

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

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Number 1

Central Association Boat Trip a Harbinger of Peace

ONE of the most homogeneous organizations in the electric railway industry is the Central Electric Railway Association. The railways operating in the territory of this association are in a position to profit to a rather unusual degree through co-operation, due to the fact that their business is in considerable part made up of interurban traffic. Their lines radiate and interconnect in a remarkable manner, and the interurban roads themselves and those which do city business can greatly augment their own income by assisting in promoting the prosperity of their neighbors. The territory is compact geographically and is closely knit together by interurban and steam lines. Moreover a spirit of good fellowship permeates the territory which, combined with the ease of getting about, conduces to making the meetings of the association very attractive to the members. This applies particularly to the summer cruises, which are resumed this week after a wartime lapse.

The cruise this year lasted from Monday to Thursday inclusive and short stops were made at points of great interest. There was sufficient of a program to form a skeleton for the meeting, and the papers and discussions were well worth while. However, the principal feature was the opportunity furnished for developing personal acquaintance, which is greatly needed in these trying times if the status of the electric railway is to become what it should.

Other associations may well envy the Central its wonderful summer outings and may properly hold it responsible for results commensurate with its unusual facilities for getting together.

Standardizing Ships, Electric Cars and Other Things

“CAN the world be persuaded to buy ships as it buys automobiles? that is the question.” This extremely timely query is propounded editorially by a New York City daily in a recent number. The question was obviously prompted by the feat performed by the Emergency Fleet Corporation on the previous day in launching five ships of a combined tonnage of 39,000, all within a period of forty-eight minutes. The point made was that if the public will buy ships fabricated and assembled by the methods found applicable in war time, it will be possible to continue the operation of the Hog Island shipyard. Otherwise it may be necessary to scrap the equipment assembled there at so great a cost.

What is true in the shipbuilding field applies with modifications in the construction of electric cars. And, it is profitable to note, there was an analogy here in

the decision by the United States Housing Corporation to buy cars built according to the “standards” prepared for it by a war-time committee appointed by the Electric Railway War Board. The signing of the armistice put an end to the Housing Corporation’s plan, otherwise fifty cars of this type would have been ordered immediately. It is unfortunate that these cars could not have been completed, if only to determine their post-war marketability by actual sales.

The present acute shortage in electric railway funds is having its effect in the line of standardization. For example, many roads are buying safety cars to the manufacturers’ rather than their own specifications. They could well follow the same procedure in purchasing larger cars. It is quite true, however, that it is easier to use a standard small car than large ones because clearance difficulties and other limiting conditions do not enter into the calculation. Any road can utilize a small car, as far as ability to get it over the road goes, whereas each road seems to be hampered by “special conditions” with respect to the use of large cars. Even with this handicap, however, some of the lessons taught by the safety single-truck car development can be applied to their larger contemporaries.

There Is Growing Recognition of the Value of Good Service

IT IS REFRESHING and encouraging to read editorials such as have appeared in many of the metropolitan dailies recently on the traction situation. In all of the large cities there seems to be a wider realization than ever before of the fact that electric railway companies are not immune to the effects of ordinary commercial laws. Everyone knows that the cost of labor and materials has gone up, and that in other lines of business this has been met by an increase in the price of the commodity. This raises the natural inquiry, why should the same course not be followed with street car fares?

It is still more satisfactory to find that there is growing understanding of the importance to a city of good service. This, for example, was the fundamental argument in a recent editorial in the *Minneapolis Journal*, reproduced in our issue of June 21.

The Minneapolis editor insists that service is paramount in any settlement of traction affairs—“more important to the individual car rider, and more important to a growing city which cannot permit its development to be stunted by lack of transportation facilities.” He contends that if Minneapolis had a 6-cent service, with plenty of cars running, with extensions built where necessary, while St. Paul struggled with a 5-cent service that meant cars crowded and infrequent and no extensions, the people of the latter city would not be long

in recognizing that their 5-cent bargain is no longer a good one. The editorial is an answer to the argument that the proposed service-at-cost franchise in Minneapolis will mean a 6-cent or 7-cent fare for Minneapolis while St. Paul, with a franchise guaranteeing a 5-cent fare and eighteen years to run, will have an unfair advantage. Both cities are served by the Twin City Rapid Transit Company which has expressed its approval of the pending ordinance.

The people as a whole also, we believe, are coming more and more to realize the value of good service. This was one of the strongest arguments which won over a majority of the Chicago city council to support a service-at-cost franchise some months ago. They recognized an increased fare as unavoidable and their principal differences were on a proper distribution of transportation improvements. If the companies had been able and willing to guarantee rapid transit facilities to every ward the popular support of the plan would have been more generous. It was really a question of making an enlarged elevated and subway system self-supporting on a reasonable rate of fare.

We look for interesting developments in the Minneapolis-St. Paul controversy. We believe the near future will show the wisdom of the Minneapolis *Journal's* argument. Local transportation is a community problem in which the interest of the public is even greater than that of the owners of the railway utility and the public interest can be best advanced by securing adequate service. A 5-cent fare was never expected to bear the burdens of present-day costs, and those communities which insist on carrying out such a contract are biting off their nose to spite their face. Five-cent service is better than no service at all, but the financial condition of many railway properties is approaching a crisis where 5-cent service will probably mean no service or very poor service. A right-thinking public will pay the price of good service before it is too late.

Electric Railway Transportation in the Orient

ACCORDING to the picture sketched by Shiro Sano, whose article on electric railway conditions in Japan is printed in the present issue, this utility is suffering in the Far East from difficulties of the same sort as are being encountered in the United States. While conditions in the two countries are radically different in many ways, it is at least of interest to compare them and to draw such conclusions as apply in our own country. The fact that the electric railways of Japan are compelled to rely for support to an increasing extent upon another utility indicates that there is an unfortunate relation of expenses to fares which must be corrected by means of better and more economical service and by increase in fares as well. Judged by our standards wages in Japan have been very low but they are increasing at a rapid rate, greatly aggravating this condition.

The fare-collection scheme used in Tokyo appears cumbersome and as not tending to high schedule speed, but presumably time saving is not considered so essential there as in an American city of the same size. Again the wide use of the double trolley in Japan strikes us as peculiar. While this scheme has had a slight use in the United States it involves very great complication in overhead construction, and the improvements in the track return circuit have largely removed

the argument in its favor. Municipal ownership and operation is having an extensive trial in several Japanese cities. In time there should be valuable data available as to the success of these experiments.

Look About You Now and Then

SOMETIMES we marvel that a man in the station in life of a public utility manager can allow himself to be so far behind the times in his own business. It is lamented that acknowledgment of this condition in our industry is now and then forced upon us by elementary questions about things which we thought were fully known to all railway operators—things really vital from the standpoint of holding down one's job, let alone efficiency of management. For example, can you imagine a manager in a good sized town not knowing even the rudiments of the safety car idea? But it is a fact. Would that we had the power to direct such managers to spend \$50 to proceed to the nearest city operating safety cars, there to learn by sight what they have failed to absorb from volumes of printed matter and hours of discussion. This is a knock, but it is more than that. There can be no excuse for such neglect in keeping abreast of the industry on the part of a responsible management, and the knock is therefore a helpful hint to the delinquents to look about them now and then.

The Forgotten Man in the Railway Tangle

SOME forty years ago a prominent professor of political economy at Yale coined the phrase "forgotten man" to describe the individual in the community who is often entirely overlooked in a great many civic and other government betterment programs. For instance, A considers that it would be a fine thing for B if the municipality or state should make a grant of money to him or otherwise give preference to him over his fellow citizens. The plan is enthusiastically approved by B, and both arrange to carry out the project. The "forgotten man" is C, the average citizen, who is not consulted in the matter and whose only connection with the affair is to pay the cost of carrying out the idea so generously conceived by A and so gratefully accepted by B.

There is a forgotten man, or several representatives of that genus, in pretty nearly every traction dispute on fares. When an increased fare is proposed to cover the increased cost of operation, the municipal authorities are usually very conspicuous in their denunciation of the plan and give out lengthy statements on the hardship which will result to the populace, and indignant citizens write to the daily press in opposition or head delegations to protest in municipal councils. Undoubtedly, both the authorities and the citizens (A and B in this case) are right in their contention that low fares on the local railway system are desirable as a means of community development. The trouble is that they forget entirely about C, at whose expense they seem to expect that this improvement will be maintained.

A striking illustration of this situation has been given in New York City during the past week. The New York Railways, after trying for a considerable time to accomplish the impossible task of making a profit by carrying passengers at less than cost, passed into the hands of a receiver, who finds himself in a position where he cannot pay the rental of all of the

leased lines of the company. He has, therefore, announced that he will be obliged to turn back the lines on Eighth Avenue and Ninth Avenue to their owners. This would mean, of course, that transfers would no longer be given between these lines and those of the New York Railways system of which they formerly constituted a part, and consequently that some of the car-fares in New York City will indirectly be raised. This proposed action of the receiver is being vigorously protested by the city. "What?" they say, in effect, "Charge an additional fare at the points of intersection at which formerly transfers were given without charge? This is more than a hardship, it is an outrage!" If the present transfer law, which, by the way, was passed long after the companies received their charter to charge 5 cents, does not require transfers between two independent lines, these protestors seem to think it should be amended to overcome this defect.

Now, all this is very well, but who is to pay the deficit which will be caused if transfers are continued? Surely, not the New York Railways. The company is insolvent now. Nor is there any reason why the owners of the Eighth or Ninth Avenue lines should bear the expense. They are looking forward to beginning independent operation under not very cheerful circumstances and have already seen the market value of their securities suffer a considerable fall because of the financial conditions now surrounding electric railway operation. The community has certainly no right, legal or otherwise, to ask the railway companies or any of them to make up deficits from operation. If New York City or its citizens want a service, they are rich enough to pay for it and they ought to do so. This is the only conclusion which can be drawn from the Eighth and Ninth Avenue case.

A Constructive Suggestion on the Use of Standards

A CONSTRUCTIVE suggestion to assist in the more general use of standards is made in a letter contributed to this issue by Martin Schreiber, chief engineer Public Service Railway, and a member of both the American Electric Railway Engineering Standards Committee and of the recently formed American Engineering Standards Committee.

In the past there has been a great deal of complaint that while the idea of standards was generally accepted, very few railway companies actually employed them. Each company accepted the desirability of standards in the abstract, but when it came to purchasing equipment always seemed to find some reason why a modification, more or less important, in the standards should be made to suit that company's local conditions. The association obviously has no authority to order the use of any particular standard, and there the matter has stood.

The experience during the war in reducing the number of patterns in other lines of manufacture, however, has been a stimulus toward similar progress with electric railways. The suggestion of Mr. Schreiber is that the manufacturers agree to refer to the association any departures from the standards which they are asked to make, and that the appropriate committee of the association should then endeavor to find out the reason for the change before the order is actually executed. Such a plan involves no sacrifice of personal liberty.

If the change is a good one the standards committee of the association wants to know about it. If it is not necessary, the railway company presumably is equally anxious to be informed. The industry as a whole has an interest in this matter because reductions in cost of production will follow the greater use of standards, and thus every purchaser will be benefited.

If the individual customer, after this examination, insists upon departing from standards and thus necessitating, perhaps, the preparation of new patterns or the cutting of new rolls, he is entirely within his legal rights. But the plan suggested, we think, would head off a great many unnecessary changes, and this would eventually mean that the price for the standard designs or rail sections would be less than that for the non-standard. As soon as this condition began to prevail, there would be a still further tendency toward the use of standards. We hope some steps can be made in the direction pointed out by Mr. Schreiber.

Start a Third Rail Standardization Drive

AN ARTICLE in the June 14 issue of this paper described some of the various types of third rail installations which are in use for electric railway operation. One cannot fail to be impressed by the large number of the different types, and the need for standardization. Climatic conditions and the necessity for protecting the third rail to prevent accidental contact appear to be the chief reasons for the development of most of the types. The question of cost is an important consideration and in a good many cases has proved misleading. It is a comparatively easy matter to obtain the initial cost as so much per mile of single or double track, but this does not form a basis for ascertaining what amount will be involved for modifications, renewals and disturbances necessary to existing permanent way where electrification is undertaken to lines already existing. A further and probably the most important item is the cost of maintenance, which must be ascertained if a true estimate for comparison is to be made. Electric railways have practically standardized the equipment for their power houses, plants, switchboards, substations, cables, etc. These can be ordered to fulfill the requirements from the various manufacturers, but as soon as an attempt is made to equip the permanent way with an electrical conductor a wide divergence of opinion is found with no attempt at standardization.

To the practical man familiar with the prevailing conditions there appears to be no difficulty in starting standardization. In such a consideration the weight, section, location of the conductor and method of contact should be the first consideration. The insulation, supports, sectionalizing and bonding would follow. The many points such as anchoring, expansion joints, clearances, protection, etc., could be taken up, but would of necessity have to be adapted to the various locations and conditions to be contended with.

A standard clearance for third rail installations was adopted in 1916, by committees of the American Railway Association, the American Railway Engineering Association, and the American Electric Railway Association. There is still much work that could be done along this line. Such an investigation made by our various electric railway association committees appears essential, if any advance is to be made in this matter.

Practices and Tendencies in Japanese Electric Railway Transportation

Both Double and Single Trolley Are Used,
Track Gages Are Far From Standard and
People Seem to Lean Toward Public Ownership

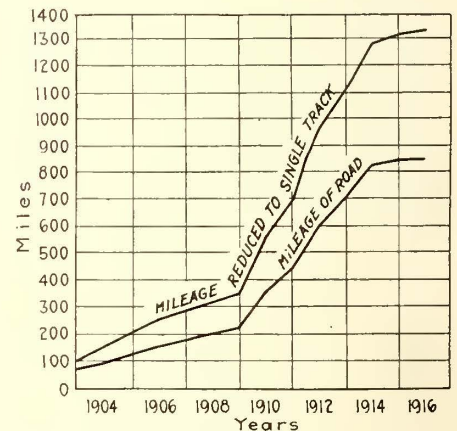
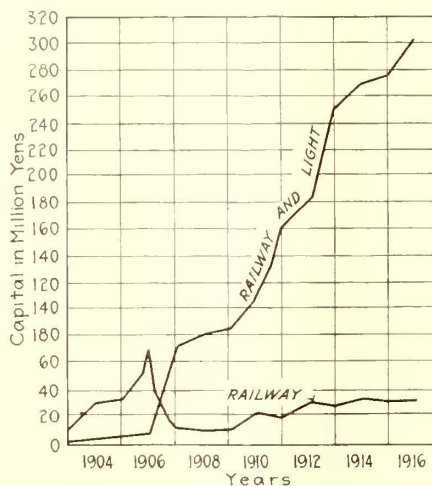
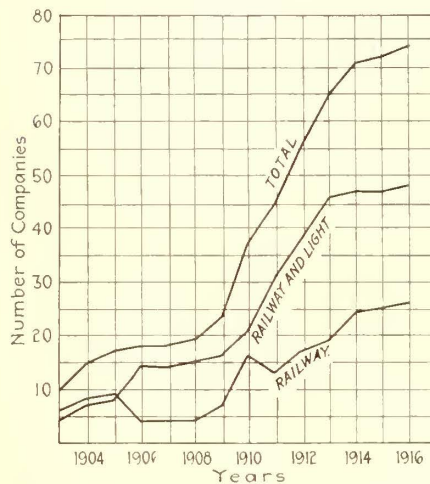
By SHIRO SANO

Electrical Engineer, Tokyo, Japan

IN 1890 the Tokyo Electric Company imported two electric cars from the United States for the purpose of demonstrating the advantages of electric traction. These cars were purchased from the Sprague Electric Railway & Motor Company. They were used on the grounds of the Third National Exposition, held in Tokyo that year, and created a favorable impression. It was, however, five years before the experiment produced results, although in 1893 the Kyoto Electric Railway Company was organized with a capital of \$150,000 (300,-

bined railway and light companies is \$152,000,000 of which \$132,200,000 has been paid in. The annual income from railway service totals \$15,500,000 not including the income from light and power sold by the railway companies. The annual car mileage last reported was 117,120,000, the corresponding number of passengers carried being 704,470,000.

Although most electric railways in Japan are owned by private companies, some belong to the municipalities and still others to the central government. In the large



PROGRESS OF ELECTRIC RAILWAYS IN JAPAN. LEFT, COMPANIES; CENTER, CAPITALIZATION; RIGHT, MILEAGE

000 yen). A 5-mile track in Kyoto was constructed and operation began on Feb. 1, 1895.

In Kyoto one 25-hp. motor was used on each car, the car bodies as well as the motors were built in Japan and power was supplied from a water-power plant. As an electric car was looked upon as a serious accident hazard a special runner with a lantern in hand was sent ahead to herald its approach.

The Kyoto Railway was a success from the start, and led to the construction of many other lines. To-day, according to the latest returns of the Department of Communications, there are ninety electric railway companies in Japan, including sixteen which have lines under construction. The total power consumption of the railways is not known exactly, as more than one-half sell power for lighting and other purposes. The power plant capacity is, however, 164,624 kw. The line mileage is 890, the length in single-track equivalent being 1363 miles.

Of the 4492 cars in use 4077 are motor cars and 415 are trailers. The aggregate capital for electric railways alone amounts to \$15,700,000 of which \$14,500,000 has been paid in. The total capital for com-

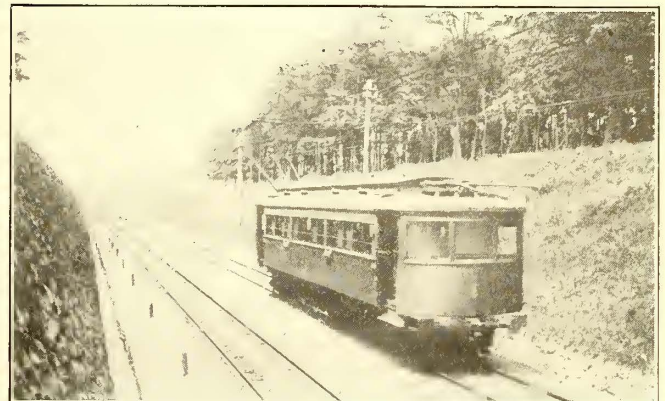
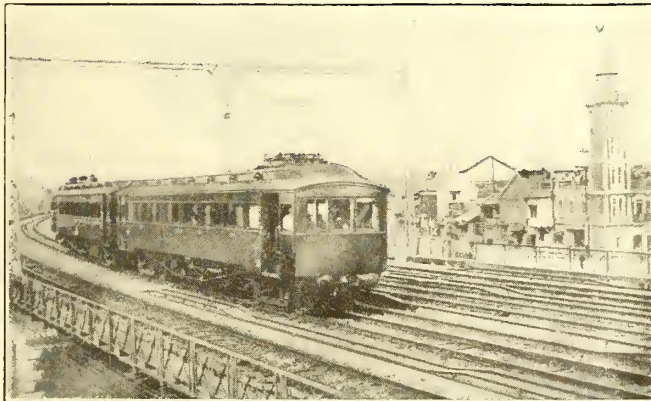
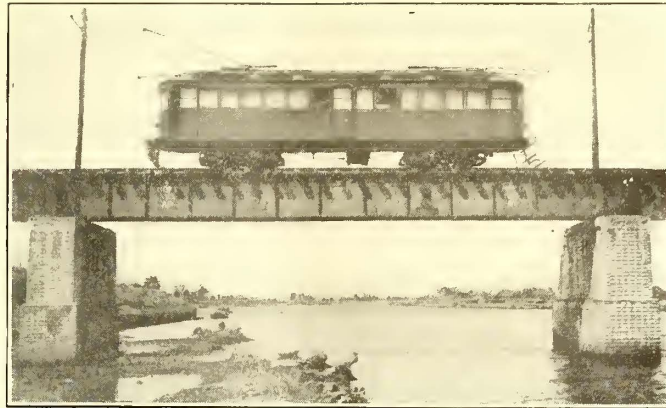
panies the tendency seems to be in favor of municipal ownership. Of the six largest cities in Japan Tokyo, Osaka, Kyoto and Kobe have municipally owned railways while those in Yokohama and Nagoya are under private ownership.

Electrification of steam railroads has made very slow progress in Japan but is promising for the future. The passenger steam railway operating in the outskirts of Tokyo has been electrified, but freight is still hauled by steam locomotives. The passenger traffic between Tokyo and Yokohama is now mainly done by electric power, where steam prevailed until a few years ago. The long tunnel at Usui has been completely electrified, passenger as well as freight trains being hauled by powerful electric locomotives. This, however, is the only place where real electrification work has been done.

The development of the electric railway industry in Japan can best be seen with the aid of the charts reproduced herewith. From these it is evident that railway enterprises have grown marvellously since 1907, due principally to the successful conclusion of the Russo-Japanese war and the general prosperity which succeeded it. The charts show also that the railway com-

panies have increasingly been engaged in lighting and power business outside their transportation activities. This may be explained by the fact that the net earning capacity of companies engaged in lighting and power supply is much greater than that of those engaged simply in transportation work. This point is taken up more fully in the following paragraphs.

As a business proposition the electric railway in Japan is not very profitable. The latest returns available show that the mean dividend for companies doing a straight electric railway business is but 5.6 per cent per annum, this being the average for twenty-six companies. The corresponding figure for companies doing a combined railway, light and power business is 8 per cent, a mean value for forty-eight companies. The return to 442 companies doing a light and power business is 9.35 per cent. This explains the tendency for railway concerns to take up lighting business as a side issue, particularly as a dividend of 5.6 per cent is not attractive to Japanese investors where average good concerns in other lines pay 10 per cent or more. The inter-



AT TOP, SUBURBAN CAR NEAR TOKYO; DOUBLE TROLLEY DOWN SINGLE TROLLEY UP; NOTE BRIDGE CONSTRUCTION ALSO. AT LEFT, EXAMPLE OF JAPANESE ELECTRIFICATION—INTERURBAN LINE BETWEEN TOKYO AND YOKOHAMA. AT RIGHT, ELECTRIC CAR OPERATING IN THE OUTSKIRTS OF TOKYO

est paid at bank rates is 6 per cent to 7 per cent on fixed deposits in ordinary times, although at present the rate is lower due to extraordinary inflation of currency incident to the war and the holders of national securities receive 6 per cent on paid-in value.

DOUBLE TROLLEY IS FAVORED IN JAPAN

In the early development of electric railways in Japan there was a wide difference in opinion as to the system to be adopted. The dispute concentrated on the relative merits of single-trolley and double-trolley contact systems. The general policy of the government at present is to permit the use of single trolley on suburban railways only, the double trolley being standard for street railways. Of six large cities, Tokyo, Yokohama and Kobe use double trolley and Osaka, Kyoto and Nagoya use single trolley.

Although the modern tendency is to adopt the standard track gage of 4 ft. 8½ in. there is a great variety

in practice as to gage. The principal railway gages can be grouped into three classes, 4 ft. 8½ in., 4 ft. 6 in. and 3 ft. 6 in. Thirty-nine of the present seventy-three electric railways in the country have the 3-ft. 6-in. gage, twenty-three have standard gage, ten have 4-ft. 6-in. gage, the remainder being divided between 2 ft. 6 in. and 4 ft. 8 in.

The prevalence of the 3-ft. 6-in. gage is probably due to the fact that this is the standard for steam railroads. The 4-ft. 6-in. gage owes its existence to local conditions. For example, in one case an old horse-drawn tramway had this obscure gage when it changed over its motive power to electricity. To avoid interruption to service the old gage was adhered to.

There are two principal plans for charging for transportation in Japan, one in which the fare has some relation to mileage and the other in which a uniform charge is made irrespective of the length of ride. For obvious reasons the suburban and interurban railways use some kind of a mileage plan exclusively, while the tendency of the street railways is to use uni-

form rates. Some large cities, however, still adhere to the old system of divisional charges, in which the city is divided into a number of sections and a fare is charged in each. In Tokyo, Osaka and Kobe the uniform rate is charged, while in Kyoto, Nagoya and Yokohama a division rate is the rule. In addition there are several kinds of special charges, such as those involved in the use of commutation tickets, season tickets, discounts for workingmen and students, discounts for school children, discounts for soldiers, etc.

As an example of the special charges the practice of the Tokyo Street Railway will be given in full. These will be given in Japanese money, the yen having a value of about 50 cents in American money and the sen being worth one-hundredth of the yen. The single ticket is 5 sen plus a transit tax of 1 sen, making a total of 6 sen. Return tickets are sold for 9 sen plus 1 sen tax, a total of 10 sen. Soldiers can buy return tickets at 7 sen. A

costs yen 0.95, a thirty-trip ticket yen 1.40 and a fifty-trip ticket yen 2.50.

Boys and girls attending middle schools or lower schools, properly indentified by school authorities, are entitled to purchase a twenty-five-trip ticket, including duty, for yen 0.80, and a fifty-trip ticket for yen 1.55. Other students and workmen are entitled to ride on a single ticket, including tax, at 4 sen and a return ticket at 7 sen.

This low rate of fare applies only during certain periods as follows: March 1 to April 30, 5 to 6.30 a.m.; Oct. 1 to Nov. 15, 5 to 6.30 a.m.; Nov. 16 to Feb. 28, 5.30 to 7 a.m.; May 1 to Sept. 30, 4.30 to 6 a.m. As a practical matter all riders during these hours are considered as either workmen or students unless they specifically state that they are not.

Regarding the transit duty of 1 sen, it will be noted that this is paid every time a passenger rides except in the case of commutation tickets. This duty is not restricted to street railways but extends to all public vehicles in the empire.

Fare collection in Tokyo is done by means of tickets. A passenger on entering the car waits until the conductor comes to him to collect the fare. On paying this he receives a ticket along with a transfer ticket if he desires one. At the transfer station he returns the original

FORM OF TRANSFER USED ON CITY LINES IN TOKYO

ticket. On boarding the second car he asks for another transfer if he desires one, retaining his first transfer as a ticket and surrendering it at the next transfer station if he desires to transfer a second time. This is continued until he reaches his destination.

The date is printed on the transfer ticket and by means of a special punch having different figures the conductor punches the hour of transfer, to even half hours, the route number, the name of the transfer station and the destination.

School children taking advantage of the special discount are required to change cars at the transfer station specified on the ticket cover. Workingmen's and students' discounts apply only in the specified hours mentioned but there is no specification as to the time when the return trip must be taken. With a return ticket two passengers may ride at the same time, thus saving 1 sen of transit duty. Commutation tickets are sold both at the railway office and in the car and need not be used by the original buyer. There is no season ticket issued by the Tokyo Street Railway.

\$25 PER MONTH IS A HIGH WAGE IN JAPAN

Wages of motormen and conductors vary somewhat with location, but the recent scarcity of men in general has tended to raise the standard of wages and to even out the inequalities. At present a conductor or motorman in Tokyo and other large cities receives about 30

yen per month at the start, increasing up to about 50 yen as he acquires experience. In Tokyo a boy above eighteen years of age is eligible for work as conductor but twenty years is the lower age limit for motor. An apprentice conductor or motorman receives 50 yen per diem, and undergoes training for about fifty days before he is eligible to serve as a regular employee and to receive the 30-yen wage.

Of late it has been difficult to secure conductors or motormen since the great war created an abnormal demand for men of all classes, and high wages have been paid in other occupations. The present high wages are the result of this competition. The sum of \$15 per month for a young man of eighteen just out of his apprenticeship is a high wage, although the recent inflation of currency has boosted up the general prices of commodities.

On one electric railway an attempt has been made to employ women as conductors, and with excellent results. The proverbial modesty and kindness of Japanese girls are said to do much to promote harmonious relations between passengers and conductors. However, this is an experiment and it is very doubtful if the practice of employing women on cars will prevail.

TOKYO OWNS ITS STREET RAILWAY SYSTEM

The city railway systems in Tokyo may be considered typical on account of the importance of the city. Here there were at one time three separate street railway companies, but these were finally combined into one and bought by the municipality. The result has been that the technical details of the equipment are rather complicated, as the original companies used different standards of cars, rails, generator frequencies, etc. In the city, double trolley, with 500 volts direct current, is standard and the track gage is 4 ft. 6 in. Grooved girder, tee and step rails are used in different parts of the city.

In general two types of cars are used, the smaller being four-wheel cars of 7 tons weight with a maximum carrying capacity of forty passengers. The larger ones are double-truck cars weighing from 9½ to 10½ tons, with a capacity of sixty-six passengers. The city owns 919 of the small cars and 530 of the larger ones. In Tokyo there is a track mileage of 79.8, or 159.2 miles of single track, and the power is supplied by a private water-power company.

Besides the street railway owned by the city there is a government electric railway entering it and five more suburban electric railways terminate in the city. On these double trolley is used in the city, and the change is made to single trolley at the city line.

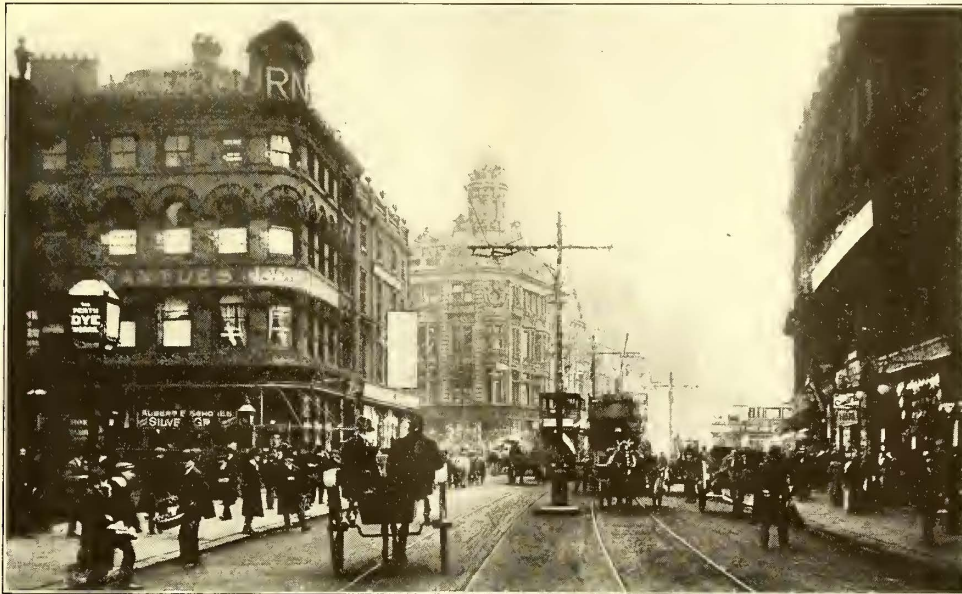
Although the electric railway industry in Japan has made marked advance in the past, much is left for the future. Electrification of steam railroads is sure to come on account of the abundance of water power still undeveloped and the increasing difficulty of securing coal. High-speed transit in the large cities is of no less importance, and there is still a field for interurban and suburban railways. In Tokyo, for instance, high-speed transit is an acute necessity, and a project is now under consideration for the construction of an elevated and subway system. High-speed electric railway operation between Tokyo and Osaka, a distance of 356 miles by the present steam route, is contemplated, and application has been made to the government for permission to put this project through.

The Zone Fare in Practice

LEEDS, PART I

A City that Has Grown Rapidly without Any Apartment House Development—Efforts Have Been Made to Cultivate Off-Peak Traffic—Trackless Trolley and Bus Service Also Conducted but Only as Feeders to the Trolley System—Comparative Bus and Trolley Statistics Are Presented

By WALTER JACKSON



BOAR LANE IN THE SHOPPING DISTRICT OF LEEDS

LEEEDS is the great clothing center of England, located 185 miles north of London and exactly half-way to Edinburgh. In addition to the clothing industry, which is predominant, Leeds possesses great engineering works, a big leather trade and an unusual diversity of other manufactures. Coal mines and quarries are also in the immediate vicinity. In general, the best residential district is on high ground in the north, while the manufacturing district is in the river valley to the south and southwest.

Since the rise of the manufacturing era, Leeds has grown apace, as is clear from the accompanying table of population and ratable value:

Population			
1811	62,534	1891	309,119
1861	207,149	1911	417,051
1871	259,212	1917	*459,260
Ratable Value			
1861	£504,885	1891	£1,279,213
1871	759,896	1901	1,741,373
1881	1,125,852	1917	2,258,486

* Enlarged city of 21,593 acres.

Leeds is also in close touch with a number of smaller cities and towns which reported the following populations in 1911: Guiseley (woolens) 4,925; Rawdon (woolens) 3,200; Yeadon (woolens) 7,442; Horsforth (residential) 9,145; Pudsey (weaving) 14,027; Rothwell (colliery and residential) 14,279; Shadwell (residential) 1,239, and Morley (woolens) 24,285. With these and some other communities, the population of the

Leeds district amounts to approximately 500,000. Furthermore, traffic from these sources is supplemented by business with the city of Bradford (350,000 population) 9½ miles distant.

LEEDS AND ITS BACK-TO-BACK HOUSES

At the risk of wearying the railway reader, it is desirable to present some further statistics on the subject of housing to emphasize the fact that there is no special connection between congestion and the zone-fare system. It will be recalled that although Glasgow has the cheapest and most frequent tramway service in the world, the prevailing type of dwelling is the four or five-story tenement; while in New York City, with the most extensive universal fare existent, the elevator apartment house almost invariably follows the opening of rapid transit lines—the change of the Brooklyn section from small houses to big being especially marked. So, then, in examining the housing conditions at Leeds, one is struck again by the tremendous influence of habit, for Leeds, true to English predilections, has few multi-family houses.

Out of 112,000 houses in the city of Leeds, 76,000 are of the odd back-to-back brick type that has become almost traditional in the Midlands and northern counties. Since the common back wall of each pair of houses thoroughly eliminates open areas at the rear, satisfactory ventilation and lighting are considered impossible. Hence the construction of such houses was forbidden by

the housing and town planning bill passed by Parliament in 1909.

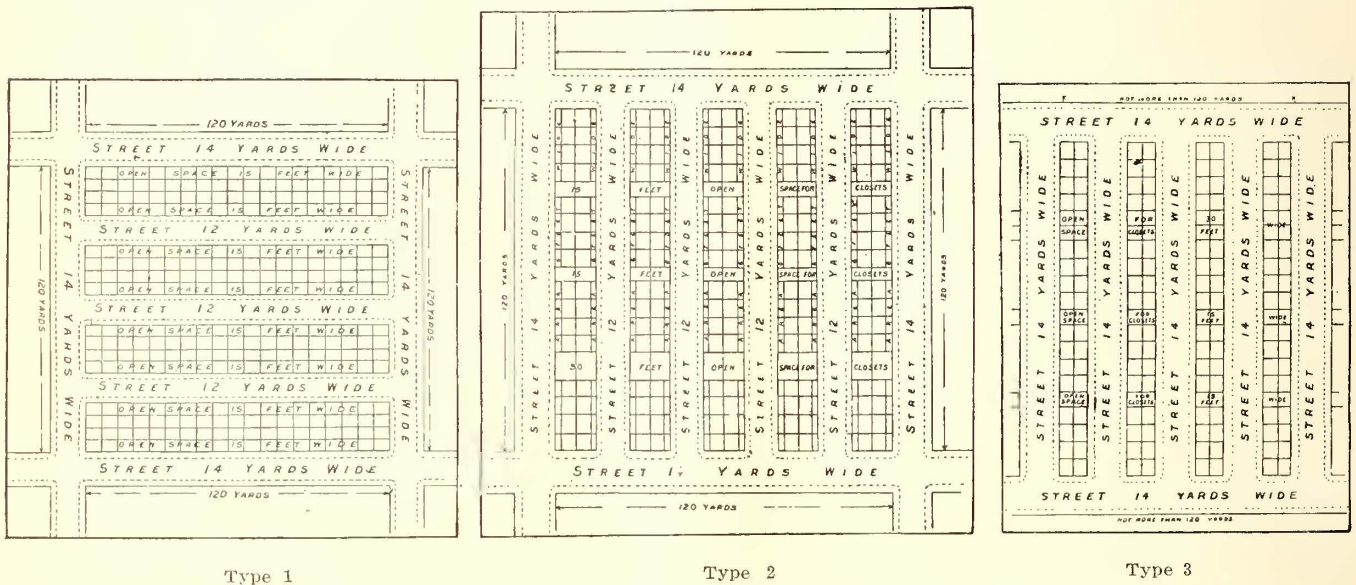
Although the back-to-back house would seem to be economical of ground space because of the absence of yards, the contrary is the case. In the first place, the houses are only two stories high and made for single families. In the second place, the blocks are extremely narrow, with the result that a most disproportionate area of land is taken up by paved streets—and these serve largely for laundries, playgrounds and other uses incident to the needs of the inhabitants. One curious consequence of having so many extremely short blocks is the ingenious variation of the names of thoroughfares. One often runs across a series in which every synonym for a passageway has been exhausted, thus: Hunslet street, avenue, terrace, road, mount, lane, crescent, grove, hill, parade, promenade, gate, etc.!

