of December, 1919, by \$657,589.

**Seven per Cent Increase in Operating Income of Tubes**

The Hudson & Manhattan Railroad, under federal operation, had a remarkable increase in net income. In 1918 the net income was in fact a deficit of more than \$40,000, while in 1919 the same item was \$122,300, an increase over 1918 of 400 per cent. The total railway revenue for 1919 increased \$1,052,296 or 20.7 per cent over 1918.

At the same time, the total operating expenses increased \$868,545 or 33.6 per cent. Net operating revenue for 1919 was \$2,680,628, an increase of \$183,751 or 7.4 per cent. The remaining items, such as taxes, non-operating income and deductions, were very nearly the same during the two years so that the increase in net income was \$163,122, making a net income for 1919 of \$122,300, since 1918 was a deficit.

With only 20 miles of single track, the number of revenue car miles amounted to more than 9,275,000. The number of revenue passengers carried was 94,102,461. The operating ratio changed from 50.8 in 1918 to 56.3 in 1919, an increase of 5.5 per cent in one year.

The company operates under the Hudson River from both uptown and downtown New York to New Jersey.

INCOME STATEMENT—HUDSON & MANHATTAN RAILROAD

Year Ended Dec. 31:	1919	1918	Percentage Change
Revenue from transportation	\$5,747,298	\$4,715,120	21.9
Revenue from other railway operations	383,420	363,302	5.5
Total railway revenue	\$6,130,718	\$5,078,422	20.7
Maintenance of way and structure	518,821	392,986	32.0
Maintenance of equipment	433,851	266,574	62.8
Power	818,750	729,075	12.3
Transportation	1,468,173	995,490	47.5
Traffic	715	715	0
General miscellaneous	210,495	196,705	7.0
Total railway operating expenses	\$3,450,090	\$2,581,545	33.6
Net operating revenue	\$2,680,628	\$2,496,877	7.4
Taxes assignable to railway operations	369,278	342,767	7.7
Operating income	\$2,311,350	\$2,154,110	7.3
Net income from Hudson Terminal building	781,738	795,179	-1.7
Net income from other real estate	30,487	20,840	46.3
Total operating income	\$3,123,575	\$2,970,129	5.2
Non-operating income	101,252	96,861	4.5
Gross income	\$3,224,827	\$3,066,990	5.1
Deductions from gross income:			
Interest on car purchase agreements	\$9,033	\$17,467	-48.3
Interest on real estate mortgages	43,215	43,795	-1.3
Rental tracks, yards and terminals	62,050	79,480	-21.9
Amortization of debt discount and expense	39,795	39,795	0
Miscellaneous deductions	139,899	98,740	41.7
Bond interest on N. Y. and J. 5's, first mortgage 4 1/2's, and first lien and refunding 5's	2,168,535	2,168,535	0
Appropriation to reserve for contingencies	640,000	660,000	3.0
Total deductions from gross income	\$3,102,527	\$3,107,812	0.2
Net income transferred to profit and loss	\$122,300	*\$40,822	400.0

\* Deficit

STATISTICAL INFORMATION—HUDSON & MANHATTAN RAILROAD

Year Ended Dec. 31:	1919	1918	Percentage Change
Miles of road	8.5	8.5	0
Miles of single track	20.028	18.757	6.8
Number of revenue car-miles operated	9,275,286	8,510,430	9.0
Number of passengers carried	94,102,461	79,964,372	17.7
Statistics per car-mile:			
Passenger revenue (cents)	62.0	55.4	11.8
Gross railroad operating revenue (cents)	66.1	59.7	10.8
Operating expenses (cents)	37.2	30.3	22.6
Net operating revenue (cents)	28.9	29.3	-1.5
Number of passengers	10.15	9.4	8.0
Car-miles per revenue passenger	0.098	0.106	-7.5
Statistics per mile of road:			
Passenger revenue	\$676,153	\$554,720	21.9
Operating expenses	\$405,893	\$303,711	33.6
Net railroad operating revenue	\$315,368	\$293,750	7.4
Number of passengers	11,070,877	9,407,573	17.7
Passenger revenue per passenger (cents)	61.1	5.9	4.1
Ratio of operating expenses to total operating revenues, per cent.	56.27	50.83	5.44
Ratio of operating expenses and taxes to total operating revenues, per cent.	62.30	57.58	4.72



## Municipal Ownership Voted Down

On Jan. 3 the property owners of Ottawa, Ont., voted on a by-law to purchase the Ottawa Electric Railway at the expiration of its franchise in August, 1923. The proposition was defeated by a vote of nearly two to one. The company has had a proposal of service-at-cost before the city for the past year, but because of the opinion held by the Councillors that the people desired municipal ownership it has not yet been seriously considered. Now that the wishes of the citizens as to municipal ownership have been definitely expressed it is probable that a new contract based on a flexible fare may result.

## Financial News Notes

**Increase for Purchase Purposes Authorized.**—The Chicago & Joliet Electric Railway, Joliet, Ill., has been authorized to issue \$1,350,000 of preferred stock and \$5,000,000 of bonds by the Illinois Public Utility Commission. The company has also been authorized to purchase the Chicago & Desplaines Valley Electric Company.

**Syracuse Suburban Suspends.**—The Syracuse & Suburban Electric Railroad suspended operations on Jan. 1. The road runs from Syracuse, to Fayetteville and Manlius. It has been operating at a loss for some time. Passengers were taken care of by means of a temporary motor bus service and with the help of the New York Central.

**\$983,000 Loss by Pacific Electric.**—The Pacific Electric Railway, Los Angeles, Cal., has announced that its losses for the year ended Dec. 31, 1920, will be approximately \$983,000. The company states that the increase in its freight and passenger rates as recently granted have not been effective long enough to show definite gains, but that it is anticipated that with these increased rates operative during the year 1921 the lines will show some profits during this year.

**Thirty Per Cent Reduction in Force at Lowell.**—At a brief meeting of the Home Rule committee in Lowell, Mass., recently, Manager Thomas Lees of the local division of the Eastern Massachusetts Street Railway stated that about 30 per cent of the operators of cars in the city at the present time were laid off because of the general industrial depression. He furthermore said that the revenue of the district for the month of December would be under what was taken in in November, and that November was under October.

**A Conspectus of Indexes.**—Albert S. Richey, electric railway engineer, Worcester, Mass., has published on a card

of pocket size twelve of the standard index numbers, such as Bradstreet (wholesale commodities) Dun, U. S. Bureau of Labor Statistics (retail food), street railway wages, copper, steel rails, U. S. bank clearances, etc. The figures are grouped in five columns showing respectively 1913 average, peak for the current year, year ago, month ago, and current. An explanation on the back of the card tells the way in which these figures are compiled. It is Professor Richey's expectation to publish these figures each month.

**Indiana Interurban Leased.**—The Gary & Valparaiso Railway, owning and operating 12 miles of interurban railway between Valparaiso and Chester in Porter County, Ind., has recently leased for twenty years the interurban railway of the Gary Connecting Railroad extending from Woodville Junction in Porter County west 16 miles to Broadway in Gary, Ind. At Woodville Junction the leased railway connects with the Gary & Valparaiso Railway, and at Broadway in Gary with the Gary Street Railway. Under the lease, the Gary & Valparaiso Railway will operate and maintain the entire 16 miles of interurban railway, paying a rental to the Gary Connecting Railroad.

**Employees Buy Stock.**—The campaign started by the Rutland Railway, Light & Power Company, Rutland, Vt., on Oct. 4 for the sale of its 7 per cent cumulative preferred stock to consumers and employees has just closed. This sale presented the first opportunity in the history of the company for the acquisition of that company's stock by consumers and company employees. The sale was conducted entirely by an organization composed of approximately 125 of the latter. During the period the campaign was in force a total number of 422 shares were sold, 233 shares being for cash and 189 on a monthly saving investment plan.

**Power Commission Reports Increase in Railway Earnings.**—A statement issued by the Hydro-Electric Power Commission of Ontario respecting the Windsor and Essex County electric railways, which were taken over from the Detroit United Railway, claims that during the first seven months of operation by the commission wage advances were granted to employees and surplus revenue increased over the previous corresponding period. The revenue of the corresponding seven months of 1918 was \$194,123; 1919, \$225,268; and 1920, \$296,373. Extra coal costs in an emergency steam plant, operated during a Niagara power shortage, amounted to \$27,000, while wages were increased 25 per cent at the outset and later an additional 10 per cent. After providing \$49,986 for interest and \$11,346 for the sinking fund, the net surplus was \$22,335.

