Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

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Find the Way or Make One

IN THE issue of this paper for Jan. 24, we present an abstract of a report made in 1918 upon the comparative merits of lag screws in place of bolts in framed timber structures. It appears that the time-honored custom of using bolts and nuts in such structures is at last giving way to economy and progress. The economy lies in the two important factors of all construction work—namely, material and labor. In these days of inflated costs and depleted income, there is a source of gratification in every such instance of increased economy resulting from study and experiment, and our interest in seeking further economies is greatly stimulated thereby.

The spur of necessity has ever fostered inventive effort, and we believe that the times through which we are passing will prove a blessing in disguise in so far as they have emphasized the necessity for finding every possible economy both in labor and material. Labor need have no fear of either machinery or any other labor-reducing agency, since history has shown that it has always been some other force or influence than machinery which has created a surfeit in the labor market.

There are many fields open to the managements of electric railways in which to effect such economies. A journey over almost any property, other than the few roads which have either been recently built or rehabilitated, will show even an outsider that what is needed most is a complete investigation into the depot and shop facilities. Many depots are now badly located with respect to time required to keep the line supplied with cars. Pull-ins cost more than they should. Shops which were probably designed for the repair of, say, fifty cars per year are trying to do economical work on 100 cars now with the same equipment and arrangement and with very high labor costs. Centralization of such work in modern, well-lighted, properly planned shops will work wonders.

Car equipment still needs modernization on many roads, some of which are still using cars of the vintage of 1908, very heavy, costly to operate and having no fare-collection devices whatever. Such equipment probably loses, by evasion and by theft, about as much money daily as would pay the interest on equipment trust certificates for modern cars which would get the money and help keep it. The ways and means for obtaining modern equipment can be found if an earnest attempt is made to do so.

Some very large companies doing a very heavy summer resort business still persist in getting along without prepayment areas, while they own the necessary property and have no apparent obstacle in the way of the ready establishment of such areas.

The tendency to hang on to franchises and to operate and maintain tracks and routes which originate little or no business but seem necessary as parts of through and long-haul routes also persists to a marked degree. Such tendencies must be overcome, and consolidation of routes and abandonment of unprofitable franchises must be faced. They are contributing factors to many of our recent receiverships.

Truly, there is work for men of vision and resource in the situation here outlined. We have no doubt as to the results which will be had when these problems are fully appreciated and an earnest effort is made toward their solution. With faith and the will to do, the ways and means can be found to put every one of our electric railway systems back upon a paying basis, except the comparatively few which never had any strategic value or intrinsic worth.

Don't Half-Install the Safety Car

THE safety-car plan embodies two objectives, neither of which can be safely divorced from the other. The two objectives are to give more frequent service and to lessen operating costs. It is a mistake to install safety cars on a basis of accomplishing only the second half of the plan.

We have a case in mind where safety cars were installed on a car-for-car basis with no change in schedule speed and no improvement in the service visible to the public. The company cut the platform expense almost in two and saved further on energy and maintenance, but the public gained nothing but the feeling that its service had been cheapened. It grumbled and criticized. Finally, after several months of this operation, there was a combination of circumstances—one of those accidents that just happen without the blame falling on anyone—whereby a safety car was hit by a locomotive and badly smashed though no one was seriously injured. Forgetting that only a year or two before a two-man car had met with a similar though more disastrous accident at the same point and that the blame had been clearly fixed upon the conductor, the public immediately condemned the safety car as being responsible for the accident because of its one-man operation and began clamoring for its removal from the service.

And why should it not clamor thus? It had nothing to lose by a return to the older cars. The safety cars had been installed in a manner which brought no gain for the public. It was only natural that the first opportunity should be seized to discredit the small cars when nothing had been done to "sell" the public on the better, faster, more frequent service which the safety-car plan makes possiible. Had a return to the older cars meant going back to a fifteen minute headway instead of ten minutes; twenty-five minutes to get down to work instead of twenty minutes, and perhaps a 6-cent fare instead of 5, then it is quite probable that

the protest against the safety car after the accident would have been very mild if any, and that the safety car could very promptly have been cleared of responsibility for the accident, as it really was.

How the Work of the Association Has Expanded

IN THESE days of high expenses and low net receipts of electric railway companies it may seem to some an inopportune time for the American Electric Railway Association to increase its dues. Actually, it is the condition just mentioned which has brought about the increase because it has developed the necessity and opportunity for more co-operative action through the Association.

If the companies were more prosperous the same need might not have been felt. But the very extremity of the crisis has obliged them to utilize every means to assist themselves and this has emphasized the necessity for a central bureau where data can be collected and problems which concern every road can be worked out for the assistance of all.

The growth of the association in usefulness is described in one of the feature articles in this issue. As Mr. Clark points out, its greatest development has occurred only during the last few years. In its early life the association was little more than a debating society. No centralized work was taken up until 1905 and only gradually after that. Now the work done between conventions constitutes by far the greater part of that accomplished by the association and obviously, where so much research work has to be done, it can be carried out more cheaply and effectively by one organization than if the same effort were made by each company separately.

Not Everybody Goes Out to Work

WE HAVE all heard the expression: "Everybody has gone to the country" when the fact is that but 5 per cent of the population is doing that pleasant thing at any one time. In a lesser degree we get the impression that 'most everybody goes to work. As a matter of fact, a great many more people must be at home than in the factories and offices, since for each breadwinner there are three or four dependents. If we are to do much in the way of building up off-peak riding, it is important to know who the stay-at-homes and go-to-schools are and what their habits are. A certain number, we will find are the grandmothers and grandfathers who sally forth after 9 a.m. with a market basket to do some neighborhood shopping. Then there are the wives and domestics on the same or more extended errands; the school children who may travel during the luncheon period as well as morning and mid-afternoon; the many visitors to the afternoon movie shows and, in addition, off-peak riders who are breadwinners, such as agents, solicitors, plumbers, carpenters, delivery boys, etc. It is plain, then, that off-peak travel does not drop so low because everybody is at some fixed job in factory or office, but because the majority that remains has no such specific inducement to ride.

Broadly speaking, most rush-hour riders are compulsory riders; most off-peak riders are voluntary riders. Therefore, our sales efforts must really be directed toward turning the casual rider among the "stay-at-homes" into a frequent rider through devices like wholesaling tickets, limited-ride weekly tickets, unlimited ride passes or the like. Only then can we feel sure that most of the cash riders really are infrequent riders. In any such campaign a railway company should have the hearty support of the local storekeepers and theater proprietors as they get most of their business from riders during the off-peak hours. Indeed, it might be possible in some cities to get the more enterprising retail storekeepers to revive the one-time popular plan of giving to each purchaser of more than a certain amount one or two single-ride trolley tickets. If the storekeeper wanted to limit this bonus so as to encourage morning shopping, which all stores prefer, he could supply tickets only to those who made their purchases before noon or 1 p. m., just as some merchants now give double trading stamps to morning shoppers. Such a plan would certainly not meet with objection from the railway company for the morning shopper would usually leave home after the early morning rush and would return before the evening rush.

Undoubtedly there are many ways by which midday or evening riding can be stimulated. It is certainly worth going after.

The Claims Account Demands Attention

MORE claims are made, more claims are settled, they cost more, expenses are higher and suits pending are increasing, in spite of increased claim-department efficiency. That sums up in a few words the present status of the accident account of the electric railway industry, as reported to us by a well-known claims agent who has recently been examining the accident records of the past two years, of a number of the largest companies in the country. If this condition is general, it is one which demands attention and broad, effective concerted action to stem the tide.