Although further construction of the back-to-back house is forbidden, some particulars of the several types

an attic bedroom of 140 sq.ft. One group of such houses showed a frontage of 21 ft., a combined depth of 30 ft. for two houses, a basement height of 6 ft. 3 in., a first-floor height of 9 ft., a second-floor height of 9 ft. 8 in. and a total overall height of 39 ft. 6 in. to the ridge.

In a statement concerning the housing and town planning bill of 1909, the Lord Mayor and Aldermen of Leeds protested against the summary prohibition of back-to-back houses. After quoting the extremely low death rate of Leeds in comparison with other British cities, despite Leeds being an active manufacturing district, the protest went on to say:

It is presumed that the object of the bill is to secure better dwellings for the working classes; but the view taken by the corporation is that should the clause prohibiting the erection of back-to-houses pass into law, the position of the working classes in Leeds, as far as housing is concerned, will be worse than it is today. The effect of the clause will be to make compulsory the building of large tenement dwellings, which, unless there is a great change in public opinion, will never be fully occupied, or in the alternative will compel the building of through houses



Block and Street Plans of Leeds Back-to-Back Houses

used in Leeds, illustrated herewith, may be given as a matter of record.

Type 1—The ideal houses are in groups of eight without any forecourt, but with an open space of 15 ft. at the end of each block, abutting upon streets not more than 360 ft. in length and 42 ft. wide. This means a space of 72 ft. between buildings made up of the street and forecourts. In these houses the basement has a coal place and pantry; the ground floor a kitchen and scullery, with bath, divided into 165 sq.ft. of kitchen and 66 sq.ft. of scullery; the second floor, one bedroom of 145 sq.ft. and another of 64 sq.ft.; the third floor, an attic of 185 sq.ft. The toilet facilities are located between each group of eight buildings.

Type 2—The second oldest houses are in groups of eight with forecourts or gardens 6 ft. deep and with an open space of 15 ft. at the end of each group, abutting upon streets not more than 360 ft. in length and 36 ft. wide. This means a space of 48 ft. between buildings. In these houses the basement has a coal place and pantry; the ground floor, 176 sq.ft. of kitchen besides the scullery; the second floor 176 sq.ft. of bedroom besides a bath and toilet; the third floor, an attic of 176 sq.ft. and another attic of 48 sq.ft.

Type 3—About one-half of all the back-to-back houses are, of the latest sort, in a continuous row with forecourts or gardens of at least 15 ft. in depth, abutting upon streets not more than 360 ft. in length and 36 ft. wide. This means a space of 66 ft. between buildings. The basement has a wash cellar in addition to the coal and larder sections; and the ground floor a living room of 186 sq.ft., a scullery of 66 sq.ft. and a bath; the second floor, one bedroom of 162 sq.ft. and another of 64 sq.ft.; the third floor,

only, which will mean occupation by two or more families, that being the only way in which the people will be able to pay the necessary rent.

The working classes in the city have a decided aversion to tenement houses, which are the only alternative to back-to-back houses (on the assumption that each family is to occupy a separate dwelling), for it has been found in working-class districts the houses are in many cases occupied by two or more families, a state of things which is conducive neither to morality or public health.

It is obvious enough from the foregoing that apartment-house life is not palatable to the Englishman despite its possibilities in reducing work for the housewife and other conveniences like central heating.

In earlier days the efforts of the Leeds municipality were concentrated on the elimination of slum areas (£775,928 for clearance work alone) and the widening of streets in the business section. The capital expenditures for street improvements had run up to £2,500,000 by 1917. In late times the purchase of land for housing projects has been taken up; by 1917 the city had put up fifty-one houses. In 1918, however, war conditions made it impossible to put up more than five. The need for new buildings is emphasized by the fact that the number of vacant houses dropped from 7144 in 1911 to 462 in 1917. Of course, many of these houses are such in name only.

Within the present city limits Leeds has already acquired for housing development, on the basis of ten to twelve houses to the acre, the following sites: Staningley Road, 53½ acres; Hawkesworth, 70 acres, and Cross Gates, 83½ acres. The real garden city development, however, would be on the south side of the River Aire at Middleton, where there is room on 450 acres for more than 5,000 houses and gardens on a plateau about 500 ft. high. The City of Leeds already owns in this neighborhood a public park of 350 acres, but the housing development is dependent upon Parliamentary sanction to permit the extension of the city boundaries

travel is coming later on account of the shorter work-day. Engineers now start at 7:30 instead of 6 a. m. and the mills are also expected to make 7 a. m. their opening hour. Outdoor workers begin at 7 a. m., many factories at 7:30 to 8 a. m., and most offices and stores at 9 a. m. These changes are going to sharpen the morning peak, but this disadvantage may be offset by eliminating many of the less-than-cost workmen's cars, which must be boarded before 7:45 a. m. to get the half-rate fare.

Besides making frequent traffic checks to determine the influence of these important changes, the Leeds



Type 1



Type 2

to include the areas referred to. In connection with the Middleton development J. B. Hamilton, general manager Leeds City Tramway, is already planning a right-of-way service that will enable workmen in Middleton to travel 3 miles to or from work in twelve minutes or less. This will give most of the residents a clear half hour for lunch. In this way, the line will get a better load factor, and the patrons of the line will get more pleasure out of their home life. The first cars on the Leeds City Tramways are out at 4:30 a. m., and the last cars leave the center



Type 3

FROM THE OLD TO THE NEW WITH LEEDS FAMOUS BACK-TO-BACK HOUSES

of the city at 11:30 p.m. This is half an hour earlier than before the coal stringency, which led to a cut of 15 per cent of the mileage of some lines. Leeds, however, developed so many munitions factories that the actual total mileage was practically unchanged. The traffic characteristics graph, such as that given on page 12 for the Headingley route on Oct. 21, 1918, shows the first peak between 5 and 6 a.m. outbound and from 7 to 8 a.m. inbound, between 12:30 and 2:30 p.m. both ways, between 5 and 6 p.m. outbound, between 7 and 8 p.m. inbound and again between 7:15 and 8:30 p.m. outbound.

Roughly, there are three peaks, morning, noon and night. As in other British cities, the early workmen's

tramways management has taken up the subject of staggering the hours of work. The employers are agreeable enough, but it is harder to convince the employees. Many of the latter live so close to their work that tramway comfort means little to them, and they do not care to disturb the hours of opening and closing unless, perchance, they do the disturbing themselves! In general, all routes are continuous through the center of the city wherever possible. This is shown in detail in Table I on page 10, in which the through routes are bracketed.

One of the first points to be observed from this table is the sizable length of the routes, even when considered from the through-routing basis. This shows that there is ample open ground accessible, although for topographical and industrial reasons the development has not been uniform.

A second point to be observed is the splitting up the through services where traffic on opposite sides of the center is uneven, such as the division of the Upper Wortley service among Killingbeck, Halton and Seacroft, or again supplementing of the Harehills Road service from Haddon Place by cars from Beeston. Through this division and overlapping of services, the actual headways available at the more important traffic

gathering points are better than the tabulation indicates.

It is fully realized that the zone fare compels short headways, for otherwise the low fare alone would not attract so great a proportion of short riders. There is food for reflection in the fact that one of the first alterations made in the service by Mr. Hamilton when he came to Leeds in 1902 was to substitute a five-minute service with single cars for a ten-minute service with trailers, the response being an immediate jump in short-haul traffic. Nor does the operation of the zone fare interfere with the economical use of car mileage as obtained through turnbacks. For example, on the 13.62-mile Roundhay Guiseley line, the service to the first turnback, Haddon Place, 2 miles out, is two and one-half minutes, and to Horsforth, 6 miles out, five minutes, leaving a ten-minute service in the four-mile open country run to Guiseley.

As shown on the route and fare map, the central gathering places for the converging routes are near the Town Hall and Briggate (Street). The great loading point is on Briggate, where the cars arrive about every thirty seconds during the rush hours. Here, the open or sidewalk queue system has been superseded by something more effective, owing to the fortunate circumstance that Briggate is a reasonably wide street. It has been found feasible, since the spring of 1918, to use railed passage ways divided and marked for the various routes. Outgoing cars refuse to accept passengers at certain discharge points in the congested district, and prospective passengers make use of the stockades at all times of the day. Such means have proved most effective in avoiding unnecessary and unfair crowding. The standard car seats twenty-four below and thirty-six above. All passenger interchange, except at heavy loading points, is on the rear platform only.

The schedule speed for the system as a whole is 7.72 m.p.h. with free running speeds of 16 m.p.h. in the outer areas. Prior to the coal-saving measures, stops



As commercial manager of the City of Leeds, JOHN BAILLIE HAMILTON ("JB") holds an unusual position, but one similar in several ways to that of city manager, which has made considerable headway wherever American municipalities try to keep business principles and political jobbery apart. Mr. Hamilton has been general manager of the Leeds City Tramways since 1902, coming direct from the position of chief assistant at

Glasgow except for a pleasure-and-business interim in the United States. The title of commercial manager became added in this way: During 1913, when the public services of the city were paralyzed by strikes, the Council of Leeds appointed a committee of five to co-ordinate and re-organize the work of the several departments affected. To concentrate responsibility, the Council deemed it necessary to engage one executive. The office of commercial manager was therefore created, and Mr. Hamilton was asked to add this to his other responsibilities. One of the most important features of the commercial manager's work is the employment bureau. All applications for work must be made to this bureau, and when a department head needs help he must draw upon the list supplied by the bureau. This avoids undue pressure on the department head and goes a long way toward preventing the creation of easy and needless positions. Mr. Hamilton is also surveyor of highways and superintendent of the street-cleaning department. Since he is in charge of all highway facilities, he has used his tramway experience to save paving charges by transferring heavy drayage to electric motor cars where possible—a unique situation indeed! During his off-hours, Mr. Hamilton acts as a consultant on all transport problems and specialist in rate cases, valuation proceedings and the like.

were spaced 540 to 750 ft., but the present range is 660 to 900 ft. Most of the twelve traffic regulators and timekeepers are stationed in the downtown district, as the ticket inspectors also handle traffic along the line. Telephones are installed about every ½-mile for emergency and general traffic regulation use only.

HOW TRACTION ON TIRES WORKS OUT

The Leeds City Tramways offer interesting examples of every kind of urban and suburban surface transit. From a car route like Hunslet earning 22.04 d. (44 cents) a car-mile to a motor bus earning only 9.65 d. (19.3 cents) one gets nearly the entire range of economics in highway transportation. Therefore, the experiences of the Leeds lines and the deductions of the management should prove of more than usual interest

TABLE I.—THROUGH-ROUTINGS OF TRAMWAYS IN LEEDS

Street Railway:*	Route Length in Miles	Maximum Service Minutes
Hunslet.....	2.00	3
Balm Road.....	2.23	7½
Cardigan Road.....	2.50	7½
Dewsbury Road.....	2.61	4
Harehills.....	2.03	4.64
Dewsbury Road.....	2.61	4
Compton Road.....	1.87	4.48
Beeston.....	2.32	5
Woodhouse Street.....	2.14	4.46
Beeston.....	2.32	5
Harehills Road.....	1.89	4.21
Park Gates (Beeston).....	1.79	3
Belle Vue Road.....	2.49	4.28
Morley.....	6.35	7½
Meanwood.....	2.69	9.04
Domestic Street.....	1.70	10
Victoria Road.....	2.00	3.70
Whitehall Road.....	.....	1.46
Lower Wortley.....	2.91	.....
Easy Road.....	1.95	4.86
Upper Wortley.....	3.05	4
Killingbeck.....	2.33	5.38
Upper Wortley.....	3.05	4
Halton.....	3.24	6.29
Upper Wortley.....	3.05	4
Seacroft.....	3.17	6.22
Stanningley.....	.....	5.48
Pudsey.....	.....	6.61
Rodley.....	.....	5.75
Roundhay.....	3.68	.....
Guiseley.....	9.94	13.62
Roundhay.....	3.68	.....
Horsforth.....	5.45	9.13
Roundhay.....	3.68	.....
Kirkstall.....	3.33	7.01
Haddon Place.....	2.00	.....
Harehills Road.....	1.89	3.89
Lawnswood.....	4.58	.....
Street Lane.....	5.14	9.72
Headingley.....	3.14	.....
Chapelton.....	2.80	5.94
* Total single track, approximately 121 miles; double track route length approximately 54 miles.		
Trackless Trolley:		
Farnley.....	4.01	30
Guiseley and Otley.....	3.19	20
Guiseley and Burley.....	2.91	40
Motor Bus:		
Moortown and Shadwell.....	2.72	45

to operators who are worried about the possibilities of traction on tires instead of rails.

One rail-less or trackless-trolley car is operated as an extension of the Guiseley line to Otley 3¼ miles distant along one road and to Burley 3 miles distant along another. Otley has from 10,000 to 12,000 people and Burley from 5,000 to 6,000 but the intervening country is sparsely settled. In summer this district is a vacationing ground to which the tramways carry a heavy travel, but for the greater part of the year nothing better than a twenty-minute maximum and sixty-minute hourly service appears justified. This is indicated by the return for the week ended Feb. 8, 1919, when the total traffic was only 7,691 passengers for 1,688 bus-miles. The maximum fare, which is slightly higher than the street-car fare basis is 4d., and the gross earnings per bus-mile for the week named were 13d. This service has now been operated for five years with a 28-

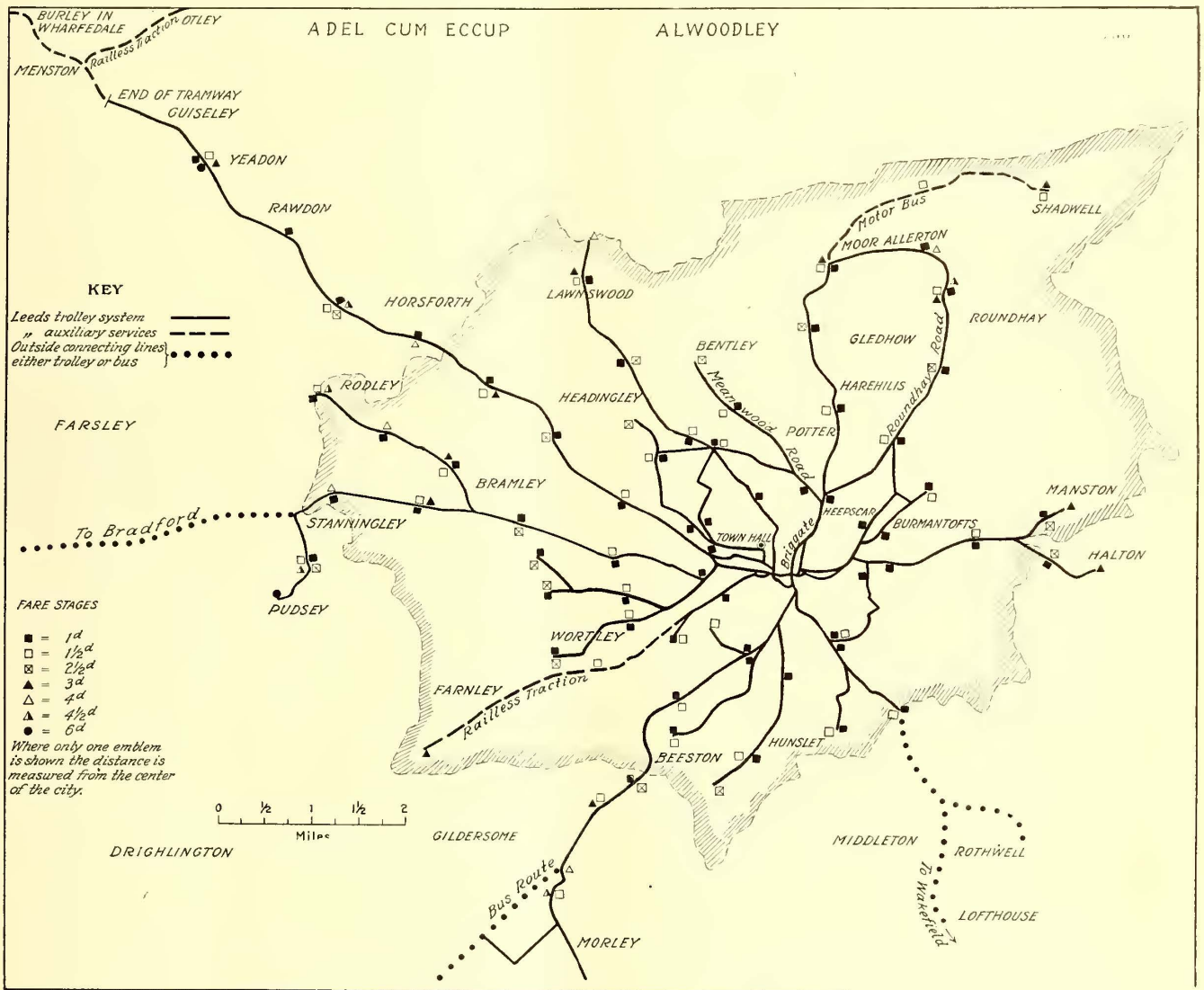
passenger vehicle whose driver is assisted by a boy to care for the collection of fares.

The trackless trolley service to Farnley, 4 miles distant, is operated directly from the center of Leeds, although it runs along the Tramway tracks for 1 mile. The service on this route varies from twenty to thirty minutes. The maximum fare is 3d. For the week ended Feb. 8, 1919, 7409 passengers were carried a total of 1421 bus-miles, and the earnings were 11.05d. per bus-mile.

Of still less importance than the trackless trolley services is the extension bus line (2½ to 3 miles long) to

concerned, that form of operation cost about 2d. per mile more than the trackless trolley. It was justified chiefly in localities where the permanence of development was uncertain or where the business fluctuated because of market days, holidays, outings, etc.

Quite recently Mr. Hamilton was one of a board of three engineers which carefully considered whether it would be preferable to use motor buses at Edinburgh or to electrify the cable system. The decision, as noted in the article on Edinburgh, in the ELECTRIC RAILWAY JOURNAL of May 3, 1919, was to electrify, a few buses being used only until such time as certain extensions



ROUTING OF LEEDS TRAMWAY SYSTEM AND LOCATION OF STAGE POINTS

Shadwell. This has no fixed headway, the bus making eight round trips between 8 a.m. and 6.30 p.m. to suit the convenience of its patrons, the country cottagers. For the week ended Feb. 8, 1919, the bus carried 1248 passengers. The number of bus-miles run was 272, and the intake per bus-mile, 9.65d.

In discussing the reasons for the installation of these services, Mr. Hamilton said that he regarded the trackless trolley simply as a means, where good roads were available, of putting down a tramway on the installment plan. Tracks would be justified when the density of population reached say 5000 per mile or route, or to put it another way, when the traffic warranted a headway of at least ten minutes. As far as the bus was

could be built. Mr. Hamilton's arguments were expressed fully in a paper on "Passenger Transport" read by him before the Tramways Association conference. Following quotations from the paper: "As they also take up the opening Mr. Hamilton

In many provincial towns the introduction of tramways in the central and older parts of the town. The provision of a regular service from the center of the city and the reduction of fares, at frequent intervals, has completely metamorphosed the character of the parts of the town. . . . In . . .

with 1895, just shortly after the corporation had taken over the working of the tramway undertaking, the population residing in the two central business wards of the city has decreased in one case by 25 per cent. and in the other by 35 per cent., while during the same period increases from 40 per cent to 60 per cent have taken place in districts outside the central zone.

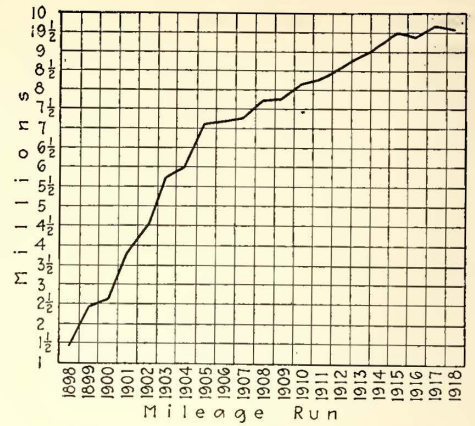
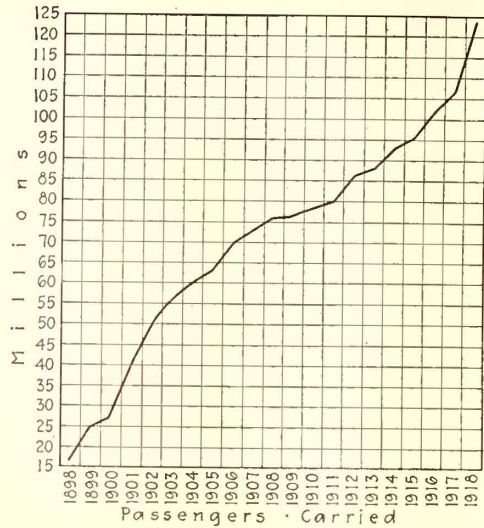
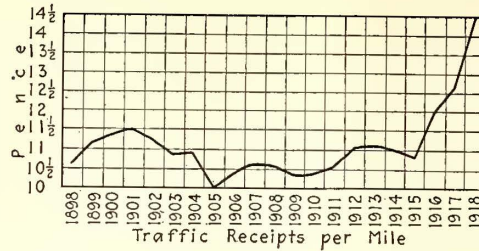
The requirements of the form of traction necessary to meet the (city) conditions which I have outlined must first provide for vehicles capable of dealing with large variations in the number of passengers. . . . One car may have practically no passengers, while the following car may have from forty to fifty. The size of the vehicles should, therefore, be capable of meeting the public requirements by having a large carrying capacity.

The point in the whole matter is that if a vehicle with a capacity of approximately sixty (seated) passengers can be provided at the same cost as or less than a vehicle with a capacity of about thirty-four (seated) passengers, then even at the less busy periods of the day it is very likely to pick up more passengers, and, at any rate will carry them, other things being equal, with greater comfort than a smaller vehicle possibly could.

Worby Beaumont's alternative to the tramcar, *viz.*, the motorbus, with its strong smells and its tendency to skid, and with the fact that at the rush periods of the day every tramcar as at present would be represented by two motorbuses, will produce a mental picture to every delegate here of the condition of congestion and confusion which would occur every day in the central thoroughfares of the towns they represent.

I have said that the carrying capacity of a motorbus is only half of a tramcar. . . . In inclement and rainy weather the effective carrying capacity of the motor bus (open tops) is further reduced by fully one-half. Surely if there is any obstruction caused by tramcars, the cure proposed—that of substituting four buses for one car—is worse than the disease.

Continuing, Mr. Hamilton said that the large bus development of London was due to conditions almost unique, the streets being too narrow for any kind of rail traction. Finally, on the basis of all the figures of bus costs then available, Mr. Hamilton calculated



RECEIPTS PER CAR-MILE, PASSENGERS AND MILEAGE IN LEEDS SINCE 1898

Note—Passengers per car-mile were 13.04 for year ended March 31, 1918, as compared to 11.61 for preceding year.

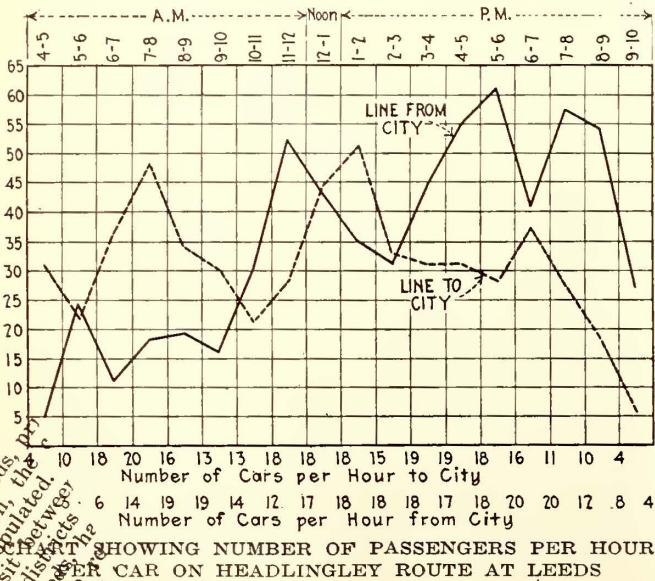
that in Leeds motor-bus operation would cost £137,600 a year more, leaving a deficit instead of a surplus (for relief of the rates) of £61,000. The annual cost per seat for motor buses compared with cars in 1912 was as £47 to £23.

One other variety of electric railway operation at Leeds remains to be mentioned—inter-operation with adjacent undertakings. Perhaps the service to Bradford, 9½ miles distant, is most notable as it represents the earliest important attempt to overcome both the legal and the physical handicaps of inter-operation. Leeds has a gage of 4 ft. 8½ in., and Bradford one of 8½ in. less. This made it necessary to devise an axle of expanding type so that the same cars could be run on both gages. This was successfully operated for five years, but owing to the shortage of equipment and the greater difficulty of maintaining non-standard apparatus, trucks with expanding axles had to be temporarily discontinued late in 1918.

It has been observed that the absence of through-car service perceptibly injures travel despite the fact that the transferring passenger always finds a connecting car waiting for him. This traffic is quite considerable, 61,395 passengers being carried during the week ended Feb. 8, 1919. For the same week, the mileage run was 6940 and the earnings 16.30d. per car-mile. The service is given in competition with steam trains, which lost a large part of their travel when the government made a general rate increase of 50 per cent. A through-running arrangement is also in force with Wakefield, 9½ miles distant.

CONTENTS OF LATER ARTICLE

In the second and concluding part of this description of the Leeds transportation system an account will be given of the fares charged and the labor conditions, with statistics of operation. The method of accounting for fares will be described and illustrated with reproductions of some of the blanks used.



particularly in Leeds, tramway traction, the population of transit districts, suburban districts, higher speeds, the union of the two in 1912 as

Optimism Prevails at Pennsylvania Association Meeting

Pronounced Spirit of Fairness and Helpfulness of Commissioners, Increased Riding Due to Populations Returning to Pre-War Normal, and Revenue from Increased Fares Serve as Antidotes for War Period Gloom

IN SESSION when the world's most momentous peace document was being signed, the electric railway men gathered in the annual meeting of the Pennsylvania Street Railway Association at the Penn-Harris Hotel, Harrisburg, Pa., on June 27 and 28, seemed to sense the beginning of a new order of things in the electric railway industry contemporary with the optimism and hopefulness for a new order of things in the political world. They realized they were rapidly emerging from the war conditions and that the outlook for the future, as it may be interpreted from the attitude of the public and the commissions and from the comparison of operating revenues of the last few months with those of a year ago, was most encouraging. This meeting of the Pennsylvania association was the first regular meeting since before the war, the annual meeting of a year ago having been simply a small business session at which the officers were elected and other essential work done, and the members gloried in the renewed interchange of ideas and discussion of their respective operating conditions.

Undoubtedly the principal encouragement the members took home with them from the annual meeting of this week was contained in the informal address of Chairman William D. B. Ainey, of the Pennsylvania Public Service Commission. Some of his remarks were reiterations of thoughts he had expressed before the mid-winter meeting of the American Electric Railway Association and before the Chamber of Commerce of the United States at its meeting in St. Louis in April. But the note of sympathetic approach to the electric railway problem, which he has pronounced as the attitude of the Pennsylvania commission and the one which should actuate all public service commissions to render helpful assistance, will bear much repetition. He was anxious to make clear to the members this spirit of helpfulness with which the commission undertook to solve the problems of the public utilities which constantly come before it. He said that the commission felt that the great corporations were as necessary as the air we breathe and the food we eat, and considered them to be in a sense wards of the commission, though of course recognizing the obligation the commission holds to the public. In this work the commission has carefully refrained from setting itself up as being able to operate the properties better than the managements, feeling certain that the railway men knew better than any member of the commission how to operate their properties. He wanted to get away from the idea that the public utilities commission should occupy a position of antagonism toward the railways. The commission, he said, was not a court, but an inquisitorial body, before which the railway men were invited to come and talk over with the commission their respec-

tive problems, so that they might be fully appreciated and the commission might then act in a manner which would be helpful and not in any sense as a judge before the court. The aim of the commission was not to render a judgment against any one, but to give a decision in each case which would be fair and just to every one. The court must weigh the evidence presented, but the commission can go beyond this and invite information and seek to help in the solution of the intricate problems of the utilities.

Commenting upon the paper on methods of analyzing passenger traffic by R. H. Horton, which had just previously been read, Mr. Ainey added the important thought that traffic studies should not stop with the people who do ride on the cars and where they go and when, but should also study the courses of the people who do not ride. The enormous number of people who walk represent to a certain extent potential riders, and if data were at hand regarding the movements of these people, it might be used as an important guide to the company in providing a service which would attract their patronage. A large proportion of the walkers represents a revenue which belongs to the street railway companies, and having proper information they should go after it. Later in his talk he referred to this source of revenue as the unearned increment of the electric railway business.

COMPLAINT DEPARTMENT OF THE COMMISSION

In the course of his talk Mr. Ainey referred to the manner in which the old Greeks classified all strangers and things about which they were unadvised as enemies and in a spirit of antagonism, and then referred to the great value of keeping the public informed of the causes of failures and delays in the service, many of which were beyond the control of the company. He also told of the informal complaint department of the commission and pointed out how he believed this to be a proper function of the commission work. The psychology behind this department is really the important thing, for the public in general seems to prefer to address its complaints against public utility companies to the commission rather than the companies, since it feels that the commission is a disinterested body and therefore inclined to be more fair and responsive. This department of the commission serves as a clearing house for a great number of complaints, the great majority of which are probably inconsequential. These are all treated with care, however, and are usually referred to the company concerned, thereby giving it an opportunity to call upon the complainant and discuss the causes of the complaint, this usually resulting in a much better understanding between the person and the utility.

Taking up the discussion of fares and revenues for the utility company, Mr. Ainey said that the commission had no objection to or antipathy against any rate of fare, whether it be 5 cents, 6, 7, 8 or 10 cents. Before granting any particular rate of fare, it was simply interested in knowing whether the company had gone deep enough into its own problems to know that the rate of fare desired was necessary, and then whether there were not other elements than the increase which might be taken advantage of to produce the results without the fare increase. The commission is of course duty bound to go into all factors in the interest of maintaining a reasonable fare for the riding public and at the same time in the interests of retaining to a company a large share of its potential passengers; in other words, to make sure so far as it is able that the fare proposed will not react to the detriment of the company rather than to its advantage. It is the duty of the commission to join with the companies in rendering good service, and only as they have adequate revenues can this end be accomplished. In other words, the commission and the companies come to the same end in striving to serve the public, for they are both interested in the prosperity of the company. The hearing of a company in a rate case involves two factors, the first being the determination of how much additional business may be secured by proper service and merchandising methods, and then how much additional revenue must be derived in the way of a fare increase in order to bring about the desired revenue.

Mr. Ainey thought that the minds of the managements should be directed toward the fact that a great many companies are burdened with intercorporate obligations and corporate complexities which bring about undue overhead expense and that there must some time be a lessening of these burdens.

Mr. Ainey took occasion to break down the barrier which he said existed in many operators' minds that it was necessary in order to avoid discrimination, to have one rate of fare all over a property. He said that there was nothing in the law against discrimination, but rather unjust discrimination. The zone system of fare collection does not necessarily add any burden upon the public through its differentiation between riders for the conditions of length of ride, service, etc. He did not express himself as to the value or effect that would result from the use of the zone system, but simply clarified its legality.

COMPENSATION FOR EFFICIENCY

Mr. Ainey sounded a new note in commission regulation of utilities when he asked the help of the companies to solve the problem of compensation for efficient management. He said it was his belief that there was something radically wrong in not giving compensation or recognition to the well-regulated and operated property as compared with the return to the poorly managed property. He said there must be some formula which will recognize good management and bring back an incentive for that. He expressed his sympathy with greater return so earned, and said that such compensation would make a spur to the company to practice economy if it could share in the results. The company should not have to strive for efficient management with the motive of preserving life, but to the end of earning more for the stock-

holders, provided that the public would likewise benefit through such economy and efficiency in operation.

ADDRESS OF THE PRESIDENT

In his presidential address, Gordon Cambell, president York Railways, referred to the war and the inevitable after-war conditions in this country and abroad. He mentioned particularly the effect of these conditions on the electric railway industry and the higher cost of material and labor. Some companies have received power to increase rates, but there are others where this permission has not been granted.

The speaker did not think much could be expected from referendums on the rates of fare. It is true, people realize that costs have increased, as when they pay ten cents to the baker for a loaf of bread which they formerly bought for 5 cents. But, he asked, would they vote for a higher bread price if they had an opportunity, merely because the baker argued that the price of wheat was higher, and that without an increase the ultimate production would decrease and the public interest suffer?

These questions of utility rates, in his opinion, should be left to a responsible commission, having in mind the ultimate public interest. The wrecking of electric railways would be a public disaster. Increases in revenue are necessary and can be obtained only by increased rates of fare. A 10-cent fare to-day is no higher, measured in commodities, than a five-cent fare was formerly. Any reduction from the 10-cent fare would therefore be a reduction in price. Adjustment of fares for the depreciation of currency will bring increased revenues, in his opinion. He quoted Professor Fisher on the future trend of prices and pointed out that if later prices should decrease, fares could be lowered.

Continuing, he said:

While open to consider any device or method of reducing operating costs, let us not give encouragement to the idea that reduced fares can be maintained thereby. This is always a popular idea but at this time is rather dangerous. New things cost money. They require capital. They are experimental, and if time proves that we were on the wrong track another "mistake of management" is charged up to us. Let us meet the main issue first, that revenues must be provided. And if, under commission supervision, satisfactory service can be produced for lower fares, let that be fully demonstrated first. It is easy to lower fares. And, in principle, we believe that the lowest price at which transportation can be sold profitably is the best price.

How about fixed charges? It is said that car fares need not increase because fixed charges have not increased and form so large a part of the cost. But less than one-fourth of the receipts are now applicable to fixed charges. Fixed charges have increased continually and must continue to increase. True, they cannot be reduced, for which reason we cannot stand a reduction in revenues, but in order to keep pace with the public needs we must buy more cars, more power facilities must be provided, paving (imposed on us by city ordinances) is continually extending. It now requires \$2,000 to pay for what could formerly be done for \$1,000 and rates of interest have increased. These same facts apply to depreciation. It will cost more now to replace property when it becomes worn out or obsolete, and it behooves us to set aside a greater reserve for depreciation.

Now, it is true that in readjustments interest on fixed investments has not increased, and thereby the holder of bonds is a sufferer. His 5 per cent interest will only buy half what it formerly did. He has our sympathy, for he has provided capital for the development of public utilities which the public now enjoy. We cannot argue for an increase in return to the former investor in bonds, but we can say this for him: It is our bounden duty to keep faith with him; to see that the interest return he is entitled to is assured to him; that his property is not run down and

wasted but maintained in a high state of efficiency; that ample reserves be provided for contingencies and that his property should show earnings, not merely sufficient to pay his return but to assure it doubly and to provide a fair return to those who have operated the properties in the joint interest of the public as users and of the public as investors.

THE PROPER BASIS FOR FARES

After referring to the hope of the industry that the Federal Commission would be of help in bringing about a recognition of the infallible underlying truths of the industry, Mr. Campbell discussed methods of proportioning fares. He referred to the zone plan of the Public Service Railway of New Jersey, and gave the theory of the zone fare advocates, which was, first; that it is more equitable to distribute the cost in proportion to distance traveled, and second, that by preserving the short-distance riding revenues will be maintained with the lower general scale of prices. He thought that except under certain conditions the volume of this short-distance riding might be overestimated, and that this plan placed the burden of providing the increased revenues on part instead of all of the riders, though for some longer hauls he thought higher fares are in order.

Besides the short rider, there are two other classes of patrons who might be entitled to special consideration. According to the speaker, they are:

First, the regular rider, the man who, rain or shine, rides twice or even four times a day, bearing his full share of the cost of maintaining the service, while there are others who only use the cars in rainy weather or when their motor car is undergoing repairs, generally on the most crowded trips. It does not seem right that this latter class should have this service at their command without paying a service charge. Second, the off-peak rider. This plan was suggested by the Bay State Company. The arguments in favor of would, no doubt, be that it would induce those who could do so to ride at other hours than those of heaviest travel and that, when the travel is light, those who might otherwise walk would be induced to ride.

We have thus three conditions which might be considered in the theoretical construction of rates for street railway transportation. But, are not these only diversions from the logical conclusion that the car fare should increase as the value of money falls? If this increase could have been gradual and in inverse proportion, there would, no doubt, have been no disturbance in the normal travel. Unfortunately, this was not practicable. Unfortunately, relief has been delayed too long in some cases and is too timidly applied in others, and the results, I fear, will be costly reconstruction in many places.