**\$2,134,000 of Notes Offered.**—Halsey, Stuart & Company and A. B. Leach & Company, Inc., New York, N. Y., are offering for subscription at 95.25 and interest, yielding about 8½ per cent, \$2,134,000 of twenty-year 8 per cent

secured gold notes, Series "B." The Middle West Utilities Company through its subsidiary companies operates in the following fifteen states: Illinois, Indiana, Kentucky, Maine, Michigan, Missouri, Nebraska, New Hampshire, New York, Oklahoma, Tennessee, Texas, Vermont, Virginia and Wisconsin. The company's subsidiaries serve 496 communities, having a combined estimated population of 1,317,200. On Oct. 31, 1920, electric customers numbered 221,881, gas 54,784, water 24,778, a total of 301,443 customers for these services alone. Several railway lines are included in the properties that are controlled.

**New Bedford Company Takes Over Line.**—The trustees of the Eastern Massachusetts Street Railway, Boston, Mass., have voted to recommend to the directors a sale of the so-called Sassaquin line to the Union Street Railway, New Bedford, for a price agreed upon. The line runs between Lunds Corner and the Freetown line. It will take some time to obtain favorable action on the part of various interests involved and to complete the details of the conveyance. Meanwhile, the Union Street Railway company will operate the line by permission of the Eastern Massachusetts Street Railway. H. H. Crapo, president of the Union Street Railway, explains: "If and when the conveyance is completed the Union company will commence to rehabilitate the property and to operate the line in substantially the same way it has been operated during the past year. The Union company has taken on this burden of service without anticipation of present profit and with the knowledge that the existing rates of fare are barely sufficient to cover the operating expenses."

**Committee Reports Against Purchase Offer.**—A special committee appointed to consider the offer of purchase made by the Western Pacific Railroad to the Sacramento (Cal.) Northern Railway has recommended against the stockholders of the electric line accepting the offer. Miles Standish headed the committee of inquiry. He reported that "the Western Pacific price is inadequate and we are unable to get any better offer." The committee feels that by careful management the road will pay interest on its Class A, B, C and D bonds and also will provide sufficient funds for improvement and betterment. The Sacramento Northern Railway has \$5,205,497 of 5 per cent bonds outstanding, in four classifications, and \$4,474,607 in stock outstanding. The A and B bonds are paying interest, but the C bonds will not pay interest until July 1, 1922, and the D bonds July 1, 1927. Maturity on all bonds is twenty years from issue, which was 1917. The Western Pacific, it was explained, proposed to issue as against these bonds, at 80 per cent of their par value, paying 5 per cent, first mortgage bonds, maturing March 1, 1946. To absorb the stock the Western Pacific proposed a payment of \$26.50 a share on first preferred, \$12.50 on second preferred and \$5 on common, the par value being \$100.



# Traffic and Transportation

## Further Relief Denied

Commission Refuses to Authorize Straight 8-Cent Fare in District of Columbia—Mr. Ham Dissatisfied

An application of the Washington Railway & Electric Company, Washington, D. C., for an increase in fare to 8 cents straight has been denied by the Public Utilities Commission of the District of Columbia. The commission directs the Washington Railway & Electric Company and the Capital Traction Company to continue the present rate of 8 cents cash, or four fare tokens for 30 cents. That rate is to prevail until April 1 next. In addition, the price of intercompany transfers has been reduced from 2 cents to 1 cent.

### TAX REFORM URGED

Owing to the inequality of earning power between the two local railway companies a rate of fare which will allow the Washington Railway & Electric Company a return of 6 per cent on its valuation makes possible a considerably higher return to the Capital Traction Company. The new order of the commission is to apply until April 1 only, in the hope that before that date Congress will have enacted the proposed law relieving the companies of the 4 per cent tax on gross earnings and substituting a tax on net revenue in excess of 6 per cent on the value of the property. Referring to the companies' operations for the past six months the commission says:

The evidence presented by the petitioners at these hearings shows that in the six months' period that has elapsed since the present rate of fare was fixed by the commission, beginning May 1, 1920, the net income of the companies available for return amounted to \$510,489, which amount has been verified by the commission's accountants. Included in the operation of the companies for this period, however, are several items of major renewals and replacements of tracks, totaling \$225,696 charged to operating expenses, approximately one-third of which, the companies state, is later to be transferred to capital accounts, representing improvement and betterment to track and roadway. For the purpose of this discussion one-third of this amount should be added to the net income of the companies during the past six months.

The commission takes issue with the interpretation being placed by the two companies of the rules laid down by the Interstate Commerce Commission in the manner of handling renewals and replacements of track. On this point its order says:

The testimony of representatives of both the Washington Railway & Electric Company and the Capital Traction Company shows that they are attempting to follow the rules laid down by the Interstate Commerce Commission in the manner of treating renewals and replacements of track and roadway. These two companies, however, place different interpretations on those rules, the former apparently capitalizing less than the proper amount, while the latter is capitalizing more than the proper amount. It is the intention of the commission to formulate definite rules to govern such cases, but it is not prepared at this time to announce the proper procedure.

It also appears from the evidence that deductions have been made by the petitioners since July 1, 1920, of approximately \$3,750 per month for the purpose of paying the federal income tax. Several of the state public utility commissions have recently questioned the propriety of charging the federal income tax as a part of operating expenses. This commission concurs in the opinion that the federal income tax law contemplates that the burden shall be imposed on the corporation and paid out of its net profits and not passed on to the public.

William F. Ham, president of the Washington Railway & Electric Company, expressed disappointment at the decision of the Public Utilities Commission. The order, he said, would reduce the rate of return to a point where no utility can prosper and which is unfair to those who have invested in the securities of the company. Mr. Ham says that it will make it practically impossible to attract new capital for necessary extensions and betterments. He called attention to the fact that the reduction in the price of inter-company transfers, of itself, means a loss of \$18,000 a year. He regards the decision, however, as bringing nearer the merger of the capital's two street railway systems.

The commission points out that recent purchases of coal have been made at a price only 72 cents a ton in advance of the contract price.

## Court Holds Iowa "Two-Cent" Law Confiscatory

Judge Martin J. Wade of the United States District Court this week handed down a decision branding the Iowa 2-cent fare law as confiscatory and therefore in contravention of the Federal Constitution. His ruling came upon action brought by five electric railways operating within the State.

The plaintiffs in the case were the Mason City & Clear Lake Railroad, the Cedar Rapids & Marion Railroad, the Clinton, Davenport & Muscatine Railroad, the Iowa Railway & Light Company and the Southern Iowa Utilities Company. In 1918 these companies instituted an action against the Iowa Railroad Commission and the Attorney-General of the State and were granted a temporary injunction. During the war period their lines were not taken over by the government and for a time were compelled to operate in accordance with the Iowa law.

F. F. Faville, recently elected to the Supreme Court of Iowa, was appointed a special master in chancery to consider the case. His recommendations were the basis for Judge Wade's ruling. Judge Wade retains jurisdiction in the action, with full power to modify or dissolve the injunction at any future date upon showing by the Railroad Commission that the 2-cent fare law has ceased to be confiscatory.

## Birmingham Rates Effective

Seven-cent Fare Placed in Operation—Commission Commends Receiver for Improving Service

A formal order of the Alabama Public Service Commission granting the Birmingham Railway, Light & Power Company the right to charge a 7-cent fare in Birmingham and on its suburban lines was announced on Dec. 29. The commission retains jurisdiction of the case and recites that the granting of the 7-cent fare is without prejudice to any other rates which may be fixed by the commission later, when reports of the operations of the company, as required by the order, are received. The order includes the lines of the Birmingham-Tidewater Railway and the Birmingham-Edgewood Electric Railway, both of which are owned by the Birmingham Railway, Light & Power Company. The new rates took effect Jan. 1.

In its order the commission declares that it will give careful consideration to any agreement for a reorganization of the Birmingham Railway, Light & Power Company which may be made between the receiver and officials of the company and the city officials of Birmingham. The order also requires the continuation of the sale of school tickets and family ticket books on certain of the longer lines.

### QUALITY OF SERVICE COMMENDED

The commission commends the receiver for the quality of service maintained in spite of financial difficulties. Its order said in part:

The increase of 1 cent in the railway fare operated to increase the gross revenue from all departments approximately 7½ per cent, and therefore increased the cost to the public by only that percentage. The increase now applied for would approximately double that percentage and amount to approximately 15 per cent total increase to the public for all services performed by the utilities involved.

Immediately following the increase of the railway fare to 6 cents twenty-five safety cars were bought and new motor sets purchased for installation on the cars on hand. The railway shops have since been operated to their capacity. The new cars were placed in operation in January, 1920. The old cars thereby released were put through the shop as rapidly as its capacity would permit, and thereafter placed in operation on one line after another, and this process has continued without interruption until nearly all of the motor equipment has been put in good condition. Later nine practically new trailer cars were purchased and are in operation. Recently fifteen additional safety cars have been purchased and put in operation. As a result there has been a constantly increasing improvement in railway service since the fare was increased to 6 cents. Our investigation convinces us that the existing service is, with one or two exceptions, of a high standard and that improvement is still in progress.