There are many conditions which would tend to bring about such a state of affairs. The great increase in the number of automobiles is the first thing that comes to mind. This should mean not only a corresponding increase in number of accidents but probably an even larger increase because of the greater congestion in the streets. Another and perhaps almost equally important contributing cause for the growth in the accident record is the general reckless abandon which has seemed to sweep the country over and which is probably a direct outgrowth of the war. It has permeated the shops and the street and brought reductions in the care with which owners and chauffeurs drive their automobiles, with which pedestrians watch their own safety, and probably also in the care with which motormen operate their cars. Then there has been a slackening of the interest and activity in safety work, both public and private, due, no doubt, to its subordination to the demands of the war, and this has contributed by its omission to the increasing number of accidents.

So much for the number of accidents and the causes, but what of the increased cost of accidents—the increased cost per accident.

In both accident and liability claims, the trend of the attitude of the courts is distinctly toward making the corporation pay for a larger proportion of all the accidents and to pay higher awards to compensate for depreciated money value. Each new legislature in almost every state adds more to the requirements

of the corporation and gives more rights to the injured. Fifteen years ago, $2,000 was a common upper limit which a state supreme court would award against a common carrier. Now there is no limit, except in fatalities, and it is not rare for an award as high as $15,000 or $20,000 to be paid to an individual. All but fifteen states now have workmen's compensation acts which leave a company few legal defenses so far as its own employees are concerned.

There is no sovereign remedy for this condition, but at least one thing can be done. This is to revive the safety-first work of two and three years ago—perhaps under some new name with new slogans and new methods. Too much cannot be said of the accomplishments by previous safety campaigns, but much of their effect has now been lost. To re-establish them in perhaps a different form but in no less effective a way is one of the principal matters which should be taken up by electric railways and particularly by their claim agents throughout the country.

Kansas Establishes Industrial Peace Precedent

KANSAS has had its fill of strikes. So has most every other state; but Kansas is making a determined effort, led by Governor Allen, to eradicate from the future these crimes against the public welfare. The Legislature has enacted a law at the Governor's behest which compels arbitration and outlaws strikes and lockouts in certain named essential industries, including transportation and other public utilities. Whether she has found the final solution or not, Kansas is certainly to be commended on making a determined attack upon the problem. She has had the nerve to do what nearly every other state has wanted to do. She had a fight, for approval of the Governor's plan was not won in the Kansas Legislature without having to overcome considerable opposition.

This advanced piece of industrial legislation is the outgrowth primarily of the coal strike, but it covers the entire field of industry the essential character of which is generally accepted. It apparently has certain features of the Australian compulsory arbitration laws. It provides state operation of establishments covered by the act in the event of refusal by one or both parties in a dispute to obey the order of the industrial court which has been created for the purpose of hearing and deciding controversies over wages, hours, conditions of work, or relations between employer and employee. The act recognizes collective bargaining, forbids picketing, limits right of discharge and even empowers the industrial court to amend the employment contract which has unjust and unreasonable clauses.

The act abolishes the former public utilities commission, and places all of its work on the shoulders of the newly created Court of Industrial Relations. Looked at from this angle, it merely extends the definition of "public utilities" and extends the regulatory authority of the state over them until it includes regulation of labor, and relations of labor to employer, as well as the more usual financial and operating features of such concerns or businesses. In general, there should be nothing repugnant in this idea. The public is entitled to uninterrupted economical service from a public utility supplying a necessary community service. If regulation is necessary to obtain this, that regulation is worthless if it stops short of including all elements likely to interfere with this service, and labor is one such element. Some statement of the power of the state to assume the regulation of labor relations in such industries is thus to be expected, but it may develop that this power need be exercised only in extreme cases.

The present Kansas act must be considered as entirely experimental from both the legal and practical standpoints. Other efforts to compel industrial peace have been largely futile but this one may be more successful. If so, it will furnish a precedent for a similar step in other states. The purpose is a worthy one.

We Are Outgrowing Our Travel Ways

HOT on the heels of the Broadway Association's vote for the motor bus as against the electric car, discussed in our issue for Jan. 24, comes the announcement that automobile traffic on Fifth Avenue, New York, has grown to such overwhelming proportions that a serious effort is to be made to turn this 55-ft. highway into a one-way street during the busier hours at least! It is but a few months since the City of New York paid nearly one and one-quarter million dollars for reconstruction and easement rights on Park Avenue, two blocks distant, in the hope of relieving Fifth Avenue. Yet the diminution of traffic on Fifth Avenue for the time being has been only 6 per cent while traffic on Park Avenue has increased 170 per cent. The Broadway Association, so eager to emulate on its narrower highway the trackless and "busful" condition of Fifth Avenue, well might ponder the following from the *New York Times* for Jan. 31:

> "This paralysis (the impassable jams) frequently has extended for blocks, particularly between Thirty-fourth and Forty-second Streets, with the buses of the Fifth Avenue Coach Company, limousines and smaller cars caught tight in the immovable tangle at just the time that their occupants were in a hurry to get home or to work."

We are not going to pretend that a trackway on Fifth Avenue would be the solution, although double-deck cars would certainly offer greater capacity in a given space than double-deck buses. We merely point out that the conditions on Fifth Avenue prove that nothing would be gained by substituting buses for cars on Broadway or any other busy highway which is already provided with electric railway tracks. If pressed for a real solution, we are led to agree absolutely with the statement of Lord Ashfield of Southwell (Sir Albert H. Stanley), made in London in mid-January, that special underground roadways for vehicles as well as for railways must be built to meet the new conditions introduced in cities by the enormous growth of self-propelled vehicles. An aspect of this problem as regards non-city roads is revealed by the suggestion of a British highway board to build one kind of highway for fast-moving traffic and another for slow-moving traffic. Again, in a recent personal communication, one of Britain's leading consulting engineers writes that he has found that conditions on highways which are still underloaded favor the use of the motor-bus, but that in the case of heavier traffic, he has been forced to the conclusion that the better, cheaper and permanent solution is the construction of electric railways on private right-of-way. Since new highways must be built in any event, it is simply a question of using the new arteries in a way that will produce maximum capacity at minimum cost, and in many cases that way will be the rail-way.

Operating London's Underground Railways

How the Differential Fare Works Out on the Rapid Transit Lines of the Greatest City in the World—Why Former Flat-Fare Lines Changed to Graduated Fares, Beginning at a Lower Rate—Intensive Utilization of Double-Track Lines Through Non-Stop and Skip-Stop Trains—Enormous Total Increase in Traffic Despite Shortage of Equipment and Increases in Fare, Due to War and Demobilization Activities