WHAT THE PUBLIC WANTS

The speaker then referred to the work of the executive committee during the year, the coming hearings on the question of increased compensation for carrying United States mail, and the activity of the legislative committee in protecting the companies from the effects of ill-advised legislation. Concluding, Mr. Campbell said:

The question is asked, Why are the street railways so unpopular? Is it because they have been for a long time trying to do something for less than it was worth, the results being reflected in the wages and the service? Is it because they are tax gatherers—for the street railway collects from all its passengers a tithe for government taxes, another for State taxes, a tithe for city taxes and another to pay for paving the city streets? Is it because they make no concessions? But the street railways do generally carry children for half fare, smaller children free, baskets and bundles without charge, policemen and firemen of the city free, and in many cases they have assumed expenses, willingly or otherwise, as a concession to public opinion. But are they really so unpopular or is this hostility subjective in the mind of the propagandist and only objective in the public mind?

Of course, people generally "knock" the public servant. They have to complain of something. We know how it is

ourselves. We used to complain of the servant at home. We don't now, for there is none. Well-intended criticism is to be taken seriously, but ordinary grumbling probably reflects the momentary frame of mind of the complainant. If we give the full service which we honestly believe is the public due, striving ever to better it, we can ask the return with a clear conscience.

It is my own belief that the real demand of the public is good service, rather than cheap service. The class of travel which we have lost came from those who can afford the very much higher cost of private automobiles. Possibly, before long some will travel in the air with still greater elements of cost and risk. Likewise, I am an advocate of fair wages and conditions for our employees.

We have it on no less authority than the President of the United States that if we have treated the people from whom we are making our profits as they ought to be treated, if we treat the employees whom we use in earning these profits as they ought to be treated, if our methods of competition are clear and above reproach, nobody will be jealous of our profits.

Do not understand me as under-estimating the difficulties. This is not to be accomplished without combined effort. I assume that the street railway men will continue their devotion and unremitting effort toward the cause. It has been a long and grueling fight with heavy casualties, but now that we have reached this point let us see it through. What I wish to suggest is renewed courage and confidence in the future.

DISCUSSION ON MAINTENANCE AND FARES

After the address by President Campbell and the reading of the papers by F. R. Phillips and E. C. Spring at the first session of the association, Friday afternoon, the discussion of the members centered about the subjects which had been taken up in the papers, abstracts of which are published elsewhere in this issue.

W. E. Boileau, general manager, Scranton Railway, told of the task to which his company had been put in keeping the cars running during the war period. Rails had been taken from the scrap heap and put back in the street, and at one time when it was impossible to get car wheels, the ones in use became worn so low that the gear cases were striking the pavement and so the company lowered the pavement. He said that the maintenance program which the company had been forced to follow during the war would now require between \$300,000 and \$400,000 expenditure within the next one or two years to put the property back in normal condition. The population of about 280,000 served by his company had lost over 75,000 people during the war. The riding went down and down with each draft and with the exodus of workmen to other places of employment until the company was compelled to increase its fare to 6 cents. This was not great enough, and as the riding continued to drop off, the fare was raised to 8 cents. At this rate of fare the revenue become better almost daily and the number of riders was coming back and was nearly up to the number which had been carried at the 6-cent rate when the commission ordered a cash fare of 7 cents with four tickets for 25 cents. The increase of riding, which had been expected from this decrease in fare, had not been realized, and he doubted if the 7-cent fare would ever bring sufficient return to make the business profitable. With the present rate of fare, he said that about 73 per cent of the fares collected were tickets, it having been estimated that this would go to 90 per cent. The largest percentage of cash fares is paid on the lines carrying a high percentage of foreigners who do not seem to invest in tickets. In the better sections of the city, tickets are used almost

exclusively. One line which carries almost entirely foreigners collects over 60 per cent cash fares, while a line in the better section of the city collects only 22 per cent cash fares.

William O. Hay, general manager, Northampton Traction Company, Easton, reported that in 1916 his company had increased its fare from 5 cents to 6 cents and had been disappointed in the per cent of increase in revenue received. A good many of the riders had walked rather than pay the increase. On Sept. 23, 1918, the company went to a 7 cent fare and since that time has been realizing a comfortable return. The people have seemed to recover from their soreness and are again riding the cars. The results this year have been very good and the company now sees its way out of the woods, so to speak. He also commented on the fact that the company had learned a lot about development of the scrap heap during the war as a means of keeping the cars operating, and told how brakeshoes had been recovered, scrapped axles refitted, cars robbed of parts to keep others going, etc.

H. G. Morse, of the General Electric Company, and W. G. Kaylor, of the Westinghouse Traction Brake Company, were called upon by the president and they recited some of the severe difficulties which the manufacturers faced in their endeavor to keep the operating companies supplied with necessities.

F. R. Phillips, Pittsburgh Railways, remarked that there seemed to be something inseparable between the rate of fare and the revenue received. In connection with the so-called superimposed fare system of Pittsburgh, whereby there existed a 5 cent inner zone and a 7 cent outer zone, he reported that there had been a traffic increase of about three per cent in the 5 cent inner zone, but a decrease in the number of riders in the 7 cent zone, with a net revenue very much less than that previously derived by the company. In the outer zone, it seems that there was formerly a great deal of riding from home to the local theatres in the evening, and these people complained that it was entirely unjust to charge them 7 cents for that ride, whereas an equivalent ride in the central district would cost only 5 cents. This system of fares is about to be abandoned, and replaced by a fixed flat fare all over the city of 7½ cents (four tickets for 30 cents) with a 10-cent cash fare. The 10-cent cash fare entitles the rider to a transfer to ride across the city, it now being necessary to pay two fares to ride across the city. There is thus no increase in the fare to the passenger who rides across the city, but the new system will bring about a 2½-cent increase in the central zone and a ½-cent increase in the outer zone. Under the superimposed system, the total net increase in receipts in the 7-cent area was 9 to 11 per cent, whereas it should have shown a 40 per cent increase. Mr. Phillips commented that it was very difficult to tell what effect the rate of fare has on the amount of riding, since there are a number of elements which have a bearing. For instance, he cited the fact that at present the industries of Pittsburgh are operating at only 62 per cent normal, and he inferred from this that the amount of riding on the cars might likewise be assumed to be about 62 per cent.

R. B. Hull, general manager, Lancaster County Railway & Light Company, Lancaster, said that his company, by increasing its fare from 5 cents to 6 cents

and eliminating all unnecessary service, had been able to make a good showing and that for May and June of this year it had shown a 20 per cent increase in revenue over that during the corresponding months of last year.

LESS THAN FIVE-CENT FIRST ZONE FARE

C. B. Fairchild, Philadelphia Rapid Transit Company, was inclined to think that the industry had arrived at the time when it must right about face and collect from the passenger for what he wanted to buy; namely, so many units of transportation at a proper unit charge. He was inclined to believe that this unit charge for the first zone should be something less than a nickel. He argued that it cost so much to produce this street car service, a figure differing with all of the special conditions of each locality. The first problem is to determine what the cost of producing the kind of service the public wants, plus a fair return on the investment given, is. The company must then derive that amount of money in order to produce the service required and then the public can arrange to pay the corresponding fare in any manner in which it prefers. If the cost of paving streets and various other items of cost which must now be borne by the car rider, were removed then the cost of producing the transportation could be reduced, and it should be the endeavor of the industry to bring about a rock bottom basis for figuring transportation costs.

Mr. Fairchild remarked that the industry had violated every principle of merchandising by continuing from the old days to charge 5 cents for a ride, regardless of how long or how short a ride the passenger desired to purchase. He believes that, like the merchant, the railway company must be prepared to sell the customer the size of package he wants, which means that he must come to a zone system, and this zone rate must be low enough to attract customers. He said the industry had overlooked one thing which had made European business attractive—the short-haul riders. It should be the aim to get onto the cars the people who are now walking at the hours when the companies are hauling empty seats around, and this means a rate of fare less than five cents for the first zone. He thought that the bulk of the business which is available can be classified as short haul. He also pointed out that it would not be necessary to carry as many passengers in this country as they must in Europe to realize an equivalent return, because of the lower unit fare prevalent there. Referring to the protest of the suburbanites against the zone fare system, he said that he did not think their case was well founded and that he did not believe they would object strenuously.

President Campbell took an opposite view of the fare situation. To carry a passenger one to two miles for something less than 5 cents would be going backward, his contention being that the value of the nickel has changed so materially that a ride of that distance for 5 cents now would be giving more than to give an equal ride for half that amount in 1900. He said that fares in effect have been cut in half already and that instead of looking toward lower fares, the industry should be looking toward increased fares, that it had been looking too long toward small fares. He was inclined to doubt that short-haul traffic would be stimulated by the small fare, or if it were stimulated, that there would not be sufficient additional riding

so that the company would realize an increase in revenue. He was looking more toward the basis of rides for 5 cents which existed twenty years ago as a proper readjustment basis for fares at this time. At that time the length of ride for 5 cents was in the neighborhood of 2 miles. Even at that rate of fare, the passenger of today would receive more for his money due to the infinitely better service, more lines, better cars, etc., taking into account all the progress made through engineering.

Thomas A. Wright, vice-president and general manager, Wilkes-Barre Railway, told how his company had increased its fares from 4 cents to 5, then 6, and later to 8 cents, which has finally yielded a satisfactory return. His return for May had shown a 47 per cent increase over the corresponding month last year and the reports showed a steady decrease in the loss of passengers. In the population of 250,000 served, there had been a decrease of 25,000 to 30,000 people during the war who were now gradually coming back, and conditions were becoming normal. He had just finished his testimony before the commission on the rate case of his company and the question which was uppermost in his mind was as to what the effect will be on the industry if a fixed rate of return is generally determined upon. If that is all that the companies will be allowed to earn, he wondered what incentive there would be from the manager down to try for better operation and better economy.

Mr. Kaylor and A. M. Eicher of the Westinghouse Traction Brake Company, upon request, described the safety car and told of some of the splendid results which are being obtained through its use in several cities and presented the evidence which the use of these cars furnish, that more frequent service does sell transportation.

At the banquet given by the association on Friday evening, Lieut.-Gov. Edward Biddleman, of Pennsylvania, was the principal speaker. He was followed by Chairman Ainey of the public utilities commission, who briefly addressed the gathering, and by several of the state legislators. The secretary of the association, Capt. Henry M. Stine, acted as toastmaster. Mr. Biddleman said in the course of his remarks that it was high time that men in public stations should exercise the courage to let industry earn a fair return, whatever the cost might be. If an increase of fare becomes necessary in order to sustain the cost of transportation, then it becomes the duty of the officers of the commonwealth to approve and support that increase. He said they should stand up for what they believe to be to the interests of the public whether that is popular for the moment or not.

At the Saturday morning session, after the reading of Mr. Horton's paper on "Methods of Observing and Analyzing Passenger Traffic" an abstract of which will appear in next week's issue, Mr. Boileau stated that his company had used two and three-day traffic check data very effectively in handling complaints made by the merchants' and other associations.

Mr. Fairchild said that the number of complaints of service had been reduced over 80 per cent in the last year and a half, due in large part to the data made available from traffic studies. His company keeps a record of all delays and finds that this record is very helpful in explaining to patrons who complain of poor

service and long delay, by showing them the cause is usually one beyond the control of the company. All complaints for the Philadelphia Company are handled by the welfare and public relations department, which is in charge of a vice-president, the office having been created with the organization of the department, and a transportation superintendent of wide experience promoted to the place.

Mr. Spring told of a bulletin board which his company has at the interurban station in Allentown, upon which the cause of delays or other information is written for the information of the passengers. He has found this to be of greatest value in allaying criticism, for when the public is advised of the fact that a parade in a certain town has held up the car and there will be none for thirty minutes, or given other similar information as to conditions, they then know it is beyond the control of the company, and are decidedly more content in their wait.

ELECTION OF OFFICERS

The nominating committee which was appointed by President Campbell, reported at the close of the Saturday morning session that it was recommended no change be made in the administration of the association and that the present officers be re-elected. Upon motion, the wishes of the committee were carried out, and the officers below re-elected for another year:

President, Gordon Campbell, president and general manager, York Railways Company, York, Pa.

Vice-President, T. B. Donnelly, claim agent, West Penn Railways, Pittsburgh, Pa.

Secretary and treasurer, Henry M. Stine, 211 Locust Street, Harrisburg, Pa.

Electric Railways from an Operating Standpoint*

Policies and Methods Which Will Aid in Securing Better Operating Ratio—Merchandising Principles Applicable in Selling Car Rides

BY EDWARD C. SPRING

Superintendent of Transportation, Lehigh Valley Transit Company, Allentown, Pa.

MY OPTIMISM and faith in mankind lead me to believe that the future of electric railways is assured, but not without most serious thought and sleepless nights. The department which occupies the most prominent position in the field of activities is the operating department, and upon it in no small measure depends the working out of the difficulties in which the industry now finds itself. The men at the head of the operating department are close to the public they serve, and the service they give is vital to the welfare of the company and the growth of the community—a relationship filled with great responsibility and opportunities demanding sane and sound judgment.

The operating department has in its hands two important factors to use in safeguarding the industry; namely, the power to create and the power to save—two factors which are essentially vital in the future of our properties. These embody the power to create business and develop it along the most economical lines, and the power to save in all branches of operation in order that there shall be no waste.

*Abstract of paper read before Pennsylvania Street Railway Association at Harrisburg, June 27, 1919.

Our employees should be trained in the art of co-operation. We need men who can think and solve the seeming impossible, who will dare to tackle the problems that are confronting them. To them we shall look for the progress that will make the operating department count 100 per cent. The employee who takes a personal interest in his work and feels that the company is his, who realizes his individual responsibility, is the man of the hour, and he will in turn find his position easier and more pleasurable. The more quickly the trainman realizes that his car is one of a chain of stores, and he the manager and salesman selling transportation and delivering it in the package of service, the sooner will he become one of the co-operating parts of the organization. To such an employee is encouragement and appreciation due.

There is one expenditure in the account of the electric railway which brings back no return, and that is the element of accident claims. In no better way will the efforts of an employee be felt and appreciated by the management than in promoting to the limit the safety program. The slogan of the electric railway section of the National Safety Council, "One less accident for every mile of track in 1919 over 1918," should be impressed upon the entire personnel of the organization, in order that they shall be on the alert to safeguard the company's interest.

The equipment department, in promoting the interests of the company, should see to it that defective rolling stock is not allowed to go beyond a reasonable period before repairs are made. The cost of maintenance can be materially kept down if the defects are remedied and repairs made as soon as they are apparent, and not allowed to go over for the general overhaul. Such repairs should always be, if possible, of a permanent character, rather than of a temporary nature. The reclaiming of old material should continue to receive the attention it has during the war period.

In the track and roadway department, the adoption of standards is strongly urged as a means of promoting economical maintenance of tracks and roadways. This is desirable not only because of the importance it has in keeping the stores and stocks down to a minimum, but of increasing the general efficiency of the work done. Workmen handling the same type of material repeatedly become more proficient in making repairs, and not only is the work better and more quickly done, but more cheaply. Another saving is the time involved, which may be minimized by making early repairs. The centralization of stores and tools, the reducing of all gangs to the lowest possible working force, and the making of estimates of cost and proper disposition of cost will assist the way department in promoting economy.

In connection with the work of the superintendent of overhead and distribution lines, transmission and telephone lines should be inspected and all weak places where winter weather might cause trouble put into shape, for much labor can be eliminated by doing this character of work during favorable weather. All overhead work done in cold weather is generally over-expensive. The centralization of distribution points for material and an accurate check of materials on hand are great factors in bringing about savings.

In the transportation department, serious thought should be given to traffic studies, and the effect of distance, time, stops, skip stops, slow downs, length of stops, speed and general operating conditions upon the

grade of service and cost of operation. Traffic charts made at frequent intervals to show the load factors and traffic changes are absolutely necessary for good service and operation. The car mileage of any system should be checked daily so that any increase can instantly be accounted for. Development of the freight service offers other great advantages for increasing the revenues at this time of high costs. If made a part of a proper organization plan, the interurban railway may be made of most effective value in eliminating the middleman's profits and reducing the cost of foodstuffs to the consumers.

FARES AND INCREASED REVENUE

An electric railway has every right to operate at the lowest possible cost, even if it shall neglect maintenance for one or two years, but it is a very dangerous habit to get into. Probably more properties have been wrecked as the result of this policy than from any other cause.

As a member of the committee appointed by the American Electric Railway Association to make a report at the Atlantic City convention on the subject of rates of fare and methods of collection, it would be unwise for me at this time to do more than make a few general statements. It is apparent that no company has as yet reached a final solution of the rate problem, although recent developments would tend to indicate that a zone plan of operation has many advantages over the so-called horizontal fare unit increase. The latter, which has been the one most tried out, has not shown the gain expected, but in many cases has been accompanied by a decrease in revenue.

Observations have led to the belief that a well defined zone system offers the greatest advantage to passengers and will retain a larger proportion of the existing travel than any other method of increasing the revenue. I am a firm believer that transportation is a commodity and service is the package in which the commodity is delivered to the customer, and that our business should be handled on a commodity basis. If this is true, then the zone system is the logical solution of increased revenue. The length of the zone and the rate per zone must be determined according to the conditions which exist. I do not believe that a hard and fast rule can be laid down for all cases. A so-called inner zone of 5 cents would seem mandatory in the business district, and it seems to be the most logical. The inadequate financial results from most of the zone systems placed in operation, have resulted from inaccurate estimates of travel on the system. An accurate estimate can only be made from a check of each passenger, and the actual length of ride of each passenger.

The greatest difficulty with any zone system is the collection of fares and their proper registration. The diversified methods in present use on the various systems tend to enhance the pockets of the conductors rather than the company. The various systems employed in the collection of fares on the lines by the zone system practically make bookkeepers out of the conductors and form a source of annoyance to the passengers, being particularly bad in congested areas during peak load movements.

I believe that in solving this great problem before the industry that it will be possible by acting with wisdom, coolness and firmness to apply a remedy which will wholly or in a great part remove the existing evils

while leaving the good behind. We must be cautious in our movements so that we will not discourage enterprise. We do not desire to destroy communities, but we do desire to put our commodities fully at the service of the people on a profitable basis.

Nothing needs closer attention, nor deserves to be treated with more courage, caution and sanity, than the relationship of the corporations to the municipalities. The law of public opinion in its broadest sense must be cultivated and matured in every community. It is well to remember that the adoption of what is reasonable in the demands of a municipality is the surest way to prevent the adoption of what is unreasonable. We need in this country a greater number of newspapers dedicated to the cause of unbiased truth in order that the public mind may not be confused, but so molded in public matters by honest and faithful counsel that the people at large will realize that the problems of the transportation companies are in reality those of the community, and that they can best be solved if the two will act together.

The Maintenance Man's Experiences During the War*

How the Difficulty of Securing Supplies and the Shortage of Labor Affected Street Railway Operation

BY F. R. PHILLIPS

Superintendent of Equipment, Pittsburgh Railways Company

EVEN several months prior to the declaration of war by our government, and increasingly so thereafter, the electric railway industry began to feel its pinch. Huge demands for supplies and munitions of war were made upon the industries of this country by the allied governments and by our own. These supplies were similar in many respects to the material and supplies used in large quantities for the upkeep of street railways. For when we speak of steel, we think of rails, wheels, axles, shells, guns, bars, bolts, shapes, sheets, etc. When copper or brass is referred to we think of coils, brush-holders, controllers, trolley wheels, trolley wire, overhead material, cartridges, shell casings, etc. The serious shortage of coal because of the enormous consumption here and abroad together with the restricted production in foreign countries nearly put an end to street car operation in a number of communities. As time progressed and our government increased its preparations for war, with greater and still greater intensity, many manufacturers of street railway apparatus practically withdrew from the market, leaving many of us in a somewhat precarious position. This forced us into the practice of using substitutes and required a change in practice which proved decidedly uneconomical. Moreover, in order that some semblance of service might be maintained, we were compelled to rob some cars to keep others in a serviceable condition.

The Army, Navy and other governmental departments made conscientious efforts to relieve the situation, but with no practical result. Priority certificates were admirable pieces of paper, and a thing much coveted, but they rarely earned dividends. Furthermore, the quality and workmanship of the supplies and materials which were secured were far below normal.

Materials that were welcomed with open arms and glad hearts during this period would, prior to the war, have been promptly rejected or scrapped. The exigencies of the situation, however, taught us many lessons in reclamation of material, although the line of demarcation between a sensible and a mistaken economical practice is still a question of some debate.

The shortage of material also led many of us to use materials and supplies beyond the time usually considered economical. Of course, prices increased in leaps and bounds and in many instances beyond reason. One instance perhaps will suffice to illustrate. A certain class of material used in large quantities for the insulation of electrical apparatus, prior to the war sold for 90 cents a pound. During the most critical period and a time when it was most needed, the price was \$9.80 a pound. This material was not used in quantities for war purposes and is produced in this country.

LABOR SHORTAGE AN ADDITIONAL BURDEN

Companies operating in districts within and contingent to large manufacturing centers where munitions of war were manufactured, even before the war keenly felt labor shortage. Manufacturers of munitions in their anxiety to serve their country bid against each other for the labor supply, and the pace became so hot that the poor street railway man soon became an "also ran." Many of the trained employees, especially in the equipment departments, soon joined the stampede. Moreover, large numbers of the employees through enlistments and the draft entered the service of the Army and Navy and other branches of governmental work and the two combined causes of exodus made serious decreases in the employee rolls of railway companies.

While the maintenance departments of street railway companies draw largely upon the various trades for their labor supply, still the work is of a special nature and requires special training before the men become proficient. It has been estimated that the cost of replacing the average shopman and completing the transaction costs approximately \$75 per turnover. One company in an effort to maintain its quota of men during the period from July 1, 1917 to Dec. 31, 1918, employed 3083 men to fill 600 jobs, or an average of five men to each job during the eighteen-month period. Furthermore, it was not possible to maintain the necessary quota of men within fifteen per cent.

Many of the larger companies resorted to the employment of women in occupations which had heretofore been considered of a character beyond the possibility of performance on the part of the gentler sex. Three years ago who would have supposed it possible that women would be oiling motors, painting cars, repairing cars, motors, trucks, controllers or winding armatures. It must be said to their credit, for the most part, that they performed their tasks nobly and well, and in some instances, had it not been for them I fear that our very poor showing would have been much worse.

Under such circumstances, it was, of course, impossible to maintain previous standards and schedules of work despite our utmost effort to meet the situation. Then the unprecedented weather of the winter of 1918 added to our difficulties. In certain districts, particularly in the east and middle west sections, there were continued low temperature conditions with repeated snow, rain or sleet storms. In my vicinity for fifty-one

*Abstract of paper read before Pennsylvania Street Railway Association at Harrisburg, June 27, 1919.

consecutive days in the winter of 1918, the temperature was below zero or it snowed, rained or sleeted, and on many of them there was a combination of two of these.

Like other public service undertakings, many of the municipal departments were operating below normal and were unable or at least did not perform their proper functions. The streets in many cities were packed with snow and ice, and practically the only navigable area within the streets was in the railway area. All of the traffic was concentrated within the trench cut through the snow by scrapers and sweepers. Due to the fact that catch basins and other surface drains were closed, this trench became the surface drainage system for the time being. As one master mechanic very aptly put it—"railway motors are not submarines," nor have railway motors capable of operating continuously in salt and acid water yet been designed. The result was an avalanche of disabled equipment.

Many governmental departments (national, state and municipal), unfamiliar with the well-nigh insurmountable conditions which we were compelled to meet, through various institutions and agencies brought to bear all the pressure possible to force us to improve the service, and in their earnest efforts to secure what they considered proper transportation facilities for munition workers, more often than not, imposed conditions upon us that only served to add further to the already heavy burden.

But this experience of the war period has served to provide a fund of knowledge which will no doubt be invaluable in solving the problems of the future.

Up Goes Sheffield, Too

AT A RECENT meeting of the Sheffield (England) Council the following figures were quoted as representing present prices for tramway material and those quoted four years ago:

Article	Unit	Price		Per Cent Increase
		1914	Dec., 1918	
Tramway rails.....	Ton.....	\$29.20	\$85.16	192
Cement.....	Ton.....	8.28	31.28	279
Gear wheels.....	Each.....	15.00	67.64	351
Armature coils.....	Set.....	24.33	83.95	245
Oil.....	Gallon.....	.24	.73	200
Tickets.....	Thousand.....	.06	.30	400

The cost of timber during the same period has risen 500 per cent. In 1916 tenders for the construction of fifty cars were asked for, and the price quoted was \$5,840 per car. Recently \$14,600 apiece was paid for fifty cars of a similar type.

In consequence of the increase of wages, alterations in working hours, higher cost of materials, and additional capital expenditures, and allowance for contingencies, the estimated increase in expenditure in conducting the tramways department will be \$744,300 per annum. The estimated increase in revenue from the advance in fares is \$914,900 per annum.

Some of the Parisian society people are taking a hand in strike breaking for the purpose of assisting Paris to regain her much needed street transportation service. Baron Henry Rothschild has been a chauffeur of an auto-bus, making regular trips over a city route, while Countess Villestreya has been punching tickets in a subway station.

Federal Commission Completing Plans

THE Washington representative of the ELECTRIC RAILWAY JOURNAL reports that since the first official hearing of the Federal Electric Railways Commission in New York City, June 19, questions of organization and the formulation of plans for its continued work have absorbed its attention. There have been conflicting opinions as to the period of the commission's existence, owing to the fact that the President's contingent fund, out of which the commission's expenses are to be paid, was not made available after June 30.

Some officials in Washington have thought that the commission would be obliged to wind up its work on that date. Others, among them the Attorney-General, have taken the position that the commission will not expire until the President issues the proclamation of peace, and that it may continue to function, provided the \$10,000 set aside at the President's direction for its use, can be made secure, in accordance with the usual practice of the Treasury Department in such cases.

The commission, fortified by the opinion of the Attorney-General, will therefore continue its work and has already appointed as its executive secretary Charlton Ogburn, formerly examiner of the National War Labor Board, in charge of the electric railway section. Mr. Ogburn is now appointing his staff and arranging for the commission's offices in Washington.

As heretofore announced, all persons interested in the electric railway problem, including state and municipal authorities, civic associations, chambers of commerce, boards of trade and electric railways themselves, will be given an opportunity to appear before the commission and testify as to the conditions in their respective states and communities.

It is also proposed to issue questionnaires in order that the commission may receive a report from all interested parties unable to appear in person. A force of statisticians and accountants will be employed to examine the reports made to the commission, and the testimony of witnesses will be reviewed and classified. The information so secured will form the basis of the commission's report to the President. If it is impossible to prepare a complete report prior to the proclamation of peace, action will be taken for legislation necessary to continue the commission until its work be completed.

The commission has already received a number of unofficial requests from interested parties in various cities, urging the importance of making a local investigation of the electric railway situation. Whether the commission will be able to heed these requests depends of course upon the number of communities desiring particular investigations, the length of the commission's term of office and the sufficiency of funds made available for its use. No decision has as yet been reached by the commission with reference to this branch of its activities.

Eugene Meyer, Jr., managing director of the War Finance Corporation, whose place on the commission has been temporarily filled by Louis B. Wehle, counsel of the corporation, is expected to return from Europe in the near future and take his place on the commission. It is proposed to hold two hearings a week in Washington until all those desiring to be heard have had an opportunity to present their views and give information regarding transportation conditions as they find them.



ONE OF THE STATIONS AS COMPLETED

Subway in Madrid, Spain, Nears Completion

Present Congested Transportation Conditions in the Spanish Capital Will Be Greatly Relieved by the Completion of the First Line of the New Subway Next Fall

THE Central Metropolitan Railway of Madrid, Spain, will provide a rapid means of transportation between the city's most densely populated districts, and between these and the principal railway stations. Double-track subways will be constructed to constitute the main arteries of a network which at some date will cover the whole of the capital and its suburbs.

The capital of Spain has developed rapidly, due to the increase in transportation facilities already provided. This has caused a spreading out of the population, as the inhabitants, trusting the transportation facilities as to future adequacy, have moved away from the centers. The network of electrical carlines is, however, inadequate to satisfy the growing needs of the capital.

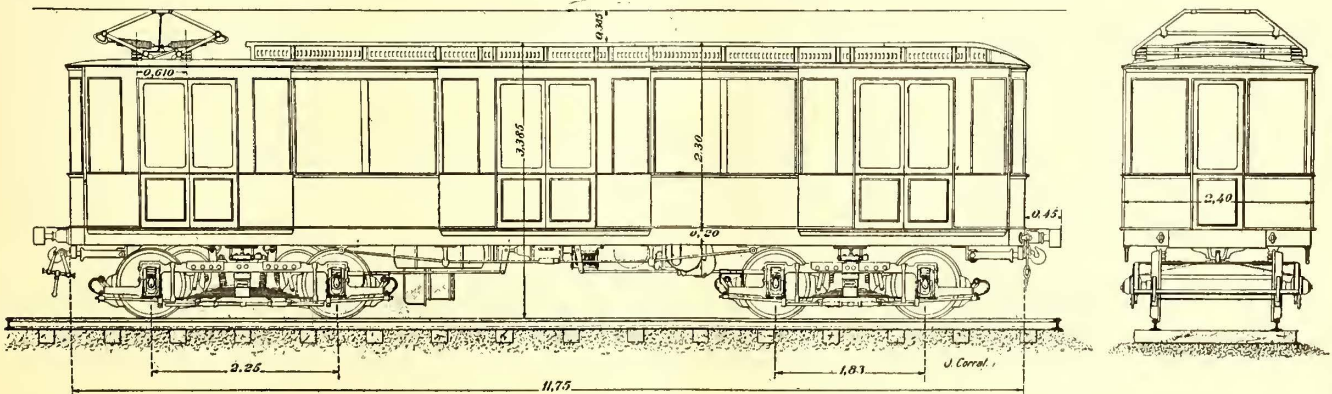
Many of the city streets are so narrow as to preclude the use of more than a single track. The consequent throttling of traffic, added to the tie-up caused by congestion of vehicles, leads to a service necessarily very slow and irregular. This condition cannot be remedied by increasing the speed of the vehicles and adding to the number of cars, as the difficulties at the crossings would make matters worse rather than better.

On the "Metropolitano" the average speed will be 15.5 m.p.h., with sufficient capacity to permit a two to three-minute headway between trains. These will consist of five-car trains, comfortably accommodating 250 persons per train. The two-track tunnel has been designed to accommodate wide and comfortable cars, which will be well lighted.

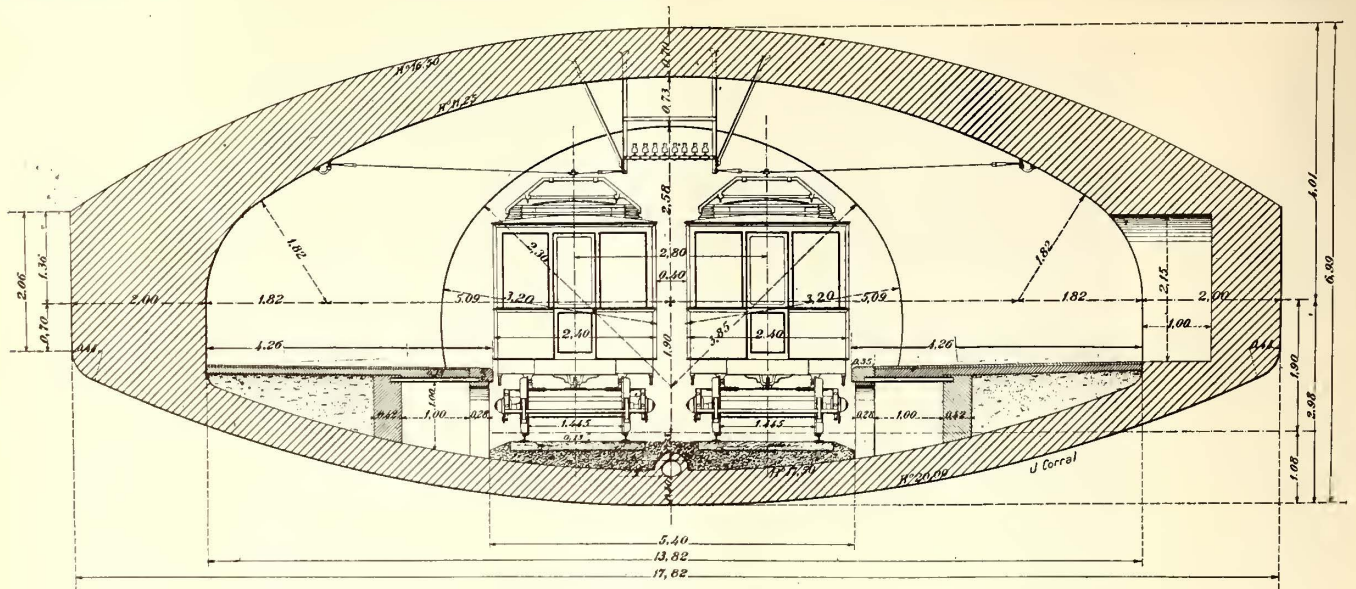
SOME DETAILS OF THE MADRID CENTRAL-METROPOLITANO RAILWAY

The present plan includes the construction of four lines to constitute the Central Metropolitano system. Line No. 1 will run north and south, from Cuatro Caminos to Progreso, line No. 2 from Ferraz-Puerta del Sol-Calle Alcalá to Goya. Line No. 3 the full length of Serrano Street and line No. 4 from Ferraz-Boulevares-Goya to Alcalá.

The total route mileage of this system is about 9. The tunnel will be double-track throughout its full length, and of solid concrete construction similar to that of the Paris subway but in dimensions slightly smaller. The stations will be 197 ft. long and built as near the street



TYPE OF MOTOR CAR USED FOR SUBWAY OPERATION



SECTION OF SUBWAY AT STATION

level as possible to make them easily accessible. The maximum grade of this section, which follows the street center, is 4 per cent; the curves have a minimum radius of 328 ft.

The construction of the tunnel has advanced continuously since 1918, in accordance with the plans previously made, and at the end of the year the stretch from the Puerto del Sol to Cuatro Caminos was completed. At the same time the approaches to the stations have been under construction as well as the shops at Cuatro Caminos.

At the time of the publication of the last annual report of the company but a small number of brace beams and supports with removal of dirt, were necessary for completion. The decorative details for the stations, vestibules, kiosks, etc., are now being taken up and it is expected that the whole work, tunnel as well as superstructure, will be completed before fall.

Material such as rails, ties, car bodies for the motor cars and trailers, trusses for the shops, machinery, etc., are being produced in Spain. As regards material of foreign manufacture, the copper is being furnished by the Standard Underground Cable Company, Pittsburgh, Pa., and it is now stored in the shops at Cuatro Caminos. Of the twenty-four Westinghouse and Schneider motors, one half have already been delivered and the remainder are in transit. The operating accessories for the mo-

tors are from the General Electric Company, Schenectady, N. Y., and the forty-six forward trucks were furnished by the J. G. Brill Co., Philadelphia, Pa. The manufacture of these details was pushed rapidly to provide for early operation.

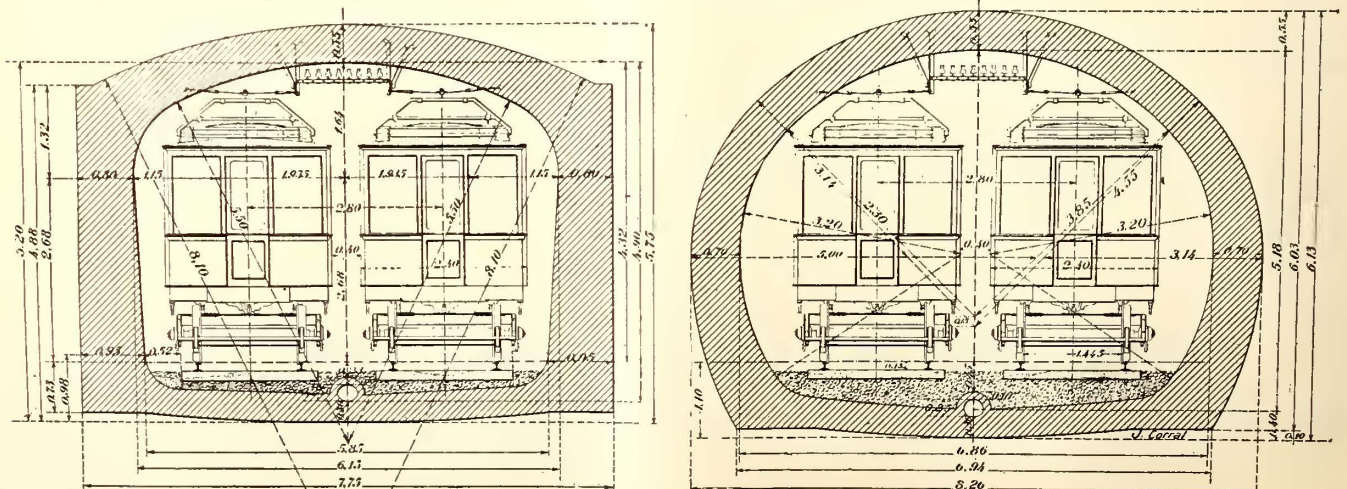
Assuming that the American manufacturers can make shipment on the expected dates, the contractors promise to put branch No. 1, from Sol to Cuatro Caminos, in operation next October.