We find that the property as a whole had, during the receivership, earned slightly less than its taxes, bond interest and sinking fund obligations. The cash conditions of the receivership estate has reached an acute stage that demands relief. We recognize, too, that there are unusual burdens resting upon the street railways of the Birmingham district in these particulars: (a) The average hauls are long; (b) the traffic is unbalanced on most of the lines; (c) railroad crossings are numerous; (d) the competition from jitneys and private automobiles has been excessive.

The facts stated above are established by the undisputed evidence in the case. Upon the whole we are convinced that the property has been managed with a high degree of efficiency and economy, and that the railway departments have been furnishing service below the true cost.



## Would Charge 10 Cents

**San José Companies File Applications for Increased Fares, Alleging Big Deficits in Past Year**

Declaring that for the last nine months its operation has resulted in a loss of \$235,645 the Peninsular Railway, San José, Cal., has applied to the State Railroad Commission for authority to increase passenger fares. The company seeks to increase its 6-cent and 8-cent fares to 10 cents and the charge for school children's 46-ride commutation fares from \$1.85 to \$2.22. It also proposes the sale of tokens, good for an unlimited time and transferable, for 7 cents each. These tokens will be honored for transportation within any 10-cent fare zone. They must be purchased five or more at a time. The company's rules and regulations governing the issuance and acceptance of street transfers are not to be changed.

### NINE MONTHS' LOSS \$235,645

According to a financial statement filed with the application, for the nine months ending Sept. 30, 1920, the company's operating revenue totaled \$265,370; non-operating revenue, \$27,418, a total of \$292,789. Operating expenses amounted to \$248,996; taxes and depreciation to \$21,968; fixed charges and miscellaneous debits \$257,469. With the expenses totaling \$528,434 the company points out that its net loss for the period amounted to \$235,645.

The San José Railroads, which also furnishes service in San José, also applied for authority to increase its fares, claiming that in the nine months ending Sept. 30, 1920, it had sustained a loss of \$89,432. A 10-cent fare is proposed for all lines now charging 6 cents and 12-cent and 18-cent fares are proposed in place of the 10- and 15-cent fares now being collected on certain lines. The 15- and 20-cent fares are to be increased to 18 and 24 cents, respectively, according to the plan of the company.

The sale of tokens at 7 cents each, transferable and good until used, is also provided for in the company's proposed schedule. It is likewise proposed to sell thirty-ride family commutation tickets between any two stations the one-way fare of which is 12 cents or more for twenty times the one-way fare. Under the proposed new schedule school children's forty-six-ride tickets will be increased in cost from \$1.85 to \$2.22. The \$2.70 ticket for school children will be reduced to \$2.63 and the \$3.60 ticket to \$3.48.

### No Increase Now in St. Paul

The City Council of St. Paul, Minn., has taken steps which will postpone for a month at least an increase in fare by the St. Paul City Railway, a subsidiary of the Twin City Rapid Transit Company, from 6 cents to 7 cents. The Council has approved the report of E. W. Bemis, utility expert, who suggested that the 6-cent fare con-

tinue until the early part of this year, when he would recommend further action based on what revenue will be necessary to enable the company to earn a fair return and to finance its paving and other extensions.

The company, according to the report, is earning a 6.6 per cent return on an actual valuation of \$11,000,000. The outlay for paving and extensions to be made by the company is estimated at \$2,000,000.

Mr. Bemis suggested that some of the needed revenue might be obtained from the depreciation fund and that the balance be obtained by a note from the company to the city, giving the city a lien, equal to the amount of paving, on the company. In his report Mr. Bemis indicated that the neutral zone should be continued, and also advocated the skip-stop, providing the stops were at proper distances apart and properly located.

## Asks More in Spokane

That the Spokane & Eastern Railway & Power Company on its Spokane city lines during the first ten months of 1920 sustained losses in operation, including taxes but not interest, of \$76,492 is asserted by F. E. Connors, vice-president and general manager, in a petition filed recently with the Public Service Commission of the State of Washington asking that fares be increased from 6 cents to 8 cents. The operating loss while the road, then the Spokane & Inland Empire Railroad, was in the hands of Mr. Connors as receiver is stated in the present petition to have been \$250.

The large increase in the deficit is credited to the added expense of operation and the necessity of adding improvements required to rehabilitate the system. Prior to the present ownership, it is stated that the road had been allowed to deteriorate because of the inability to earn enough money to keep it up in proper shape. Further large expenditures will be necessary to keep the property in good condition. The funds for this purpose cannot be had unless an increase in fares is granted.

Like the Washington Water Power Company, the Spokane & Eastern Railway & Power Company is confronted with a request from its carmen for a shorter working day. Platform men of other Northwestern cities are working shorter hours, but in this as in the matter of keeping up the property the railway is handicapped by a lack of money which can only be supplied by increased fares. The petition also states that higher fares are in vogue in other Northwestern cities. The petition, which was filed by Graves, Kizer & Graves, attorneys for the company, seeks to reopen the old fare case heard April, 1919, when the fare was raised from 5 to 6 cents.

The city legal department on Dec. 23 filed with the Public Service Commission a formal protest against permitting the company to reopen the old fare increase case.

## Bus Regulation Asked

**Council Committee Urges that Restrictions Be Placed on Operation of Jitneys in Hartford**

A report has been submitted to the City Council of Hartford, Conn., by the special committee of that body which has been investigating the railway-jitney situation in Hartford. The committee urges that the present bus competition be removed. It contends that, if steps are taken by the city authorities to aid the railway through regulation of the jitneys, the city has the right to insist upon improved service and the payment of deferred maintenance charges.

The committee's report follows:

Your committee, while recognizing the popularity of the jitneys with a large number of our citizens, feels strongly that the continued prosperity and development of our city is absolutely dependent upon a permanent, responsible and efficient transportation system. While the service furnished by the Connecticut Company may be inadequate at certain hours, we believe that the great majority of our citizens can only be transported by means of the trolleys with any degree of regularity and efficiency, especially in the winter months.

### RAILWAY CALLED ESSENTIAL

We cannot fail to recognize that large sections of our city have been built up because of their proximity to trolley lines; that the trolley company has made large, permanent local investments in its tracks, buildings and equipment, and under its charter and franchise obligation can be compelled to furnish continuous service, provided it secures sufficient revenue to be able to operate. From our conferences with officials of the trolley company we are satisfied that because of the present high costs of operation and equipment it will be impossible for the company to continue operation unless the jitney competition is restricted. From such information as we have received from the officials your committee is satisfied that even in the city of Hartford and with the 10-cent fare, the local lines will not receive sufficient revenue to more than break even between receipts and actual operating costs, provided the Connecticut Company pays its Hartford taxes, its percentage of gross receipts and meets its obligations in the matter of paving the portion of the city streets on which its lines are located. This does not include repairs to trackage, which in certain parts of the city are grievously needed.

If on the other hand, the present jitney competition is removed and the trolley receives sufficient revenue, the city has the right to insist upon improved service and the payment of deferred maintenance charges. In the case of Wethersfield Avenue and Windsor Avenue paving for example, it has been impossible for the city to insist on the performance of this work as the company had no funds which could be used for the purpose and could not borrow them.

The six new routes designated in the proposed amendment to the ordinance for the most part are parallel and would be in direct competition to the trolley lines. They avoid Main Street between Charter Oak Avenue and the tunnel, but provide for the operation of jitneys through such narrow and already congested streets as Prospect Street, Allyn Street, Ford Street and Trumbull Street. These streets are all so congested that they are now receiving special consideration from the police board with a view to further restriction of traffic.

## Council Cancels Duluth Referendum

The City Council of Duluth, Minn., on Jan. 3 rescinded its action calling a special referendum for Feb. 3 to place a proposition for a 6-cent fare again before the people. The Council decided on Dec. 24 to call a referendum election providing the expenses of the same should be borne by the Duluth Street Railway, but changed its mind



when representatives of the Federated Trades and Labor Assembly charged that the Council would be violating the corrupt practices act if it conducted an election the expenses of which were paid by a private corporation. Herbert Warren, general manager of the company, has announced that the railway is operating at a loss and that the cost of operation must be curtailed or the fare raised. The voters have twice rejected a proposal to allow the company to raise its fare.

### Arkansas Bureau Busy

A. G. Whidden, Manager of the Public Relations Section, Waging an Active Campaign of Education

An active campaign is being waged by the recently created Public Relations Section of the Arkansas Utilities Association to inform the people regarding the public service corporations operating within the State. A. G. Whidden, manager of the Public Relations Section, is using for this purpose paid advertisements in the newspapers of Pine Bluff, Fort Smith and other cities. He is also issuing a series of bulletins discussing the utility question, in which he emphasizes the essential nature of electric railways and other utilities.

In discussing the present status of Arkansas utilities recently, Mr. Whidden said that the principal trouble with public utilities throughout the country today is that they have been so starved by lack of adequate compensation that their plants have run down, and many are unable to meet demands made upon them.