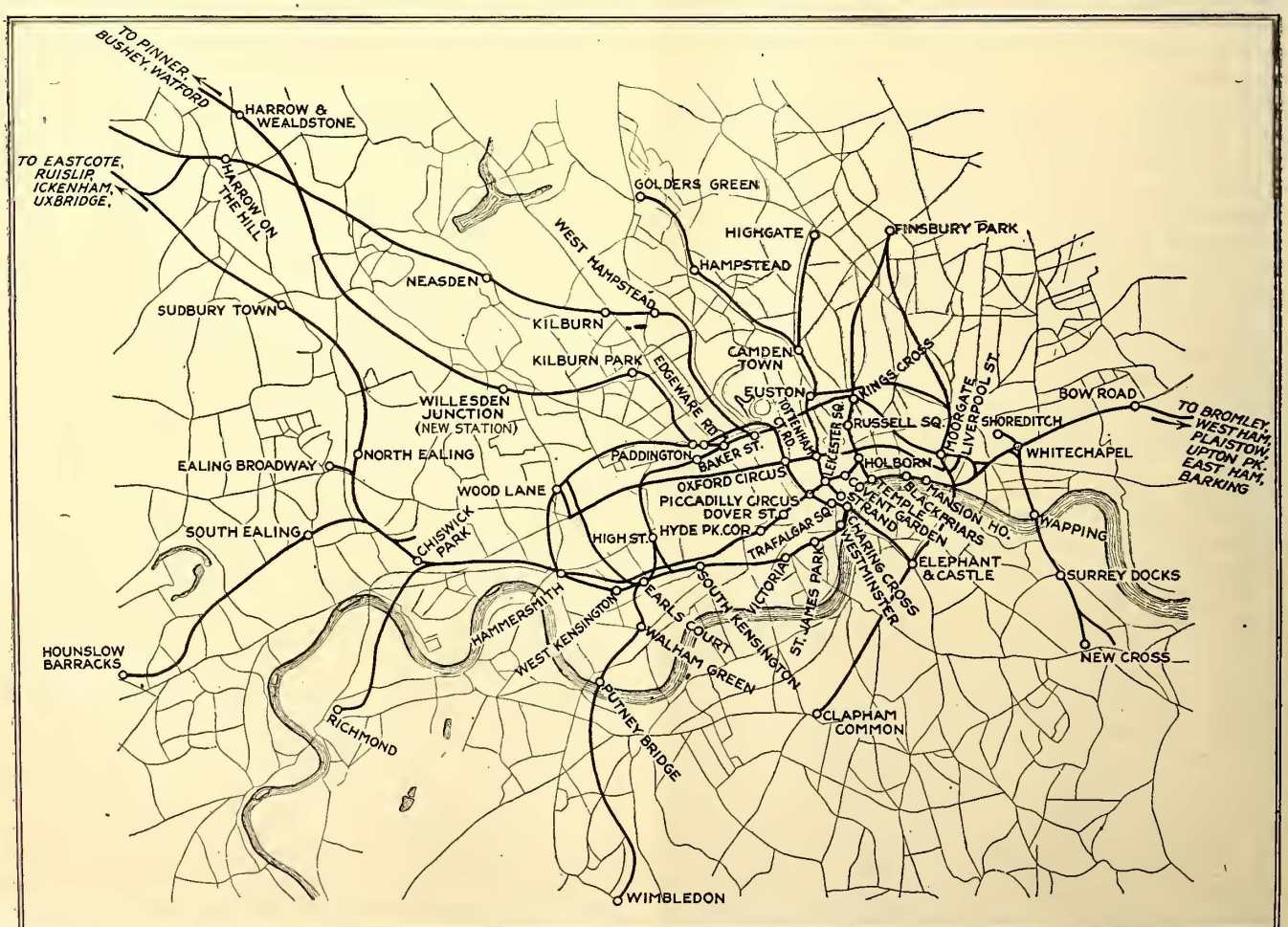
BY WALTER JACKSON

DURING the past four and one-half years, traffic in London has been so abnormal that it would be useless to attempt to ascribe the changes to any particular system of fares. For the period mentioned, London has been both a great workshop and the main clearing house of the military and naval forces of the Empire. Up to the spring of 1919 its population was augmented by nearly 1,000,000 transients, and the most common pastime was hunting for a bed.

Therefore, the transportation facilities of London would have been taxed most severely in any event. Add to this increase of activity and population the commandeering of 1,319 buses for war purposes, the practical cessation of all maintenance but that absolutely necessary, the withdrawal of 16,000 experienced men to enter the fighting and munitions services, the scarcity of fuel of all kinds, the darkening of the streets against air raids, etc., and it is clear enough that the management of the London Underground Electric Railways (the managing company) had its work cut out for it.

While the traffic increases or decreases for the war and demobilization period bear no particular relation to the principle of charging by distance, an analysis of the traffic carried by the different transportation mediums will reveal how well the underground lines have developed long-distance riders, whereas the buses show a preponderance of short riders, many of whom come from or go to the stations of rapid transit lines and who use the surface vehicles to save themselves a walk of half a mile or less.

As to the relation of fares to dwelling locations, it is, of course, quite impracticable to discuss the housing conditions of a world city in detail. One can state only in a broad, general way that the Englishman, if he can afford it, almost invariably prefers to live in a house by himself. The proportion of apartment houses in London is obviously smaller than it is in large



MAP OF THE LONDON UNDERGROUND RAILWAYS SYSTEM

American cities where a universal 5-cent fare has prevailed for so many years. It is true that tens of thousands of London houses ought to be destroyed and replaced by sanitary and more comfortable dwellings, but few people place the blame for this condition on the cost of transportation.

Despite the great augmentation of traffic hereinafter detailed, the operating and schedule speeds have remained at the high level of pre-war days. The oldest system, the City & South London Railway, is the slowest, with a schedule of 13.65 m.p.h., then follow the Bakerloo with 16.32, the Central London with 16.90, the Piccadilly with 17.20 when all stops are made and 19.05 during rush when alternate trains stop at alternate stations (skip stop!), the Hampstead with 17.36, and finally the District Railway which averages 17.61 m.p.h. on the main-line section between South Kensington and Mansion House and 29.98 m.p.h. over the entire system. The following particulars on operations and fares are due largely to the courtesy of the late W. E. Blake, superintendent of the Line Underground Railways, who died not long ago from blood poisoning resulting from a slight accident on the line.

The ideal headway which the company tries to maintain for the greater part of the day is two and one-half minutes. Such an interval assures the encouragement of underground travel for much shorter distances than would be the case with longer trains at longer intervals. To put the matter another way, the company is more anxious to secure passengers than economize on motormen. Table I on page 278 shows that the maximum rush service is forty-three trains (272 cars) an hour on the District Railway.

It will be seen from this table that the normal unit

No. 1—In one of the beautiful suburbs.
No. 2—Eaton Square, London, S. W.
No. 3—City of Westminster dwellings on Regency St.
No. 4—Moreland buildings (apartments), City of Westminster.
No. 5—Type of dwelling in a poorer quarter of London.

CITY AND SUBURBAN DWELLINGS OF LONDON

TABLE I—SCHEDULED TRAIN SERVICE GIVEN ON THE DIFFERENT LINES AT RUSH AND NON-RUSH PERIODS, JULY, 1919

	Rush Period						Non-Rush Period					
	Through Service		Local Service		Total		Through Service		Local Service		Total	
District:	No. of Trains per Hour	No. of Cars	No. of Trains per Hour	No. of Cars	No. of Trains per Hour	Cars per Hour	No. of Trains per Hour	No. of Cars	No. of Trains per Hour	No. of Cars	No. of Trains per Hour	Cars per Hour
Circle	10	44*	..	..	10	44*	10	44*	..	..	10	44*
Wimbledon	8	62	..	..	19	116	3	...	6	32	6	32
Putney Line	2	12	9	42			..	...	4	12	4	12
Richmond	5	32	..	..	5	32	4	24	..	..	4	24
Ealing	10	68	..	..	10	68	6	36	..	..	6	36
Hounslow	4	24	6	22	10	46	..	...	6	12	6	12
Harrow	1	6	5	11	9	24	..	...	3	3	4	4
Uxbridge	..	...	3	7			..	...	1	1		
Hammersmith	..	...	..	..	..	...	2	12	..	..	..	...
Main Line, Total	40 (12x8, 18x6, 4x5, 6x4)	248	..	..	..	...	22 (4x5, 6x4, 12x6)	116	..	..	..	...
Bakerloo:												
Watford	4	23	..	..	..	...	4	20	..	..	..	...
Queen's Park	24	120	..	..	..	...	16	48	..	..	..	...
Main Line, Total	28 (3x6, 1x5, 24x5)	143	..	..	..	...	20 (4x5, 16x3)	68	..	..	..	...
Piccadilly	24x5	120	..	..	..	...	24x3	72	..	..	..	...
Aldwych	..	...	15	15	..	...	..	...	5	15	..	...
Hampstead:												
Highgate	19	95	..	..	..	...	12	36	.	..	..	...
Golders Green	19	95	..	..	..	...	12	36	..	..	..	...
Main line, total	38x5	190	..	..	..	...	24x3	72	..	..	..	...
Central London	24x6	144	..	..	..	...	24x3	72	..	..	..	...
City and South London	25x5	125	..	..	..	...	13x5	65	..	..	..	...