The total cost of the north-to-south branch is as follows:

Understructure	\$ 787,396.57
Superstructure	188,991.61
Mobile material and coaches	316,520.00
Repair shops	106,482.90
Formation of the company, making of the plans, management, and interest for the second year of construction	144,608.92
Total	\$1,544,000.00

The prices given are the same as those which have been contracted to be paid for all the additional underground work in Madrid.

During the second week in May the Glasgow, Scotland, Corporation Tramways made a record for receipts, taking in for that week £33,514, which is £161 more than the previous record.



TYPICAL SECTIONS OF SUBWAY

Operating Without Telephones

“Preparedness” Plans Made by Boston Elevated Railway During the Recent Strike of Telephone Operators in New England

By EDWARD DANA

Superintendent of Transportation, Boston Elevated Railway

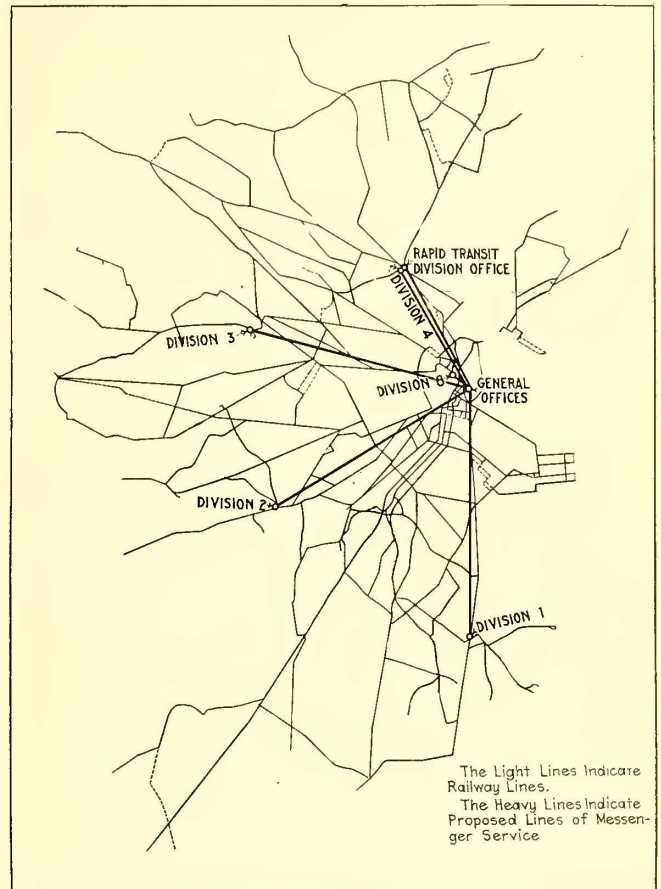
THE strike of telephone employees in Boston which occurred on April 15, 1919, and lasted approximately seven days, immediately raises the question in the minds of street railway men as to how a transportation system operating 15,000 trips daily and spread over 125 square miles and running its 1600 cars 160,000 miles daily could carry on its business without aid of the telephone upon which it of necessity depends to such a large extent in handling its 6300 men, its accidents and delays and its executive functions.

The Boston Elevated rents its telephone system from the local telephone company, but except for the provision of current to its central switchboard from the batteries of the public telephone company, its telephone system is entirely a self-contained affair, operated by its own employees and designed to meet its own requirements. The central board has 275 connections, of which twenty-four lines are directly connected with the main exchange of the telephone company. These lines were completely out of service during the strike, but while there was great concern as to whether the power which energizes its local system would be maintained by the telephone company, this complete shutting down of its plant did not occur, and consequently its operation was relatively little affected by the strike which paralyzed other industries.

Of course the failure of public lines leading to its switchboards necessitated securing the co-operation of the police in the various communities in case of serious accidents or delays, and men were stationed at police headquarters representing the company. This in reality connected the police patrol boxes with the company in case of serious trouble. The only real problem which the company had to face was that of keeping in touch with its operating officials during the evening and the night when they were not available at their offices. This was accomplished by providing automobiles at the five locations where divisional headquarters are maintained, and after the first night this plan was found to be reasonably satisfactory to meet emergencies and relieved to a large extent the concern of the management, although the officials were handicapped in doing the business that a railway operating man necessarily does by telephone from his residence.

COMPANY'S PLANS IN CASE OF TOTAL FAILURE OF TELEPHONES

The object of this article is to outline what further arrangements were contemplated had the central branch exchange switchboard of the company been deprived of its battery current and the system been entirely deprived of telephone service. Such a study is not alone dependent upon the occurrence of a strike but might very well occur through the destruction by fire of the building in which this switchboard was located,



MAP OF BOSTON ELEVATED RAILWAY MESSENGER LINES

although under such conditions the results would not be so disastrous as in the case of a strike because the public lines would in that condition be available.

The Boston Elevated Railway has six divisions—four operating divisions, one elevated division, and one non-operating surface and subway division. When the seriousness of the situation became apparent, the transportation department officials conferred and laid out a “time-table of communication” which in some respects afforded advantages of communication by messenger which even surpassed the telephone.

The office of the superintendent of transportation was deemed to be the heart of the communication system, and from that point a trunk line was planned to each of the division headquarters upon which would be operated upon a moment's notice a regular headway of messengers leaving every five minutes over a definitely planned route. These messengers would use in each case the quickest available method of transportation, which for a certain portion might be walking to a subway station; another portion, the rapid transit service, and still another portion, an automobile. This

would require a definite number of men exactly as a car line demands a definite number of cars and crews to maintain regularity of service. All concerned would know of the exact route, and that verbal or written messages could be handed to this conspicuously-marked constantly-moving chain of men, at any fixed point along the route.

It was found that after allowing for reasonable delays and layovers as well as relief to cover the entire operating period of the day that the several divisions which are respectively—4, 3.70, 3.52, 2.16, 2.16 and 0.25 miles from the office of the superintendent of transportation could be maintained with twenty-five men and four autos.

When this had been arranged the backbone of the system had been provided, and it was a relatively simple matter to arrange local schedules in the divisions to tap the trunk line at divisional headquarters.

In addition it was planned to arrange an automobile patrol which would help in the elimination of long delays or lost cars, as for instance when a car operated on an infrequent line should get out on the line and become derailed or disabled and have no means of communication with the outside world.

SUPERINTENDENT'S OFFICE MADE CLEARING HOUSE

Much of the success of the plan would have depended upon the work done in the office of the superintendent of transportation in sorting mail and in classifying reports and in promptly and correctly forwarding information received. To this end additional help was arranged for, but the quickest method of securing results here would have been demonstrated by actual experience after the plan was in operation.

While the operation of the system under such an arrangement would have taxed the patience of the operating officials, it was confidently expected that if the word came that the telephone service had "gone" there was not so much to fear as might at first be supposed.

Fortunately this did not occur and the officials can only feel satisfied at the "preparedness" measures, but it might have occurred and may actually occur some day on some property.

Tool Holders for Use in Close Quarters

A NEW LINE of set screw pattern turning tools has recently been placed on the market by J. H. Williams & Company, with plants at Brooklyn and Buffalo, N. Y. These tools are provided with right and left-hand offsets and straight shanks. The nose of the holder is beveled to permit their use in close quarters. The tools are all drop forged with a strong tough grade of steel and are submitted after forging to a special heat treatment. The cutter-holding channel is broached to accurate size in special machines and provides a rigid seat for the cutter.

The electric cars on all lines in and near the city of Tokyo, Japan, carried some 1,450,000 passengers during the day of April 1 last. The income from this source was 63,136 yen, or \$31,568. This is the largest amount ever recorded since the operation of this service. The corresponding figure for the same day last year showed 120,000 fewer passengers carried.

A. S. T. M. Shows Strong Spirit of Co-operation

At the Annual Meeting Held in Atlantic City Last
Week Several Subjects of Interest to
Electric Railways Were Taken Up

THE American Society for Testing Materials held its 22nd annual meeting last week at Atlantic City, N. J. The significant development of the meeting was the great expansion of co-operative work with other societies and with testing and research laboratories. Renewal of vigor in materials study was apparent, not only in the unusually strong program of papers presented, but also in the announcements of work in progress or to be undertaken.

New policies were fixed by several decisions of vital importance which the Executive Committee reported to the meeting, though matters of great moment are still in abeyance. A definite organizational policy has been established, with the first independent headquarters in the society's history. C. L. Warwick, long the assistant of the late Professor Edgar Marburg, secretary of the society since its foundation, has been appointed secretary-treasurer to succeed him. The society's office will no longer be at the University of Pennsylvania, but is to be located in the building of the Engineers' Club of Philadelphia, 1315 Spruce St., and is to be manned by a full-time organization. During the past year the society has gone outside the close bounds of its technical activities by joining the Engineering Council and by participating in the formation of the American Engineering Standards Committee. Both of these new activities have brought into being very serious problems, not yet solved. Furthermore, many demands for taking up joint committee work in different technical subjects arose after the end of the war, and they led finally to the society's entering upon a much broader program of co-operation than has prevailed at any previous time since its organization. All these matters produced active discussion at the meeting, but in the sessions of the society attention to the questions at issue was restricted to brief announcements by the chairman, with no discussion.

While these matters were in the foreground of attention, notable technical work constituted the essence of the meeting. In the matter of steel rails, results were reported that give distinct promise of an early advance in this difficult subject. A classic group of papers on magnetic study of steel quality was presented. Fatigue and impact testing were brought into new prominence. Several ingenious new testing instruments gave further proof of the activity of laboratory investigators. A remarkable paper on paints injected new vitality into the lagging thought in this subject.

GIRDER RAIL SPECIFICATIONS REVISED

Sub committee I has had under consideration in co-operation with a committee of the American Electric Railway Association the question of omitting the drop test in the standard specifications for open hearth steel girder and high Tee rails, with the intention of substituting a ball impression test for this. The previous test did not bring out the quality most desired by users of girder rails, viz., resistance to wear. Moreover, girder rails owing to their irregular section are difficult to test in the drop, and their practical use is such that the drop test is not considered to be an essential

one. To meet the demands of the users of this rail an impression test to determine hardness was drawn up in co-operation with the A. E. R. A. committee. The following are sections relating to this test:

7. (a) Four representative sections of rail from each melt shall be selected by the inspector as test specimens. (b) Excess scale on the head of the section shall be carefully removed.

8. (a) The head of each specimen shall be subjected to a pressure of 50 net tons. (100,000 lb.) for a period of 15 seconds applied through a ball $\frac{3}{4}$ in. in diameter. (b) The average depth of impression obtained on the four specimens shall not be more than 3.8 mil., for Class A rails nor not more than 3.6 mil. for Class B rails.

9. If the average of the impression tests from any melt fails to conform to the requirements specified in Section 8 (b) the manufacturer may at his option test each rail from such melt by making an impression test on the web as described in Section 8 (a). Rails so tested which conform to the requirements as to depth of impression specified in Section 8 (b) shall be accepted.

The committee believes it is justified in recommending an impression test differing from the standard Brinell test for several reasons: First, that the use of the larger ball is more convenient in view of the considerable number of tests contemplated. (Four from each melt with provisions for testing possibly every rail.) And the size of the specimen; second, that the test is intended to be comparatively simple so far as girder rails are concerned and not absolute—that is, that the user is not particularly interested in the Brinell hardness of the rail; and third, that the proposed test is in agreement with the present foreign practice in tests of girder rails.

The proposed revision has been approved by the members of the A. E. R. A. committee with which sub-committee I has been co-operating, and it is understood that this committee will recommend its adoption by the American Railway Association at its next meeting.

NEW TINNING TEST FOR COPPER WIRE

In the specification for tinned soft copper wire proposed as tentative standard there is included a new method for determining the integrity of the tin coating. It is based on the view that the tin coating must be entire, but should not be thicker than this object necessitates, as a thick coating will crack when the wire is bent or stranded and in any case reduces the conductivity of the wire. For these reasons only two cycles of dipping in the test solutions are specified—the second cycle to make sure that spots which though not bare have too thin a coating are detected. The specified method is to dip a clean sample of the wire into dilute hydrochloric acid (sp.gr. 1.088) for 1 min., washed, wiped dry, and then dipped for 30 sec. into sodium polysulphide solution (sp.gr. 1.142), which will blacken bare copper; then to repeat this cycle. If these two cycles produce any blackening of the wire beyond $\frac{1}{2}$ in. from the cut end, the sample is considered to have failed.

OTHER FEATURES OF COMMITTEE REPORTS

A remarkable paper on paints injected new vitality into this subject. A flashpoint test worked out for paint thinners other than turpentine has, during the past year, been found to be accurate also for turpentine, and the preservation coatings committee therefore recommended its extension to cover all thinners. The same committee continued the inspection of test panels erected two years ago as a means of determining the best way of preparing iron and steel surfaces for painting. No conclusions will be reported before another year or two of exposure, but one well-defined result obtained so far is that cleaning a deeply rusted surface with scraper and wire brush is an unsatisfactory preparation for painting; the panels prepared in this way have failed badly.

On the other hand, the plates which were painted as received from the mill, with mill scale intact and adherent, are among the best up to date.

With the presentation of tentative specifications for viscosity tests of lubricants, a long contest in committee came to an end during the past year. The Saybolt instrument was decided on, in spite of the objection by various laboratory investigators that it does not give "absolute viscosity."

The method for determining the fusibility of coal ash presented by the committee on methods of sampling and analysis of coal is one which was formulated by A. S. Fieldner and has been used by the U. S. Bureau of Mines for several years. It was endorsed in joint action with the American Chemical Society.

C. E. R. A. Cruises on Great Lakes

Association Charters S.S. "South American" for Four-Day Meeting—Safety Cars, Relief for Railways and Other Topics Discussed

THE Central Electric Railway Association celebrated the return of the country to a peace basis by holding a summer meeting on the Great Lakes, having the exclusive use of the large cruising steamer *South American*, from Sunday, June 29, to Thursday, July 3, inclusive. The steamer sailed from Toledo on the morning of June 30, touching at Detroit in the afternoon. About noon on Tuesday it reached Perry Sound, and later made a two-hour stop at Georgian Bay. On Wednesday a brief stop at Mackinac Island was made according to a report telegraphed from that point, and the schedule called for other short stops at Harbor Springs, and Benton Harbor early Thursday morning. The cruise was to end at Chicago on Thursday afternoon. The two-hour stop at Owen Sound which was planned, was not made.

The steamer, which has a capacity of 360 persons, had 350 on board, and all were delighted with the trip. The sentiment which prevailed was that much credit was due John Benham of the International Register Company, and James H. Drew of the Drew Electric & Manufacturing Company, for the fine arrangements and entertainment for which they were responsible. The newspaper men in the party published a small daily under the caption *Central Daily Spray*, which furnished a means of communication among the attendants at the meeting and also supplied some material of the "lighter vein" variety.

The program opened with a meeting of the executive committee on Monday morning, followed by a business session with reports of committees on Monday afternoon. On Tuesday morning S. W. Greenland, general manager, Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., presented a paper on "One-Man Car Operation." This paper and the lively discussion which followed it will be given in a later issue of the ELECTRIC RAILWAY JOURNAL.

On Wednesday, the formal paper was by Robert Rifenerick, consulting engineer, Detroit (Mich.) United Railway, on the subject, "Burdens from Which We Should Be Relieved." In his absence it was read by Charles L. Henry.

As this was the first boat trip of the association since 1916, it was like a big reunion and the usual good fellowship of the C. E. R. A. members was more than ever in evidence.

Earnings of the Safety Car*

Analysis of Its Possibilities on a Forty-Car Line—
Approximately Sixty-six Per Cent Return
on Investment Is Shown

BY T. C. RODERICK

Assistant General Manager, Tri-City Railway, Davenport, Ia.

IN a great many cities, mostly through the aid of public utility commissions, an increased fare ranging from 6 cents to 10 cents has been established to meet the increased operating costs that prevail at the present time. But the results obtained by increasing fares have been far from satisfactory. In some cases the relief is only temporary. In other cases the expected relief did not materialize. In still other cases, on the first favorable showing of the monthly reports, there was an immediate demand for a restoration of the old rate of fare. Again where the relief had been obtained by action of political boards, such as city councils or city commissions, a change in the political control was followed by an immediate reduction of the fare, and the constant turmoil has kept the business and the public in such a state of uncertainty that the question of service has been almost completely forgotten.

With all of these discouraging conditions there is one ray of hope which not only gives promise of increased revenue but also gives decreased operating expenses and possibilities of more frequent service with greater satisfaction to the riding public. These results can be obtained by the use of the safety car.

To show the possibilities of the safety car we will apply its costs of operation to the Tri City Railway of Iowa. The operating costs per car-mile during the past eight months, for the four primary accounts mentioned and the possible figures for the safety car follow:

	Present Cost	Safety Car
Maintenance of way and structures.....	\$0.0208	\$0.0125
Maintenance of equipment.....	.0374	.0187
Power.....	.0706	.0353
Transportation.....	.1120	.0616
Total.....	\$0.2408	\$0.1218

The majority of the cars in Davenport weigh approximately 40,000 lb., have four 35-hp. or 40-hp. motors, are from 42 ft. to 44 ft. over all with a seating capacity of forty passengers and have an average schedule speed of 8.87 m.p.h. The weight of the safety car is approximately 7 tons with a seating capacity of thirty-two.

Maintenance of Way and Structures.—Without exact figures for comparison a reasonable method would seem to be a comparison of axle tonnage of each type of car over the track, though the hammer blow of the heavier car would be more severe than in direct proportion to its weight. The tonnage per axle of the present car is 5 tons, for the safety car 3½ tons, while the ratio of axles per car is two to one. If 50 per cent more safety cars were used than of the present equipment the percentage of axle tonnage would be 52½ per cent. If we allow 7½ per cent for extra cars of the present type, the tonnage over the track would be 60 per cent of the tonnage of the present cars. Applying this percentage to the present cost of maintenance of way and structures would give us, for the safety car, 60 per cent of \$0.0208 = \$0.0125.

Maintenance of Equipment.—This item is subject to a great many variables such as wage scale, grades, curvature, condition of track and climate conditions. Reports from systems that have had these cars in operation for three years give cost of maintenance of equipment for the past twelve months at 1.2 cents on one and 1.02 cents on the other. Others give reports varying from 15 per cent to 50 per cent saving over previous cost of heavier equipment. Reports from Cedar Rapids, where they are operating safety cars with two men, indicate the saving would be approximately 50 per cent of the present cost. Applying this percentage to the present of maintenance of equipment would give us for the safety car, 50 per cent of \$0.0374 = \$0.0187.

Power.—This is an item in which the saving is very apparent, due to the light weight of the car and smaller number and size of motors. Comparing the kilowatt-hours used per car-mile of the safety cars operated in Cedar Rapids with the cars operated in Davenport, on both of which the kilowatt-hour is metered at the car, we find the safety car using 47 per cent of the other car. This comparison is made with the line with the least grades in Davenport. On an average for the system it would be less. Assuming a power consumption of 50 per cent present cost we have for the safety car 50 per cent of \$0.0706 = \$0.0353.

Transportation.—The use of one man per car is a very apparent saving in the safety car operation. It has been customary to give this operator a higher compensation for the added responsibility, and this rate has been usually 10 per cent. At this rate the reduction in expenses amounts to 45 per cent. This would make the cost for transportation \$0.0616.

The figures for traffic and general would remain the same as at present so that on the basis of these assumptions there is a saving per car-mile in operating expenses of \$0.1127 or nearly 48 per cent.

The safety car, having only 80 per cent of the seating capacity of the present equipment, 25 per cent more cars would be required to furnish the same number of seats. The total car mileage of the Davenport lines for 1918 was 2,067,450. The increased car mileage due to the decrease in car interval would be 568,586 miles, which, at 0.1281 cent per car-mile, would cost \$72,872.

Nearly all systems that have decreased their car interval by the introduction of safety cars have shown an increase in receipts practically equal to the increased mileage. Assuming in this case 50 per cent of the car mileage increase we would have a 15 per cent increase in gross receipts, or \$78,495.

Credit:		
Savings on operating expenses 2,067,450 car miles at...	\$0.1127	\$233,002
Increased earnings.....		78,495
Total increase.....		\$311,497
Debit:		
Increased operating expense.....		\$72,872
Increased annual charge, 15 per cent on \$275,000.....		41,250
Total increased expenses.....		\$114,122
Net increased earnings.....		\$197,375

Fifty safety cars at \$6,000 each, would cost \$300,000, an amount which would be partially offset by the sale of forty double-truck cars at possibly \$2,500 each. Necessary track changes would cost \$75,000. The account would then stand as above. The annual increase in earnings is \$3,947.50 per car or nearly 66 per cent of the investment. This is exclusive of the saving in accidents, which reports from nearly all companies show to be very materially reduced.

*Abstract of paper read at meeting of Iowa Electric Railway Association, Colfax, Ia., June 19, 1919.

Keeping Up the Trolley Voltage*

Automatic Substations Have Demonstrated Ability to Improve Operating Conditions, and Possibilities Are Attractive

BY C. W. PLACE

Engineer, General Electric Company, Schenectady, N. Y.

IN ANALYZING many sets of conditions under which electric railways have in the past found it advantageous to use manually operated substations I became thoroughly convinced that power can be most continuously and satisfactorily delivered by having the transforming device automatically rather than manually controlled. The automatic substations can be put where they are needed and have capacities proportioned to the load in the immediate vicinity instead of having to provide for the load plus losses in long feeders. The transforming devices need not be bunched to accommodate the operator as to living conditions, or to minimize investment in property.

Railway systems fall into two natural divisions or classes as regards the application of automatic control, namely, those furnishing interurban service or service approaching it in character, and those furnishing city service. The advantages of automatic substations for interurban service have been fully and properly discussed and seem most generally appreciated. In this type of service the more infrequent the cars the greater will be the proportional saving beyond the labor saving.

In city service the advantages over manual operation multiply in proportion to the density of the traffic and the load difference between rush and slack hours. The larger the city and the more congested the traffic, the greater the advantage of using some type of automatic control for the machines and the feeder circuits.

It seems to me that in the immediate future, due to present housing conditions, there will be much agitation resulting in the development of many real estate additions, with a demand for railway service which may not promise profit for some years. The only way that I can see for the railways to make the necessary extensions is by putting in small automatic stations and using light-weight, one-man cars.

All companies must lay out their feeder, transforming and generating systems on the basis of the peak load, hence anything that increases the peak requires additional investment. This is why reduction in weight of cars, which must be accelerated most frequently during the peak, is receiving so much attention. Every volt drop in potential from power plant to motor represents wasted power which must be paid for before returns on the investment can be realized. Furthermore, it is the drop in the return circuit which provokes electrolysis discussion. Hence any remedy that cuts down the loss on the positive side of the complete circuit does the same on the negative.

The maintenance of the trolley voltage cannot be divorced from the way in which the power is used when supplied. Reference has been made to the effect of the peak on the size of equipment all along the line. The use of automatic substations improves this peak condition immensely and certain modifications in the conditions under which the cars are operated would allow the substations to help still more.

For instance, if the railways could prevail upon the state commissions and the public to allow them to operate their present heavy cars as express cars, stopping them only at transfer points until far out into the residence district, and to pick up the intermediate, and short haul people with one-man cars, stopping anywhere, the railways would lower their peaks, would require less transforming apparatus to handle the same number of passengers and would economize the passengers' time.

There is another phase of the question that everyone may not fully appreciate. At present, with commutating poles, flash guards, and other safety features on rotary converters, the whole limitation of service from a machine is dependent upon heating. Less capacity is required to deliver a given number of kilowatt-hours from a number of machines if the iron losses are removed during practically idle periods. For example, the no-load losses for a 300-kw. set recently investigated were 3.33 kw. for the transformer and 8.7 kw. for the rotary; while the possible shut-down period was eleven hours out of the present eighteen-hour day.

To return to the general principles involved in this matter, voltage between trolley wheel and rail is a factor in making the car move and the nearer to normal it is the more efficient is the operation. As long as voltage is maintained at the car and none of your equipment up to that point becomes dangerously hot, it is undesirable to have any underloaded machines on the line. It is desirable, however, to have one or more additional machines, as near the load as possible, come into the circuit as soon as the voltage really begins to go down (not on a momentary dip). When this time comes the machine should come in promptly. All of the operations of starting up must occur in the proper sequence and as rapidly as possible within the capacity of the machine.

Hand operation can be improved upon considerably by fixing the polarity of the machine and hastening its building up by exciting the fields at the proper instant. Next the rotary comes onto the line by the rapid cutting out of a load-limiting resistance. After the machine is on the line this load limiting resistance prevents injury to the machine itself by preventing the current from building up unduly. The lowering of voltage on the line caused by introducing the resistance in turn starts up another station in exactly the same way as the first machine was started, or the high current itself brings in another machine. At each point it has been considered advisable to have a check on the proper completion of one operation before the next can occur.

The load-limiting resistors mentioned have been furnished a number of times for use on hand-operated machines, where it was not considered possible to go to the expense of making stations automatic.

Where the station supplies power over a number of feeders the resistance has been split up and part put in the machine and part on the individual feeders.

There are other types of feeder control which involve breaking the feeder circuit on the occurrence of trouble on the outside circuit.

Still another phase of this automatic control question that is worth consideration is this: Fuel costs money, and any energy obtainable without burning something means a cut in operating expense. An induction motor driven above speed by a waterwheel delivers real energy when it is connected to a system on which frequency is established and magnetizing current supplied by c.c.e.

*Abstract of paper read at meeting of Iowa Electric Railway Association, Colfax, Ia., June, 19, 1919.

or more synchronous machines. There may be possibilities of utilizing this fact on some alternating current circuits. The addition of such source of energy will tend to improve voltage conditions and cut down alternating-current distribution losses just as an automatic substation will do on the 600-volt circuit.

Most railway systems could stand some of these induction generators as a means of improving the power factor. If the effect of the magnetizing current on the power factor is too great an automatically-controlled synchronous machine can be used to neutralize it. Many of these low-head, small automatic stations will be installed, and there is no reason why anyone possessing a fairly good location should not put in one or more. A good location involves banks high enough to give, say, about 10 ft. head without flooding valuable bottom lands.

Regulating Rates in Iowa*

Rates Stipulated in Franchise Ordinances Are Not Contractual but Legislative in Character, and Cities Can Alter Them

BY WILLIAM CHAMBERLAIN

General Counsel United Light & Railways Company,
Grand Rapids, Mich.

HAVING in mind that it lies wholly within the power of the Legislature to establish rates of service for public utilities and that this power may be exercised by it (1) directly either through contract in which it reaches an agreement with the utility or by legislative act in which it establishes the rate by law and needs to bargain with no one (and is subject to no limitations save those of the constitution), or (2), indirectly through delegation of the same powers to some one or more of its minor governing subdivisions, we are in a position to examine the situation in Iowa.

Except as to passenger fares upon railroads, the Iowa Legislature has never directly exercised its power over rates, but has on the contrary expressly delegated this power as to all the ordinary utilities save street railways to the cities and towns within which the utilities operate. This delegation of power is found in Section 725, Code of 1897, as amended. The city power to legislate as to rates, however, is not abridged by the fact that maximum rates have been fixed in a franchise voted upon by the people. Unfortunately, street railway rates are not covered by Section 725, and the power of city councils to increase these rates above the maximum provided in the franchise without a vote of the people is questioned. The Iowa supreme court has never made a decision on this point, nor has any district court, so far as I am aware. My own studies of the subject, however, which have been quite extensive, have convinced me that this power does not exist in city councils, whether charter cities or those organized either under the general law or commission plan law.

STATUS OF COUNCIL'S ACTS

The question as to the proper municipal officer or body to exercise this rate-making power is not the vital question. The vital question now is whether the acts of councils in naming maximum rates in franchises are to be considered as consummating contracts or are to be considered as purely legislative acts of the council.

If contractual in character they are binding upon the utility regardless of whether its last dollar is exhausted in fulfilling the obligation of its contract; if purely legislative in character, that is to say, the initial exercise by the city of its power to fix rates by law, they are subject to attack if by reason of changed conditions the rate fails to yield a fair return upon the fair value of the property devoted to the public use.

It is the opinion of those of us who have been engaged in the rate litigation now before the State and Federal Courts that these franchise rates are to be considered as purely legislative in character and subject to attack as confiscatory under present day conditions, while city officials have earnestly contended that franchise rates are contracts binding upon the company but not upon the city. So far we have had no controlling decision. Judge Wade of the Federal Court has in an interlocutory opinion held adversely to us. Judge Applegate, one of the most distinguished of the District Judges of Iowa, has held with us; while the State Supreme Court, in the case of *Town of Williams vs. Iowa Falls Electric Company*, has very strongly intimated if not fairly declared its opinion that our view is the correct one.

WHY FRANCHISE RATES ARE LEGISLATIVE AND NOT CONTRACTUAL

Unless it is granted in express terms, cities have no legislative power whatever over rates of public utilities, and in but few states has this legislative power over rates ever been granted to municipalities. It is out of this failure of many states to grant to municipalities this law-making power over rates, coupled with the failure of the legislatures to exercise it directly, that the courts of many states have held that cities may have the power to contract as an implied power even though no express power to contract was granted.

This rule is so firmly established and supported by such an abundance of distinguished authority that were it not for Section 725 delegating express legislative authority over rates to our cities and towns, our position would be clearly untenable. But in Iowa the cities and towns have been granted complete legislative authority over rates, and that the power to fix rates by law obviates all necessity of possessing the power to fix them by contract admits of no dispute. However, implied powers are not to be found to make things more convenient or more desirable; they must be necessary to the proper functioning of the city upon a given subject or they do not exist. Therefore, we confidently assert that while cities and towns in Iowa have complete authority to fix rates by law, they do not have power to fix them by contract even though the contract be binding only upon the utility. Ordinance provisions, therefore, must be considered as legislative and treated by the courts as such.

It is perfectly proper for a city council to include regulations of rates in the ordinance granting the franchise and such regulations do not, from the mere fact that they are included in the ordinance granting the franchise, become contractual in character by reason of the acceptance of the franchise. They are legislative rate regulations to exactly the same intent and purpose as though enacted by the city in a separate and distinct ordinance and should be so treated.

This rule is better for the city, for the utility and for the consumer. If it be held by our Supreme Court that

*Abstract of paper presented before Iowa Electric Railway Association, Colfax, Iowa, June 18, 1919.

the so-called franchise rates are legislative in character and thus subject to attack if so low as to be confiscatory under present prices, the decision will be welcomed not only by the utilities but also by the greater proportion of the city councils of the state and by practically all the consumers.

It is a remarkable and gratifying fact that in the greater portion of our Iowa cities and towns the city officials have responded to the needs of the companies with a promptness and fairness unexcelled by any of the public utilities commissions.

Pending the ultimate solution of this problem by the decision of our high courts, no utility should accept a new franchise in Iowa which is granted in an ordinance attempting also to fix rates. If the cities or towns desire the rates to be fixed, they themselves should establish them by separate ordinance which is the fair, just and legal method of proceeding. A number of years before the outbreak of the war some of the companies I have represented adopted this policy, and many franchises have been granted throughout Eastern Iowa in this manner. It is needless to say that these companies have not been troubled during the war with any litigation over increased rates, as automatically the councils are obliged to increase the rates to keep pace with the cost of production and all have willingly done so. It is only where the average mayor or councilman feels that he may be criticised for his action in relieving the company from a contract that he hesitates about meeting the situation fairly.

If this litigation should be decided adversely to the companies, then in my opinion no Iowa gas or street railway company would be warranted in spending any substantial sums for improvements or extensions until it has first secured a new franchise drawn upon proper lines. No franchise at all would be much superior to a so-called contractual franchise, for the reason that the Supreme Court of the United States in the late Denver water case and again in the late Detroit United Railway case has held that even though a utility has no franchise at all, those accepting its service must pay a rate which will yield a fair return upon the reasonable value of the property devoted to the public use.

I believe that most city councils with a full appreciation of the situation would rather accept a surrender of an old franchise to which is attached rates so low as to bring about the practical insolvency of the company and grant a new franchise without rates under the Iowa law than face the inevitable outcome of the ruin of the utility. If this rate litigation is decided adversely to the companies, there should be immediate effort on the part of all utilities to secure franchises without the rate provisions.

Sorbitic Treatment for Rails

**Can Be Applied to New Rails or Those in Place—
The Rail Surface Is Hardened by Use
of This Process**

REFERENCE has been made in these columns to the sorbitic method of hardening rail surfaces, developed in Great Britain and invented by C. P. Sandberg. When applied at the mill, the heads of the rails, as they come from the hot saw at a temperature of about 900 deg. C., are subject to a blast of air at 15-lb. pressure from a series of discharging nozzles. The result of this treatment is the formation in the rail head of different structures which vary according to their depth from the surface, the outer being sorbitic, while pearlite without lenticular formation is found in the center of the head. Sorbite is the term applied to denote the hard,

fine granular structure, obtained without loss of tensile strength or elongation, and with granules scarcely distinguishable with a magnification of 1000 diameters. A special feature of the sorbitic process is that it need not be applied only to new rails, but rails or special work in place in the street can be treated without disturbing

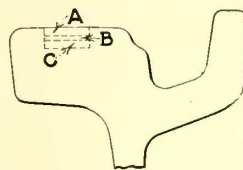
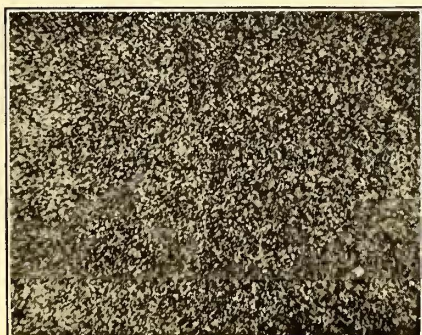


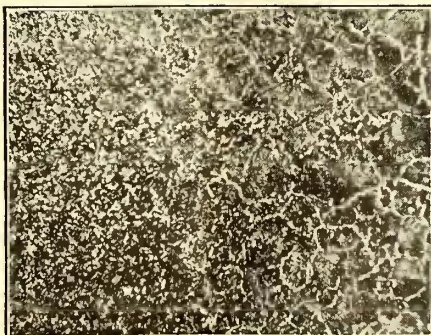
DIAGRAM OF RAIL SHOWING SECTIONS FROM WHICH MICROPHOTOGRAPHS WERE TAKEN

the pavement. In fact, extensive orders for the treatment of rails *in situ* are being executed for tramways in Croydon, Birmingham, Manchester, Bournemouth, London, Liverpool and Glasgow.

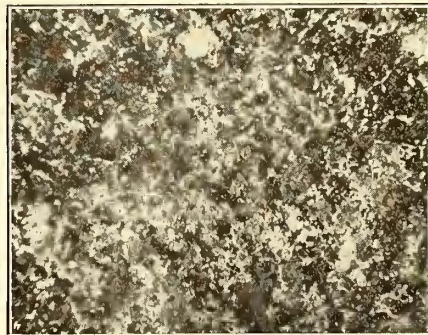
On March 13, 1919, through the courtesy of T. B. Goodyer, general manager of the Croydon Corporation Tramways, a demonstration was arranged for a representative of the ELECTRIC RAILWAY JOURNAL by Scholey & Company, Westminster, agents for Mr. Sandberg. A length of rail was subjected to the flames from a specially designed twin or duplex oxy-acetylene blow pipe, mounted on a light hand-propelled, geared truck, which advanced at the rate of about 1 ft. per minute. The rail surface was raised to a red heat and immediately quenched by means of water jets, close to and just behind the blow-pipe nozzles. After the passage of the truck, large, freshly-ground cold chisels were applied to both treated and untreated portions of the rail. No difficulty was experienced in notching the untreated rail, but the edges of the chisels were immediately turned up or chipped on being applied to the treated portions. The speed of the operation may be regulated to suit the particular requirements of the case by the use of twin, triple, quadruple or fishtail burners.



A.



B.



C.

MICROPHOTOGRAPHS SHOWING GRADUAL CHANGE OF STRUCTURE IN RAIL HEAT TREATED BY SANDBERG PROCESS

An interesting experiment was carried out two years ago on the Leeds Tramways, with the *in situ* treatment. Here a length of rail, heavily corrugated, had the corrugations removed and a portion of the rail was treated. So far, the corrugations have not recurred on the treated rail although they are fully developed on the untreated length. A similar experience is now reported from Birmingham so that the process may have an important bearing on the solution of the corrugation problem.