#### LESSON COSTLY FOR PUBLIC

Utility operators could see coming just such trouble as some communities are experiencing, and tried to avert it by appealing to the public and to city councils for fair and equitable rates, so that the high operating expenses could be met, and new generators, transformers and other machinery purchased, said Mr. Whidden. These appeals were not heeded. The people, unfamiliar with operating costs, did not appreciate the situation, nor realize how the public would be affected. So, today, both the public and the utilities are paying the penalty. Mr. Whidden continued:

The utilities are partly responsible for the situation because of their failure to use advertising space in the newspapers to inform the public concerning constantly increasing costs of operation. They realize this now, and, having confidence in the fairness of the public, plan to present their case to the people through newspaper advertisements, and other mediums of publicity.

Of course there will be some to contend this is no time to increase rates, but those utilities that have been starved for years must have some relief if they and the communities they serve are not to suffer more than they have.

Those manufacturers and others who advanced prices to meet higher costs of production can afford to say, "This is no time to advance rates." They have had their necessary increases, and with decreasing production costs, probably may reduce rates or prices. But the utilities are in a different position. They have not had advances proportionate to higher costs and everything they use—labor, fuel, material—has gone up. The result is they are just about starved out and their efficiency impaired. They must have relief in the way of ade-

quate rates if they are to survive and provide the service necessary to continuous development of the community.

Under the caption, "Public Utilities Pay One-Fifth of Taxes," one of the "ads" sent out by Mr. Whidden says:

Public utility companies pay 20 per cent of all taxes collected in Arkansas!

This surprising fact is shown by the 1919 assessments. The total valuation of all property was \$588,161,065. Of this amount the utilities represented one-fifth, or \$115,656,474.

Consider what this means: All lumber mills, all mines, all factories, all buildings of whatsoever nature, all improved and unimproved land—everything in the state, except public service companies, paid only \$4 in taxes for every \$1 paid by the public utilities.

On the basis of 33 mills—state, county, city and special levies in Little Rock—the utilities of Arkansas paid in taxes last year \$3,816,663.

On the same basis, all other property in the state paid only \$15,592,652.

The utilities actually paid more than \$3,816,663, because they are subject to taxes not levied against other property owners—such taxes as pole, corporation, franchise, and other special levies.

If all the utilities in Arkansas were forced out of business by reason of inadequate rates or unjust legislation the people of Arkansas not only would be deprived of the comfort, convenience, protection, pleasure and profit provided by the operation of the light, telephone, water, gas and railway companies, but the rate of taxation would have to be increased to make up the four million the utilities pay toward public improvements, governmental expense and schools.

### Crossing Regulations Laid Down

Operation of one-man cars on thoroughfares crossing steam railroads at grade is prohibited in proposed regulations issued recently by the Massachusetts Department of Public Utilities. Exceptions are made to grade crossings at which all train movements are protected by the railroad crew or where a gateman is employed.

Justice John C. Crosby of the State Supreme Court has ruled against the petition of certain employees of the Eastern Massachusetts Street Railway for an injunction to restrain the public trustees from the operation of one-man cars. A demurrer to the petition was filed by the company, in which it was pointed out that the Department of Public Utilities has decreed that the one-man cars are not a menace to public safety as claimed by the petitioners. This demurrer was sustained by the court.

The new rules governing the operation of the cars over grade crossings are the result of several months' study by the inspection bureau of the commission. They demand, in Regulation 1, that every street railway car on approaching a grade crossing shall be brought to a full stop 100 ft. from the railroad tracks. This stop, it is stated, shall be for the purpose of ascertaining whether or not the machinery of the car is in perfect condition for emergency handling.

The car thereafter must be worked slowly to the railroad tracks and again brought to a stop. The operator may not then proceed until he has ascertained that the way is clear and that there is no danger of a train approaching from either direction. This last stop, it is provided, shall not be deemed necessary where train movements are protected by train crews.

Another of the new regulations provides that at all crossings where no gateman or flag tender is employed, unless it be one where movements are protected by train crews, the conductor must leave his car, walk ahead to the tracks and stand there until his car has passed over.

A fourth regulation provides that at all grade crossings there shall be installed a trolley guard so arranged that if the trolley leaves the wire it may be caught by the guard.

### Birney Cars Installed on Lines of Heavy Traffic

Birney safety car operation was started on one of the lines of the Youngstown (Ohio) Municipal Railway on Jan. 1. The line selected for the first use of this type of equipment in the Ohio city, the Wilson Avenue and East Youngstown line, serves a large residential section with heavy industrial traffic morning and evening in the city. It has met with considerable automobile competition. Heretofore the base schedule for this line has provided a ten-minute headway with a five-minute headway during the morning and evening peak load periods.

With the safety car in use the all-day service has been placed on a five-minute headway with the peak load service on a two-and-a-half minute headway, the additional morning and evening service being supplied by the old style of cars alternating with the safety cars.

Twelve Birney cars have been assigned to the line, ten being required by the base schedule and two being spares. Including this service forty-four safety cars are in service on the lines of the Pennsylvania-Ohio Electric Company and associated companies in Youngstown, Ohio, and New Castle and Sharon, Pa.

The new service in Youngstown is of special interest because of the problem that is presented in the use of safety cars for the heavy and concentrated industrial traffic and the effect of the frequent service on the automobile competition.

### Transit Problem Discussed

C. I. Brooks, chairman, committee on transportation, Miami, Fla., recently submitted the findings of that committee before the Rotary Club. In summing up the transportation problem in Miami he stressed the importance of the motor vehicle. In this connection he spoke of the parking practice in Miami and suggested a parking plan such as is carried out in Cleveland, Ohio. On the street railway subject he declared that the people would have an opportunity to express their choice between the trolleys and the jitneys. He believed that buses were not a dependable system of transportation, but that a street railway system should be in operation which would give not only transportation advantages but would also mean the development of city property.



## Transportation News Notes

**Seven Cents in Columbus.**—The Columbus (Ga.) Railroad has raised its fare from 5 cents to 7 cents under the terms of an order issued by the State Railroad Commission. Fifteen tickets are sold for \$1. Thirty school tickets are sold for \$1.

**Ten Cents Asked in Ardmore.**—The Ardmore (Okla.) Railway has applied to the Oklahoma Corporation Commission for authority to charge a 10-cent cash fare on its Ardmore lines. This is the first city electric line in the state to ask for a 10-cent fare on its city system.

**Would Raise Zone Rates.**—The Valley Railways, Lemoyne, Pa., has notified the State Public Service Commission of its intention to raise its fare from 7 cents to 8 cents in each zone. In October, 1918, the fares were increased from 5 cents to 7 cents. The railway operates between Lemoyne, Carlisle and other points in the Cumberland Valley.

**Oklahoma Interurban in Operation.**—The Northeast Oklahoma Railroad, Miami, Okla., has been completed and has begun operation. The road, which is twenty-three miles in length, will serve the towns of Miami, North Miami, Commerce, Cardin, Picher, and Century, Okla. J. F. Robinson is president. The other officials are: W. H. Trapp, vice-president; H. B. Cobban, secretary-treasurer and general manager; and H. M. Myers, auditor.

**Six Cents in Victoria.**—A 6-cent cash fare is now being charged by the British Columbia Electric Railway, Vancouver, B. C., on its lines in Victoria. Six tickets are sold for 35 cents, and ten school tickets for 25 cents. Universal free transfers are retained. The fare was formerly 5 cents cash, five tickets for 25 cents. The railway several months ago applied to the city authorities for permission to charge a 6-cent fare, later amending its petition to ask a rate of 7 cents.

**Ten Cents in Framingham.**—By authority of the Massachusetts Department of Public Utilities the Boston & Worcester Street Railway, Framingham, has raised its cash fare from 7 cents to 10 cents on several of its lines. The new rate schedule substitutes a 5-cent cash fare for certain 4-cent tickets and abolishes the fifty-trip ticket between Overbrook and Chestnut Hill, formerly sold for \$6.75. There is no change in the length of fare zones. It is estimated that under the new rates the railway will receive \$30,000 additional revenue annually. The company had a deficit of \$58,624 for the first ten months of 1920, and for the past

two years has failed to earn operating expenses, taxes and interest.

**"Safety First" in Los Angeles.**—Carrying the message of "safety first" to 5,000 school children of Los Angeles, Cal., every week the Los Angeles Railway and the Pacific Electric Railway are at present co-operating in a campaign against accidents of all kinds. The railways are employing H. H. Mathieson, safety engineer, to speak before the school children and to present a "safety first" motion picture film. The work is being conducted with the approval of the Los Angeles school board and under the direction of the superintendent of schools. The film shows how accidents happen and how they can be eliminated by eliminating carelessness. It preaches the safe way as the right way and covers all classes of accidents.