*District Circle trains made up to five cars temporarily.

on the Central London, Bakerloo, Piccadilly and Hampstead lines is a three-car train, made up usually to five cars, or occasionally to six, excepting on the Hampstead lines. Rolling-stock limitations make five-car trains standard at all times on the City & South London Railway. Trains on the District Railway range in length from a single car on a branch line to ten cars on the main line. In pre-war days, ten-car trains at reduced rates were exceptionally popular for school parties which were handled between peaks. Reduced round-trip fares, as for shoppers, were less successful, for though the ticket could not be used before 10 a.m., the user could not be prevented from delaying her return to coincide with the evening rush.

Another pre-war traffic development was the running of through trains between the extremes of the system, Southend and Ealing, a distance of 47.43 miles. During the war this special service for the long-distance commuter had to be curtailed, but it was so popular that it is sure to return. Incidentally, the charge-for-distance fare did not prevent the rapid growth of this service(namely, from a trial train on July 22, 1909, to four through Southend trains in each direction daily and five on Sundays. The Ealing-Southend trip has been made in ninety minutes, corresponding to a rate of 31.6 m.p.h.

Engineering Limitations on Service

On the Piccadilly, Hampstead, Bakerloo and Cental London lines, the platforms are still one car length in excess of the longest trains run. On the District Railway the limit has been reached so that various expedients have had to be devised to permit the operation of trains longer than platforms. In June, 1914, a nine-car train was inaugurated, the idea being to carry in the rear coach only passengers for Charing Cross and Mansion House stations from Ealing and stations to Hammersmith, as these passengers would not require any platform accommodation until arrival at Charing Cross and Mansion House. This scheme had to be withdrawn on the outbreak of the war, owing to the difficulty of finding an extra guard to look out for the special loading and unloading of the ninth car. To use Mr. Blake's expression, the idea of a Season Ticket Holders' Club Car caught very well.

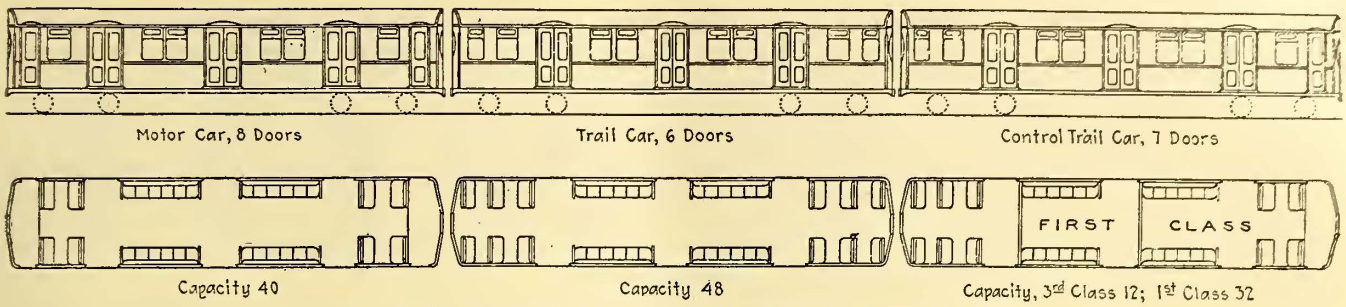
Another means of securing longer trains was to make

As operating manager of the London Underground Electric Railways and the London General Omnibus Company, Ltd., H. E. BLAIN is chief officer of the greatest city transportation concern in the world, co-ordinating underground rapid transit lines, surface tramways and motor buses in one splendid system. Although he began his railway career at Liverpool, following his employment in other municipal departments, Mr. Blain has been a resident of the London district since 1903. It was in that year that he became the first manager of the West Ham Corporation Tramways. He saw at once that the greatest handicap to the full usefulness of the tramway systems in the different political subdivisions of the metropolis was the absence of through running arrangements. Upon reaching the boundary of a borough, passengers had to get out and board a car belonging to another tramway system. This condition was the result of the restrictive laws regulating the construction of tramways and the right of municipal tramways to extend beyond the boundaries of the corporation. With the working out of through running arrangements as early as 1904, these restrictions were largely overcome at a great benefit to the public and the undertakings concerned. To-day, through-running agreements are well-nigh universal throughout the United Kingdom. Mr. Blain held the management of the West Ham Corporation Tramways for ten years, being President of the Municipal Tramways Association in 1911 and entered upon his broader duties with the London Underground Electric Railways in the year 1913.

Mr. Blain has taken a prominent personal interest in all matters affecting relationships with the staff, and the welfare work of the Underground Group has been especially noticeable. He is vice-president, as representing employers, of the Industrial League, an organization whose objects are to improve the relationship between employers and employees, its president being the Rt. Hon. G. H. Roberts, M.P., Minister of Food, and its Employees' Vice-President being Mr. G. J. Wardle, M.P., Parliamentary Secretary to the Ministry of Labour.

Mr. Blain has also been responsible for the organization, in Great Britain, of the "Safety First" movement, being the Hon. Secretary of the London "Safety First" Council, which has specially dealt with traffic matters, and of the British Industrial "Safety First" Association, which is rapidly extending the movement into the factories and workshops of Great Britain.

Prior to his connection with the Underground Group, Mr. Blain had considerable experience as an expert witness on traction matters, both in the law court and in the Parliamentary committee rooms.

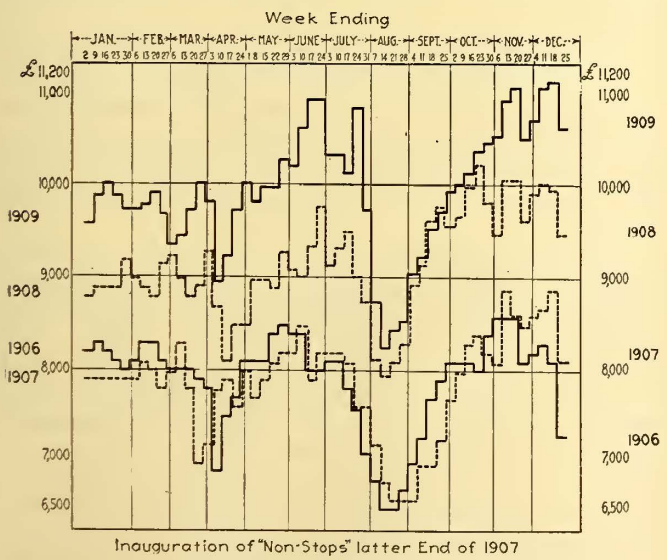


NEW SIDE-DOOR CARS, LONDON UNDERGROUND LINES

a combination of the facilities which existed on the line east of Whitechapel (to Barking) to accommodate infrequent long trains, and the capacity of the railway west of Whitechapel to accommodate shorter but more frequent trains. In this way, two of the trains leaving East Ham about 8 a.m. were made up to ten or eleven cars and these trains were split at Whitechapel into six and four (or five) cars. This arrangement is still in use.

When the District Railway is at its maximum of forty-three trains an hour, an average interval of less than eighty-four seconds must not be exceeded between the departure of successive trains from a station. Hence if a District train stops only thirty seconds, maintenance of the schedule demands that there can be between successive trains an interval of less than fifty-four seconds from the time one train actually starts until the next stops.

The actual time that elapses between the first application of the brakes and the bringing of a District train to rest is about twelve seconds; while the number of seconds occupied in starting a train and. bringing it to a maximum speed in the tunnel section is thirty to thirty-six seconds. Of the latter period, about twenty seconds is occupied in clearing the block joint just immediately beyond the starting signal. On the Tube Railways. the rate of retardation has been cut to nine seconds by the use of the Frood non-metal brakeshoe, but this brakeshoe is not so suitable for the District Railway's long stretches in the open. Therefore, the District Railway is experimenting with electro-pneumatically controlled brakeshoes by means of which the braking period has been cut to ten seconds. Considerable improvements have also been made in the signal system, as through the increase of home signals. The post-war period will see further improvements.