Ashes—Handling by Steam Conveyor Versus Manual Labor

A CORRESPONDENT who is friendly to the steam-jet conveyor plan of handling ashes, calls attention to the need for additional information if the comparison contained in the brief article on page 951 of the May 17 issue of this paper is to be applicable under conditions more general than those described. On request of the editors of this paper the American Steam Conveyor Corporation has furnished the following additional information:

The steam ash conveyor figures previously given were for an installation in the Big Mine of Canada. This does not have an ash storage bin, but discharges the ashes onto the open prairie, about 140 ft. from the boiler house. Farmers frequently come from the surrounding territory and haul away the ashes for filling purposes. As to an item to cover fixed charges on the steam conveyor and the ash storage bin, there undoubtedly should be such an item, but an analysis of a number of steam conveyor systems which have been in operation for several years has shown that the charges are quite low when the cost per ton of ash is taken into consideration.

In the charge of manual labor there would be an item of \$5.50 for carting and no equivalent charge where the ashes were handled through the steam conveyor. This is due to the fact that in this case the ashes were discharged onto a pile far enough away from the boiler so that they would not interfere. In the case of the manual labor item the ashes were wheeled outside, and then loaded onto wagons, which hauled them to a distance of 250 ft. from the mine. No steam allowance was made in the comparison as the Canada West Coal Company, which operates this mine, burns in its power

plant a dirty, fine slack which had been stored on the open prairie. This is practically refuse coal which the company cannot sell, and consequently the charges for steam were disregarded.

Paving Blocks and Sectional Paving for Railway Tracks

New Type of Construction Along the Tracks of the Toledo Railway & Light Company Is Giving Satisfaction

THE accompanying views illustrate several specially shaped wood blocks for paving along railway lines. One of the illustrations shows alternate rows of Kreolite end-lug wood paving blocks and ordinary second-hand paving bricks laid alternately. The wood blocks were laid about $\frac{1}{2}$ in. higher than the bricks so that the annealing effect of traffic could weld the wood over the edges and prevent cobbling of the bricks. This method of installation also tends to reduce the noise produced by vehicular traffic and as well provides a non-slippery surface. The Kreolite blocks are treated with 6 lb. of creosote per cubic foot by the Rueping process. The end-lug block absorbs all expansion and prevents buckling or thrust against the rails. One illustration shown which is of particular interest is that of a pavement which has been in service for six months and illustrates how the wood blocks iron out over the bricks. It was taken along the Main Street tracks of the Toledo Railway & Light Company.

Another illustration shows how the header blocks are set in a trench and concreted into position. These header blocks serve as a boundary between the railway company's and city's paving. They prevent loosening of blocks in the city's portion of the pavement which might be caused by vibration of the tracks.

The illustrations showing the sectional paving for crossings were also taken on the lines of the Toledo Railway & Light Company. The sections are not fastened down but simply laid in place and can be removed by two men with crowbars. It is thus not necessary to take up all the pavements to repair frogs, as only that portion adjacent to the frogs need be removed in order to make repairs.

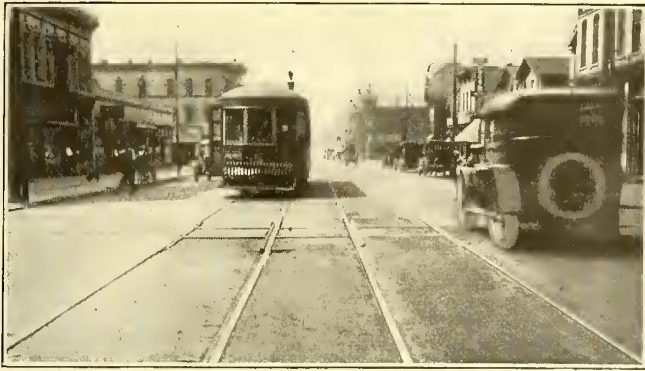
Of the two intersections shown, one cost \$121 and the other \$129 installed. It is estimated that the cost



RAIL AND LUG BLOCKS FOR PAVING IN STREET CAR TRACKS



LUG AND RAIL BLOCKS WITH STRETCHER BLOCKS OUTSIDE OF RAILS



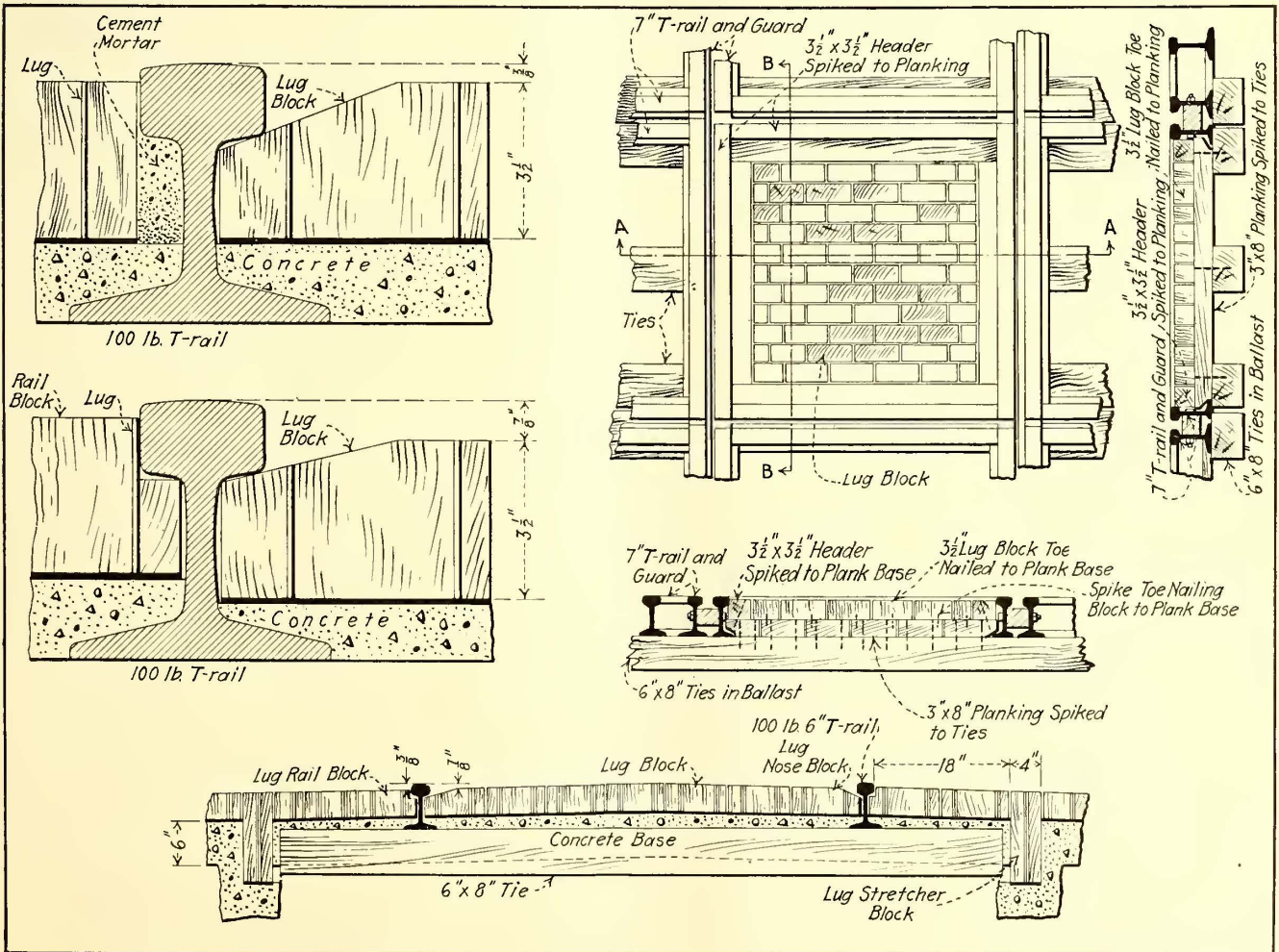
SECTIONAL PAVING CROSSINGS ON THE TOLEDO RAILWAY & LIGHT CO.'S LINE—AT LEFT, INTERSECTION AT CHERRY AND MICHIGAN STREETS; AT RIGHT, INTERSECTION AT CHERRY AND HURON STREETS

necessary to install concrete, wood block or brick pavement at these points would have been slightly more than \$100, and these would have had to be renewed every time that the crossing needed repair or renewal of worn parts.

The intersection at Cherry and Michigan Streets, Toledo, is a 9-in. 125-lb. groove-rail built-up crossing and that at Cherry and Huron Streets is a 9-in., 137-lb., hard-center crossing. These two intersections cost more than if the track had been a 6-in. rail, as it was necessary to use additional planking under the sectional pavement in order to bring it to the full 9 in. which was the rail height.

These two intersections were installed in March of this year and are giving good satisfaction. Inspections made at the Cherry and Huron Streets crossing showed that all four of the crossing frogs were working. This would have destroyed the usual type of paving and would have necessitated an expense of from \$50 to \$100 to replace it, while with this special construction it has not been necessary to disturb the pavement, the expense of replacing it has been saved and the annoyance of bad crossing conditions, to both pedestrians and vehicles, has been avoided.

The Kreolite blocks used were made by the Jennison-Wright Company, Toledo, Ohio.



TOP, LEFT, CONSTRUCTION OF ELECTRIC RAILWAY TRACK PAVING WITH SPECIAL BLOCKS. TOP, RIGHT, CONSTRUCTION DETAILS OF SECTIONAL PAVING FOR CROSSINGS. BOTTOM, SECTION OF PAVING ALONG TRACKS WITH HEADER BLOCKS ON OUTSIDE SET IN CONCRETE

Committee of One Hundred

Revised List of Those Who Will Present the Case of the Electric Railways Before the Federal Electric Railways Commission

PRESIDENT J. H. PARDEE of the American Electric Railway Association has given out a revised and complete list of the committee of 100. Their names follow. The chairmen of the four subcommittees mentioned on page 33 are included in this list among the vice-chairmen, as with the vice-chairmen and the chairmen they form the executive committee of the committee of 100.

MILTON E. AILES, Vice-President Riggs National Bank, Washington, D. C.
 W. R. ALBERGER, Vice-President San Francisco-Oakland Terminal Railways Company, Oakland, California
 H. M. ATKINSON, Director Georgia Railway and Power Company, Atlanta, Georgia
 JULIAN M. BAMBERGER, President Bamberger Electric Railroad Company, Salt Lake City, Utah
 S. R. BERTRON, Director United Gas and Electric Engineering Corp., New York City
 HENRY A. BLAIR, Chairman Board of Directors Chicago Surface Lines, Chicago, Illinois
 CHARLES BOETTCHER, Chairman Board of Directors Denver Tramway Company, Denver, Colorado
 H. G. BRADLEE, President Stone & Webster Management Corp., Boston, Massachusetts
 NICHOLAS F. BRADY, President New York Edison Company, New York City
 FRANK W. BROOKS, President Detroit United Railways, Detroit, Michigan
 BRITTON I. BUDD, President Metropolitan West Side Elevated Railway Company, Chicago, Illinois
 H. M. BYLLESBY, President H. M. Byllesby Company, Chicago, Illinois
 CLARENCE M. CLARK, President E. W. Clark Management Corporation, Philadelphia, Pennsylvania
 B. C. COBB, Vice-President Hodenpyl, Hardy and Company, New York City
 BARRON G. COLLIER, President Barron G. Collier, Inc., New York City
 E. G. CONNETTE, President International Railway Company, Buffalo, New York
 NORMAN Mc. D. CRAWFORD, Vice-President Columbus Railway, Power and Light Company, Columbus, Ohio
 THOMAS A. CROSS, President United Railways and Electric Company, Baltimore, Maryland
 GERHARD M. DAHL, Vice-President Chase National Bank, New York City
 ARTHUR V. DAVIS, President Aluminum Company of America, Pittsburgh, Pennsylvania
 MOREAU DELANO, Brown Brothers, New York City
 A. C. DINKEY, President Midvale Steel Company, Philadelphia, Pennsylvania
 HENRY L. DOHERTY, President Henry L. Doherty & Company, New York City
 WALLACE B. DONHAM, Vice-President Old Co.ony Trust Company, Boston, Mass.
 R. J. DUNHAM, Vice-President Armour and Company, Chicago, Illinois
 W. CARYL ELY, Barron G. Collier, Inc., New York City
 VAN HORN ELY, President American Railways Company, Philadelphia, Pennsylvania
 EDWIN C. FABER, Vice-President Aurora, Egan & Chicago Railroad Company, Aurora, Illinois
 HENRY FLOWERS, President Fidelity National Bank and Trust Company, Kansas City, Missouri
 ALLEN B. FORBES, President Harris Forbes and Company, New York City

FRANK R. FORD, Ford, Bacon and Davis, New York City
 FRANK W. FRUEAUFF, Henry L. Doherty and Company, New York City
 FREDERICK GOFF, President Cleveland Trust Company, Cleveland, Ohio
 GEORGE DE B. GREEN, Vice-President California Railway and Power Company, New York City
 FRANKLIN T. GRIFFITH, President Portland Railway, Light and Power Company, Portland, Oregon
 E. K. HALL, Vice-President Electric Bond and Share Company, New York City

RICHARD McCULLOCH, President United Railways of St. Louis, St. Louis, Missouri
 WILLIAM B. McKINLEY, President Illinois Traction System, Peoria, Illinois
 SAMUEL McROBERTS, Executive Manager National City Bank, New York City
 S. Z. MITCHELL, President Electric Bond and Share Company, New York City
 THOMAS E. MITTEN, President Philadelphia Rapid Transit Company, Philadelphia, Pennsylvania
 RANDALL MORGAN, Vice-President United Gas Improvement Company, Philadelphia, Pennsylvania

J. K. NEWMAN, Chairman of Executive Committee American Cities Company, New Orleans, Louisiana
 J. R. NUTT, President Citizens Savings and Trust Company, Cleveland, Ohio
 E. H. OUTERBRIDGE, President Pantasote Company, New York City
 J. S. PEVEAR, President Birmingham Railway, Light and Power Company, Birmingham, Alabama

E. W. RICE, Jr., President General Electric Company, New York City
 EDWIN W. ROBERTSON, President Columbia Railway, Gas and Electric Co., Columbia, South Carolina
 E. N. SANDERSON, Sanderson and Porter, New York City

W. KESLEY SCHOEPPF, President Cincinnati Traction Company, Cincinnati, Ohio
 J. N. SHANAHAN, President Newport News and Hampton Railway, Gas and Electric Co., Hampton, Virginia

THEODORE P. SHONTS, President Interborough Rapid Transit Company, New York City

PAUL SHOUP, President Pacific Electric Railway Company, Los Angeles, California
 CLEMENT C. SMITH, President Wisconsin Securities Company, Milwaukee, Wisconsin

JOHN J. STANLEY, President Cleveland Railways Company, Cleveland, Ohio
 R. P. STEVENS, President Mahoning & Shenango Railway & Light Company, New York, N. Y.

CHARLES A. STONE, Stone and Webster, Boston, Mass.

J. J. STORROW, Lee, Higginson and Company, Boston, Massachusetts
 J. F. STRICKLAND, President Dallas Railway Company, Dallas, Texas

KNOX TAYLOR, President Taylor-Wharton Iron and Steel Company High Bridge, New Jersey

A. W. THOMPSON, Federal Manager Baltimore and Ohio Railroad Company, Baltimore, Maryland

W. B. TUTTLE, First Vice-President San Antonio Public Service Company, San Antonio, Texas

T. H. TUTWILER, President Memphis Street Railway Company, Memphis, Tennessee

WILLIAM VON PHUL, President United Railroads of San Francisco, San Francisco, California

G. W. WATTLES, Vice-President Omaha and Council Bluffs Street Railway Company, Omaha, Nebraska

EDWIN S. WEBSTER, Stone & Webster Management Corp., Boston, Mass.

H. H. WESTINGHOUSE, Chairman Board Westinghouse Traction Brake Company, New York City

THOMAS N. WHEELWRIGHT, President Virginia Railway and Power Company, Richmond, Virginia

JAMES G. WHITE, President J. G. White and Company, New York City
 HARRISON WILLIAMS, 60 Broadway, New York City

TIMOTHY S. WILLIAMS, President Brooklyn Rapid Transit Company, Brooklyn, New York

GEORGE T. WILSON, Vice-President Equitable Life Assurance Company, New York City

J. H. WILSON, President Mobile Light and Railroad Company, Mobile, Alabama

Chairman

GUY E. TRIPP

Westinghouse Electric & Manufacturing Company, New York City

Vice-Chairmen

JOHN H. PARDEE

President American Electric Railway Association, New York City

A. W. BRADY

President Union Traction Company of Indiana, Anderson, Indiana

JOSEPH K. CHOATE

Vice-President J. C. White Management Association, New York City

SAMUEL M. CURWEN

President J. G. Brill Company, Philadelphia, Pennsylvania

PHILIP J. KEALY

President Kansas City Railway Company, Kansas City, Missouri

THOMAS N. MCCARTER

President Public Service Railway Company, Newark, New Jersey

JAMES H. MCGRAW

President McGraw-Hill Company, Inc., New York City

J. D. MORTIMER

President North American Company, New York City

LUCIUS S. STORRS

President The Connecticut Company, New Haven, Conn.

H. L. STUART

Halsey Stuart Company, Chicago, Ill.

O. B. WILCOX

Vice-President Bonbright & Company, New York City

O. D. YOUNG

Vice-President General Electric Company, New York City

W. F. HAM, President Washington Railway and Electric Company, Washington, D. C.

GEORGE E. HAMILTON, President Capital Traction Company, Washington, D. C.

C. H. HARVEY, President Knoxville Railway and Light Company Knoxville, Tennessee

ANTON G. HODENPYL, Hodenpyl, Hardy and Company, New York City

FRANCIS T. HOMER, President, American Cities Company, New York City

SAMUEL INSULL, Chairman Board of Directors Metropolitan West Side Elevated Railway Company, Chicago, Illinois

A. B. LEACH, President A. B. Leach and Company, New York City

ARTHUR W. LOASBY, President First Trust and Deposit Company, Syracuse, New York

HOMER LORING, Chairman Public Trustees Bay State Street Railway System, Boston, Massachusetts

HORACE LOWRY, President Twin City Rapid Transit Company, Minneapolis, Minnesota

A. M. LYNN, President West Penn Railways Company, Pittsburgh, Pennsylvania

AMERICAN ASSOCIATION NEWS

Committee of One Hundred Meets

Four Sub-Committees Appointed—Preparing Case for Early Presentation

THE committee of one hundred appointed by the American Electric Railway Association to prepare the case of the electric railway industry for the presentation to the Federal Commission, designated by the President of the United States, to investigate the electric railway situation, held its first meeting in New York on June 26. Chairman Tripp presided and in addition to the members of the committee Philip H. Gadsden, the member of the commission representing the American Electric Railway Association, was present.

Mr. Gadsden stated that the present plan of the commission contemplated holding hearings in Washington once or twice a week and that it was the present purpose not to consider individual cases except in so far as they might have bearing on the whole situation.

As a result of the meeting it was decided to appoint four sub-committees, one each on recommendations, presentation, finance, and information and service. The membership of the sub-committees is as follows:

Committee on recommendations: O. D. Young (chairman), H. G. Bradlee (vice-chairman), H. M. Byllesby, C. M. Clark, Frank W. Frueauff, Samuel Insull, Randall Morgan, J. J. Stanley, H. H. Westinghouse, E. N. Sanderson.

Committee on presentation: J. K. Choate (chairman), Philip J. Kealy (vice-chairman), E. K. Hall, A. W. Brady, Britton I. Budd, R. P. Stevens, Frank R. Ford, Francis T. Homer, J. D. Mortimer, Lucius S. Storrs.

Committee on information and service: Lucius H. Storrs (chairman), W. F. Ham (vice-chairman), Francis H. Sisson, W. R. Alberger, Barron G. Collier, B. C. Cobb, T. A. Cross, James H. McGraw, J. N. Shannahan, Britton I. Budd, T. S. Williams.

Committee on finance: H. L. Stuart (chairman), Thomas N. McCarter (vice-chairman), Samuel M. Curwen, Henry L. Doherty, Samuel Insull, A. B. Leach, Randall Morgan, E. W. Rice, Jr., Edwin S. Webster.

Under the direction of the committee of one hundred, of which Guy E. Tripp is chairman, the American Electric Railway Association is preparing the case of the electric railways, to be presented to the commission appointed by the President to investigate the electric railway situation.

It is now probable that a request will be made to the commission for a hearing to start in Washington on July 14 and to continue until the entire case is presented, which it is estimated will take two weeks.

The committee on presentation, under the chairmanship of J. K. Choate, and the committee on recommendations under the chairmanship of O. D. Young, will meet on July 7 to give formal approval to the tentative program which is already prepared. If this program is accepted, the case will be presented under three headings:

1. Present conditions of the industry.
2. The causes which have led to these conditions.
3. Suggested avenues of escape.

The association is endeavoring to present to the com-

mission an array of witnesses who are thoroughly familiar with the various phases of electric railway operation, finance and economic theories which govern public utilities. The list includes some of the best-known men in America—financiers, economists and men thoroughly familiar with public life. It is commandeering the services of witnesses wherever the best men can be obtained. Chairman Tripp believes that the situation is one in which it is the duty of every man interested to render what service he can.

An opportunity is offered for presenting the case of the railways in such a way as to impress upon the people of the United States the desperate straits in which the industry is at present, and the necessity for immediate action in the interest of the public, the employees and of the owners of these properties.

Presentation of the case, under Chairman Choate, will be in direct charge of a railway attorney of national reputation, who has participated in a number of investigations along similar lines and who is thoroughly familiar with the subject. As far as possible the evidence will be brought before the commission in a sequence which will develop the case from the start to the conclusion.

Among the important evidence to be presented is that dealing with the present price level and its probable maintenance for an indefinite period. It is the intention of the committee to show that what was at first considered a matter of short duration is in reality a condition that is likely to maintain for a long period of time.

All of the various phases of the situation, the causes which have led up to them, the various remedies that have either been suggested or applied in particular situations, are to be brought out. Included is a very complete and thorough analysis of the statistics of electric railways as developed by the United States Census as well as later statistics which have been compiled by the association for that purpose.

Equipment Committee Holds Busy Session

AT THE MEETING of the equipment committee of the Engineering Association, held in New York City on June 26, the chairman, Daniel Durie, Connellsville, Pa., presided, and the others present included W. S. Adams, Philadelphia, Pa.; W. W. Brown, Brooklyn, N. Y., representing W. G. Gove; R. H. Dagleish, Washington, D. C.; E. D. Priest, Schenectady, N. Y.; K. A. Simmon, Pittsburgh, Pa.; N. B. Trist, East Pittsburgh, Pa., and F. A. Vial, Chicago, Ill., representing G. W. Lyndon.

The sub-committee appointed to consider the development of check gages and templates for wheels and truck parts presented recommendations for wheel mounting, a check gage and a rotundity gage for wheels together with terms and gaging points for wheels and tracks. They also included tables of dimensions for standard wheel designs for use on electric railways.

The sub-committee on standardization of motor parts presented a list believed to cover the best possible field for standardization and recommended that the parts listed be considered in connection with any program for future work. The limited time which had been available for this work prevented the formulation of definite recommendations for standardization.

The sub-committee appointed to co-operate with the National Fire Protective Association in formulating a

code for 1200-volt car wiring reported that it had been co-operating with this association, but at present no definite recommendations could be made.

Committee Meetings of Week

THIS is a busy time at association headquarters. Besides the equipment committee, whose meeting is mentioned in a separate paragraph, the committee on collection and registration of fares held a meeting during this past week. Those in attendance were: W. J. Harvie, chairman, E. C. Spring, C. W. Stocks and L. H. Palmer. At this meeting the final draft of the report was prepared.

During the coming week committee meetings scheduled include the following: July 7, code of traffic principles of the T. & T. Association and recommendation and presentation of the committee of 100; July 8, terminal contracts of the T. & T. Association, information and service of the committee of 100, and the sub-committee on exhibits of the main association; July 9, executive committee of the T. & T. Association and finance committee of the committee of 100; July 10, full meeting of committee of 100; July 11, sub-committee of committee on zone fares.

"Tramway & Railway World" Discusses "Journal's" Glasgow Articles

A PLEASANT note of gentle raillery against the American flat fare and free transfer is sounded by the *Tramway & Railway World* of London, in its May 15 review of Walter Jackson's first three articles on "The Zone System in Practice." These were the Glasgow articles published in the *ELECTRIC RAILWAY JOURNAL* for Feb. 22, March 8 and March 29. Among other things, it says:

The native home of the tramway is in a rather confused state, and its guardians are looking for some way out of the trouble. Tramway managers in the United States are finding that the incomes of their undertakings do not balance expenditure, and as Wilkins Micawber testified from the depths of experience, that means misery. For a long time the cause of the trouble seemed difficult to locate. "Here," said the American tramway managers, in effect, "we have an ideal system for collecting cash; every passenger, no matter how short the distance he travels, must put down his nickel. No fuss, no trouble, no worry in collection—it is all so simple a child could collect the fares—and yet there is the deficit. What is wrong?"

In the days of their prosperity the tramway managers in New York, and beyond, had seen and smiled at the British method of charging and collecting fares. It had seemed to them much trouble for very little gain. Cent, 2-cent, 3-cent, 4-cent, and so on, tickets, with a conductor ranging through the car continually collecting coins and punching tickets, carrying a ticket bank as long as his forearm, struck our transatlantic friends as very nearly the acme of the ridiculous. They had escaped all that by the mere application of common sense at the start—charge the passenger 5 cents when he boards the car, and there is an end of it.

The success of British tramway undertakings, which carry enormous numbers of passengers at the equivalent of a 2-cent fare, has latterly, however, begun to give them quite an air of respectability in the eyes of United States managers, and the zone system of charging fares shares in the enhanced repute. After all, for a thickly-populated old country zone fares were not altogether to be despised; but, of course, for a country like America the uniform charge was the more suitable. In that tolerant frame of mind, our transatlantic friends arrived at 1914. Then a mysterious disease began to attack all grades and classes of tramway undertakings. Traffic increased, and receipts mounted up, but so also did expenditure, and while the increase in receipts

slowed down, the additions to expenditure quickened pace. Indeed, it seemed as though things were working backwards, and that the more traffic there was on a system the worse were the financial results. Here was a mystery. At last it occurred to someone to ask if every passenger who paid a 5-cent fare really defrayed the cost of his ride. Nobody knew; short-distance, middling-distance, and long-distance passengers were all lumped together, and the only thing that remained certain was that cars did not pay the expenses of their journeys. To avoid bankruptcy, some tramway undertakings have adopted the expedient of putting a limit to the 5-cent journey, and making an additional charge for any distance beyond. Results have shown improvement, and therefore the question whether or not the zone fare system should be adopted in America has become a live topic over there.

Up till about twenty years ago it was a widespread belief that the first-class passengers on railways were the chief contributors to revenue, though railway officials had long known that the case was exactly opposite. The report of the Peel commission in 1867 clearly showed that the backbone of railway passenger revenue was the third-class, but the superstitious reverence for the first-class survived till the last few years of the nineteenth century, when the condition of railway affairs became so critical that inquiry into all the facts became an absolute necessity. After that, the first-class passenger traffic was recognized as a costly form of advertising.

A similar process has taken place with regard to long-distance traffic on the tramways. In the early days the through passenger was considered most important by tramway authorities, but the essential quality of a tramway system is its adaptability to the needs of the short-distance traveler. Experience has shown that the latter is not only the largest factor, but also that he pays best for his ride. Mr. Jackson brings out the point clearly in his observation of the Glasgow tramways.

Our contemporary concludes its review by referring to the problem of auditing and checking the great variety of fares required with the zone system, but expresses the opinion this is a light task compared with that of checking the time limits and other features of the American transfer, and says that in this opinion "everyone at all familiar with the difficulties of inspection and the abuses to which the latter gives rise, will emphatically agree."

LETTER TO THE EDITORS

How the Use of Standards May Be Stimulated

PUBLIC SERVICE RAILWAY

NEWARK, N. J., June 30, 1919.

To the Editors:

I have read with interest the editorial in your last issue about standards. It seems to me that we now have a splendid opportunity to make great progress in standards. As you say, we have learned a lesson from the war, and, besides, the manufacturers are now more closely allied with the association than ever before.

I believe it would be a simple matter, for example, to limit all of the rail sections rolled to standard sections as designated, say, by the way committee of the association. When an order is placed for a rail of a type other than the standards set forth, the manufacturer would at once take up the question with the Way Committee, or some other authorized agent of the association. Then, if there was some good reason to have the extra section rolled, the manufacturer would be advised that it was O.K.; otherwise, the manufacturer would refuse to roll the rail. Similar arrangements could be made for mechanical and other parts that are standards.

MARTIN SCHREIBER, Chief Engineer.

Recent Happenings in Great Britain

Review of Legislation That Is in Prospect—London Traffic Unprecedented—Military Motor Lorries Converted to Passenger Service

(From Our Regular Correspondent)

The course of legislation affecting traction interests in Great Britain continued to be of much interest during May. Events seem to be now fairly on the way toward the state of things in which national control, unification and co-ordination will take the place of individualism. The hope is for greater economy and efficiency; the fear is of the smothering of individual enterprise and the paralysing effect of red tape and bureaucracy.

GOVERNMENT'S BILL MODIFIED

The Ministry of Ways and Communications bill has at length passed through its long period of discussion and criticism by a standing committee of the House of Commons. It has been modified in some respects, chiefly in the direction of lessening the autocratic powers to be conferred on the new minister, and for retaining more Parliamentary control. The minister is to act with the help of advisory committees, and when he proposes to embark on new schemes costing more than £1,000,000 he must get the sanction of Parliament instead of proceeding by orders in Council.

In general, however, the wide powers of the Minister are retained for dealing with all systems of transportation—unifying, co-ordinating and improving—but municipally-owned tramways are still excluded from the scheme. The powers are so wide and general that it is not possible to say exactly what the minister may do. The bill will probably be passed into law during the summer or autumn.

The other leading measure affecting traction interests—the electricity supply bill—passed its second reading in the House of Commons on May 14. As it is a long and complex bill and as it touches so many interests, its detail consideration by a committee is likely to be protracted.

CHEAP ELECTRICITY THE AIM

The fundamental object of this measure is to provide a cheap and abundant supply of electricity for all purposes throughout the United Kingdom. The main organization proposed consists of a central controlling body called the electricity commissioners and a number of district electricity boards. The commissioners will act under the general direction of Minister of Ways and Communications. They will divide the country into districts, and for each district they will constitute a District electricity board. These boards will be composed of representatives of local authorities, companies and other authorized undertakers, large consumers and labor.

The district boards will take over all generating stations and main trans-

mission lines, erect new stations and extend and consolidate the whole system of supply on uniform lines. Distribution to consumers will remain in the hands of the existing authorities, municipal or company. Financing is to be done locally so far as possible.

The weak point in the bill is that so many of the powers are to be permissive instead of mandatory. For example, the commissioners "may" set up a board for each district. So some districts may have boards and some not. Yet one of the essentials for a national supply is uniformity. Necessary provision is made for technical knowledge and advice.

The ideal aimed at is expected to be the shutting down of many small stations and the substitution thereof of a few enormous stations feeding into great main transmission lines, from which distribution for all purposes will take place. The two leading kinds of opposition to the scheme promise to be those of the municipalities which will be shorn of some of their powers, and a part at least of the engineering and manufacturing interests who object to the great powers to be conferred on the district boards, and want more freedom and room for private enterprise.

CROWDING ON THE UNDERGROUND

There has been a fierce agitation among London members of Parliament in connection with the overcrowded state of the underground railways and the tramcars and the omnibuses and also over the subject of the increased fares. They have had interviews with leading officers of the various undertakings, who tried to convince them that everything possible was being done to overcome the difficulties. They have sent deputations to the Local Government Board and to the Board of Trade, and these departments have promised to do what they can. The upshot of the matter is that the transport authorities cannot help themselves for the time being. Plenty of new rolling stock is on order to meet the unprecedented demand for accommodation, but only now after long waiting does there seem to be a prospect of getting some new cars delivered. Labor is getting more plentiful, but material is still scarce. As for cost, it is beyond words.

It is probably safe to say that no fresh capital expenditure incurred in present conditions can be remunerative, despite increased fares. The first sensible relief from congestion may not come till the autumn or winter, by which time London should be considerably emptied of its present excess of temporary population and troop traffic should have died down. For the present the local London passengers are as the sands of the seashore for multitude; they are unprecedented, overwhelming.

Only the enormous increases in wages and other working expenses prevent the transportation concerns from being in a state of financial prosperity.

This London transport agitation led in the end of May to the Government consenting to appoint a select committee of the House of Commons to inquire into the subject and propose remedies. The committee promptly started work in the beginning of June before Parliament rose for the Whitsuntide recess. The members continued hearing evidence during the holiday time. In the meanwhile a new phenomenon burst upon the eyes of Londoners early in June in the shape of a number of military motor lorries converted into omnibuses by the provision of cross seats. They are no longer needed for war, and they are being used to alleviate congestion until more omnibuses of the ordinary kind can be built.

MR. STANLEY UNDERGROUND CHAIRMAN

A man who is about once more to be officially concerned almost more than anybody else with London transport problems in their underground railway and street omnibus aspects is Sir Albert Stanley. Owing to persistent ill health he has been obliged to relinquish his office of President of the Board of Trade, and on the last day of May he sailed for America in the hope that the visit would re-establish his health. Before he left he was elected chairman of the Underground Electric Railways, London, Ltd., and he thus returns to a position of even more influence than he formerly occupied in connection with the associated London transport undertakings.

Sir Albert was made managing director of London underground railway systems more than ten years ago. The business developed enormously under his administrative talent. Then in the earlier period of the war he, like a number of other capable railway men, was induced for the time being to leave his own occupation and to join the government in order to give practical help in time of emergency. He was appointed President of the Board of Trade, and later on in recognition of his services in that capacity he received the honor of Knighthood. He has carried on his work with little external show, but with much efficiency. The good wishes of all who know him go with him to America, along with the hope for his speedy return in restored health to take up the great task, now more urgent than ever, of developing the railways and other undertakings with which he is again connected.

Every effort is being made in this country to hasten the renewal of tramway tracks worn out during the war. A number of tramway authorities have also been in the market lately for additional steam and electric plant and cars. There is much difficulty and delay in getting the wheels of production into motion again, and that despite the fact that there are about 1,000,000 men discharged from the army who cannot find employment.

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION

PERSONAL MENTION

Winnipeg Strike Over

Six Weeks of Disorder, During Most of Which City Went Entirely Without Railway Service

Winnipeg's general sympathetic strike of 35,000 workers was called off by the strike committee at 11 o'clock on the morning of June 26, having lasted exactly six weeks, and having accomplished practically nothing. The account of the trouble in the *ELECTRIC RAILWAY JOURNAL* for June 21, page 1238, traced, briefly the early developments of the strike and told of the attempt of the strike leaders to tie-up completely all industries and public utilities in the city.

The splendid voluntary services of the citizens of the city, who resisted such a ruthless assault, and who saw in it an attempt to establish the rule of the soviet in Winnipeg, kept all utilities operating, and after the third week of the strike employees began to drift back to their jobs. The City Council of Winnipeg, however, decided not to take back any employees who refused to sign a pledge expressing complete loyalty to the city, declining to join a union affiliated with any outside organization, and also refusing at all times to go out on a sympathetic strike. This applied to the firemen and policemen, who went out on strike at the call of the strike committee. At present all utilities are manned by regular staffs, while most of the former police and firemen are back on their old jobs, having "signed the pledge."

The ignominious ending of the strike, resulting in complete defeat for the strikers, has brought about a serious split in the labor ranks. The saner element are dissociating themselves from the more radical trades unionists, and denunciation of the strike leaders by the mass of the workers is general.

As stated in previous dispatches the Winnipeg Electric Railway was ordered by the City Council to resume service after the strike had been in progress four weeks. The company made an appeal to the men to return, but without success. On June 17, however, A. W. McLimont, vice-president and general manager, issued an ultimatum to the effect that employees who did not report and were not available when required to enable the company to resume service would be replaced by permanent new employees and lose their seniority. It was further announced that new employees taken into the service would not be dismissed to make places for any old employees who subsequently decided to return to duty.

This ultimatum expired at 8 a.m., on June 19. It resulted in several em-

ployees returning to work. These, together with supervisors and inspectors, manned the cars and gave service on the principal lines in the city. Fourteen cars were operated on June 19, and this number was gradually increased up to fifty cars by the time the strike was called off. Upon "peace" being declared the company's employees returned in a body and normal service was soon restored.