**A Unique New Year's Greeting.**—At the suggestion of W. H. Boyce, general manager of the Beaver Valley Traction Company and the Pittsburgh & Beaver Street Railway, New Brighton, Pa., the operating force of these companies adopted a unique method of wishing the car riders a "Happy New Year." Their "card" took the form of an open letter published in the New Brighton newspapers as a paid advertisement. Over the signatures of all the employees of the companies the letter read: "We wish our public a merry, merry Christmas and a very happy New Year. We have tried to do our duty during the year passing out now; and we look forward to 1921, hoping that our work and service will continue fully to meet your approval."

**Fares Up on "Panhandle" Lines.**—The City Railway, a subsidiary of the West Virginia Utilities Company, Wheeling, W. Va., has been authorized by the State Public Utilities Commission to raise its rates as follows: for passengers within the city from 5 to 8 cents, six tickets are to be sold for 40 cents and school tickets at one-half the regular fare. The former express rates were: up to fifty pounds, 10 cents; from fifty-one to 100 pounds, 25 cents. The new rates are: up to ten pounds, 12 cents; from ten to twenty-five pounds, 24 cents; from twenty-five to 100 pounds, 30 cents; for each additional 100 pounds, 12 cents. The rates charged in the interurban line of the Wheeling Traction Company also were increased by 6½ cents between Wheeling and Moundsville. The rates between intermediate points were increased proportionately. The express rates are graduated from 18 cents for one pound, to 30 cents for 100 pounds.

**Seven Cents in Fort Smith.**—The Fort Smith Light & Traction Company, Fort Smith, Ark., has raised its fare from 6 cents to 7 cents. Children between the ages of five and twelve years are carried for 4 cents each. The new rate was made permanent by the State Corporation Commission unless otherwise ordered. The 7-cent fare went into effect automatically after thirty days' public notice, as required by the

state law. A conference was held at which representatives of labor unions, civic organizations and city officials were present and the matter was fully discussed. At the conclusion of the meeting a resolution was adopted that no protest should be filed with the Corporation Commission against the 7-cent fare; therefore the rate automatically went into effect. The management took the public into its confidence and gave it full information regarding the railway's operating and financial problems.

## New Publications

### Engineering Electricity

By Ralph G. Hudson. 190 pages, illustrated. John Wiley & Sons, New York, N. Y.

This book, written primarily for students specializing in branches of engineering other than electrical, contains a brief and concise exposition of the fundamental principles and the customary applications of electricity and magnetism. Enough descriptive matter is included to provide material for a mental picture of electrical devices. Theories are developed with the aid of mathematics where exposition would be long and involved.

### The Discovery of Electromagnetism

Published for the Oersted committee at the expense of the Belgian State by Absalon Larsen, Copenhagen, 1920.

The Belgians celebrated during last year the centennial of the discovery of the relation between electricity and magnetism, announced by Prof. J. C. Oersted on July 21, 1820. In connection with this celebration there has been published a pamphlet containing a résumé of the facts attendant upon this great discovery, and giving reprints in the original languages from a number of articles commenting upon the discovery, published in scientific journals at the time of its announcement.

### Coal, Iron and the War. A Study in Industrialism, Past and Future

By Edwin C. Eckel, late Major of Engineers, United States Army. 375 pages. Henry Holt & Co., New York, N. Y.

This treatise is the result of a study of the working of economic laws relating to the production, distribution and utilization of these basic elements of the nation's wealth. It is not in any sense technical, but is based on numerous data, and goes to show how world peace is intimately involved with economic and industrial conditions. The book furnishes a stimulus to thought, and in view of the dependence of the electric railway business on coal and iron it might well be carefully read and studied by progressive managers and engineers.



## Personal Mention

### Governor Picks Mr. Cadle

Chief Engineer of the New York State Railways Appointed Superintendent of Public Works

Public service has borrowed from the electric railway industry one of its most able executives in the person of Charles L. Cadle, chief engineer of the New York State Railways, who has just entered the cabinet of Governor Nathan L. Miller of New York, as Superintendent of Public Works. Mr. Cadle's appointment was among the first to be announced by Governor Miller, who took office on Jan. 1. As Superintendent of Public Works he will have charge of many state improvements, the most important of which is the Barge Canal.

The news of Mr. Cadle's appointment



C. L. CADLE

has been taken as an evidence that the new Republican administration intends to co-operate with business interests in working out a constructive program of relief for the state's utilities, including electric railways. The new Governor has already intimated that public utilities are to receive consideration at his hands. It is expected that any reasonable claim which either the utilities or private business will put forth will receive attention.

Mr. Cadle has long been identified with the New York State Railways, which, in addition to operating inter-urban lines, owns the city systems in Rochester, Syracuse and Utica, first as electrical engineer and more recently as chief engineer. He went to Rochester about thirteen years ago from Cleveland, Ohio, where he had been for two years general manager of the Electric Railway Improvement Company. For about a year previous to that time he was employed in the power department of the Cleveland Railway. For several years he served as electrical engineer of the Rochester lines and

was then promoted to chief engineer of those lines. He subsequently became chief engineer of the entire system of the New York State Railways. For a number of years Mr. Cadle has made his headquarters in Rochester.

Association work has for years been of vital interest to Mr. Cadle. He has been a member of the power distribution committee of the American Electric Railway Engineering Association, serving for several years as chairman, and has also served on the executive board of the Engineering Association. He was a member of the American Association committee to confer with the Bureau of Standards on the electrical safety code in 1915 and 1916, and was later made chairman of the committee of the Engineering Association to confer with the bureau on that subject. At the Atlantic City convention last October he was elected first vice-president of the Engineering Association.

### S. S. Crane Feted

Scott S. Crane, general manager of the Altoona & Logan Valley Electric Railway, Altoona, Pa., was recently tendered a dinner by the employees of the system, the occasion being the twenty-fifth anniversary of Mr. Crane's connection with the company. When Mr. and Mrs. Crane appeared at the railway's office in answer to a telephone message they found more than 150 employees gathered around the banquet table, two places being reserved for the guest of honor and his wife. Mr. Crane was presented with a phonograph and 100 records, the gift of his fellow workers, and with an autograph album containing the name of every employee of the company. Mrs. Crane was presented with three large bouquets. Commenting editorially upon the event, the *Altoona Mirror* said:

"It was a fine tribute to Mr. Crane, personally and in his capacity as the general manager of the trolley lines. It shows that he has not only the confidence and co-operation of the men who work under him but that he also has their esteem and affection. Such manifestations of good feeling between employer and employee have been all too rare in recent years in many lines of human activity, although it has existed in the Logan Valley family.

"Mr. Crane is entirely worthy of the honor which the men and their families paid him last night. He has always applied the Golden Rule to his dealings with his subordinates, and that is a policy that invariably wins. When other executives have experienced trouble he has been rewarded with service, and the local public has been the real beneficiary."

### O. D. Mudgett Promoted

Made General Manager of the Androscoggin Electric Company, Succeeding F. D. Gordon

Electric railway men of the New England section have recently been congratulating Frederick D. Gordon, formerly general manager of the Androscoggin Electric Company, Lewiston, Me., upon his appointment as general manager of the Cumberland County Power & Light Company, Portland. Brief mention of Mr. Gordon's appointment was made in a recent issue. Following the resignation of Mr. Gordon from the Lewiston company several promotions have taken place in that organization, the chief one being that of O. D. Mudgett, who has been made general manager to succeed Mr. Gordon.

As general manager of the Cumberland County Power & Light Company Mr. Gordon will have charge of a property capitalized at more than \$2,000,000 and serving a population of 100,000 persons. The railway department of the company operates 106 miles of



F. D. GORDON

track, including a number of interurban lines. Mr. Gordon succeeds A. H. Ford, who resigned in the fall of 1919. Since the resignation of Mr. Ford the company has been without a general manager, the heads of the several departments having supervision of the work.

O. D. Mudgett, who succeeds Mr. Gordon at Lewiston, joined the Androscoggin Electric Company about ten years ago. He is a native of Gilmanston, N. H. After obtaining his early education in that city he studied electrical engineering at the New Hampshire State College. Following his graduation from that institution he went to East Pittsburgh, Pa., where he entered the employ of the Westinghouse Electric & Manufacturing Company. He was later transferred to Boston, where his work consisted of commercial engineering. He then joined the Belfast Gas & Electric Company, Belfast, Me. A few years later he entered the employ of the Lewiston company, serving continuously with that organization up to the present.



### Mr. Lewis in Buffalo

Kenneth R. Lewis, formerly general car inspector of the Hudson & Manhattan Railroad, New York, N. Y., has assumed the duties of engineer of equipment of the International Railway, Buffalo, N. Y. The position of engineer of equipment is a newly created one. Mr. Lewis will co-operate with J. W. Hulme, superintendent of equipment, in supervising the maintenance of the railway's rolling stock. His work will consist largely in the standardization of parts and in the handling of tests of all materials used in the upkeep and equipment of the cars.