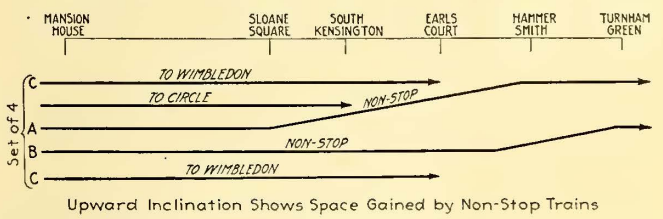
INCREASE IN GROSS RECEIPTS OF DISTRICT RAILWAY, FOLLOWING INAUGURATION OF NON-STOP OR EXPRESS TRAIN SERVICE

SIDE-DOOR CARS FAVORED

To reduce the passenger interchange period at stations, it is likely that future rolling stock will be provided with center doors in addition to end doors or with cars having three doors per side, as shown in the accompanying drawing of the first 100 cars reproduced from the ELECTRIC RAILWAY JOURNAL for Aug. 16, 1919. These cars will be 50 ft. instead of 49 ft. long and 9 ft. 6 in. wide instead of 8 ft. 6 in. wide. Three-car and eight-car (three motor cars) combinations will be used for slack and rush hours respectively. At present, only the District cars have center doors. During the war the shortage of guards often made it necessary to use one end of a tube car for entrance and another for exit. Another war-time measure was the barring of platform stairways as soon as the platform was filled more than comfortably.

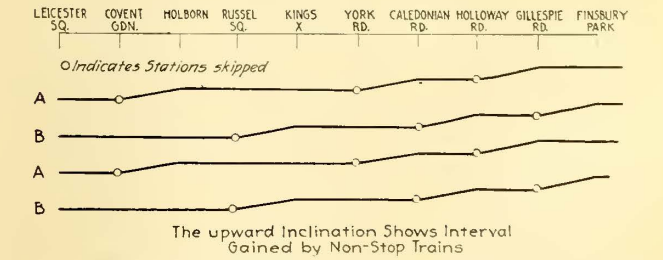
One of the most commendable features for accelerating proper loading is the use of illuminated train indicators which advise the passenger what train is due next or what train is standing in the station. This scheme also saves the passenger whose train has not arrived from being jostled needlessly, because he can stand back until his train does come in. The illuminated destination sign at the head of the train is also more satisfactory than sole dependence on marker lights, which mean little to the regular rider and nothing to the stranger.

Mr. Blake noted that in New York barriers had been



Upward Inclination Shows Space Gained by Non-Stop Trains

HOW JUNCTIONS ON A DOUBLE-TRACK LINE ARE UTILIZED TO OPERATE AN EXPRESS SERVICE



The upward Inclination Shows Interval Gained by Non-Stop Trains

DIAGRAM SHOWING SKIP-STOP OPERATION ON THE DOUBLE-TRACK PICCADILLY TUBE WITH NO JUNCTIONS AVAILABLE

erected on station platforms to segregate passengers for different destinations. This plan has been adopted for a number of heavy traffic stations in London, although there are two disadvantages—that passengers tend to alight too leisurely and that human nature makes motormen more likely to miss a fixed stop when they are expected to make it than if they are not asked to do so. Queues have been tried to a still slighter degree because limited platform space makes them impracticable except where all trains are headed for a single destination.

A comparative test disclosed the interesting fact that bus passengers in the favorable queue formation could be interchanged at the rate of one and one-half seconds per passenger; whereas the same rate for underground cars would cut the hourly maximum of trains from forty-three down to twenty-six.

The greatest handicap of the London underground lines is the absence of tracks for express service. Yet where there's a will there's a way. The non-stop trains, inaugurated on the District Railway in 1907, are a most admirable proof of this proverb. How greatly the public appreciated this means of giving higher speed with fairer loading is shown by the gross receipts graph on page 279. From the operator's viewpoint such trains also mean lower energy consumption and more miles per diem. Fundamentally, this has been made possible on the District Railway by utilizing the junctions to get the effect of four tracks as shown on page 279.

On the Piccadilly tube the skip-stop principle obtains, as shown in the diagram on page 279. Succeeding trains pass alternate stations except those of heavy traffic. On the Bakerloo line the long through runs to Watford are non-stop trains.

Two Tubes Tried and Discarded the Universal Fare

It must not be supposed that British operators have had no experience with the universal fare. They appreciated the simplicity of the system but appear to have concluded that simplicity alone does not get the traffic. The case of the West Ham Corporation Tramways has been referred to in an earlier article; that of two tubes of the London underground system will now be considered.

The first part of the Central London Railway was opened on July 30, 1900, and to Wood Lane Station on May 14, 1908, with the alluring and alliterative title of the "Two-penny Tube." Table II is a history of results in pasengers and earnings for typical winter and summer months, together with brief explanations of any changes that influenced travel:

TABLE II—TRAFFIC AND EARNINGS, CENTRAL LONDON RAILWAY

	Passengers	Earnings		Passengers	Earning
January, 1904	3,924,272	£30,665	July, 1904	3,523.255	£27,114
January, 1905	4,057,507	31,765	July, 1905	3,456.319	26,548
Competing District Railway Electrified in July, 1905					
January, 1906	3,985,216	31,073	July, 1906	3,313.618	25,462
January, 1907	3,698,267	28,723	July, 1907	2,883.621	24,058
January, 1908	3,397,936	27,944	July, 1908	3,897,164	32,765
Foregoing increase in traffic due to Franco-British Exhibition and extension into grounds via Wood Lane station. In July, 1907, also, a 3d. fare was introduced for the longer rides. In March, 1909, the 1d. and 1½d. fares were introduced, thus definitely marking the abandonment of the universal fare principle.					
January, 1909	3,089,676	£24,839	July, 1909	3,291,852	£24,217
January, 1910	3,404,559	24,247	July, 1910	3,393,404	24,887
January, 1911	3,511,565	24,163	July, 1911	2,965,198	20,835
Extension to Liverpool Street Station Opened July 28, 1912					
January, 1912	3,365,676	23,111	July, 1912	2,658,186	19,059
January, 1913	3,620,860	24,940	July, 1913	2,909.729	19,408
There was no exhibition in the year 1913					

The foregoing record would hardly look like a recommendation for the graduated fare were it not for the fact that the operators are convinced that the results would have been much worse had the universal 2d. fare been retained. Their reason is that the coming of the motor bus made it absolutely necessary to give a special fare to hold underground shortriders. Thus the introduction of the graduated fare on this route had the merit of retarding an unavoidable decline in traffic.

The Bakerloo line also began business as a 2d. universal fare line. When opened in March, 1906, it was so American that ticket choppers were employed. At that time the road extended from Westminster Bridge Road to Baker Street, a distance of 3.12 miles. In August, 1906, a 0.54-mile extension was made to Elephant & Castle; in March, 1907, there followed a 0.32-mile extension from Baker Street to Great Central; in June, 1907, a 0.27-mile extension to Edgware Road and in December, 1913, the important 0.46-mile extension from Edgeware Road to the railway station at Paddington. Earnings for typical weeks follow in Table III:

TABLE III—BAKERLOO LINE

Traffic Figures, 1906 to 1914, Inclusive, for Single Weeks
Universal Fare of 2d. Replaced by Graduated
1d., 1½d. and 2d. Fare, March, 1909

	Receipts	Passengers Carried	Pence per Passenger
1906 Week ended March 17	£1,763	220,287	1.927
1906 Week ended July 14	1,440	188,840	1.84
1907 Week ended Jan. 12	2,226	352,759	1.52
1907 Week ended July 13	2,549	339,942	1.8
1908 Typical week of January	3,206	422,740	1.8
1908 Typical week of July	3,049	403,048	1.8
1909 Typical week of January	3,375	549,885	1.47
1909 Typical week of July	3,365	551,893	1.46
1910 Typical week of January	3,555	579,366	1.48
1910 Typical week of July	3,450	580,151	1.43
1911 Typical week of January	3,890	727,032	1.28
1911 Typical week of July	3,180	579,789	1.32
1912 Typical week of January	3,740	677,620	1.32
1912 Typical week of July	2,940	557,854	1.2
1913 Typical week of January	3,570	652,122	1.31
1913 Typical week of July	3,005	551,127	1.3
1914 Typical week of January	3,515	640,529	1.32
1914 Typical week of July	3,095	561,417	1.32

During the period of the universal fare, the actual average per passenger was not 2d. but 1.8d., owing to workmen's rates and interline tickets. Although the average return per passenger dropped to 1.47d. with the coming of the graduated fare, the increase in travel brought enough to bring a substantial rise in total receipts.