On the whole, the strike was a very orderly one. On two occasions the strikers clashed with the special police, but only in the encounter of June 21 were cars running. In this instance the crowd attacked the car, pulled off the trolley, smashed every window, and tried many times in vain to upset it. Unable to do this they piled newspapers in the interior and set them on fire. Just at this moment a detachment of mounted police arrived on the scene, the fire was put out, and the car was run back to the carhouse. The mounted police, stoned by the crowd, retaliated with their revolvers. Two of the crowd were killed and scores injured. As an offshoot of the strike, strike leaders face charges of seditious conspiracy.

The strike was called off by the strike committee "unconditionally," but the Provincial Government has appointed Judge H. A. Robson, a commission to inquire into the origin and the whole circumstances surrounding the strike.

Wages Readjusted

The co-operative plan of the Philadelphia (Pa.) Rapid Transit Company now in effect provides a permanent basis of adjusting the wages of the employees of the company by averaging the wage scales of the four cities covered by the War Labor Board wage award of August, 1918, namely, Chicago, Cleveland, Detroit and Buffalo.

The maximum wage paid the Detroit trainmen has under the recent settlement now been advanced to 60 cents an hour. The maximum in the cities of Chicago, Cleveland and Buffalo is 48 cents per hour. This produces an average maximum of 51 cents an hour for the Philadelphia trainmen, viz.: First three months, 45 cents an hour; next nine months, 48 cents an hour; thereafter, 51 cents an hour.

At a meeting of the transportation committee, established under the co-operative plan, held on July 1, the above wage scale was announced to become effective at once.

The wages of other employees will be adjusted according to the provisions of the co-operative plan as soon as the necessary facts and figures are obtainable.

Publicity Pays in Buffalo

Marked Change in Attitude of Public Toward International Railway Follows Publicity Campaign

There has been a decided change in sentiment in Buffalo, N. Y., toward the International Railway since the company started its publicity campaign about two years ago and turned the spotlight upon its financial condition and its internal affairs.

COMPANY ESTABLISHES PAPER

One of the biggest factors in bringing about this change in sentiment is the publication of the *Service Spot Light*, the editor of which has never been publicly announced by the company. This little publication is issued every Monday morning and is placed in the "Take One" boxes which have been installed in all of the cars operated in the city and on the interurban lines.

The first and second pages are occupied every week by an editorial in which the company usually takes the position that it is being unfairly attacked by outside influences and individuals who do not understand the real situation in the company's internal affairs. In a recent issue the *Service Spot Light* took a shot at the Mayor for his recent speech before the state conference of mayors at Schenectady in which he said the company is not playing fair with the city; that it promoted the recent strike of the company's platform men and that it never was sincere in the service-at-cost proceedings which have since been abandoned.

Space is given in the little paper for brief letters from car riders praising or criticising motormen and conductors. Letters which give the badge numbers of the crew are translated by the company so that the names of the crew are published. In other space current events are listed which should attract people and add to travel over the company's lines, and considerable space is given to facts about the International Railway's suburban and freight and express service to points along its lines, and to jokes.

DISPLAY ADVERTISING A FEATURE

Large display advertisements are appearing in rural newspapers in localities through which the company operates cars pointing out why interurban fares have been increased and asking the public whether or not it is fair to criticise the company merely because it has raised fares to meet increased cost of operation.

For a time the company's publicity department used considerable news-

paper advertising space to offset hostile newspaper articles, but this form of advertising has been discontinued. Another campaign carried articles signed by E. G. Connette, president of the company. These articles were displayed on posters in the car windows and swinging signs suspended from the roof of the car. Each of these different forms of publicity has done its share of the work of converting the public, according to President Connette.

Through the medium of the *Service Spot Light* the International is showing the car riders how much more it is costing to operate the lines than it did five years ago; how much more is being paid out in wages to all of its employees; how much is being paid yearly for paving between its tracks while this paving is constantly being destroyed by

heavy trucks and other vehicles not owned or operated by the International, and how the cars are delayed beyond the control of the company's operating force.

Very few letters are now received criticising the company and its officials. For a time when the company was under newspaper fire thousands of letters were received monthly scoring the alleged inefficient methods of the company. The vote against higher fares, almost five to one, also indicated the hostile attitude of the general public. All this has now apparently been changed, and in its place has arisen an attitude of helpfulness toward the company on the part of its riders through a keener appreciation on their part of the problems by which the company is confronted.

New Jersey Award Announced

War Labor Board Makes Public Its Findings but Reserves Decision on Important Issue

The War Labor Board made awards on June 26 in the dispute between the Public Service Railway and its employees, the awards being based, under the 1918 agreement for arbitration by the board, on the evidence taken at Newark since the settlement of the strike last March.

HOURS A PROBLEM

Among the demands of the employees was that all runs be made straight runs, thus eliminating gaps, and that the working day be nine hours for ten hours pay, that runs of eight and less than nine hours be paid on the basis of ten hours work and that runs of six and less than eight hours be paid on the basis of nine hours work. In announcing its ruling on this demand the joint chairmen said:

At this time we are unable to grant the demands of the men as made. We do think, however, that some revision of the company's schedules should be made, if possible, to minimize the spread time and provide a full day's work for their trainmen. The spread time on some of the company's runs is now unduly long, and we recognize the justice of the men's claim for relief from such runs.

To grant the demand of the men as made in Paragraph V (of the employees' claims) would mean a radical revision of the company's schedules. The company maintains that such a revision is entirely impracticable. The company has considerably more than 1500 runs of nine hours or over.

We feel that a more careful study must be made before we can pass on this question. The evidence introduced at the hearings did not give us sufficient information. This is a work of painstaking study and care, and we are delegating to our electric railway examiner, Charlton Ogburn, the task of making this study and reporting on what revision, if any, can be made in the company's schedule toward meeting these demands of the men, and would authorize him to make a ruling covering the demands embodied in paragraph five of the complainant's petition, after he has ascertained to what extent the company's schedules can be revised in a manner that is practicable. His ruling is to be subject, however, to the approval and adoption of the joint chairmen as arbitrators and is to be covered by their award.

The board confined its awards to the platform men. The demands of shopmen and miscellaneous employees of

the company were referred back for special hearings.

The other issues before the arbitrators for the most part related to details of the working conditions. In all there were twenty-four issues submitted and on several of them the parties were in agreement already. These issues, however, were incorporated in the awards of June 26 at the request of the employees.

The first four demands related to union recognition, or rather presupposed recognition of the union by the company. On this the board said:

The employees understood at the hearing, that the board would not grant them and the demands must be taken as having been abandoned by the employees. We rule, however, that under the rulings of this board, the company must do nothing to prevent or discourage its employees from becoming a member of a union and must in no way discriminate against an employee because he is a member of a union. These employees made no specific complaint in this regard, however, and so far as the evidence shows this company gives full right to its employees to join a union, and no charge or discrimination was made against the company in this regard.

Demands of employees that men be selected for snowplow work on basis of seniority were denied by the board on the ground that "the present practice of the company is satisfactory."

The demand of the men for special pay for waiting time was denied because "the present practice of the company is fair and equitable in paying for their waiting time only at the regular wage, except where overtime is involved."

The demand of the men for additional pay for instructing new men was not granted in full, but the board did order that all instructors should receive 5 cents an hour additional for actual platform time in such work.

The demand that the company pay for the meals of crews when they are prevented from going to their homes at their regular meal time was granted. It is said this practice is substantially in operation now.

The demand for stools for motormen and conductors was granted, the use of the stools, however, to be subject to regulation by the company.

The demand of the men that free transportation be extended to employees in civilian attire, as well as to those in uniform, was granted. The board thinks, however, that this practice must be safeguarded from abuse and suggests that the officers of the company meet committee of employees and endeavor to agree upon the form of free transportation to be adopted. If this conference fails to agree, Mr. Ogburn, examiner for the board, is to make the decision as to the form.

The demands of the men, embodied in Paragraph 15 of their complaint, for pay for certain kinds of extra work were denied because the matter was covered in the findings for increased pay made by the board July 31 last.

Operators of one-man cars are awarded 5 cents an hour additional pay.

The demands of the men relating to uniforms were granted, the board holding that "the men should have a right to buy their uniforms in the open market provided they conform to the specifications of the company."

The next demand related to bulletin boards at the carhouses and the right of the employees to post notices thereon. This issue was settled at the time the strike was called off, but the board was asked to interpret the agreement. On this point the board said:

Our construction is, that the company, by giving the men the right to put their notice on the company's bulletin boards in the carhouses, has complied with the agreement and that the company has the option of saying whether the men may use their own bulletin boards or the company's.

The awards are effective as of May 1, 1919, and continue until peace is formally announced by executive proclamation. Should any difference arise relative to construction the secretary of the board is authorized to appoint an examiner, who shall hear such differences and who shall announce his decision, from which an appeal may be taken to the arbitrators.

The men originally demanded a nine-hour day with ten hours' pay. The National War Labor Board decided on other matters, but, as previously stated, referred this particular subject back to Mr. Ogburn for further investigation and report. In the meantime the men became dissatisfied with the decision and threatened to strike. They then demanded an eight-hour day with 65 cents an hour. Mr. Ogburn on July 2 passed upon the matter of hours and granted the original demand of the men for a nine-hour day with ten hours' pay. On the afternoon of July 2 the state conference board representing the employees met President McCarter and other officers of the company and both sides agreed to accept the findings of the War Labor Board. The company further agreed to enter into a civil contract binding both parties to the terms of the award for a period of two years.

Cleveland Wages Discussed

Men There Want Twelve Cents More an Hour—City Against Interfering

Problems arising from the demands of the conductors and motormen of the Cleveland (Ohio) Railway for an increase of 12 cents an hour in wages were discussed at the regular meeting of the City Council of Cleveland, Ohio, on the evening of June 23. Members went on record against interfering in negotiations between the company and its employees.

J. J. Stanley, president of the Cleveland Railway, had made a proposal which involves a profit-sharing idea and this may be discussed at a public meeting which was set for the afternoon of July 2. Mr. Stanley proposed that the men be granted the increase asked and at the same time that the rate of dividends to stockholders be advanced from 6 per cent to 7 per cent. Retaining the present rate of fare, he suggested that if the receipts then failed to take care of the advance in wages and the increase in return to investors, both the wages of the men and the rate of return on the investment be reduced, but not below the present figures.

In this connection he advocated the removal of the minimum and maximum fare limits from the Taylor franchise. Council members, however, objected to this. They said they would take care of any future emergency just as on previous occasions.

A request has been made of Council that operating allowances be increased from 20 to 23 cents a car-mile and that the maintenance allowance be raised from 5 cents a car-mile to an average of 9 cents annually.

State Credit and a Public Manager

Calvin Coolidge, Governor of Massachusetts, on June 27, sent the following message to the Legislature:

The situation in relation to the street railways of Massachusetts, as pointed out in the inaugural address, is one of great difficulty. Some of them are not earning enough money to meet their expenditures. This can have only one result if continued—that is, the suspension of operations.

In many localities the operation of street railways is a public necessity. It would be a great public inconvenience if, on account of conditions which it is trusted may be temporary, street railways should cease to operate or if their operation should be greatly impaired.

This is a condition which exists all over the nation and investigation has been undertaken by the federal authorities. It is hoped that it will be temporary. It is, however, very desirable that some emergency legislation should be provided which could be put into operation if the contingency arises.

It is, therefore, recommended that provision be made for the temporary operation of a street railway by a public manager, so that such street railway may be under the exclusive control of public officers and public agents, with authority to fix fares subject to revision by the Public Service Commission; and that temporarily for the public convenience in order to operate street railways hereafter placed under such control, provision be made for extending the credit of the commonwealth and of the cities and towns in which such street railways operate.

Such management should be approved and supervised by the Public Service Commission, and public credit should be extended only so far as is necessary to keep the roads in operation by taking care of valid operating deficits, for a limited period in any event, and only so far as existing necessities require, without in any way impairing or restricting a further and different action in the future, or imposing in any event an undue burden upon the taxpayers.

Pittsburgh Arbitration Completed

Final Hearing Before the War Labor Board on Wages Held in Washington

Final argument was heard before Chairman Basil M. Manly and Frederick Judson of the War Labor Board in Washington on June 25, on the demand of the platform employees of the Pittsburgh (Pa.) Railways for a 12-cent increase in wages.

Counsel for the receiver of the railway showed that increases in wages ranging from 65 to 95 per cent have been received by the Pittsburgh men since 1914. At the present scale a man working thirty days a month can earn \$153, and in twenty-seven days he can make \$125. It was represented by counsel that this constituted a very favorable showing as compared with the returns from labor in skilled trades.

In rebuttal counsel for the employees attacked the scale of 1914, reached by arbitration before Judge Joseph Bufington, of the United States court of Western Pennsylvania.

The principal argument of counsel for the receivers was based upon inability of the company to pay. Mr. Alter for the company declared:

During the first four months of the current year there was a deficit of \$494,707 without taking into consideration interest on bonds, rentals and other items of fixed charge. The total deficit for the period was \$1,549,849.

If the wage increases now asked had been in effect during those four months the company would have lacked \$81,698 of having enough to pay mere operating expenses and taxes.

Pittsburgh's experience with fare increases has not been very encouraging, according to Mr. Alter. Neither the 5½-cent fare nor the 5-7 cent area system brought revenues up as much as had been expected. The 5½-cent fare, indeed, did not increase them at all. The proposal to institute a universal 7½-cent fare by tickets, with a 10-cent cash rate on Aug. 1 does not offer any hope of sufficient increment in revenues to provide for any such wage increase as the men want, either, Mr. Alter informed the board. He said further that "any present increase in wages can be accomplished only by abandonment of rehabilitation measures essential to safe operation of the lines."

The finding of the War Labor Board will not constitute a final award in the case. Under the terms of the agreement which ended the four-day May strike in Pittsburgh, the finding will be subject to review by the United States District Court, under which receivers are operating the Pittsburgh railways. If a decision favoring the men is negated by the court, the employees have the right to strike again.

Engineering Department

Bill Introduced to Abolish Department of Interior and Substitute Department of Public Works

Far-reaching changes in the executive machinery of the federal government are proposed in bills introduced in each house of Congress on June 25. The federal Department of the Interior will become the Department of Public Works, if legislation proposed and endorsed by the National Service Committee of the Engineering Council is enacted. The main idea is to assemble all engineering activities of the government in one department. Such bureaus of the Interior Department as are non-engineering in character are to be placed under the jurisdiction of appropriate departments. Thus, the Patent Office is to be placed under the Department of Commerce, the Bureau of Pensions under the Treasury Department and the Bureau of Education under the Department of Labor.

At the same time engineering bureaus from other departments are to be included in the Department of Public Works. Thus, this department is slated to absorb the Supervising Architect's Office of the Treasury Department, the Construction Division, River and Harbor Improvements, Mississippi River Commission, and California Débris Commission of the War Department; the Bureau of Standards and the Coast and Geodetic Survey of the Department of Commerce, and the Bureau of Public Roads and the Forest Service of the Department of Agriculture.

The bill provides that the Secretary of Public Works "shall by training and experience be qualified to administer the affairs of the department and to evaluate the technical principles and operations involved in the work thereof." The measure excepts from the foregoing provision the Cabinet officer who is at the head of the department at the time of the passage of the bill. It was introduced in the upper House by Senator Wesley L. Jones, of Washington, and in the lower House by Representative Frank C. Reavis of Nebraska.

Ottawa Men Insist on Wage Increase

The Ottawa (Ont.) Electric Street Railway and its employees who have been negotiating for some time past over the demand by the men for an increase in wages, have arrived at a deadlock, and fears were expressed on both sides that a tie-up of the railway system was inevitable on July 1 when the present agreement expired, unless the only solution which they believe fits the situation is introduced by the municipality.

The company through its superintendent, Major F. D. Burpee, explained in a lengthy statement that the situation of the company financially was such that it was utterly impossible for the increases demanded by the men to be granted.

The solution sought by both the employees and the company was that notwithstanding the franchise agreement which the company has with the city, whereby it is prohibited from charging a higher transportation charge for passengers than 5 cents straight, the city should agree to allow the railway to increase its fares, so as to take care of the increased expenditure it would be called upon to meet should the demands of its employees be complied with.

Wage Case in East St. Louis Argued

A hearing on the demands of the conductors and motormen on the electric railways of East St. Louis, Ill., and neighboring cities for an eight-hour day and for a wage increase amounting almost to 100 per cent was held at East St. Louis, Ill., recently before Charlton D. Ogburn, examiner appointed by the War Labor Board.

W. H. Sawyer, president of the East St. Louis & Suburban Railway, testified that it was utterly impossible for the company to grant any increase in wages under present conditions. He declared that prices of the necessaries of life are now on the downward trend and it was his belief that the wage paid by the company was a "living wage."

The car crews of East St. Louis now working under a sliding scale of 41 to 45 cents an hour, are asking 80 cents an hour. The employees of the interurban lines leading out of East St. Louis, now receiving 47 cents an hour, are asking for 87½ cents. Both demand an eight-hour day. The companies involved besides the East St. Louis & Suburban Company are the East St. Louis, Columbia & Waterloo Railway and the East St. Louis, Alton & Granite City Railway.

Rapid Transit Report Presented for Cleveland

A report on the proposed underground rapid transit road, prepared by R. M. Brinkeroff of Barclay Parsons & Clapp, New York, was placed before the Rapid Transit Commission of Cleveland, Ohio, on July 2. It is based on the needs of a population estimated at 1,000,000 now, 1,500,000 within the next ten years and 2,000,000 within twenty years.

Two main arteries, one east and the other west, are suggested. A system of subway loops is provided in the Public Square. For early construction a subway is suggested under Superior Avenue to East Twelfth Street to take care of the traffic on the Superior, St. Clair and Pain Avenue lines. Another suggestion is that a subway be built under Ontario Street to the Central market house to take care of traffic on the lines southeast and southwest. A digest of the report is being prepared for publication in the ELECTRIC RAILWAY JOURNAL.

News Notes

Berlin Takes Over Surface Lines.—The municipality of Greater Berlin has acquired the metropolitan surface lines for a consideration of \$25,000,000. The shareholders were paid off in municipal bonds with a premium.

Employees Reject Wage Proffer.—The striking employees of the Toronto (Ont.) Railway in mass meeting on June 27 voted 1521 to 11 against accepting an offer of 48 cents an hour made by the Ontario Railway Board, which has taken over the line. The men demand 55 cents an hour.

Shamokin Employees on Strike.—The employees of the Shamokin & Mount Carmel Transit Company, Shamokin, Pa., went on strike on June 14 for higher wages and shorter hours. The men have been receiving 38 cents an hour for an eleven-hour day. They ask 45 cents an hour for a nine-hour day and time and a half for overtime. The company offered 40 cents an hour for a ten-hour day.

Union Chartered.—The Oklahoma Union Railway Employees' Association of Tulsa, Okla., has been granted a charter by Secretary of State Lyon. This is a labor union embracing employees of the Oklahoma Union Railway, which operates an interurban line from Tulsa to Keifer and the local systems in Tulsa and Sapulpa. It was formed some time ago and its recognition by the interurban company was forced by a strike. The association has no capital stock.

Changes in Yale's Electrical Staff.—Prof. C. F. Scott, head of the electrical engineering department of Sheffield Scientific School at Yale University, has announced several appointments of assistant professors of electrical engineering. One of these is L. W. W. Morrow, formerly director of the School of Engineering at the University of Oklahoma. Another is that of G. F. Wittig, at one time with Westinghouse, Church, Kerr & Company, and later at the University of Alabama and the University of Pennsylvania. Another is H. M. Turner, for several years in the electrical engineering department of the University of Minnesota.

Seattle Men Insistent.—The members of the Seattle local of the street railway men's union have voted to stand squarely back of their demands for increased wages, taking the position that the increase asked is not unreasonable from the standpoint of the present cost of living. Other municipal employees have asked increases of \$60 a month above the maximum rates paid

in 1915 on the theory that actual living costs have increased that much, and the railway men will co-operate with the other city employees to obtain advances. A publicity committee has been appointed to lay the facts before the public, in an effort to obtain the co-operation of the patrons of the Municipal Railway.

Arbitration Arranged in Davenport.—A strike of motormen and conductors of the Tri-City Railway, Davenport, Iowa, was averted when the company agreed to arbitrate differences with the men. The committee representing the men and officials of the company decided that arbitration should be under the Rock Island city franchise. This grant provides that all differences of wage and working conditions shall be submitted to a board of three composed of one member appointed by the company and one by the men, with the third selected by the two previously appointed. The company originally demanded that its ability to pay an increased wage be considered. The men are said to be willing to postpone arbitration if the company will agree to negotiate a wage increase over the company offer of 46, 48 and 50 cents an hour if a 7-cent fare is allowed by the Public Utilities Commission, and to arbitrate a reduction in wages if the 7-cent fare is not granted.

Wage Contract Ordered Extended.—Federal Judge Martin J. Wade has ordered that the contract between the Des Moines (Iowa) City Railway and its employees be extended for another period of six months. Judge Wade's opinion was in answer to a petition filed by the receivers of the Des Moines City Railway. The contract governs working conditions, wage scales and methods of their adjustments. One clause of the contract provides that differences on the wage question are to be submitted to a board of arbitration and for notice of contemplated or requested changes in wage scales to be served on either party thirty days previous to March 1, 1919. The employees have made the request for higher wages within the allotted time so that the next step in the controversy will probably be the appointment of the arbitration board. In the hearing before Judge Wade, Emil G. Schmidt, one of the receivers and the president of the Des Moines City Railway, testified that the company's books show a deficit of \$23,522 for the first five months of 1919.

Program of Meeting

Illinois Electric Railways Association

The Illinois Electric Railways Association will hold its mid-summer meeting at the Rockford County Club, Rockford, Ill., on July 16. The forenoon will be devoted to several interesting papers. In the afternoon, golf, a trip to Camp Grant, swimming, etc., will be provided for the entertainment of those attending.

Financial and Corporate

Operating Rates Up 5.34 Per Cent in March

The Effect of Increased Wages and Prices for Materials Is Reflected in Detailed Accounts

The operations of electric railways for the month of March as reflected in the tables compiled by the information bureau of the American Electric Railway Association indicate that throughout the country there has been little if any improvement during the month. Increases in operating expenses continue to outstrip increases in revenues and the net return is in consequence correspondingly diminished. For the country as a whole the decline is apparently a slower one than has heretofore been registered and this fact affords the only possible consolation that may be derived from the otherwise depressing situation revealed by the returns shown in the accompanying tables.

In Table I a comparison is made with the figures for March, 1918, of fifty-one companies, and in Table II the same figures are shown on a per car-mile basis. Referring to Table I it will be seen that the operating revenue increased 14.71 per cent, a healthy growth. This advance, however, is more than wiped out by an increase of 23.47 per cent in the expenses. The result is a net revenue from operations of 9.08 cents in 1919 as compared with 9.62 cents in 1918, a decrease of 5.61 per cent. This of course takes no account of taxes or fixed charges, which have to come out of this net revenue.

In 1919 taxes amounted to 2.32 cents and fixed charges to 6.81 cents per car-mile which when deducted from the net revenue of 9.08 cents, leaves a deficit from railway operations alone of 0.05 cents per car-mile as compared with a surplus in 1918 of 1.18 cents per car-mile. This would seem to indicate pretty definitely that in March, 1919, electric railway operation by itself simply did not pay its own way. However, non-operating income and return from auxiliary operations amounted together to 1.95 cents per car-mile and with this help the industry managed to keep its nose above water with a net income of 1.90 cents per car-mile. In

1918 the net income was 2.48 cents per car-mile so that the 1919 figures indicate a decrease of 23.9 per cent during the year.

The operating ratio was 75.23 per cent as compared with 69.89 per cent in 1918.

As in the past the returns have been classified according to the following geographic grouping: Eastern District—east of the Mississippi River and north of the Ohio River. Southern District—south of the Ohio River and east of the Mississippi River. Western District—west of the Mississippi River.

Although the South shows actually the best return of the three—net income in March, 1919, of 2.87 cents per car-mile compared with 1.42 cents in the East and 1.90 cents in the West—relatively, it has recently been losing ground much more rapidly. Its net revenue from operations in March showed a decrease from 1918 of 24.79 per cent as compared with a decrease of 6.07 per cent in the West and an actual gain of 1.85 per cent in the East. After deducting taxes and fixed charges and adding in miscellaneous revenues, the South shows a decrease of 61.39 per cent in its net income while the West which comes next in the amount of its falling off shows a decrease of 15.93 per cent and the East a decline of 4.05 per cent. To what extent weather conditions in 1918 affected the returns it is difficult at this time to say.

The operating ratio in the South jumped from 57.79 in March, 1918, to 71.80 in March, 1919, while in the East it increased from 74.97 to 77.58 and in the West from 67.47 to 73.63.

Table III gives the operating expenses divided up among the several departments while in Table IV the expenses per car-mile of these departments is shown. Sixty-four companies are represented and analysis of their expenses contributes to a better understanding of the returns in Tables I and II.

The increase in the cost of materials throughout the country is reflected strongly in the maintenance expenses.

The rise in the cost of labor is reflected better in the conducting transportation account. In 1918 this was 9.56 cents per car-mile and in 1919 it had risen to 11.71 cents per car-mile an increase of 22.48 per cent.

This increase in the cost of labor and material while extending generally throughout the country is more marked in the South and West, or at any rate it appears so in the tables, probably because of the unfavorable weather in the East in 1918. The cost of maintenance of way and structures increased 56.0 per cent over 1918 in the South, rising from 1.75 cents to 2.73 cents per car-mile. In the East it rose from 3.11 cents to 3.67 cents per car-mile, an increase of 18.0 per cent, and in the West it jumped from 2.02 cents to 3.05 cents, an increase of 50.99 per cent.

Maintenance of equipment costs increased 53.47 per cent in the South, 42.91 per cent in the West and 31.83 per cent in the East. The cost per car-mile of this account in March, 1919, was 2.87 cents in the South, 3.33 cents in the West and 4.39 cents in the East.

The conducting transportation account rose from 9.34 cents to 12.19 cents per car-mile in the South, an increase of 30.51 per cent. In the West the increase in this cost was 14.61 per cent and in the East it was 28.54 per cent, the amounts per car-mile in 1919 being 11.06 cents in the West and 12.25 cents in the East.

The increase in the cost of power was 1.42 per cent in the East, 17.86 per cent in the West and 122.41 per cent in the South. Bad weather conditions in 1918 in the East which increased the unit cost at that time probably accounts for the small increase in that section of the country in 1919 and the method of taking care of power in accounting in the South, makes the figure for the increase in that section unreliable.

In Tables V and VI the income statement for March, 1919, of 129 companies is shown, both the actual amounts and also the amounts per car mile.

Table VII is a detailed statement of the operating expenses for March, 1919, of 152 companies, and in Table VIII the same statement is shown on a per car-mile basis.

The most interesting of these is Table VIII in which the operating expenses per car-mile are given and divided among the main operating departments, way and structures, equipment, power, etc.

TABLE I—INCOME STATEMENT FOR FIFTY-ONE ELECTRIC RAILWAYS FOR MARCH, 1919, COMPARED WITH MARCH, 1918

	United States		East		South		West	
	1919	1918	1919	1918	1919	1918	1919	1918
Operating revenue.....	\$10,712,640	\$9,393,281	\$4,796,405	\$4,138,309	\$965,507	\$858,132	\$4,950,728	\$4,396,840
Operating expenses.....	8,059,755	6,564,681	3,721,249	3,102,450	693,261	495,902	3,645,245	2,966,329
Net operating revenue.....	2,652,885	2,828,600	1,075,156	1,035,859	272,246	362,230	1,305,483	1,430,511
Net revenue from auxiliary operations.....	120,238	.....	105,088	.....	8,921	.....	6,229	.....
Taxes.....	677,385	596,916	260,741	219,034	99,541	80,752	317,103	297,130
Operating income.....	2,095,738	2,231,684	919,503	816,824	181,626	281,478	994,609	1,133,381
Non-operating income.....	449,539	382,687	120,725	149,162	157,254	166,719	171,560	66,806
Gross income.....	2,545,277	2,614,371	1,040,228	965,986	338,883	448,197	1,166,169	1,200,187
Deductions from gross income.....	1,990,026	1,884,580	867,078	786,938	224,623	225,629	898,325	872,013
Net income.....	555,051	729,791	173,150	179,048	114,260	222,568	267,844	328,174
Operating ratio.....	75.23	69.89	77.58	74.97	71.80	57.79	71.80	73.63
Car-miles operated.....	29,226,103	29,397,146	12,230,697	11,993,575	2,954,608	2,954,626	14,040,798	14,448,945

TABLE II—INCOME STATEMENT IN CENTS PER CAR-MILE FOR FIFTY-ONE COMPANIES SHOWN IN TABLE I, FOR MARCH, 1919 COMPARED WITH MARCH, 1918

	United States			East			South			West		
	1919	1918	Per Cent Increase	1919	1918	Per Cent Increase	1919	1918	Per Cent Increase	1919	1918	Per Cent Increase
Operating revenue.....	36.65	31.95	14.71	39.20	34.50	13.6	32.68	29.04	12.53	35.26	30.43	15.87
Operating expenses.....	27.57	22.33	23.47	30.41	25.87	17.5	23.46	16.78	39.81	25.96	20.53	26.44
Net operating revenue.....	9.08	9.62	6.61	8.79	8.63	1.85	9.22	12.26	24.79	9.30	9.90	6.07
Net revenue from auxiliary operations.....	0.41	.....	.....	0.86	.....	.....	0.30	.....	.....	0.04	.....	.....
Taxes.....	2.32	2.03	14.29	2.13	1.85	16.30	3.37	2.73	23.44	2.26	2.06	9.70
Operating income.....	7.17	7.59	6.63	7.52	6.80	10.59	3.15	9.53	46.96	7.08	7.84	9.69
Non-operating income.....	1.54	1.30	18.46	0.99	1.24	20.16	5.32	5.64	8.68	1.22	0.46	166.94
Gross income.....	8.71	8.89	2.02	8.51	8.04	5.85	10.47	15.17	30.99	8.30	8.30	.....
Deductions from gross income.....	6.81	6.41	6.24	7.09	6.56	8.08	7.60	7.64	0.63	6.40	6.04	5.96
Net income.....	1.90	2.48	29.39	1.42	1.48	4.05	2.87	7.53	61.89	1.90	2.26	16.93
Operating ratio.....	75.23	69.89	7.64	77.58	74.97	3.48	71.80	57.79	24.24	73.63	67.47	9.12
Car-miles operated.....	29,226,103	29,397,146	0.68	12,230,697	11,993,575	1.98	2,954,608	2,954,626	.....	14,040,798	14,448,945	2.82

NOTE—Figures in *italic* denote decrease.

TABLE III—OPERATING EXPENSES OF *SIXTY-FOUR ELECTRIC RAILWAYS FOR MARCH, 1919, COMPARED WITH MARCH, 1918

	United States		East		South		West	
	1919	1918	1919	1918	1919	1918	1919	1918
Operating expenses.....	\$8,880,713	\$7,193,519	\$4,230,223	\$3,503,424	\$930,126	\$664,834	\$3,720,365	\$3,025,261
Way and structures.....	1,056,449	790,538	505,587	419,678	111,472	71,778	439,390	299,082
Equipment.....	1,202,422	870,918	604,449	450,431	117,714	76,110	480,259	344,377
Power.....	1,501,773	1,301,743	787,013	762,198	92,542	41,589	570,618	497,956
Conducting transportation.....	3,777,927	3,101,449	1,685,659	1,287,155	498,059	382,570	1,594,209	1,431,724
Traffic.....	38,549	29,870	19,307	12,589	2,721	2,641	16,521	14,640
General and miscellaneous.....	1,145,870	1,008,704	544,723	485,843	107,617	90,146	493,530	432,715
Transportation for investment—Cr.....	7,176	50	.....	.....	.....	.....	7,176	50
Car-miles operated.....	32,257,315	32,435,875	13,759,122	13,509,446	4,085,132	4,094,519	14,413,061	14,831,910

* NOTE—This table includes the expenses of the fifty-one companies shown in Tables I and II, and in addition thirteen other companies which are not included in Tables I and II, because of the fact that they do a power and light business and do not separate their railway taxes and fixed charges from the taxes and fixed charges of their other business.

¹ Includes \$216,499 undistributed depreciation. ² Includes \$90,347 undistributed depreciation. ³ Includes \$83,485 undistributed depreciation. ⁴ Includes \$85,530 undistributed depreciation. ⁵ Includes \$133,014 undistributed depreciation. ⁶ Includes \$4,817 undistributed depreciation.

TABLE IV—OPERATING EXPENSES IN CENTS PER CAR-MILE OF THE SIXTY-FOUR ELECTRIC RAILWAYS APPEARING IN TABLE III, FOR MARCH, 1919, COMPARED WITH MARCH, 1918

	United States			East			South			West		
	1919	1918	Per Cent Increase	1919	1918	Per Cent Increase	1919	1918	Per Cent Increase	1919	1918	Per Cent Increase
Operating expenses.....	27.53	22.18	24.12	30.74	25.93	18.55	22.76	16.24	40.15	25.81	20.40	26.50
Way and structures.....	3.28	2.44	33.98	3.67	3.11	18.00	2.73	1.75	56.00	3.05	2.02	50.99
Equipment.....	3.73	2.68	39.17	4.39	3.33	31.83	2.87	1.87	53.47	3.33	2.33	42.91
Power.....	4.49	4.02	11.97	5.72	5.64	1.42	7.27	7.02	122.54	3.96	3.36	17.86
Conducting transportation.....	11.71	9.56	22.48	12.25	9.53	28.54	12.19	9.34	30.51	11.06	9.65	14.61
Traffic.....	0.12	0.09	33.33	0.14	0.09	55.55	0.07	0.06	16.66	0.11	0.09	22.22
General and miscellaneous.....	3.55	3.11	14.15	3.96	3.60	8.33	2.63	2.20	19.55	3.43	2.92	17.46
Transp. for investment—Cr.....	0.02	.....	.....	.....	.....	.....	.....	.....	0.05	.....	.....	.....
Car-miles operated.....	32,257,315	32,435,875	0.65	13,759,122	13,509,446	1.85	4,085,132	4,094,519	0.23	14,413,061	14,831,910	2.82

¹ Includes 0.67 cents per car-mile undistributed depreciation. ² Includes 0.28 cents per car-mile undistributed depreciation. ³ Includes 0.60 cents per car-mile undistributed depreciation. ⁴ Includes 0.63 cents per car-mile undistributed depreciation. ⁵ Includes 0.92 cents per car-mile undistributed depreciation. ⁶ Includes 0.03 cents per car-mile undistributed depreciation. ⁷ A number of companies in the South include the cost of power under conducting transportation which accounts for the apparent disparity of these figures.

TABLE V—INCOME STATEMENT OF *129 ELECTRIC RAILWAYS FOR MARCH, 1919

	United States	East	South	West
Operating revenue.....	\$26,006,594	\$17,415,970	\$1,419,198	\$7,171,426
Operating expenses.....	19,505,913	13,200,115	1,024,502	5,281,296
Net operating revenue.....	6,500,681	4,215,855	394,696	1,890,130
Net revenue: Auxiliary operations.....	586,660	280,336	142,488	163,836
Taxes.....	1,660,716	1,057,133	143,449	460,134
Operating income.....	5,426,625	3,439,058	393,735	1,593,832
Non-operating income.....	683,232	309,083	162,390	211,759
Gross income.....	6,109,857	3,748,141	556,125	1,805,591
Deductions from gross income.....	5,400,998	3,504,656	355,714	1,540,628
Net income.....	708,859	243,485	200,411	264,963
Operating ratio.....	75.00	75.79	72.19	73.64
Car-miles operated.....	70,878,195	46,192,903	4,195,805	20,489,487

* Includes the companies shown in Tables I to IV and others for which the 1918 figures are not available.

TABLE VII—OPERATING EXPENSES OF *152 ELECTRIC RAILWAYS MARCH, 1919

	United States	East	South	West
Operating expenses.....	\$20,576,266	\$13,782,866	\$1,271,087	\$5,522,313
Way and structures.....	2,376,009	1,528,317	153,260	694,432
Equipment.....	2,721,559	1,810,903	159,956	750,700
Power.....	3,279,832	2,294,963	137,265	847,604
Conducting transportation.....	9,073,511	6,060,039	652,949	2,360,523
Traffic.....	84,784	42,849	4,898	37,037
General and miscellaneous.....	2,578,837	1,707,082	162,759	708,996
Transportation for investment—Cr.....	14,607	1,628	.....	12,979
Car-miles operated.....	75,131,551	48,068,190	5,368,142	21,695,219

NOTE—This table includes the expenses of the 129 companies shown in Tables V and VI and in addition 23 other companies which are not included in Tables V and VI because of the fact that they do a power and light business and do not separate their railway taxes and fixed charges from taxes and fixed charges of their other business.

¹ Includes \$476,401 undistributed depreciation. ² Includes \$340,401 undistributed depreciation. ³ Includes \$136,000 undistributed depreciation.