Mr. Lewis is a native of Washington, D. C., where he was born in 1888. He obtained his education in the Washington grammar schools and the McKinley Manual Training School. He has since specialized in electrical engineering and has completed several courses on that subject. He began his railway experience with the Washington & Old Dominion Railway in the fall of 1906. In the following year he joined the New York Central Railroad, serving as an inspector of locomotives in the electrified zone. In 1908 Mr. Lewis accepted a position with the Hudson & Manhattan Railroad, and, after serving in various positions, he was promoted to general car inspector.

### Interurban Officials Promoted

Lawrence Meservie has been appointed a division superintendent of the Monongahela Valley Traction Company, Fairmont, W. Va. Mr. Meservie will have charge of the interurban lines entering Fairmont and of a portion of the city system. The creation of the new position and the appointment of Mr. Meservie resulted from a substantial increase in interurban traffic. Mr. Meservie has for many years been a trainman on the interurban lines.

Theodore E. Fitzpatrick has been made an assistant superintendent of transportation of the company. Mr. Fitzpatrick will assist Carl B. Johnson, superintendent of transportation, and will co-operate with A. I. Horton, who is also an assistant to Mr. Johnson. Mr. Fitzpatrick has been in the employ of the railway since 1903. In his new position he will supervise the regulation of traffic on all city routes, as well as on a number of interurban lines.

J. W. Walker has been appointed superintendent of the Traction Light & Power Company, a subsidiary of the Union Traction Company of Indiana, Anderson, Ind. Mr. Walker succeeds J. B. Shadel, who resigned recently. He is a graduate of Purdue University and was formerly in the employ of the United States Steel Corporation at Gary, Ind.

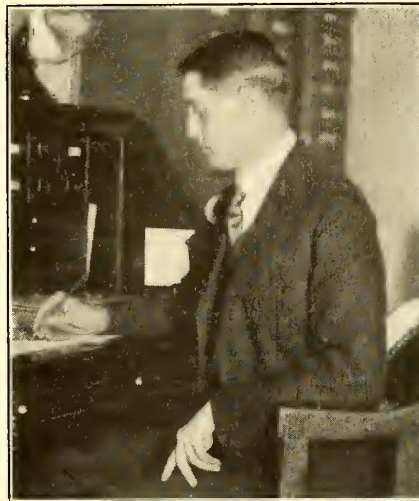
T. H. Ceperley, who for the past twelve years has been chief operating engineer of power and substations of the Albany Southern Railroad, Albany, N. Y., has resigned on account of ill

health and expects to spend the winter in the South. Mr. Ceperley will re-enter the electrical field in the spring. He was formerly connected with the Newburgh Light, Heat & Power Company, as chief engineer of the Newburgh plant, and prior to that with the Fonda, Johnstown & Gloversville Railroad.

### Changes in St. Louis

#### Major R. J. Lockwood Made Assistant Manager of the United Railways in Charge of Purchases

To secure an increase in operating efficiency, Rolla Wells, receiver of the United Railways, St. Louis, Mo., has somewhat reorganized the company's executive personnel. Major Richard J. Lockwood has been appointed assistant manager. Major Lockwood will report to Colonel A. T. Perkins, general manager, relieving him of many duties, and thus enabling him to give his attention to more important matters. Questions pertaining to supplies and purchases



MAJOR R. J. LOCKWOOD

will come under Major Lockwood's direct supervision.

The responsibilities of Walter E. Bryan, superintendent of power, and C. L. Hawkins, engineer maintenance of way, have also been extended by Colonel Perkins. The general manager has himself absorbed the duties formerly performed by the chief engineer.

Major Lockwood, the new assistant manager, is a newcomer in the electric railway field, most of his experience having been in steam railroading. He was born in St. Louis thirty-eight years ago. Shortly following his graduation from the engineering department of Washington University, St. Louis, in 1904, he entered engineering and construction work. After holding engineering and executive positions with several roads he became vice-president and general manager of two subsidiary lines of the "Frisco" system in Louisiana. He later served as vice-president and manager of the Appalachian Railroad in Florida.

During the war Major Lockwood

served with Colonel Perkins, who commanded the Division of Combat Railways in France. He rose from a private in the officers' training camp at Fort Oglethorpe through the grades of second lieutenant and captain of Field Artillery, captain and major of Engineers and finally and until the signing of the armistice was made chief engineer of the Division of Light Railways and Roads, A. E. F. In the meantime he was in the thick of things in the Chateau Thierry, St. Mihiel and other engagements.

Walter E. Bryan, superintendent of power, was born in St. Louis on Oct. 21, 1885. Graduating from Washington University in 1907 with the degree of B. S. in electrical engineering he entered the power department of the local railway system. After serving for a time as draftsman he was appointed electrical foreman in charge, under the superintendent of power stations, of substations and electrical work in the power department. In August, 1910, he left the company to become an electrical engineer for the United States Incandescent Lamp Company, but in March, 1911, he returned to the United Railways. In the following year he became assistant superintendent of power stations. Later in the same year he was promoted to superintendent.

Carl L. Hawkins, engineer maintenance of way, is also a Missourian by birth. After completing a course in electrical engineering at Washington University, he was employed by a firm of contractors on railroad construction work in Florida. Shortly thereafter he returned North and entered the service of the United Railways as an engineer in the track department. He was made chief engineer of that department in 1911, subsequently being promoted to engineer maintenance of way.

Charles A. Pohl has been appointed chief engineer of the Niagara Gorge Railroad, Niagara Falls, N. Y. Mr. Pohl is a member of the firm of Bogart & Pohl, civil and consulting engineers, New York City.

M. H. Pitman has been appointed service superintendent of Georgia Railway & Power Company, Atlanta, Ga. In this capacity Mr. Pitman has charge of the gas shops, the gas repair shop, and the gas meter shop, in addition to the electric and steam meter department. He has been connected with the company for a number of years.

Frederick E. Nelson has joined the Twin City Rapid Transit Company, Minneapolis, Minn., as publicity representative. Mr. Nelson has been appointed acting general passenger agent of the Twin City lines during the temporary absence of W. O. Clure, who is now recovering from injuries received several weeks ago in an accident. Mr. Nelson is a newspaper man by profession and at one time or another was connected with several papers in the Pacific Northwest. Since his discharge from military service he has served on the *Minneapolis Journal* and more lately on the *Minneapolis News*.



# Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER,  
SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES

BUSINESS ANNOUNCEMENTS

## Prices of Overhead Trolley Line Material Decline

**Lower Raw Material Cost a Large Factor—Demand Rather Light and Deliveries Favorable**

With the copper market continuing on its downward march in an apparent attempt to set new low price records recently, the expected decline in overhead trolley line material has come about. At this writing electrolytic copper can be purchased as low as 12:50 cents per pound delivered, though large producers are nominally asking 13 cents over the first quarter.

Several of the large manufacturers of trolley line material reduced their prices on January 3, the reduction in two instances averaging 5 per cent on the whole line of ears, crossings, splicers, hangers, etc. In a third case the price drop amounted to about 15 per cent on the same date. Another large manufacturer has not announced any price change as yet.

Demand for this class of supplies on the whole is rather light, though in some instances good sales are reported, on behalf of maintenance work of course. Deliveries are favorable and range from 10 days up to an extreme period of three or four weeks.

## Wiring Supply Prices Lower

**Pipe, Loom, Armored Cable and Fittings Reduced with Lower Steel and Cotton Costs**

Just before the year closed important revisions downward were made on several items of wiring supplies. The first of the independent mills making merchant pipe, closely related to rigid conduit, dropped its price to corporation level on Dec. 31, and was followed by other mills early in January. That was the final step to bring the independent steel market to corporation levels, thereby leaving only one steel market. Stocks are generally pretty well built up but in some sections quite spotty.

Steel strip for flexible armored conductor dropped about 20 per cent late in December so that manufacturers now are quoting price reductions of around \$15 per 1,000 ft. of No. 14 two wire. Stocks are large on certain makes with rather low jobbers' prices resulting. Conductor bushings, etc., are also lower, smaller sizes about 33 per cent and larger sizes 8 per cent.

Non-metallic flexible conduit prices are off about 30 per cent, the discounts changing 15 points. Cotton material entering into the make-up of loom is quoted as much as 50 per cent lower in some instances. Stocks are heavy.

Rubber-covered wire prices while low are apparently holding, from \$8.25 to \$8.75 being a good ruling price in New York City for large lots of No. 14. Weatherproof, No. 14, in 250-lb. lots is quoted at from 27 to 29 cents in New York City.

## Long Deliveries of Railway Type Resistance Grids

**Demand Is Large and No Stocks Exist Either With Manufacturers or Railways—Prices Firm**

Current buying of resistance grids on the part of electric traction companies is heavy and the supply poor. An analysis of individual orders, it is stated, shows that electric lines are buying close to their requirements but nevertheless the total demand is large. For one thing railway stocks of reserve grids are known to be low. With cold weather at hand street car lines are loath to face the possibility of heavy snows with consequent burnouts and breakage of resistance grids without having a fair stock to make replacements.