Cost of Transportation and Classification of Riders on Underground Lines

Because of the enormous increase in traffic, upward changes in the rate of fare have been few although operating expenses have also risen enormously. The following are the single-trip rates on the several lines named:

City & South London Railway, 7.28 miles of route, is the oldest subway of London. It serves a comparatively poor district in which the number of riders who pay more than 2d. is relatively small. The mileages for a given fare are 1.6 miles for 1d., 1.9 miles for 1½d., 3.3 miles for 2d., 3.7 miles for 2½d., 5.3 miles for 3d. and 7.3 miles for 4d. As shown in Table IV, the average fare per passenger (local and ordinary) was 1.590d. (3.80 cents) during 1918, the lowest unit return on rapid transit lines in London. The traffic of this system rose from 17,347,871 (local and ordinary) in the year 1915 to 24,838,206 (local and ordinary) in the year 1918.

TABLE IV—CITY AND SOUTH LONDON RAILWAY

Local and "Common Fund Through" Traffic by Fares, 1914 (to July, Pre-War period), 1915, 1916, 1917, 1918

PASSENGERS

Fare	1914 (to July)	1915	1916	1917	1918
1d.	2,278,273	5,997,959	7,056,566	8,460,279	8,445,200
1½d.	829,551	2,058,745	2,257,742	2,576,419	2,451,958
2d.	2,150,253	5,057,513	5,815,924	6,395,376	7,271,873
2½d.	832,678	1,711,671	1,980,696	2,204,417	1,988,042
3d.	895,909	1,848,355	2,110,664	2,489,787	3,359,771
3½d.	112,057	181,884	212,556	242,837	273,545
4d.	216,786	419,064	492,242	622,162	876,848
Over 4d.	57,616	72,680	91,682	120,371	170,969
Total,	7,373,123	17,347,871	20,018,072	23,111,648	24,838,206

AVERAGE FARE PER PASSENGER

1914 (to July)	1915	1916	1917	1918
1.92d.	1.83d.	1.83d.	1.82d.	1.90d.

PASSENGERS IN PERCENTAGES

	1d.	1½d.	2d.	2½d.	3d.	3½d.	4d.	Over 4d
1914 (to July)	30.9	11.2	29.2	11.3	12.2	1.5	2.9	0.8
1915	34.5	11.9	29.1	9.9	10.7	1.0	2.4	0.5
1916	35.3	11.3	29.1	9.9	10.5	1.0	2.4	0.5
1917	36.6	11.1	27.7	9.5	10.8	1.0	2.7	0.6
1918	34.0	9.9	29.3	8.0	13.5	1.1	3.5	0 7

Central London Railway, 6.76 miles of route, enjoys considerable traffic from its nearness to the Oxford Street shopping district. Its average fare per passenger is 2.01d. or practically 4 cents. The mileages for a given fare on this railway are: 1.2 miles for 1d., 1.5 miles for 1½d., 2.5 miles for 2d., 2.7 miles for 2½d., 4.7 miles for 3d. and 6.7 miles for 4d. As shown in Table V, the 1d. passengers on this line, as on the City & South London, average 32 to 33 per cent of the total, which is a little below half the 1d. ratio on the bus lines hereinafter presented. The traffic of the Cental London Railway increased from 24,153,697 (local and ordinary) in the year 1915 to 35,169,985 (local and ordinary) in the year 1918, or approximately 45 per cent (local and ordinary).

London Electric Railway, comprises the three most modern tubes, namely, Bakerloo, (20.8 miles), Hampstead, (6.33 miles to Golder's Green and 4.67 miles to Highgate) and Piccadilly, (9.23 miles). As a whole this system serves many attractive suburban communities as well as the theatrical and shopping center of London. The average fare per passenger is now 2.12d. or in excess of 4 cents, and as Table VI indicates about 28 per cent of the non-season local and ordinary passengers pay more than 2½d. or 5 cents. On the Piccadilly line, which may be regarded as typical of this group, one may ride 1.1 miles for 1d., 1.6 miles for 1½d., 2.6 miles for 2d., 3.1 miles for 2½d., 5.3 miles for 3d., 7.2 miles for 4d., and 8.9 miles for 5d. The increase of traffic on the London Electric Railway lines has been from 71,486,362 (local and ordinary) passengers in 1915 to 109,969,665 (local and ordinary) passengers in 1918. Even this record will be exceeded by that of 1919.

Upon examination of the relations between fares and distances, it will be observed that the long-distance rider is favored so far as is consistent with service costs. For examples, the initial ride for 1d. on the South London and Central London tubes is but 1.1 and 1.2 miles respectively, but the 4d. passenger gets 2 miles for his fourth penny. So, too, the Piccadilly passenger who gets but 1.1 mile for his first penny receives 1.9 miles for his fourth and 1.7 miles for his fifth penny. In sum, after due allowance has been made for the proper initial fare in handling a passenger, he is given a constantly increasing mileage for each increment of fare paid.

Furthermore, the suburbanite is entitled to ride without an increase in fare to any one of a number of stations in the business district. For example: A passenger from the Golder's Green terminus of the Hampstead Tube pays 4d. to the terminus at Charing Cross downtown. From that station, however, he may travel eastward on the District Railway to Temple, Blackfriars and Mansion House or westward to Westminster, St. James' and Victoria; or if he leaves at the Leicester Square station of the Hampstead Tube he may use the Piccadilly Tube to Piccadilly Circus, Dover Street, Down Street and Hyde Park Corner in one direction and to Covent Garden, Holborn and Russell Square in the opposite direction. The holders of the season tickets hereinafter described have the same neutral zone privileges. In addition to assuring liberal treatment for the long-distance rider, this arrangement helps to simplify the ticket system.

As a further inducement to the suburbanite, all of the railways named issue season (commutation) tickets, which character of fare amounts to 5.5 per cent of the total carried by the City & South London, 8 per cent of the Central London and 8.5 per cent of the London Electric Railway. By comparing these percentages with those of the ticket riders given in the preceding tables, it will be apparent that more long riders use "seasons" than individual tickets. The following examples will bring out the principle upon which the season ticket charges are based:

If a person within the 1d. zone wishes to buy a season ticket the cost to him for three months would be 15 shillings, whereas if he rode twice a day, six

TABLE V—CENTRAL LONDON RAILWAY

Local and "Common Fund Through" Traffic by Fares, 1914 (to July, Pre-War Period), 1915, 1916, 1917, 1918

PASSENGERS

Fare	1914 (to July)	1915	1916	1917	1918
1d.	4,384,013	7,366,993	8,012,237	10,518,625	11,336,389
1½d.	190,829	1,061,267	1,185,873	1,390,909	548,652
2d.	6,789,527	10,132,078	10,782,926	12,080,578	12,675,356
2½d.	450,520	722,125	812,796	1,491,504	2,267,779
3d.	2,675,102	4,175,979	4,476,270	5,189,433	5,943,734
3½d.	73,799	149'667	165,837	215,001	212,844
4d.	268,474	467,699	516,206	1,116,825	2,062,196
Over 4d.	31,388	77,889	66,896	72,931	123,035
Total,	14,863,652	24,153,697	26,019,041	32,075,806	35,169,985