TABLE VI—INCOME STATEMENT OF TABLE V, SHOWING THE AMOUNTS IN CENTS PER CAR-MILE

	United States	East	South	West
Operating revenue.....	36.67	37.70	33.82	35.00
Operating expenses.....	27.50	28.58	24.42	25.77
Net operating revenue.....	9.17	9.12	9.40	9.23
Net revenue: Auxiliary operations.....	0.83	0.61	3.39	0.80
Taxes.....	2.34	2.29	3.42	2.25
Operating income.....	7.66	7.44	9.37	7.78
Non-operating income.....	0.96	0.67	3.87	1.03
Gross income.....	8.62	8.11	13.24	8.81
Deductions from gross income.....	7.62	7.58	8.48	7.52
Net income.....	1.00	0.53	4.76	1.29
Operating ratio.....	75.00	75.79	72.19	73.24
Car-mile operated.....	70,878,195	46,192,903	4,195,805	20,489,487

TABLE VIII—OPERATING EXPENSES OF THE 152 COMPANIES APPEARING IN TABLE VII, SHOWING THE AMOUNTS IN CENTS PER CAR-MILE FOR MARCH, 1919

	United States	East	South	West
Operating expenses.....	27.38	28.67	23.68	25.45
Way and structures.....	3.16	3.18	2.85	3.20
Equipment.....	3.62	3.77	2.98	3.46
Power.....	4.37	4.77	2.56	3.90
Conducting transportation.....	12.08	12.61	12.17	10.88
Traffic.....	0.11	0.09	0.09	0.17
General and miscellaneous.....	3.43	3.55	3.03	3.27
Transportation for investment—Cr.....	0.02	.....	.....	0.08
Car-miles operated.....	75,131,551	48,068,190	5,368,142	21,695,219

¹ Includes 0.63 cents undistributed depreciation. ² Includes 0.70 cents undistributed depreciation. ³ Includes 0.63 cents undistributed depreciation.

Indianapolis Merger Conditionally Approved

Company Disposed to Reject Changes in Plan Which Have Been Suggested by Public Service Commission

The Indiana Public Service Commission handed down an order on June 28, conditionally approving the merger of the Indianapolis Traction & Terminal Company and the Indianapolis Street Railway. After hearing the case as reported in the *ELECTRIC RAILWAY JOURNAL* of June 21, page 1243, the commission submitted a radically modified plan of merger. This provided for placing the reduced Indianapolis Traction & Terminal stock in the hands of five trustees, to be selected by the commission from fifteen citizens nominated by the company. Other requirements were so stringent that the committee of stockholders and officers of both companies declined to consider the proposal of the commission, which would have required the calling of another meeting of the stockholders. The commission was informed that the time was too short, and that the merger already approved by the majority of the stockholders should be approved by the commission or the company would not be in a position to provide necessary financing on July 1. The controlling part of the order is as follows:

The merger agreement is hereby approved subject to the following conditions:

1. That the \$2,500,000 of common stock of the consolidated company to be issued in lieu of \$5,000,000 of common stock of the Indianapolis Traction & Terminal Company be reduced to the par value of \$1,000,000.
2. That all bonds accumulated or accumulating in bond sinking funds shall be retired and cancelled.
3. All payments of interest on bonds in sinking fund shall be permanently discontinued.
4. No direct payments into bond sinking funds shall be made until Jan. 1, 1923, and until Jan. 1, 1923, the amounts of such direct payments which otherwise would be paid into said sinking funds, shall be utilized and expended for additions, extensions, improvements, equipment or for other proper capital expenditures. If such direct payments are resumed in 1923, such payments into said funds and the disposition thereof shall conform to the provisions set out in the Sixth paragraph of the agreement submitted to the commission; that is to say, that said direct payments into said sinking funds shall be utilized in the purchase, retirement and cancellation of the bonds of the Indianapolis Street Railway and the Indianapolis Traction & Terminal Company in the proportions provided in the respective trust deeds or mortgages and upon such retirement and cancellation, bonds of the consolidated company to the par value amount of bonds so retired and cancelled, shall immediately be available for additions and extensions.

DIVIDEND PAYMENTS FIXED

5. The consolidated company shall assume the complete performance of the franchise obligation of each constituent company.
6. Until April 7, 1933, no dividends shall be paid on the \$5,000,000 of preferred stock of the consolidated company issue in lieu of the \$5,000,000 of common stock of the Indianapolis Street Railway and no dividends shall be paid on the \$1,000,000 of the common stock of the consolidated company issued in lieu of the \$5,000,000 of the common stock of the Indianapolis Traction & Terminal Company while or at any time there is a failure to comply with the franchise conditions or requirements of the franchise of either of the constituent companies. The Public Service Commissions of Indiana shall have the right and authority to determine when there is a failure to comply with or default of such franchise requirements. The commission will look to the city of Indianapolis for notice of such failure or default.

7. Whenever any dispute shall arise between the consolidated company and the city of Indianapolis the matter shall be referred to the Public Service Commission and the consolidated company shall agree to abide by the decision of the commission with respect to such matters with the right to appeal, as provided by law.

MAINTENANCE AND DEPRECIATION CHARGES FIXED

8. Until the further order of the commission, 21 per cent of the gross revenues of the consolidated company shall be set aside in a separate fund to be used for maintenance and depreciation. This amount, unless otherwise ordered by the commission, shall be set aside in cash and shall be handled separately and with proper accounting.
9. There shall be no redemption or retirement of the preferred stock of the consolidated company before April 7, 1933, or before the extended maturity date of any bonds, the time of payment of which is extended.
10. Nothing contained in Paragraph 6 of the agreement submitted or in any of its other provisions, shall either expressly or impliedly bind the commission in any matters of future security regulation.
11. The consolidated company shall apply to the commission for authorization and approval of all stock and bonds to be issued. The commission in no wise guarantees the payment of any dividends on stocks, bonds or other securities and the consolidation and merger herein conditionally approved is a matter entirely independent of rates, without any obligation, express or implied, on the part of the commission, to provide the payment of any interest charges or dividends.
12. The commission is in no wise bound to provide rates which will permit or enable dividends or interest charges to be paid on the stocks or bonds of the consolidated company. The commission reserves to itself the right to fix rates, independent of and unaffected by the securities of the consolidated company or by its approval of the merger and consolidation.
13. Nothing in the commission's approval of the merger or the consolidation agreement shall, in any manner, relieve the consolidated company from any of the liabilities, claims or obligations of or against either or both the Indianapolis Street Railway and the Indianapolis Traction & Terminal Company and the merger agreement is approved, subject to the assumption by the consolidated company of all the obligations, liabilities and claims of or against said Indianapolis Street Railway Company or the Indianapolis Traction & Terminal Company.

ACCEPTANCE NECESSARY BY SEPT. 1

14. That on or before Sept. 1, 1919, the parties to this agreement shall file or cause to be filed with the Public Service Commission, the written acceptances, approvals and consents of all parties whose acceptances, approvals and consents are legally necessary to the conditions and stipulations hereinbefore set out.
- It is further ordered, that the consolidated company shall, without unnecessary delay, proceed with the making of extensions and additions in accordance with the franchise requirements.

Salt Lake Revenues Increase

In the monthly statement filed by Manager H. F. Dicke of the Utah Light & Traction Company, Salt Lake City, Utah, with the Public Utilities Commission, it is shown that during May, 1919, 9314 more revenue passengers were carried by the company's cars than during the corresponding period of May 2 to June 1, inclusive, 1918. The total this year was 2,788,535 passengers, of whom 43.6 per cent paid cash fare of 6 cents each.

With the increased fares in force by the order of the commission, the com-

pany's revenue during the month was \$152,692, which was \$12,310 more than for the corresponding month a year ago. Operating expenses also increased, but only \$3,238, leaving an increase in the net revenue from operation, making no allowance for depreciation, of \$9,071. The net revenue in May, 1919, was \$44,980.

Mr. Dicke in his letter accompanying the report says in part:

With respect to the increase in net from operation, I want to say for your information that we have not as yet for this year increased our maintenance gangs for the purpose of doing the usual amount of maintenance work during the summer season.

Indiana Assessments Announced

Under the 1919 assessment of utilities announced by the State Board of Tax Commissioners of Indiana large increases have been made over the 1918 assessments. The assessments may not be final, as the various properties will have recourse to a rehearing at the second session of the tax commission to be held in July.

The assessment of the constituent companies of the Indianapolis city railway system was increased from \$7,992,719 to \$16,425,010. The Indianapolis Street Railway is increased from \$5,739,903 to \$11,905,080; the Indianapolis Traction & Terminal Company from \$2,222,190 to \$4,448,250; and the Broad Ripple Traction Company, a part of the Indianapolis system, from \$30,625 to \$71,680.

The assessment of the value of the railway lines in Indianapolis is nearly \$500,000 more than the outside figure of the tentative valuation placed on the traction property by the Public Service Commission during the hearing last fall on the fare increase matter.

The assessments for all interurban railways of Indiana for the year 1919 as compared with 1918 are as follows:

	1919	1918
Union Traction	\$9,731,522	\$3,257,860
Terre Haute, Indianapolis & Eastern	12,520,448	4,115,443
Indianapolis & Cincinnati	1,953,651	665,031
Interstate P. S.	2,422,125	66,839
Fort Wayne & No. Indiana	5,639,075	1,899,722
Chicago, Lake Shore & S. Bend	3,163,305	856,145
Louisville & Northern Ry. & Lt.	552,645	184,370
Beech Grove Traction Co.	139,750	30,625
Central Ind. Ltg. Co.	97,555	34,265
Chicago, South Bend & Northern Indiana	3,163,305	995,640
Cincinnati, Lawrenceburg & Aurora	174,780	71,886
Evansville Rys.	63,678	316,154
Evansville S. & N. Ry.	648,590	266,195
Ft. W. & Decatur Tr.	224,590	110,345
Ft. W. & Nw. Ry.	821,935	277,937
Ft. Lick & W. B. St. Ry.	26,880	9,240
Gary Connecting Ry.	147,850	49,350
Gary & Hobart Tr.	112,350	32,606
Gary & South	282,682	85,587
Gary St. Ry.	1,124,330	304,880
Gary & Valparaiso Ry.	281,032	52,580
Hammond, Whiting & E. Chi.	2,141,240	460,935
Indiana Rys. & Ltg. Co.	1,411,510	495,950
Indiana Utilities Co.	23,310	11,160
Indianapolis & Louisville	937,049	260,449
Indianapolis, N. C. & East	1,058,263	363,955
Lebanon-Thorntown	103,201	40,326
Louisville & Northern	552,645	184,370
Louisville & Southern	731,948	27,036
Madison Lt. & Ry.	35,900	15,050
Marion & Bluffton	583,050	199,425
Muncie & Portland	573,795	196,230
New Albany St. R. R.	332,610	119,585
Ohio Elec. Ry.	778,518	259,221
Public Utilities	1,558,320	619,635
Southern Michigan	169,672	56,484
Vincennes Tr. Co.	115,005	47,545
Washington St. Ry.	30,500	11,925
Winona Interurban	1,394,685	460,988
Winona & Warsaw	80,320	27,870

Financial News Notes

Authorize Three-Year Bond Issue.—The stockholders of the Nova Scotia Tramways & Power Company, Halifax, N. S., have authorized an issue of \$2,000,000 of three-year 7 per cent gold bonds, of which \$1,000,000 is to be issued presently for improvements subject to the ruling of the Public Utilities Commission.

Successor Company Organized.—The Pittsburgh, Butler & Harmony Consolidated Railway & Traction Company has been incorporated in Delaware with a capital of \$6,500,000, presumably as the successor to the Pittsburgh, Harmony, Butler & New Castle Railway, change in control of which was noted in the *ELECTRIC RAILWAY JOURNAL* for June 28, page 1290.

Abandonment Hearing Concluded.—The Massachusetts Northeastern Street Railway, Haverhill, Mass., has petitioned the New Hampshire Public Service Commissioners to close the branch of the railroad from Smithtown to Salisbury Junction, on the claim that travel there does not warrant continuation from a financial standpoint. Following a hearing the commission reserved decision on the appeal of the company.

Baltimore Company Again Defers Dividend.—The directors of the United Railways & Electric Company, Baltimore, Md., at their regular meeting on June 25 again deferred action on the quarterly dividend on the common stock. This is the second time this year that the board has postponed action. So far, only 1 per cent has been distributed to common shareholders this year. After the meeting no intimation was given as to when the board would again take up the dividend question.

Receiver for Vincennes Company.—E. C. Cheobold, Vincennes, Ind., has been appointed receiver of the Vincennes (Ind.) Traction Company by Judge A. B. Anderson in the United States District Court. The receiver was asked in a complaint filed by the Mercantile Trust Company, St. Louis, Mo., against the Vincennes Traction Company and the City Trust Company, Vincennes. The allegations in the complaint were admitted by the defendants and consent was given for the appointment of a receiver.

Will Not Sell Collateral Now.—It was announced in Chicago, Ill., on June 27 that not only would the Chicago Elevated Railways be forced to default on its \$13,600,000 of 6 per cent notes, due on July 1, but it would be unable to pay even the interest. A. G. Hoyt, New York banker, representing the protec-

tive committee formed on behalf of the noteholders, said: "The noteholders have a first lien on the collateral securities, but they do not propose to foreclose immediately, fearing to harm still further the elevated companies' credit. We shall make a general survey of the situation and hope for a fair return for the service the properties render."

Brooklyn Interest Payment Deferred.—The directors of the Brooklyn, Queens County & Suburban Railroad, the Nassau Electric Railroad, and the Coney Island & Brooklyn Railroad, all included in the system of the Brooklyn (N. Y.) Rapid Transit Company, decided to defer, temporarily, at least, payment of the interest due on July 1 on the bonds of those companies. The amount involved is about \$450,000. The mortgage securing these bonds provides varying periods of grace before default can be declared, and the directors hope that before these periods expire conditions will permit the payment of the interest. It was announced that the rental by the Brooklyn Heights Railroad to the Brooklyn City Railroad, due on July 1, would be paid.

Abandonment Petition Denied.—The Indiana Public Service Commission has dismissed the petition of the Central Indiana Lighting Company, Columbus, Ind., for authority to abandon service on its Maple Grove line. The petition to discontinue the line was made on the assertion that the building of the Nentrup road would result in such loss to the company that it could not afford to maintain that branch of its service. The State tax board later denied authority to build the Nentrup road. The company thereupon decided to continue the Maple Grove line. Those who favor the road being built are not preparing to make a test case to determine the constitutionality of the tax law, under which the ruling was made.

Notice of Sale of Collateral.—The Equitable Trust Company, New York, N. Y., as trustee for the issue of five-year 5 per cent convertible gold bonds of the Eastern Power & Light Corporation, New York, N. Y., dated March 1, 1913, has given notice that default having been made in the payment of the principal of these bonds and in the payment of certain interest due on them, it will sell at public auction in New York on July 15 the collateral pledged as security for these bonds. Included in this collateral are 12,482 shares of the common stock of the West Virginia Traction & Electric Company, 26,000 shares of preferred stock of the Reading Transit & Light Company, and 73,000 shares of the common stock of the Reading Transit & Light Company.

Dallas Results for May.—Earnings of the Dallas (Tex.) Railway for the twenty months of operation under the service-at-cost franchise amounted to but slightly more than 4 per cent of the agreed property valuation, as against a permitted return of 7 per cent. The deficit in the permitted return for the

period is \$369,241. The gross earnings for May were \$194,379 (not including interurban terminal receipts). This represents an increase of about 48 per cent in comparison with last year. The railway operating expenses were \$165,178, an increase of about 40 per cent over last year. The net earnings from railway operations were \$29,200, and from interurban terminal operations \$4,659, making the total net earnings \$33,860. This amount is equivalent to a rate of return of 4.96 per cent per annum on the property value.

Bond Extensions Approved.—The Indiana Public Service Commission, in orders issued on June 13 extending bond issues of the Union Traction Company of Indiana, asserted its jurisdiction in this field for the first time. Members of the commission said that the body had never before acted formally on utility bond extensions, reserving the right merely to pass on new issues. The commission approved the extension for three years of \$4,623,000, par value, 5 per cent bonds of the Union Traction Company, which expired on July 1. The interest rate is to be increased to 6 per cent and the federal tax on the interest coupons up to 2 per cent is to be paid by the company. The Union Traction Company was also authorized to extend for three years the outstanding 6 per cent bonds of the Indianapolis, Newcastle & Eastern Traction Company, amounting to \$1,200,000, par value. These bonds also expired on June 1. A five-year extension of the Marion City Railway bonds of the Union Traction Company was approved. The par value of these 6 per cent bonds is \$328,000. They expired on May 1.

Offering on Sioux City Service Bonds.—Halsey, Stuart & Company, Chicago, Ill., and New York, N. Y., are offering for subscription at 89 and interest, yielding 6.75 per cent, \$880,000 of Sioux City (Ia.) Service Company first and refunding mortgage sinking fund 5 per cent gold bonds dated Jan. 1, 1910, and due Jan. 1, 1928. The bonds are secured by an absolute first mortgage on the electric light, power and steam heat distribution systems and the electric generating and steam heating plant of the company, and, upon the retirement of \$750,000 of first mortgage 5 per cent bonds of the Sioux City Traction Company, due on July 1, 1919, will also be secured by an absolute first mortgage upon the entire electric railway property of the company. The present issue of refunding bonds will provide for the retirement of the electric railway bonds just mentioned. The mortgage under which the bonds are issued creates a sinking fund obligating the company to deposit with the trustees sums which will aggregate \$1,200,000 at the maturity of the bonds, at least half of which must be used in retiring first and refunding bonds and the balance for permanent extensions and improvements.

Traffic and Transportation

Girardville Case Different

Increase to Eight-Cent Fare Allowed to Road in Mining District with Few Short Riders

The Public Service Commission of Pennsylvania has dismissed complaints as to increased rates for service on the lines of the Schuylkill Railway, Girardville, Pa., due to the fact that the increase was necessary to meet increased operating expenses. In its ruling, referred to very briefly in the *ELECTRIC RAILWAY JOURNAL* for May 10, page 939, the commission said that as an emergency measure and for the purpose of giving the company what appeared to be the necessary relief it would grant the application for an 8-cent fare, but would refuse that part of the application which provided for thirteen tickets for \$1 and would order the company to sell seven tickets for 50 cents on one day's notice until June 1, 1920. At that time the company is to report to the commission the result of the experiment. The complaint of the Borough of Mahanoy as to the service rendered will be disposed of by the commission in a separate report.

The commission says that peculiar conditions surrounding the operation of the railway place it in a class by itself. It is pointed out by the commission that the line is constructed in a mountainous country, in some places over mines, and that the wear and tear on the cars and the condition of the surface of the line over which the right-of-way runs entails more expense in keeping the cars in order and maintaining the roadbed than is usual. The company has no large cities from which to draw its patrons, and, while the road connects comparatively populous communities, some of its divisions traverse regions that are sparsely settled. The road has very few short riders to depend upon. For these reasons the commission distinguished this company from most of the other companies operating in the State.

Further Testimony by Municipalities

Robert H. Whitten, formerly with the Public Service Commission for the First District of New York, utility expert and technical advisor to the Cleveland City Plan Commission, testified further at the hearing in Newark on June 26 before the Board of Public Utility Commissioners of New Jersey in regard to the plan submitted by the Public Service Railway for installing zone fares.

Mr. Whitten, who appeared for the municipalities, advocated the division of the proposed one-mile zones into one-

third-mile zones so that passengers getting on in the middle of a zone would ride to the middle of the next zone without being compelled to pay two zone fares. He contended that this would be fairer to the short distance rider and claimed that it would not complicate the fare collection system, but simply required the conductor to change the zone indicator oftener.

It was Mr. Whitten's opinion that the plan suggested by the Public Service Railway for fixed one-mile zones would make the loading very uneven, as passengers would be inclined to walk to zone points. This would slow down car movement and would have a tendency to increase traffic congestion. He said that the prime function of the electric railway was to serve the needs of the comparatively short distance rider. The steam roads and rapid transit lines could if necessary take more of the longer hauls. The direct examination of Mr. Whitten was concluded late on June 26. The hearing was then adjourned until July 1.

Ten-Cent Fares for Bay State

The public trustees of the Eastern Massachusetts Street Railway, Boston, Mass., voted to withdraw on July 1 the 7-cent tickets and tokens from the Bay State system. It was announced that on and after that date the initial fare north and south of Boston would be 10 cents, as it has been since Jan. 8 for a single cash fare. The 7-cent tickets and tokens will be redeemed at 7 cents each.

The public trustees took possession of the property on June 1. An estimate of the earnings and expenses for the month indicates a deficit of approximately \$300,000. Nothing was earned toward interest charges or the principal of the State guaranteed bonds.

Steps have been taken by the public trustees substantially to reduce the management expenses throughout the system. Notwithstanding these economies, neither an 8-cent nor a 9-cent fare would produce enough revenue to meet the cost of service, as provided by law, or even the interest charges, which must be met if the company is to remain solvent.

As soon as the cost of service can be determined accurately in each of the twelve districts under the home rule plan of operation and accounting, which also goes into effect July 1, the fares in these districts will be changed accordingly.

It is the intention of the public trustees to issue at frequent intervals statements showing the receipts and expenses of each district.

Fares Compromised

Residents Along Monongahela Valley Traction Line and Company Settle Dispute in Conference

A compromise agreement has been reached between the Monongahela Valley Traction Company, Fairmont, W. Va., and the special committee appointed at a recent mass meeting to represent the several hundred residents and patrons of the company between Parkersburg and Williamstown who protested against the application before the Public Service Commission for a 7-cent flat rate.

PROTESTS WITHDRAWN

This compromise in the form of an agreed order has been sent to the commission and will be filed by this body, the protest of the residents being withdrawn and the company withdrawing application for its requests not included in the compromise agreement.

The fare from the limits of Williamstown, W. Va., over the bridge to Marietta, Ohio, is fixed by the compromise agreement at 5 cents, as at the present time. There are to be four zones between Parkersburg and Williamstown as at present, the zone limits to be the same with one exception.

The cash fare per zone will be the same as that which the Public Service Commission determines should be allowed for the city of Parkersburg, but in no case is it to exceed 7 cents. In other words, if Parkersburg has a 6-cent rate the interurban rate will be 6 cents.

Coupon books of fifty or 100 tickets, good on both the interurban and city lines, are to be sold by the company at $\frac{1}{2}$ cent less per ticket than the cash fare charged. Tickets without a time limit are to be sold for transportation between Parkersburg and Greenmont at the same rate as the cash fare charged in the city as fixed by the Public Service Commission, but in no case for more than 7 cents. School tickets between Parkersburg and Greenmont and between Williamstown and Central are to be sold for $3\frac{1}{2}$ cents. School tickets are good for any school child any day in the school year from 7 a. m. to 6 p. m.

RATES INCREASE SLIGHTLY

The fare rates as agreed in the compromise are to take effect when any new rate allowed by the Public Service Commission in the city of Parkersburg goes into effect.

The compromise rates mean that it will cost 6 cents more than formerly to go to Williamstown or Marietta if one travels on a book of tickets and if the 7-cent fare should be granted. On the other hand, the fare for school children is decreased from 5 cents to $3\frac{1}{2}$ cents so that residents on the interurban might actually save money under some conditions.

The lines of the Monongahela Valley Traction Company connect Fairmont with Mannington. In extent they cover more than 110 miles of road.

Ten-Cent Fare Announced for Boston

The State Public Control Act Would Seem to Leave No Other Alternative, Trustees Say

The trustees of the Boston (Mass.) Elevated Railway, to meet the deficit which has been created by reason of the added cost of service, have announced that they will establish a 10-cent fare on July 10. While the legal title to the property is vested in the stockholders, the complete control of the Boston Elevated Railway has passed to public trustees. Stockholders have no voice in the management and no control over service, receipts or expenditures. The trustees serve no private interest.

PUBLIC TRUSTEES AT WORK A YEAR

When the railway was turned over to the trustees on July 1, 1918, the deficit for the preceding six months of private management, though no dividends had been paid and little attempt made to maintain the property, was \$570,000. In the first month of public control, namely, in July, during which the 5-cent fare was continued, the deficit, augmented by the burdens of dividend rental maintenance charges, increased cost of supplies and materials, wage increase and rental of the Dorchester Tunnel, was \$700,000. The trustees introduced a 7-cent fare. That fare failed to meet the cost of service by about \$600,000 a month. An 8-cent fare was then established. That rate has been in force since Dec. 1, 1918. The 8-cent fare has also failed to meet the cost of service, the net operating cost for six months to May 31, 1919, having been \$1,519,974 in excess of the receipts.

The statute under which the experiment in public control was begun provides that at the end of the year which closed on June 30 accumulated deficits should be met by a payment from the State Treasury, the amount so paid to be assessed upon the cities and towns in which the railway is located. Despite the general notion that this payment of deficits is a contribution by tax payers to car riders, the statute makes it a loan to be repaid to these communities when and as fast as receipts exceed the cost of service. The car rider continues to carry the entire burden of the service.

NINE-CENT FARE UNWISE

Under the statute as quoted, the trustees were required to advance the fare. A study of receipts and expenditures convinced the trustees that it would be unwise if not unlawful to experiment with a 9-cent fare. The average cost of carrying a passenger under existing conditions, without consideration of the obligation to repay deficits or the outcome of the pending arbitration over a further advance in wages, exceeds 9 cents. There was also to be considered the uncertainty of the effect of the higher fare upon net revenue,

owing to loss of passengers. Under the 8-cent fare there was in December a loss of nearly 15 per cent in travel. From natural increase in business and from returning patronage that percentage has gradually diminished until in May the loss was reduced to 9 per cent.

The trustees point out that there are certain items in the cost of operation that have special interest. For instance, \$2,004,000 is annually reserved for depreciation. For the eleven months ended May 31, 1919, for which complete figures of operating cost are available, the charge amounted to \$1,837,000. This reserve is based upon independent expert opinion as to what should be set aside yearly in order to provide for renewals and replacement as necessity arises. Applied to the individual fare since Dec. 1, 1918, the increased allowance for depreciation amounts to 0.497 cent per passenger. In the eleven months \$1,243,222 has been expended in rental dividends to stockholders. These annually aggregate \$1,403,970 as the fixed return upon their investment. This applied to individual fare amounts to 0.416 cent per passenger during the past six months.

The sum of \$1,365,636 has been paid to the city of Boston in subway rentals that now represent an annual charge of \$1,491,560, the amount having been increased this year by \$473,000 upon the opening of the Dorchester tunnel. These rentals, in the opinion of the trustees, are unjust to the car rider. The additional amount assumed during the period of the 8-cent fare as applied to the individual fare has cost 0.183 cent per passenger. A bill was introduced in the Legislature to relieve the riders from this burden during public control of the railway, but it failed of enactment. More than \$12,272,000 has been spent during the eleven months for wages. This constitutes 45 per cent of the total of fixed charges and operating expenses. The total wage increase for the period was \$3,996,883, of which \$2,750,000 was due to the award of the War Labor Board, the remainder due to the increase in going rates of craft organizations and to additional service and higher standard of maintenance. The increase in wages as applied to the individual fare amounted to 1.751 cents per passenger in the six months period ending May 31. Under present conditions the trustees declined to grant the recent demand of employees for still higher wages. In consequence that demand is now under consideration by the War Labor Board before which final arguments were made on June 25.

The sum of \$2,312,728 has been expended for maintenance and repairs of track and repaving of streets, for no

part of which any provision is made in the reserve for depreciation. Increased cost from rising prices of supplies and materials has been felt most in the matter of coal, which, during the period named, has advanced in price to such an extent as to make an additional outlay of \$405,000. When applied to the individual fare this amounted to 0.126 cent per passenger during the six months ending May 31.

In announcing the 10-cent fare the trustees after reviewing affairs of the year, said:

Public interest in the service is as keen as it is in the fare. To imagine that a new management, hampered by the depreciable character of the railway, the unprecedented war conditions, and the lack of capital and income, could promptly bring the impaired service to a proper standing, gauge the cost and fix a fare commensurate and reasonably cheap, is to imagine what commonsense forbids. Realizing what their task meant, the trustees laid out a program which will cover a term of five years. A substantial beginning has been made toward the consummation of that program bringing with it new cars, new track, better trains in subways, larger accommodations on surface lines, cleanliness and ventilation of cars.

What of the future? Without being unduly optimistic the trustees believe that the cost of the service measured by fares, is reaching its highest level; that gradual improvement in service with gradual reduction in fares is to be expected. In brief, the trustees are confident that the goal which they have had in view—a service of high standard at lowest possible cost—is not unattainable. The time within which this goal can be reached will depend largely upon the promptness with which the deficit of the past year is made good and upon the relief that the Legislature may give by just and wise legislation.

Chapter 159, special acts of 1918, inaugurated the experiment with public control. Private management of the Boston Elevated Railway under a charter permitting not over a 5-cent fare under a public policy that imposed upon it subway rentals and street improvements, and with rising cost of supplies and materials to add the finishing touch, had resulted in failure.

Three courses were open to the Legislature. It could let the property go to ruin, regardless of interrupted service and wasteful cost; it could embark upon government ownership and control, or it could try out government control with private ownership. The last plan was adopted. The property in effect was leased by the stockholders to the State for ten years at a fixed rental paid in the form of interest on outstanding bonds and dividends on outstanding stock. The dividend for the first two years was fixed at 5 per cent, for the next two years at 5½ per cent, and thereafter at 6 per cent on par value of shares. The capital stock on which these dividends are paid comprises common stock amounting at par to \$23,979,400 and preferred stock amounting at par to \$3,000,000, an aggregate of \$26,879,400, which, with premiums amounting to \$2,707,000, makes a total investment of \$29,586,400. The real dividends therefore are for the first two years 4.74 per cent, for the next two years 5.15 per cent, and thereafter 5.55 per cent on actual cash investment.

When the trustees took over the rail-

way on July 1, 1918, they found a large number of cars totally unfit for use, much of the remaining rolling stock of obsolete type, unclean, and unpainted, many miles of track badly worn and some unsafe, power plant in part out of date, and repair shops inadequate. The service was approaching the point of collapse. The trustees faced an imperative need of new capital and an even more imperative need of larger revenue. For capital \$2,000,000 was available from the proceeds of the preferred stock authorized in the act establishing public control. This was immediately applied toward the purchase of 250 new cars. Fifty center-entrance trailers have been received. The delivery of the remaining 200 cars, delayed by war conditions, is assured within the next four months.

No more capital stock can be issued because by law it must be issued at par and the market price has been continuously below par. No more bonds can be lawfully issued because the bonds outstanding equal the outstanding stock and premiums. There was one source of additional capital. This was the Cambridge subway. The company had been allowed to build and own it as an exception to the well-settled and sound policy that forbids private

ownership of public highways. Every other subway in Boston has been built and owned by the public.

The trustees submitted to the Legislature a bill to authorize the purchase of this subway by the State as agent for the communities which the subway serves. The price named was less than actual cost and far below cost of replacement. The bill required an immediate lease of the subway to the company at a rental sufficient to meet the interest on the State loan and to provide a sinking fund from which to pay eventually the entire purchase price of the subway. This bill was passed by the Senate, but was rejected by the House of Representatives. This was peculiarly unfortunate for the reason that while the proceeds of the subway could only be invested in permanent improvements, such investment would mean large operating economies. The statute establishing public control provided that "if on the last day of June, 1919," it appears that "during the preceding three months the income has been less than the cost of the service," the trustees shall within one month thereafter put into effect "a higher grade of fare." In consequence the 10-cent fare has been announced as best suited under existing conditions.

thing of the rentals. This interest was due on July 1 and will have to be defaulted, Mr. Stimson said.

It was a desperate situation, Mr. Stimson urged, and he declared that immediate relief was required if the system was to continue service. Under the so-called Quimby or Rochester decision of the Court of Appeals, fourteen of the 113 transfer points seemed to be without the jurisdiction of Commissioner Nixon, although Mr. Stimson was not sure that the law might be construed to take those in as well.

Corporation Counsel Burr said that the city was agreed that there would have to be a rock-bottom basis for a readjustment, but said this could not be arrived at until the city had had the opportunity to look over the books and a new valuation of the property had been made.

Toledo Fares Increased

The Toledo Railways & Light Company, Toledo, Ohio, has increased the rate of fare to 6 cents, with 2 cents for transfers. Under a decree of the United States Courts, the company has the right under present conditions to fix the rate of fare under which it operates, its increase from the old franchise rate to 5 cents having been approved. This being true, it has the right to make the further increase that is necessary to pay the additional wages just granted to the men by the War Labor Board.

A resolution was introduced in the City Council on June 25 to oust the company from the use of the streets, as it has been operating without a franchise since 1914. Should this resolution prevail, it is said that further action will be taken in the United States District Court.

More than 2000 employees of the Toledo Shipbuilding Company refused to submit to the increased fare on the evening of June 25, and after an altercation, two cars were ditched, and several others were stoned. One of the cars took fire and the service of the fire department was necessary to extinguish the blaze.

St. Louis Fare Hearing Postponed

The hearing on the United Railways fare case scheduled for June 24 at St. Louis, Mo., was indefinitely postponed by the Public Service Commission of Missouri. Coincident with the announcement of this postponement City Counselor Daues of St. Louis issued a statement saying that the city will wait until Oct. 31 before beginning an active fight for reinstating the 5-cent fare at St. Louis. Mr. Daues said that the city was in favor of giving Rolla Wells, receiver appointed by the United States District Court, a chance to see whether the United Railways could be operated profitably under less than a 6-cent fare.

Receiver Would Abolish Transfers

Would Charge Three Cents at Ninety-nine Intersection Points Where Transfers Are Now Issued Free

Job E. Hedges, as receiver of the New York (N. Y.) Railways, has petitioned the Public Service Commission for the First District for permission to abolish ninety-nine free transfer points on the system under his management, and to establish a charge of 3 cents for transfers made at such points. Free transfers are now given at 113 points on the lines of the New York Railways system. Fourteen such free transfer points will be left if the commission grants the company the relief desired. Those remaining are transfers which are required by the conditions of municipal consents and franchises. The remainder were established either by general provisions of the public service commissions law or by specific orders of the commission.

The petition of Receiver Hedges alleges that the earnings of the New York Railways system show an emergency which is likely to disintegrate the property entirely unless some relief is afforded at once. The charge for transfers made at the ninety-nine points involved in the petition, according to the application, would produce a revenue approximating \$900,000. It is stated in the petition that the relief thus afforded would only be partially what the company needs to meet its operating expenses, interest charges, etc. It is also alleged that the average rate of fare actually received by the company for each individual line is only a little more than 3 cents.

At the hearing on June 30 Henry L. Stimson, counsel for Mr. Hedges, the receiver, led the argument for the application, assisted by James L. Quackenbush, counsel for the New York Railways. Corporation Counsel Burr, appearing with E. J. Kohler for the city, objected to the taking of any testimony until an up-to-date appraisal of the property could be made.

As Judge Mayer, in the Federal Court, has fixed July 8 as the time when he will decide whether the Eighth Avenue and the Sixth Avenue lines shall be turned back to their original owners because the New York Railways cannot pay the rental charges, Public Service Commissioner Nixon announced that he wanted the question of whether transfers should be abolished settled before that date.

Evidence given by F. T. Wood, assistant to Frank Hedley, vice-president and general manager of the company, was to the effect that the abolishment of free transfers and the charging of 3 cents for them would bring an additional revenue to the road of \$853,981 a year.

It was stated that rentals now due and unpaid to subsidiary lines amount to \$667,510. If Judge Mayer does not get assurance by July 8 that the rentals can be paid, it is believed he will separate the Eighth and the Ninth Avenue lines from the consolidated system. The earnings for the system up to March 31 were \$50,000 short of paying the interest on the bonds, not to say any-

Transportation News Notes

Interurban Will Install One-Man Cars.—The New Jersey & Pennsylvania Traction Company, Trenton, N. J., announces that it will shortly install cars of the one-man type on some of its divisions.

Increase in Fare in Quincy.—The Public Utilities Commission of Illinois has issued an order increasing the fare of the Quincy (Ill.) Railway from 5 cents to 7 cents. Four tickets will be sold for 25 cents.

One-Man Cars for Galesburg.—The Public Utilities Commission of Illinois has issued an order authorizing the Galesburg Railway, Lighting & Power Company, Galesburg, Ill., to operate one-man cars in that city.

Missouri Interurban Wants Increase.—The Southwest Missouri Railroad, Webb City, Mo., has applied to the Public Service Commission of Missouri for permission to increase passenger rates between Webb City and Carthage.

Chicago Railways Rate Hearing Sept. 2.—The hearing on the appeal of the Chicago (Ill.) Surface Lines in the 7-cent fare case, from the denying order of the Public Utilities Commission of Illinois, has been set for Sept. 2 in Sangamon County Circuit Court.