### STOCKS EXPECTED TO BE BETTER

Unfortunately deliveries of grids are running long and rush orders have scant chance of meeting with immediate attention. In fact one of the largest manufacturers is apportioning deliveries on a percentage basis. In view of this condition electric railways are probably anticipating their needs more than would otherwise be the case. Stocks of railway type grids virtually do not exist with manufacturers now, in spite of the fact that one of the latter had as high as 100,000 in stock recently. Deliveries vary greatly according to the particular grid desired, but range as long as three or four months at present and in isolated instances orders have been unfilled as long as seven months. It is expected that within the next three or four months, however, stocks will be well built up in spite of the fact that a good running volume of business is anticipated right along.

The chief problem with which producers have had to contend has been to obtain grey iron castings. The supply is now improving slightly though it is still far from normal. Prices have undergone no change. It is pointed out that the large rejections and losses through breakage on grids constitute an excessive overhead, and this combined with the undiminished cost of castings and other material, manufacturers say, precludes lower prices for some time to come.

## No General Drop in Gear Case Prices

**One Manufacturer Lowers Price of Sheet Steel Product but No Reductions by Others**

Although one of the large manufacturers of gear cases reduced the price of sheet steel cases about seven per cent on Jan. 3, this drop has not been followed by a similar action on the part of other producers, so far as can be learned.

Steel mills have lowered sheet steel prices appreciably within the past month but seemingly the chief reasons why this reduction has not been passed on to gear case consumers are current stocks of high priced material purchased some time ago and high labor costs. These two factors, according to a leading producer, are sufficient to prevent any price decreases on its product for nearly three months to come.

Orders are holding up fairly well, in some instances a slightly lessened demand being noted recently, but on the whole the total volume of gear case business seems to compare well with former years. Deliveries, however, are running longer than usual, especially on malleable cases. The latter have undergone no price change and lower quotations are not expected while the raw material remains so high in price and uncertain as to supply.

## Short Supply of Coal in 1920

**Scarcity Due to Coal Miners' and Railroad Strikes, Car Shortage and Foreign Buying**

One of the chief difficulties with which public utilities and manufacturers had to contend during 1920 was an insufficient and irregular supply of fuel. An extraordinary and long continued chain of circumstances was to blame for this scarcity.

Following the coal miners' strike in November, 1919, surplus stocks were reduced to a comparatively low point. Then, starting with the first of the new year, a car shortage prevailed that lasted through the greater part of the year and seriously hampered efforts of producers to move coal. A wage increase of 27 per cent to coal miners went into effect on April 1, thus increasing the cost of production. Early in the same month occurred the outlaw switchmen's strike on the railroads, and this completed the demoralization of freight transportation. As large consumers were unable to obtain enough coal on contract delivery they entered the open market for deliveries almost at any price.



Successful foreign buying competition further shortened supplies, and as a result speculation and manipulation served to send coal prices skyward. In midsummer utilities paid as high as \$16.50 to \$23 per ton for coal at New York. At times many of the street railways were on the verge of closing down for lack of coal. Herculean efforts on the part of all concerned and heroic measures that were adopted prevented this, however. Among the latter were orders from the Interstate Commerce Commission virtually embargoing exports of coal, granting regional priorities to districts such as New England that were hardest hit, reserving the preferential use of open-top cars for shipment of coal, and giving the use of assigned cars to public utilities. These measures, coupled with a gradual improvement in transportation, relieved the situation the latter part of the year. Prices have recently been on the downgrade and early in December the last of the preferential car orders was rescinded.

**Copper Market at Lowest Prices in Six Years**

Further reductions in the copper market bring the producers' prices down to 13 cents a pound, delivered, for first quarter, outside market prices to 12.50 cents and certain small producers' to 12.75 cents. At the same time there have been both good sales made at these prices and increased inquiries.

The latest development, however, is the possibility that large copper producers will withhold heavy tonnages from the market in an endeavor to keep the market from going to still lower levels. The price now is said to be

lower than that at which most companies can produce, although at least one producer is known still to be below these prices on his costs. Not since before the war has the metal sold at such low figures as are now ruling.

**Easier Prices of Pole Line Hardware**

Following the decline in steel prices during the past month, manufacturers of pole line hardware have been gradually lowering their quotations to conform to reduced raw material costs. Furthermore, slackening demand and the overcoming of prevailing long deliveries as winter approached have aided to ease the price situation. One of the leading manufacturers reduced the price of pole line hardware between 10 and 15 per cent the first of December. Another manufacturer followed suit with a drop in price of 15 per cent the middle of the month. A third has just recently announced a price decrease amounting to about 5 per cent.

Back orders have just about been caught up with now, although surplus stocks have not accumulated in any great volume. Some items are occasionally shipped from stock and delivery of the remainder ranges up to 2 or 3 weeks.

**Sixteen Cars Destroyed by Fire in St. Louis**

A fire which started at 7.25 p.m. on Jan. 3 in the Debaliviere carhouse of the United Railways, St. Louis, Mo., destroyed sixteen cars, damaged seventeen more cars and four trailers and left one section of the building in ruins. The damage is estimated by Receiver Rolla Wells to be \$200,000 to the equip-

ment, and \$50,000 to the building. The loss is partially covered by insurance. All cars of five lines of the United Railways are housed at the Debaliviere carhouse when not in service. About 100 cars and trailers were in the carhouse and yards when the fire started. Of the cars damaged, seven motor cars and four trailers were seriously impaired and ten cars were slightly damaged.

By drafting cars from other carhouses and from the repair shops the schedules on all lines were maintained the following day. Colonel A. T. Perkins, general manager for the receiver, said the loss would not seriously affect the service although it largely offset the gain of thirty-seven cars recently put into service as part of fifty authorized by the public service commission. To replace the cars that were destroyed will entail considerable expense as many of them were of older types and cost less than half the present selling price of modern type cars.

Origin of the fire was undetermined on Jan. 4, but it was thought the conflagration started in a car standing in the center of the southeast corner of the carhouse.

**Rolling Stock**

Galesburg (Ill.) Railway, Lighting & Power Company has received ten new safety cars for service on its lines.

Brantford Municipal Railway, Brantford, Ont., Canada, has purchased and put into operation two one-man cars formerly operated on a Connecticut railway which went into insolvency.

W. S. Twining, City Transit Director, Philadelphia, Pa., has called for bids

**NEW YORK METAL MARKET PRICES**

	Dec. 1, 1920	Jan. 5, 1921
Copper ingots, cents per lb.	14.00	12.75 to 13.00
Copper wire base, cents per lb.	17.00	16.25
Lead, cents per lb.	5.50	4.75
Nickel, cents per lb.	43.00	43.00
Zinc, cents per lb.	6.00	6.00
Tin, cents per lb.	33.25	36.75
Aluminum, 98 to 99 per cent, cents per lb.	32.90	28.30

**OLD METAL PRICES—NEW YORK**

	Dec. 1, 1920	Jan. 5, 1921
Heavy copper, cents per lb.	10.50 to 11.00	10.00 to 10.50
Light copper, cents per lb.	8.50 to 9.00	8.00 to 8.25
Heavy brass, cents per lb.	6.50 to 7.00	6.00 to 6.50
Zinc, old scrap, cents per lb.	3.25 to 3.50	3.00 to 3.25
Yellow brass, cents per lb.	4.50 to 5.00	4.00 to 4.50
Lead, heavy, cents per lb.	4.00 to 4.50	3.50 to 3.75
Steel car axles, Chicago, per net ton.	20.00 to 21.00	17.00 to 18.00
Old car wheels, Chicago, per gross ton.	32.00 to 33.00	21.00 to 22.00
Steel rails (short) Chicago, per gross ton.	19.00 to 20.00	16.50 to 17.00
Steel rails (rerolling), Chicago, gross ton.	20.00 to 21.00	17.00 to 18.00
Machine shop turnings, Chicago, net ton.	7.50 to 8.00	6.00 to 6.50