AVERAGE FARE PER PASSENGER

1914 (to July)	1915	1916	1917	1918
1.94	1.91	1.91	1.92	2.01

PASSENGERS IN PERCENTAGES

	1d.	1½d.	2d.	2½d.	3d.	3½d.	4d.	Over 4d.
1914 (to July)	29.5	1.3	45.7	3.0	18.0	0.5	1.8	0.2
1915	30.5	4.4	41.8	3.0	17.3	0.6	2.0	0.4
1916	30.8	4.6	41.5	3.1	17.2	0.6	2.0	0.2
1917	32.8	4.4	37.7	4.6	16.2	0.7	3.4	0.2
1918	32.2	1.6	36.0	6.5	16.9	0.6	5.9	0 3

TABLE VI—LONDON ELECTRIC RAILWAY COMPANY

Local and "Common Fund Through" Traffic by Fares. 1914 (to July, Pre-War Period), 1915, 1916, 1917. 1918

PASSENGERS

Fare	1914 (to July)	1915	1916	1917	1918
1d.	9,235,039	19,917,432	23,137,364	28,979,798	28,765,305
1½d.	3,222,555	5,754,718	6,550,914	8,470,656	9,607,943
2d.	11,932,092	22,184,036	24,521,416	29,784,247	32,467,965
2½d.	2,132,523	4,587,478	4,631,552	6,092,891	7,852,171
3d.	8,262,671	14,353,329	15,458,847	18,599,043	22,596,006
3½d.	317,115	924,496	1,156,157	1,338,257	1,586,391
4d.	1,688,613	3,240,739	3,446,985	3,867,036	4,995,392
Over 4d.	260,238	524,334	939,872	1,287,191	2,098,492
Total,	37,050,846	71,486,362	79,743,107	98,419,119	109,969,665

These figures do not include foreign through passengers or season tickets.

AVERAGE FARE PER PASSENGER

1914 (to July)	1915	1916	1917	1918
2.04d.	2.05d.	2.04d.	2.02d.	2.12d.

PASSENGERS IN PERCENTAGES

	1d.	1½d.	2d.	2½d.	3d.	3½d.	4d.	Over 4d.
1914 (to July)	24.9	8.7	32.2	5.7	22.3	0.8	4.5	0.9
1915	27 9	8.0	31.0	6.4	20.1	1.3	4.5	0 8
1916	29.0	8.1	30.7	5.8	19.4	1.4	4.3	1·3
1917	29.4	8.6	30.2	6.2	18.9	1.4	3.9	1·4
1918	26.1	8.8	29.5	7.2	20.6	1.4	4.6	1·6

days a week, thirteen weeks a quarter year, the cost on a ticket-per-journey basis would be only 13s. In all probability, however, the 1d. short rider will use his ticket not twice but four times a day because of going home for lunch, etc. Hence he is the winner in the end.

On the contrary, a rider within the 3d. zone can purchase a three-months' season ticket for 32s. 6d. as against 39s. for single-trip tickets. In addition to this saving, all riding that he does beyond the two trips a day costs him nothing.

Season tickets are sold up to periods of twelve months at any ticket office. A reduction of 10 per cent on two season tickets and 15 per cent on three or more season tickets is made when members of the same family reside in the same house and ride between the same stations. Season tickets are also issued at half-price for use by children under fifteen years of age, and for use by students, pupil teachers, apprentices, clerks, etc., under eighteen years of age. Monthly season tickets are also sold to a limited extent.

TABLE VII—UNDERGROUND RAILWAYS

Season and Workmen Traffic
Per Cent of Total Traffic for May, June, July, 1915 and 1918

	Ordinary Passengers	Seasons (Passenger Journeys)	Workmen
District Railway			
1915:			
May, June, July	19,874,176	3,446,196	2,788,218
Per cent of total	68.6	17.4	14.0
Average fare	.....	2.42d.	1.52d.
1918:			
May, June, July	27,791,969	6,013,488	3,778,896
Per cent of total	64.8	21.6	13.6
Average fare	.....	2.59d.	1.70d.
London Electric Railway			
1915:			
May, June, July	24,057,379	1,436,628	5,356,610
Per cent of total	71.7	6.0	22.3
Average fare	.....	1.82d.	1.14d.
1918:			
May, June, July	36,262,669	3,087,240	6,732,476
Per cent of total	72.9	8.5	18.6
Average fare	.....	1.76d.	1.20d
City and South London Railway			
1915:			
May, June, July	6,799,612	314,768	1,932,556
Per cent of total	67.0	4 6	28.4
Average fare	.....	1.50d.	1.17d.
1918:			
May, June, July	9,100,394	499,148	2,511,993
Per cent of total	66.9	5.5	27.6
Average fare	.....	1.48d.	1.19d
Central London Railway			
1915:			
May, June, July	7,193,911	573,210	977,230
Per cent of total	78.4	8.0	13.6
Average fare	.....	1.77d.	1.04d
1918:			
May, June, July	9,832,494	799,240	862,004
Per cent of total	83.1	8.1	8.8
Average fare	.....	1.88d.	1.06d

From the accounting viewpoint, the season ticket is a source of prolific clerical labor. On the other hand, it reduces labor at the booking offices and saves the printing of hundreds of tickets per passenger per annum. It is also reasonably certain that the holder of a season ticket will prefer the tubes when taking out members of his family.

Again, if a certain portion of the line is saturated from a traffic standpoint, nothing would be gained by attracting additional traffic through a decrease in fare, but there have been several occasions in the past where it has proved more profitable to charge a 1d. fare than a 1½d. fare. Possibilities of this character have not been developed lately because the war crowding made it out of the question to create new business.

That *bête noir* of the British railway, the workman's reduced rate ticket, is not absent from the London underground lines. Tube rates for workmen vary according to franchise conditions. The general principle is that of one-way rates for a round trip, the first half of which must be taken before 8 a.m. and the second half after 12 o'clock noon. As it is impracticable for the ticket seller to discriminate, anybody who rides before the last workman's train enjoys the lower rate. Children get half rates, either through special tickets or one-half of the regular ticket.

The District Railway conditions differ in some respects from the other rapid transit lines, as the District is an electrified steam system and as such is at present under government control. According to the general order of Jan. 1, 1917, a 50 per cent increase in fares became effective except within the bounds of London as represented by Acton Town on the west and Bow Road on the east. Within these limits the old fares obtain. Season tickets on this system, comprising 28 miles in itself, amounted to fully 21.6 per cent of the total traffic during May, June and July of the year 1918, two and one-half to four times the percentage of the shorter underground railways. On the other hand, the proportion of workmen's travel is less on the District, 13.6 per cent, than on all the others except the Central London. The relative proportions and grand totals of local passenger traffic on all the underground railways are detailed in Table VII.

Subway Tickets and Their Collection

All passengers except those holding season tickets or passes must purchase a separate ticket for each trip. This ticket bears the rate of fare paid and the name of the farthest station to which the passenger is entitled to ride. An important feature of these tickets is that they carry any required transfer or interchange information on the back. For example, if a passenger at Golder's Green calls for a ticket to Paddington, he will find that the ticket bears instructions for him to transfer first at Tottenham Court Road from the Hampstead to the Central London Railway and then at Oxford Circus from the Central London to the Bakerloo line. To minimize the number of varieties of tickets that this system, so helpful to the passenger, necessitates, the instructions may relate to several destinations. For instance, the 1½d. ticket from Trafalgar Square tells the traveller how to reach stations on five different tubes. In spite of all the ingenuity expended on the simplification of this system, the Underground Electric Railways still have to print a great number of different kinds of tickets, according to the number of through booking facilities in operation with the steam railways.