Increased Fare at Youngstown.—It was announced that fares on the Municipal Railway at Youngstown, Ohio, controlled by the Mahoning & Shenango Railway & Light Company, would be increased from 5 cents to 6 cents on July 1. This will be done under the new service-at-cost plan adopted some time ago.

Wants Fare Increase Continued.—The Aurora, Elgin & Chicago Railroad recently filed a petition with the Public Utilities Commission of Illinois asking for a continuation of the order which granted the company an increase in fare from 5 cents to 6 cents on the city lines of Elgin and Aurora. The original order expired on July 1, 1919.

A Courtesy to the Soldiers.—The Quincy (Ill.) Railway, included in the system of the Illinois Traction Company, considered all men in the uniforms of United States soldiers and sailors as the guests of the company during Quincy's big welcoming demonstration. Conductors of the company were notified not to collect fares from the men in uniform.

Fare Increase Again Refused at Warren.—On June 11 the City Council of Warren, Ohio, rejected the ordinance granting the Mahoning & Shenango Railway & Light Company a re-

newal of its franchise for twenty-five years and an increased rate of fare. This ordinance has been drafted four times, passed twice by Council and vetoed both times by Mayor Parks.

One-Man Cars Authorized.—The Public Service Commission of Massachusetts on June 30 approved the purchase and operation by the Berkshire Street Railway, Pittsfield, of seventeen one-man safety cars. The commission has also approved the construction and operation by the Milford, Attleboro & Woonsocket Street Railway, Milford, of two safety cars operated by one man.

I. T. S. to Run Its Own Express Business.—The Illinois Traction System, Peoria, Ill., resumed express business over its lines on June 29. The Adams Express Company operated over the lines of the Illinois Traction System until the express companies were consolidated into the American Railway Express Company. The Illinois Traction System now plans to operate the express business and to extend the scope of the work.

Memphis Fares Upheld.—The Supreme Court at Nashville, Tenn., on June 28 upheld the legislative act creating the Public Utilities Commission and the 6-cent fare that commission authorized for the Memphis Street Railway. The 6-cent fare in Memphis is already in effect and seems certain to remain in full force until an appraisal is made and a permanent decision rendered by the Public Utilities Commission. The new fares seem to be working well.

Wants Both Passenger and Freight Advance.—The Joplin & Pittsburg Railway, Pittsburg, Kan., has applied to the Public Service Commission of Missouri for an increase in both passenger and freight rates. The present appeal of the company is for an advance in passenger rates in Joplin and in freight rates between Joplin and Pittsburg. Some time ago the company was authorized to increase passenger rates between the city limits of Joplin and the Missouri-Kansas state line.

One-Man Cars for South Bend.—One-man cars may be introduced into South Bend, Ind., as a result of a visit made to Gary, Ind., by Mayor Carson, City Attorney Slick and R. R. Smith, superintendent of the Chicago, South Bend & Northern Indiana Traction Company. The Mayor and the city attorney were favorably impressed with their visit to Gary and it is thought that a plan will soon be worked out by which one-man cars will be placed on the streets of South Bend. The safety cars in Gary were described and illustrated in an article, "Safety Cars in Gary Make Jitneys Unprofitable," in this paper for May 17, page 967.

Defeat of Fare Referendum Urged.—On June 19 petitions were presented to

the North Side Improvement Association containing the names of 500 residents of the North Side, Columbus, Ohio, urging defeat of the proposed referendum on the ordinance giving the Columbus Railway, Power & Light Company an increased rate of fare. The directors approved the petitions, which urged the association to go on record against the proposed referendum. They voted to submit the petitions to the membership for consideration.

Smoking Permitted on Elevated Cars.—The Chicago City Council believes smoking ought to be allowed on the elevated trains, as it was a year ago, when the influenza epidemic caused the health department to issue an edict against it. By a vote of forty-eight yeas to eleven nays the Council on June 23 adopted resolutions directing the health department to set aside the order. The elevated system heads can restore smoking or not, but if they refuse to restore it on the Council's resolution, an ordinance will be passed directing that it be done, according to statements made after the meeting.

New Rates at Cincinnati.—The Cincinnati (Ohio) Traction Company announced the following rates of fare, to take effect on July 1: Adults—Tickets, 6½ cents, strips of six tickets for 39 cents, cash fares, 7 cents; children under ten years—tickets, 3½ cents; strips of four tickets for 13 cents; two children carried for one adult ticket of 6½ cents, cash fare, 4 cents; transfers—issued under the present rules; inclined plane passengers—tickets, 3¼ cents; strips of four tickets for 13 cents, same tickets will be used for inclined plane fares as for tickets; cash fare, 4 cents. Arrangements have been made for the use of old tickets by adding the difference in cash. These changes have been referred to previously very briefly in the ELECTRIC RAILWAY JOURNAL.

Increases on Elmira Suburban Lines.—The Elmira Water, Light & Railroad Company, Elmira, N. Y., has filed with the Public Service Commission for the Second District, a new tariff which it proposes as effective on July 20 on the Seneca Lake division—Elmira, Elmira Heights, Horseheads, Montour Falls and Watkins and the towns of Elmira, Horseheads, Veteran, Catlin, Catherine and Dix. Changes proposed are: One-way fares between points Horseheads to Watkins, inclusive, established on the basis of 3 cents per mile, minimum fare 5 cents. Increases are effected. The new regulation provides for the sale of fifty-two-trip monthly commutation ticket books for travel between points named and at the following prices per book: Pine Valley and Elmira, \$10.40; Pine Valley and Horseheads, \$4.68; Millport and Elmira, \$13.52; Millport and Horseheads, \$8.32; Millport and Montour Falls, \$7.03; Montour Falls and Watkins, \$3.64. Changes in chartered car rates, package rates and for checking trunks effect increases.

Personal Mention

J. P. Ingle President

Manager of Keokuk Property Elected to Head the Iowa Electric Railway Association

At the annual meeting of the Iowa Electric Railway Association held at Colfax, Ia., on June 18 and 19, J. P. Ingle, manager, Keokuk (Ia.) Electric Company, was elected president of the association for the ensuing year and member of the board of directors for five years. Mr. Ingle was born at Salisbury, Md., on Oct. 27, 1882, and lived at Atlanta, Ga., from 1882 to 1906. He was educated in the public schools of Atlanta and worked for the Atlanta Gas Light Company as office boy, billing clerk and bookkeeper from 1897 to 1902. From 1902 to 1906 Mr. Ingle



J. P. INGLE

attended the Georgia School of Technology, graduating the latter year with the degree of Bachelor of Science, Civil Engineer. In 1906 he became assistant superintendent of the Gas Light Company of Columbus, Ga., and in 1908 superintendent of the gas department of the Baton Rouge (La.) Electric Company. In 1908 he went to Keokuk, Ia., as superintendent of the gas department of the Keokuk Electric Company, becoming general superintendent of the company in 1914. From 1915 to date he has been manager of this company, which does all of the electric railway, lighting, power and gas business in Keokuk, and also serves several other surrounding towns in Iowa and Illinois.

Mr. Jackson Retires

Walter Jackson, who has been connected with the ELECTRIC RAILWAY JOURNAL for seventeen years successively as assistant editor, associate editor and as business manager, has resigned to enter independent consulting electric railway work. He will

specialize on modern operating economies, the building up of short-ride zone fare systems and the co-ordination of bus and electric railway service. During recent years, Mr. Jackson has given these subjects wide study, both in America and abroad, and his writings on these topics have been of most stimulating character. Mr. Jackson will carry with him in this new work the best wishes of his recent associates for his success.

Capt. Harry L. Brown, U. S. A., has returned to the editorial staff of the ELECTRIC RAILWAY JOURNAL after an absence of a year and a half spent in the signal service. He was formerly the Western editorial representative of the paper, with headquarters in Chicago, but will now be stationed in the New York office.

George H. Wygant, for the last nine and a half years commercial agent of the Tampa (Fla.) Electric Company, has been transferred by Stone & Webster to Baton Rouge, La., as manager of the Baton Rouge Electric Company, which furnishes gas and electric light and power, as well as electric railway transportation, to the community.

J. Augustus Hageman has been made traffic superintendent of the Trenton & Mercer County Traction Corporation, Trenton, N. J. The new official succeeds Thomas J. Connelly, resigned. Mr. Hageman has been connected with the company at Trenton for the last thirty years and has filled various offices with the corporation. Mr. Connelly will return to Troy, N. Y., to re-join the United Traction Company.

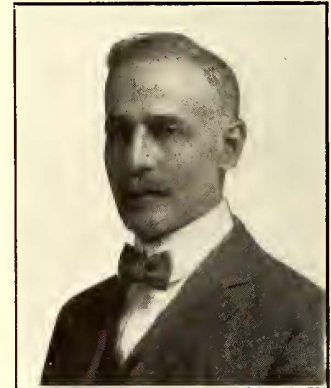
C. Gordon Reel, who retired as vice-president and general manager of the Kingston (N. Y.) Consolidated Railroad in 1911 and later was first deputy superintendent of highways of the State of New York, is now a captain in the United States Aviation Service. He was navigator of one of the airplanes which flew down New York Bay on June 28 to greet the crews of the NC 4, who returned to New York on the Zeppelin on that day.

Louis C. White has been appointed counsel to John H. Delaney, new transit construction commissioner of New York. The transit construction commissioner has taken over all rapid transit construction work from the former Public Service Commission. Mr. White has for ten years past been attached to the New York City law department, and has during most of that time been engaged in the acquisition of property for rapid transit and water supply purposes, and in the trial of suits growing out of rapid transit construction contracts.

Gordon Campbell Re-elected

President of Companies at York Re-elected to Head of Pennsylvania Street Railway Association

Gordon Campbell has been re-elected to serve a second term as president of the Pennsylvania Street Railway Association. His re-election took place at the Harrisburg meeting of this association on June 27 and 28. He became a member of the executive committee of the association in December, 1914, was advanced to vice-president in December of the following year and continued in that position until June, 1918, at which time he was elected president. Mr. Campbell has been president and general manager of the York Railways and the Edison Light & Power Company of York, Pa., since January, 1910. He graduated as mechanical engineer from Stevens Institute in 1886 and entered the railway field as a draftsman at the Denver shops of the Union Pacific Railway shortly thereafter. Subsequently he became superintendent of the Colfax Electric Railway, Denver, purchasing



GORDON CAMPBELL

agent and master mechanic of the North Jersey Street Railway, Newark, N. J., general superintendent of the railways in Providence, R. I., now operated by the Rhode Island Company, and purchasing agent of the Washington Railway & Electric Company, Washington, D. C. This was followed by his connection in August, 1908, with the York Railways as vice-president and general manager, that position having been retained until he was promoted to the presidency of the York Company.

W. B. Yearance, who for a number of years since leaving direct corporate administrative service has been engaged in consulting, operating and engineering work on many of the important undertakings for the largest utilities in the East, has just been elected by the boards of directors of the Eighth and Ninth Avenue Railroads, New York, as "general manager and chief engineer in whole and responsible charge for the operation of these properties and the administration of their interests."

H. F. Adams has resigned as manager of the Haarlem (Holland) Electric Railway, and is now in this country, where he expects to purchase some apparatus, particularly motors and converters, for his property. During the war it was impossible to get this equipment, and service had to be cut for that reason, and a fuel shortage. After the purchase of this equipment Mr. Adams intends to remain in this country and will make application for American citizenship. He believes that with the signing of peace there will be a revival of Dutch electrical enterprises, and possibly extension of the existing trunk line electrification. Mr. Adams, who is a graduate engineer from Delft and Karlsruhe, was engaged for some time in turbine manufacture in Great Britain and then engaged in railway electrification in Holland. He became connected with the Haarlem Electric Railway when it was owned in America, the shares being in possession of the Netherlands Tramway Corporation, New York. This was in 1912. Later the property was taken over by the Holland Railroad System. The line is some 30 km. in length, double track, and connects Amsterdam, Haarlem and Zandvoort. During rush hours trains of two and three cars are run on a ten-minute headway.

A. W. Warnock has resigned as general passenger agent of the Twin City Rapid Transit Company, Minneapolis, Minn. The resignation becomes effective early in the fall when Mr. Warnock plans to go into business for himself. In his fourteen years as head of the passenger department of the company Mr. Warnock has systematized the work and has introduced many innovations, some of which have been adopted for use of systems in other cities. His two books, "How to Treat the Public" and "Selling Street Car Rides" are text books which every Twin City trainman studies. Many other systems have also adopted them. Along this same line of reducing friction between trainmen and the company's patrons, Mr. Warnock has delivered 150 lectures to Twin City trainmen. Other notable work by Mr. Warnock has been the twelve annual folders devoted as much to the Twin Cities as to the electric railway lines; the establishment of the first electric railway publicity bureau on a large scale, and the complaint and suggestion bureau. Before entering electric railway work Mr. Warnock was for three years advertising manager of the Northwestern Railroad, and for nine years was a member of the editorial and advertising staffs of the *Minneapolis Journal*. He was one of the organizers of the Publicity Club of Minneapolis, which was later merged into the Minneapolis Civic & Commerce Association, and was its first president, from 1907 to 1909. It was under his leadership that the ornamental street lighting system of Minneapolis was conceived and first installed on Nicollet Avenue, from Washington Avenue to Ninth Street, in

1908. Mr. Warnock has also been active in civic work. By virtue of his unanimous election by the clubs of the city as president of the Minneapolis Civic Celebration Association Mr. Warnock was foremost in planning and managing the seven-day outdoor celebrations of the event during the first week of July, 1911.

Mr. von Phul San Francisco President

William von Phul, who has been vice-president and general manager of the United Railroads of San Francisco since 1916, has been elected president and general manager of the company succeeding as president the late Jesse W. Lilienthal. Mr. von Phul was graduated from Tulane University in 1891 with the degree B.S., and two years later as mechanical engineer. He was subsequently employed as general superintendent of the Louisiana Electric Light Company and of the Edison Elec-



WILLIAM VON PHUL

tric Company, New Orleans, until 1902, when he became associated with Sargent & Lundy, engineers of Chicago. He represented that firm as engineer in charge of construction for the Cincinnati Gas & Electric Company, later becoming general superintendent of that company until 1905, when he was employed by Ford, Bacon & Davis. Since 1907 Mr. von Phul assisted in the firm's engineering and operation of the electric railway and lighting companies in a number of large Southern cities comprised in the American Cities Company, including the Birmingham Railway, Light & Power Company, Memphis Street Railway, Nashville Railway & Light Company, Little Rock Railway & Electric Company, Houston Lighting & Power Company and later the New Orleans Railway & Light Company. In 1912 he became a member of the firm of Ford, Bacon & Davis. Mr. von Phul is a member of the American Society of Mechanical Engineers and the American Society of Civil Engineers, and is responsible for a number of important inventions which made possible the construction, at greatly reduced

cost, of the large cotton warehouse terminal which Ford, Bacon & Davis designed and constructed at New Orleans for the Board of Port Commissioners of the State of Louisiana.

M. O. Bicknell, who has recently been appointed traffic manager of the Sacramento Northern Railway, with headquarters at San Francisco, Cal., was born at Vincennes, Ind., on March 22, 1869. He began railway work in January, 1888, with the Evansville & Terre Haute, at Vincennes, as bill clerk in the local freight office. The following year he was promoted to agent of the same road at Patoka, Ind. In November, 1891, he went to the Southern Pacific Company as operator and ticket clerk at Deming, N. M., since which he has been consecutively traveling freight and passenger agent with headquarters at El Paso, Tex., until August, 1895; general freight and passenger agent of the Maricopa & Phoenix at Phoenix, Ariz., until January, 1898; superintendent of the same road until January, 1902; general freight and passenger agent of the Arizona Eastern and Southern Pacific until 1907; assistant general freight and passenger agent of the Southern Pacific, Pacific System, with headquarters at Tucson, Ariz.; chairman of the Arizona Railway Commission at Phoenix, Ariz., until 1909; chairman of the trans-continental bureau at San Francisco, Cal., until 1910; assistant to the president, Sacramento Northern Railway, which position he held until his recent appointment.

Edward J. Hunt, who has been western manager of *ELECTRIC RAILWAY JOURNAL*, with headquarters at Chicago, for the last eleven years, sails on July 5, for the West Indies, Central and South America, Japan and China, in the interest of Hitchcock, Lloyd & Company, Inc., exporters and importers, New York City. His assignment is that of studying the trade conditions in the various countries, and establishing selling connections and creating organizations to handle the company's lines. Among these are machine tools and hardware, steam and electric railway supplies, central station equipment, etc.

Mr. Hunt's early training was in electric railway construction work. He had charge of the construction of the third-rail on the Aurora, Elgin & Chicago Railroad and on the Jackson & Battle Creek Railway. He was also in charge of building the overhead on the Lansing & St. John Railway and on the Sterling, Dixon & Eastern Railroad. He joined the staff of the *ELECTRIC RAILWAY JOURNAL* in 1908, when this paper absorbed the *Electric Railway Review*. In 1910 he was placed in charge of the advertising in the Chicago territory, and held this place until February, 1919, when he resigned to take up the foreign work for Hitchcock, Lloyd & Company. Mr. Hunt's long experience in the selling activities of the electric railway field have given him excellent training for his present work.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER,

SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES

BUSINESS ANNOUNCEMENTS

South American Traction Materials Market

Some Manufacturers' Agents Report
Good-Sized Orders, Principally
for Line Materials

Some fairly good-sized orders from South America for different kinds of electric railway material and equipment, principally line materials, have been reported recently by several manufacturers' agents. From all appearances the material was for new work rather than for maintenance.

One of the larger exporting houses, however, finds the electric railway supply business to South America a little quiet just at present. Even under normal conditions South America is not as heavy a purchaser of traction material, according to this exporter, as might be supposed. The reasons given for this condition are the size of the South American countries, the great distance between cities, and the light passenger and heavy freight traffic.

While the interurban and freight work is quiet in South America there are indications that the transit systems in the larger cities are expanding somewhat.

Copper and Brass Products Higher

Sheets, Tubes and Rods Increased
3 Cents Within a Week—Bonds
Again Advance 3 Per Cent

With copper prices well over 18 cents the latter part of last week, prices of copper and brass rods, tubes and sheets advanced about 2 cents a pound. That brought hot rolled copper sheets to 27.50 cents and round copper rods to 24.25 cents a pound. Seamless copper tubing went to 32.00 cents. An additional increase of 1 cent per pound applies to manufactured copper and brass products as of July 2. Copper was quoted at 19 cents on that date with the tendency still upward. So within one week there are found two advances in copper and brass products totaling 3 cents a pound.

Copper products follow the metal upward in price cent for cent, manufacturers say, while brass products follow in the ratio of about $\frac{3}{4}$ cent for 1 cent rise in copper. All rail bonds are not sold under the same conditions; in some cases they follow the copper market closely and are sold on quotation. Where the discount is applied they change in price only on about one cent copper changes. The discount on these bonds changed on June 27 and 28 from $22\frac{1}{2}$ to 20 per

cent, another increase in price of slightly over 3 per cent. This makes a price increase of $6\frac{3}{4}$ per cent within three weeks.

Although there has been reported no increase in brass overhead line material other than wire, it would not be surprising to see advances shortly in trolley cars, splicers, etc., in the near future with the raw metal tending upward.

Copper Wire Still Advancing in Price

Volume of Sales Increases and Short-
ages in Some Kinds and Sizes
are Already Reported

Wire is steadily increasing in price as a result of the almost daily higher copper prices. Within the past week an advance averaging 1 cent per pound was made in most every make of copper wire.

Rubber covered wire on Monday morning was on a 23-cent base. Weatherproof and slow burning was quoted from 22 to $23\frac{1}{2}$ -cent base. Bare wire was 21 to $22\frac{1}{2}$ -cent base.

The volume of wire sales is getting larger right along. Wire mills are most conspicuous of the copper buying interests. Reports of shortages on certain sizes of weatherproof, particularly No. 10, and flexible armored conductor, are coming in from different sections of the country.

A much better market for bare wire is reported. Considerable business is coming through from central stations for transmission systems. Trolley wire is being sold in one mile lots. Sales of signal wire, however, have been very light of late.

Foreign inquiries for wire of all kinds are coming in in larger numbers, although the export trade in American wire has grown by leaps and bounds during the last three or four years.

High-Tension Insulator Sales Are Not Large

While there are a number of inquiries out for high-tension insulators, actual sales, manufacturers report, are below those of last year and not very good. Generally speaking, sales are for small quantities. This is to be expected as new long lines have been very scarce. Considerable work is projected, and some is under way.

Insulator sales consequently are increasing and, judging from the amount of projected work, the prospects for future business are bright. Many inquiries are coming from without the United States.

Time Now Right to Order Heater Parts

Later Purchasing for Fall and Winter
Requirements May Not Secure Such
Favorable Terms or Shipments

With the summer season well under way, there are a number of good market reasons why traction companies should consider seriously their heating needs for the coming fall and winter. There is no better time for that than right now, manufacturers say, because there is no evidence that prices will be lower this fall and because deliveries can be best obtained by getting in orders as early as possible.

On the other hand, manufacturers really feel that circumstances justify advancing prices for new electric heating equipments and for repair parts this fall and winter. The tendency of porcelain, resistance elements and iron work is upward rather than downward, and labor cannot be expected to be lower this year.

The early summer season is of course the slack season in the manufacture of electric heaters, and manufacturers have to keep on hand a certain force of workmen. The factory cannot build up at this time either repair parts or complete heaters for stock, in anticipation of the fall demand, on account of the varied requirements of the different railways. Consequently, if ordering is put off until September and October and pile up all at once, shipments will necessarily run up to two or three months.

Orders for repair parts placed now, it is learned, can be filled and shipped for delivery at any time in the fall or winter, and billed as of that date. Orders placed in September can probably be shipped in 30 days, while those placed in October are liable to require sixty to ninety days in filling. Stocks of raw materials on hand amount to about 20 per cent of the season's requirements, so late orders may have to await until these can be replenished.

The whole tendency of late ordering is toward higher costs and longer shipments. In the past four years producers have absorbed considerable amounts of the additional expense, but if costs of material go higher they feel that these must be passed on to the consumer in greater proportion than heretofore.

Repair parts orders in the past two years have been about 10 per cent of normal, so evidences point to a much larger volume of ordering than heretofore if traction companies are to put and keep in shape their electrical heating equipment for this winter.

Rolling Stock

New Orleans Railway & Light Company, New Orleans, La., has started to equip cars on its Coliseum line with safety doors and steps. When this work is finished it is expected to similarly equip cars of its other lines.

Tidewater Power Company, Wilmington, N. C., has received motors and trucks necessary for changing two of its interurban trail cars into motor cars. Shipment of the eight cars, to be rented from the Emergency Fleet Corporation, has been held up on account of the delay in delivery of motors, which were secured in Boston.

Recent Incorporations

Pittsburgh, Butler & Harmony Consolidated Railway & Traction Company, Pittsburgh, Pa.—Incorporated in Delaware with a capital stock of \$6,500,000, presumably as the successor to the Pittsburgh, Harmony, Butler & New-castle Railway, change in control of which was noted in the ELECTRIC RAILWAY JOURNAL for June 28, page 1290.

Power Houses, Shops and Buildings

Pacific Electric Railway, Los Angeles, Cal.—Plans have been completed by the Pacific Electric Railway for the

construction of a combined passenger and freight station at Harbor Boulevard, San Pedro. The building will be 190 ft. long and have an average width of 30 ft., and will be of brick construction. The total expenditure, including the rearrangement of trackage necessary, will be approximately \$50,000.

Philadelphia, Pa.—Sealed proposals will be received by William S. Twining, director, Department of City Transit, until July 8 for the following work: Contract No. 553.—Station buildings of brick, steel and reinforced concrete for Frankford Elevated Railway, at the southeast corner of Front and York Streets, and at the southwest corner of Front and Dauphin Streets, including the removal of the existing building at the southwest corner of Front and Dauphin Streets. Contract No. 554.—Station buildings of brick, steel and reinforced concrete for Frankford Elevated Railway, at the northeast and northwest corners of Front Street and Girard Avenue, including the removal of the existing building from the northwest corner of Front Street and Girard Avenue. Contract No. 555.—Group of both contracts 553 and 554 in one. Contract No. 563.—Steel sash and wood closures for the entrance openings of the existing station buildings at 4269, 4270 and 4604 Frankford Avenue and southeast corner of Frankford Avenue and Margaret Street. Contract No. 113.—Return piping for steam heating system in basement of City Hall. Contract for building partitions of wood and glass in the offices of the Department on the eleventh and twelfth floors

of 1211 Chestnut Street. Copies of plans and specifications may be obtained upon deposit of \$10, to be refunded upon the return of plans.

Track and Roadway

Los Angeles (Cal.) Railway Corporation.—The Board of Public Utilities has ordered the Los Angeles Railway Corporation to install double tracks on new Broadway, between Tenth and Pico Streets, in order to relieve traffic congestion. It is estimated that the installation of the double tracks, with switches, turnouts, etc., will cost about \$50,000.

Miami (Fla.) Traction Company.—It is reported that the Miami Traction Company will construct 3 miles of track.

Susquehanna Traction Company, Lock Haven, Pa.—Work has been begun by the Susquehanna Traction Company on the reconstruction of its line in Lock Haven.

Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind.—Extensive improvements will be made by the Fort Wayne & Northern Indiana Traction Company of its Broadway line between Main Street and the plant of the General Electric Company. The company will also double track South Calhoun Street from Creighton Avenue to Pontiac Street.

St. Louis, Mo.—Resolutions introduced in the Board of Aldermen of St.

NEW YORK METAL MARKET PRICES

	June 18	July 2
Copper, ingots, cents per lb.	17 75	19.00
Copper wire base, cents per lb.	20 00 to 20 50	20.50 to 21.00
Lead, cents per lb.	5 40	5 40
Nickel, cents per lb.	40.00	40.00
Spelter, cents per lb.	6 90	7 35
Tin, cents per lb.	172.50	70 50
Aluminum, 98 to 99 per cent, cents per lb.	33.00	33.00

† Government price in 25-ton lots or more f.o.b. plant.

OLD METAL PRICES—NEW YORK

	June 18	July 2
Heavy copper, cents per lb.	15 00 to 15 50	16 00 to 16 50
Light copper, cents per lb.	12 00 to 12 75	13 00 to 13 50
Heavy brass, cents per lb.	8 50 to 9.25	8 50 to 9.50
Zinc, cents per lb.	5 25 to 5 50	5 25 to 5 75
Yellow brass, cents per lb.	7 50 to 8.00	7 75 to 8 25
Lead, heavy, cents per lb.	4.75 to 4 87½	4 75 to 4 87½
Steel car axles, Chicago, per net ton.	\$23 00 to \$24 00	\$25 00 to \$26 00
Old carwheels, Chicago, per gross ton.	\$21 00 to \$22 00	\$22 00 to \$22 50
Steel rails (scrap), Chicago, per gross ton.	\$18 50 to \$19 00	\$19 00 to \$20 00
Steel rails (relaying), Chicago, gross ton.	\$19 50 to \$20 00	\$20 00 to \$21.00
Machine shop turnings, Chicago, net ton	\$6.50 to \$7.00	\$7.75 to \$8.00

ELECTRIC RAILWAY MATERIAL PRICES

	June 18	July 2		June 18	July 2
Rubber-covered wire base, New York, cents per lb.	22	23	Galvanized wire, ordinary, Pittsburgh, cents per lb.	3.70	3.70
Weatherproof wire (100 lb. lots), cents per lb., New York	23.25 to 26.00	27	Car window glass (single strength), first three brackets, A quality, New York, discount †	80%	80%
Weatherproof wire (100 lb. lots), cents per lb., Chicago	25 75 to 26 50	25 75 to 26 50	Car window glass (single strength, first three brackets, B quality), New York, discount	80%	80%
T rails (A. S. C. E. standard), per gross ton.	\$49 00 to \$51 00	49 00 to 51.00	Car window glass (double strength, all sizes AA quality), New York discount	81%	81%
T rails (A. S. C. E. standard), 20 to 500 ton lots, per gross ton.	\$47.00 to \$49 00	47 00 to 49.00	Waste, wool (according to grade), cents per lb.	14 to 17	14 to 17
T rails (A. S. C. E. standard), 500 ton lots, per gross ton.	\$45.00 to \$47.00	45 00 to 47.00	Waste, cotton (100 lb. bale), cents per lb.	8 to 12½	8 to 12½
T rail, high (Shanghai), cents per lb.	3	3	Asphalt, hot (150 tons minimum), per ton delivered		
Rails, girder (grooved), cents per lb.	3	3	Asphalt, cold (150 tons minimum, pkgs. weighed in, F. O. B. plant, Maurer, N. J.), per ton	\$30.00	\$30.00
Wire nails, Pittsburgh, cents per lb.	3.25	3.25	Asphalt filler, per ton		
Railroad spikes, drive, Pittsburgh base, cents per lb.	3 35	3 35	Cement (carload lots), New York, per bbl.	\$2.90	\$2.90
Railroad spikes, screw, Pittsburgh base, cents per lb.	8	8	Cement (carload lots), Chicago, per bbl.	\$3.05	\$3.05
Tie plates (flat type), cents per lb.	2.75	2.75	Cement (carload lots), Seattle, per bbl.	\$3.13	\$3.13
Tie plates (brace type), cents per lb.	2.75	2.75	Linseed oil (raw, 5 bbl. lots), New York, per gal.	\$1.83	\$1.90
Tie rods, Pittsburgh base, cents per lb.	7	7	Linseed oil (boiled, 5 bbl. lots), New York, per gal.	\$1.75	\$1.92
Fish plates, cents per lb.	3	3	White lead (100 lb. keg), New York, cents per lb.	13	13
Angle plates, cents per lb.	3.90	3.90	Turpentine (bbl. lots), New York, cents per gal.	\$1.17	1.00 to 1.03
Angle bars, cents per lb.	3.90	3.90			
Rail bolts and nuts, Pittsburgh base, cents per lb.	4 35	4 35			
Steel bars, Pittsburgh, cents per lb.	2 35	2 35			
Sheet iron, black (24 gage), Pittsburgh, cents per lb.	4 20	4.20			
Sheet iron, galvanized (24 gage), Pittsburgh, cents per lb.	5.25	5.25			
Galvanized barbed wire, Pittsburgh, cents per lb.	4.10	4.10			

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

Louis by the Tenth Ward Improvement Association last week ask that the city take action toward the establishment of loops and passenger waiting stations for the convenience of persons using the interstate electric lines between St. Louis, Mo., East St. Louis, Ill., and other Illinois points.

Schenectady (N. Y.) Railway.—The Schenectady Railway has been authorized by Governor Smith to use the new gateway bridge across the Mohawk River. The company plans to double-track the new bridge and continue the tracks down State Street, cutting off the tracks now on Washington Avenue and along the Scotia dyke. The cost will be about \$170,000.

Canadian Government Railways, Brockville, Ont.—The Brockville Public Utilities Commission is considering equipping the Brockville and Westport branch of the Canadian Government Railways for electrical operation. The line is 45 miles long and serves a farming section.

Waco-Temple Interurban Association, Waco, Tex.—The Waco-Temple Interurban Association has been organized at Waco for the purpose of building and operating an interurban line between Temple and Waco. Officers of the association are: O. A. Ryfle, president and general manager; John F. Wright, vice president; J. L. Davidson, secretary and treasurer; Alva Bryan attorney, all of Waco. A survey of the proposed route will be begun at once.

Richmond & Ashland Railway, Richmond, Va.—Operation has been begun by the Richmond & Ashland Railway on the line of the Richmond & Chesapeake Railway, which it recently purchased.

Manitowoc & Northern Traction Company, Manitowoc, Wis.—The City Council of Manitowoc has ordered the Manitowoc & Northern Traction Company to extend its lines.

Trade Notes

Watson-Stillman Company announces that on June 2 it moved its general sales and advertising departments from Aldene, N. J., to 50 Church Street, New York City.

Walter A. Zelnicker Supply Company, St. Louis, Mo., has added 2,000 sq. ft. to its present office space at 325 Locust Street, St. Louis, Mo., an increase of 33½ per cent.

Gold Car Heating & Lighting Company announces the receipt of an order for electric heaters for the 200 safety cars ordered by the Brooklyn (N. Y.) Rapid Transit Company.

Safety Insulated Wire & Cable Company, New York City, Le Roy Clark, president, announces the appointment of Francis E. Donohoe as special agent of the company, effective June 1, 1919.

Indiana Mill & Lumber Company, 1405 Fisher Building, Chicago, Ill., has announced that it is handling a line of

Southern white cedar poles in addition to its line of hardwood and pine railroad ties, piling, pine and oak timbers.

Samuel F. Joor, a consulting engineer of Chicago, has joined the American Steam Conveyor Corporation, Chicago, as sales engineer. Mr. Joor has had wide experience in the conveyor field, at one time being western manager and sales engineer of the Jeffrey Manufacturing Company and previous to that, with the Link Belt Company.

Eastern Foundry & Machine Company, Inc., announces that it is now operating its new plant at Ambler, Pa. The buildings are the modern daylight type, and the equipment the most scientific procurable. With large quantities of raw materials always in stock, and under the ideal conditions now afforded, the company states requirements in bronze castings, bushings, chord bars, bearings, or specification work, will receive prompt and satisfactory fulfillment.

Standard Scientific Company announces that the manufacture of Meliorate solderless terminals has been taken over by the Standard Scientific Company, 70 Fifth Avenue, New York City. These terminals were introduced a number of years ago by the Meliorate Manufacturing Company, which has now disposed of its entire rights and interests therein to the Standard Scientific Company, which is expending the same care and attention on the product as its predecessors.

Midwest Engine Company of Indianapolis, Ind., announces the opening of four offices in this country in order to more fully cope with and meet the growing demand for prime movers, pumping equipment, etc. Jacksonville, Fla., El Paso, Tex., New Orleans, La., and New York City are the locations selected. D. J. Carrison represents the Midwest Engine Company in Florida, with offices in the Florida Life Building, Jacksonville. Mr. Carrison was formerly connected with the Busch-Sulzer Brothers Diesel Engine Company of St. Louis, Mo., and later started a manufacturers' agency at Jacksonville, handling miscellaneous equipment to shipyards under the name of D. J. Carrison & Company. Chester B. Loomis is representing the company in western Texas, Arizona, New Mexico and southern California, with offices at 303 Caples Building, El Paso, Tex. Mr. Loomis had a consulting and mechanical hydraulic engineering office in Los Angeles, Cal., for several years before entering the service. B. H. Downing is eastern sales manager, with offices at 111 Broadway, New York City. J. R. Lowe, with offices at 617 Maison Blanche Building, New Orleans, La., represents the company in the south.

Blaw-Knox Company, Pittsburgh, Pa., announces the sale of its plant at Wheatland, Pa., to Sharon interests, is in line with its program which was outlined some time ago for either the

removal or sale of the Wheatland plant and the building of an extension to its plant at Hoboken, Pa., to take care of product formerly manufactured at Wheatland. This is done for the purpose of concentrating all of the manufacturing at Hoboken, which was found to be the most advantageous point both for manufacturing and for shipping facilities. About one-half of its new plant at Hoboken has been completed, and it is anticipated that the entire addition will be completed within the next few weeks. The combined plants at Hoboken now under construction will contain about 30 per cent more floor space than was available in the two separate plants. In addition to the foregoing activities the Blaw-Knox Company is engaged in the construction of a welding plant at Hoboken adjoining its present plant, and will specialize in this department on steel mill and chemical plant specialties. The combined plants at Hoboken will employ about 1200 men as against 700 men who have been employed by the company heretofore at Hoboken and Wheatland. The manufacturing site of the company at Hoboken covers 50 acres, and in point of shipping facilities for incoming material and outgoing product as well as in the matter of labor supply is most fortunately situated. In order to take care of the additional labor required the company has purchased 15 acres of additional ground on which houses are being erected for the use of its workmen.

New Advertising Literature

Liberty Manufacturing Company, Pittsburgh, Pa.: Catalog "Z" describes the operation of turbine cleaners, pneumatic cleaners and other products of its factory.

Mitchell-Rand Manufacturing Company, 18 Vesey Street, New York City: Form No. 245—"Discounts on Electrical Tapes and Webbing," with reference to form No. 226, which was issued previously.

Holden & White, Inc., Chicago, Ill.: Bulletin on Garland ventilators for large passenger coaches, showing typical installations for either monitor or arch roof cars of larger types, and describing the Garland blower systems.

Gilbert & Barker Manufacturing Company, Springfield, Mass.: Booklet on "Oil Storage Systems," for storing, handling and distributing volatile, lubricating and paint oils in machine shops, power plants and electric railway oil houses.

Electric Railway Equipment Company, Cincinnati, Ohio: First edition of Catalog "F," showing reproductions from actual photographs of its combination railway and lighting poles installed in many cities. It also illustrates these poles supporting General Electric Novalux units and luminous arc lamps, besides lamp standards, lighting brackets and mast arms.