**ELECTRIC RAILWAY MATERIAL PRICES**

	Dec. 1, 1920	Jan. 5, 1921		Dec. 1, 1920	Jan. 5, 1921
Rubber-covered wire base, New York, cents per lb.	23.00	18.00	Galvanized wire, ordinary, Pittsburgh, cents per lb.	3.95 to 4.45	3.95
Weatherproof wire base, New York, cents per lb.	22.00	19.00 to 20.00	Car window glass (single strength), first three brackets, A quality, New York, discount*.	77%	77%
Standard Bessemer Steel Rails, per gross ton.	45.00 to 55.00	45.00 to 51.00	Car window glass (single strength), first three brackets, B quality, New York, discount.	77%	77%
Standard open hearth rails, per gross ton.	47.00 to 57.00	47.00 to 53.00	Car window glass (double strength, all sizes, A quality), New York, discount.	79%	79%
T-rail, high (Shanghai), per gross ton, f.o.b. mill.	73.00	73.00	Waste, wool (according to grade), cents per lb.	15 to 21	13 to 19
Rails, girder (grooved), per gross ton, f.o.b. mill.	88.00	88.00	Waste cotton (100 lb. bale), cents per lb.	15 to 17½	11 to 15
Wire nails, Pittsburgh, cents per lb.	3.25 to 4.25	3.25	Asphalt, hot (150 tons minimum), per ton delivered.	40.00	40.00
Railroad spikes, drive, Pittsburgh base, cents per lb.	3.25 to 4.25	3.65 to 4.00	Asphalt, cold (150 tons minimum, pkgs. weighed in), per ton.	36.00	36.00
Tie plates (flat type), cents per lb.	3.00 to 3.75	2.75	Asphalt, filler, per ton.	36.00	36.00
Tie plates (brace type), cents per lb.	3.00 to 3.75	2.75	Cement, New York, per bbl.	4.90	4.50
Tie rods, Pittsburgh base, cents per lb.	6.00 to 6.50	6.00	Linseed oil (raw, 5 bbl. lots), New York, per gal.	.85	.83
Fish plates, cents per lb.	3.25 to 4.25	2.75	Linseed oil (boiled, 5 bbl. lots), New York, per gal.	.87	.85
Angle bars, cents per lb.	3.25 to 4.25	2.75	White lead (100 lb. keg), New York, cents per lb.	14.25	14.00
Rail bolts and nuts, Pittsburgh base, cents per lb.	6.00 to 7.00	5.50	Turpentine (bbl. lots), New York, per gal.	.95	.75
Steel bars, Pittsburgh, cents per lb.	2.35 to 3.00	2.35			
Sheet iron, black (24 gage), Pittsburgh, cents per lb.	4.20 to 5.35	4.20			
Sheet iron, galvanized (24 gage), Pittsburgh, cents per lb.	5.25 to 6.55	5.25			
Galvanized barbed wire, Pittsburgh, cents per lb.	4.10 to 4.85	4.10			

\* These prices are f.o.b. works, with boxing charges extra.



on 100 steel passenger cars for the Frankford Elevated Railway, which, it is expected, will be operated under lease by the Philadelphia Rapid Transit Company. Bids will be opened on Jan. 25.

The City of New York has ordered forty-three more safety cars from the J. G. Brill Company. This order follows one placed with the same company about the middle of October for twenty-eight safety cars, at a cost of \$7,050 each, on behalf of the Staten Island Midland Railway, which resumed operation under the city on Dec. 1. The new cars will be apportioned on the Staten Island and Williamsburg Bridge lines.

The Detroit (Mich.) Municipal Railway has received the first of the 25 safety cars ordered by the Detroit street railway commission for use on the new municipal lines. The remaining cars are expected to arrive at the rate of two each day. The cars will be stored temporarily at the upper end of Montclair Ave., until the first car barn is completed. Plans for the latter are under way but actual construction has not started. The Peter Witt type of double-truck car for use on the heavy traffic streets has been discussed and it is probable that an order for one of these cars will be placed shortly. A car of the Peter Witt type capable of carrying 56 passengers is on exhibition in Cadillac Square.

### Track and Roadway

Columbus, Delaware & Marion Electric Company, Columbus, Ohio.—Upon the application of the Columbus, Delaware & Marion Electric Company, Judge E. B. Kinkead of the local courts has granted a temporary restraining order against the Ohio Highway Commission from proceeding with the improvement of North High Street, a distance of about two miles. The complainant alleged that the estimate on the improvement is \$380,490, which is excessive and that its share of the improvement will cost \$127,000. It is further alleged that this is the wrong time for the award of the contract. It is also claimed that under its franchise the traction company has the right to remove its tracks to the center of the street within a reasonable time and that the state highway commission, by letting the road contract is endeavoring to rush the company in this work.

### Power Houses, Shops and Buildings

Monongahela Valley Traction Company, Morgantown, W. Va.—The Monongahela Valley Traction Company has ordered 25 miles of steel towers from the Blaw-Knox Company. The shop work is now under way on these towers.

Milwaukee Electric Railway & Light Company, Milwaukee, Wis.—The first

generating unit of the Lakeside plant of the Milwaukee Electric Railway & Light Company is in service. This new plant, the ultimate capacity of which is 200,000 kw., will give the Milwaukee district ample electric power supply.

Bamberger Electric Railroad, Salt Lake City, Utah.—Since the necessary steps have been taken to give Kaysville a depot on the Bamberger Electric Railroad the Public Utilities Commission of Utah has dismissed the petition of that city for an order directing the railroad company to construct the depot.

Jamestown (N. Y.) Street Railway.—The office building and part of the West Third Street carhouse of the Jamestown Street Railway was destroyed by fire on Dec. 26. A. N. Broadhead, president of the company, estimated the loss at \$50,000. The structure was a frame building erected in 1886. All of the company's tickets and records were in steel vaults and were saved.

### Trade Notes

The Brenner Manufacturing Company, 19 Gray Avenue, Utica, N. Y., manufacturer of air compressors, etc., has filed notice of increase of capital stock from \$250,000 to \$500,000.

The Tubular Woven Fabric Company, Pawtucket, R. I., will open a Pittsburgh office in charge of Gray Jones, formerly of the Cutler-Hammer Company. This is effective Jan. 1, 1921.

The American Insulating Machinery Company, Fairhill and Huntingdon Streets, Philadelphia, has filed notice of increase in capital stock from \$50,000 to \$200,000.

Electric Plant at Evans Bay, New Zealand.—The City Council of Wellington, New Zealand, contemplates a number of improvements, among which are the erection of an electric power station, tramway extensions, new car sheds and cars, to cost about £664,887.

The John E. Thropp's Sons, Lewis Street, Trenton, N. J., has acquired property in the vicinity of Fair Street for future extensions. The company manufactures mechanical stokers, etc.

The Louisville Electrical Manufacturing Company, 660 South Second Street, Louisville, Ky., is planning to erect a new plant, 60 ft. x 150 ft., for the manufacture of portable electric tools.

The Automatic Reclosing Circuit Breaker Company, Columbus, Ohio, announces the appointment of the W. D. Hammer Company, 508 Traction Terminal Building, Indianapolis, Ind., as its representative in the State of Indiana and western Kentucky.

The American Blower Company, 141 Broadway, New York City, manufacturer of mechanical draft equipment, fans, motors, etc., has increased its capital stock from \$1,500,000 to \$3,750,000. The company has plants at Green Island, N. Y., and Detroit, Mich.

The Line Material Company, South Milwaukee, Wis., through Vice-President L. E. Hendee, announces that the recent fire which wiped out the office did not halt the company's operations. All vital records were found intact in the safes, while the operating plant was undamaged.

The Power Plant Engineering Company, Seattle, Wash., has been incorporated and offices have been established in the L. C. Smith Building. The company is composed of engineers experienced in power-plant installation and operation, and it is in a position to contract for, design and install all power equipment. It also has the exclusive agency for the Santmyer powdered coal equipment. W. J. Santmyer is president, R. S. Whaley is vice-president, and A. E. MacInnis is secretary-treasurer.

Garnet Blocksidge, railway department, Philadelphia office of the Westinghouse Electric & Manufacturing Company, has resigned to become sales engineer, London office of the Westinghouse International Company. After graduating from the Virginia Polytechnic Institute in 1906, Mr. Blocksidge joined the Westinghouse Electric & Manufacturing Company as a graduate student, and remained at East Pittsburgh until 1912, when he was transferred to the Baltimore office as salesman in the railway and light department.

The Black & Decker Manufacturing Company, Towson Heights, Md., has established a new branch office at 303 Penn Avenue, Pittsburgh, Pa., in charge of W. D. Royer, formerly sales engineer of the Robbins Electric Company, Pittsburgh. This office will be the headquarters for the Black & Decker sales force in western New York, western Pennsylvania and the northwestern part of West Virginia. A service station has also been established at the same address.

### New Advertising Literature

Car Seats.—The J. G. Brill Company, Philadelphia, Pa., has issued bulletin No. 247, describing and illustrating "Brill Non-Reversible Seats."

Welding.—Metal & Thermit Corporation, 120 Broadway, New York City, has issued pamphlet No. 39, an illustrated booklet on "Thermit Insert Rail Weld."

Fire Extinguisher.—Foamite Fire-foam Company, 200 Fifth Avenue, New York City, has issued a pamphlet describing its new "All Weather," Model A, 2½-gal., non-freezing fire extinguisher.

Water Heaters.—Ross Heater & Manufacturing Company, Inc., Buffalo, N. Y., manufacturer of heaters for boiler feed, etc., has issued catalog F, a thirty-nine-page booklet illustrating and describing various types of heaters, condensers, expansion joints, coolers and airjector pumps.