To relieve the ticket sellers as much as possible, slot machines are available to the experienced passenger for the purchase of 1d. and 2d. tickets. The 1d. machine can issue up to fifteen tickets a minute. Machines for issuing 3d. tickets were not a mechanical success. The total percentage of tickets sold via slot machines is not readily determined, but at some stations the ratio is as high as 40 per cent. Several efforts in the way of a ticket-printing machine have been tried but without success as the machines are not reliable or the printing sufficiently clear. It is a matter for admiration that the ticket sellers can handle such a variety of fares and tickets at the rate of twelve to fifteen per minute, although this is hardly one-half of the speed readily attained with single fare tickets.

In addition to the full-price tickets illustrated, a workman's two-part or round-trip ticket is shown; also a two-part ticket used for a single trip emanating, in this case, on an underground line and ending on a

SPECIMENS OF LONDON UNDERGROUND TICKETS

No. 1—Combination of tube and bus ticket.

No. 2—Special ticket issued as a courtesy to military forces, etc.

No. 3—Ticket for inanimate baggage—a mail cart.

No. 4—Ticket for animate baggage—a dog.

No. 5—Front and back of 1½d. ticket, showing directions on back.

No. 6—Workman's lower rate ticket with return coupon.

connecting bus. The underground portion is given up, on leaving the tube, just like an ordinary ticket; the bus portion is exchanged for the customary fare receipt on boarding the bus. Similar combination or through tickets are used with connecting tramways. Baggage tickets are also issued. as for dogs, folding carts, etc., as illustrated.

No matter what kind of ticket for single (or round) trips the passenger purchases, he must show the same to the ticket examiner for punching before reaching the station platform, and he must give up the ticket to a ticket collector as he leaves the station of exit. At the more important stations, a cash register is used to ring up excess fares from passengers who have over-ridden their length of journey for the fare paid. The tickets taken up at exit are not required as a check on the number sold and consequently are destroyed as turned in. Even if the inspector at the entrance station failed to notch the ticket, the likelihood that the inspector at the exit station could make corrupt use of it is small as this would call for collusion with many others for trifling amounts.

Compared with a universal fare rapid-transit line, it will be seen that the examiner at the entrance corresponds to the American ticket-chopper or fare-box watcher, but that the collector at the exit is an addition due entirely to the use of differential fares. However, this increase in personnel in relation to the enormous traffic (about 1,000,000 a day) carried is by no means serious.

It would be unfair to assume that the great number of tickets required is due to the graduated fare system in itself. Rather is it the result of combining a variety of lines all built without any reference to one another. A true perspective could be obtained only by a study of the ticket practice on the Berlin and Hamburg subways which have been laid out on a consistent plan. For this reason, it is not necessary to describe the ticket auditing practice of London's tubes in detail.

A Glance at Employees Welfare Work

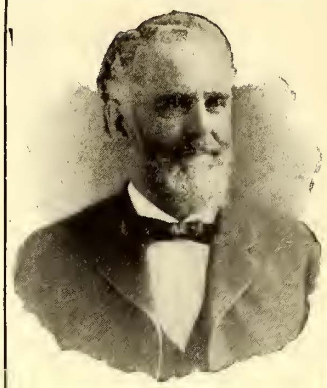
The social and athletic activities on the railway side of the Underground group are very marked. The District Railway has an excellent building as a center, attached to Hammersmith Station, and known as the Albert Stanley Institute, the female head office staff has a thoroughly up-to-date luncheon and social club in a large house at Earl's Court, the female uniform staff has a similar suite over the Brompton Road Station, while there are institute and mess rooms in connection with each of the Tube lines.

Football, cricket, swimming, boxing, ambulances, first-aid, fishing, dancing, billiards, chess, shooting, orchestral and choral work—indeed, practically all forms of entertainment or benevolent activity have their clubs. Sports meetings, concerts, fancy dress and ordinary balls are regular features. As an exemplification of the size of the welfare activities, it may be stated that the mess-room receipts for 1918 were £16,000 on the railway side and £66,000 on the bus side.

ELECTRIC COOKING KITCHEN OF UNDERGROUND FEMALE STAFF CLUB, EARL'S COURT

CORNER IN READING ROOM OF FEMALE STAFF CLUB, EARL'S COURT

H. H. LITTELL
President, 1882-1883



WILLIAM H. HAZZARD
President, 1883-1884

CALVIN A. RICHARDS
President, 1884-1885

JULIUS S. WALSH
President, 1885-1886

THOMAS W. ACKLEY
President, 1886-1887

Presidents of the American Street Railway Association 1882 to 1896

CHARLES B. HOLMES
President, 1887-1888

GEORGE B. KERPER
President, 1888-1889

THOMAS LOWRY
President, 1889-1890

HENRY M. WATSON
President, 1890-1891

JOHN G. HOLMES
President, 1891-1892

D. F. LONGSTREET
President, 1892-1893

HENRY C. PAYNE
President, 1893-1894

JOEL HURT
President, 1894-1895

H. M. LITTELL
President, 1895-1896

The American Electric Railway Association—Its Record and Possibilities

A Survey of Its Three Periods of Development, a Tribute to the Individuals Who Have Contributed to Its Growth and a Plea for the Co-operation Which Is Essential to the Extension of Its Usefulness to Meet the Growing Needs of the Electric Railway Industry

BY HARLOW C. CLARK
Editor of *Aera*

THE history of the American Electric Railway Association may be divided into three distinct periods, each distinguished by its own characteristics as they relate to organization activities. The first began with the birth of the organization in 1882 and continued until its rejuvenation, under the presidency of W. Caryl Ely, in 1905. During this time, the association was little more than a debating club, with annual meetings at which various subjects connected with the financing, management and operation of the roads were discussed, but which made no attempt to formulate policies or assume leadership. Committee work, as it is now understood, was then unknown. Such committee reports as were presented were in nearly all cases the work of one man, and attempted nothing further than a more or less desultory discussion of the subject assigned. Co-operative effort in working out common problems was not attempted and the main purpose served by the conventions of the organization was to bring the executives of member companies together for such exchange of ideas and experiences as usually occur when two or more men interested in the same subject get together.

The value of these meetings and the association's work in connection therewith should not, however, be underestimated. United in the association, the men of the industry were learning to know each other, were being taught to recognize that many of the same problems confronted all of them and that these problems could be better solved by mutual counsel than by individual effort. It was not until 1888 that the electric railway became a recognized commercial possibility and during the years that intervened between this date and the re-organization of the association, its development was largely a matter of individual initiative and individual experiment, so that it is doubtful if at any time before 1905 the industry was really ready for more complete organization. That it was ready at the time of reorganization, is plainly indicated by the success of Mr. Ely's efforts.

SPECIALIZATION IN THE ORGANIZATION BEGAN IN THE EARLY NINETIES

In 1903, the second phase of the association's development began. Six years earlier the Street Railway Accountants' Association of America had been organized at a meeting held in Cleveland. In the spring of 1903, the American Railway Mechanical & Electrical Association had been formed in the same city. It was evident that the technical problems of the industry were becoming so many and so diverse, that the time was ripe for their assignment to organizations of the men directly interested, leaving to the executives of the properties the consideration of the broader matters of policy and public relations. This view was adopted by the executive committee prior to the convention of 1903, and in discussion upon the floor of the convention met with no opposition. A year later at the St. Louis convention, President Ely, urging that the various organization activities of electric railway officials be centered in one parent organization and such subsidiary organizations as might seem desirable, declared that the attention of the association had for too long been devoted to comparatively unimportant things while the most fertile field for its efforts had remained practically untouched.

"The confusion of laws throughout the country affecting our corporations is a matter to which we might well devote attention," he said, "There are also such great questions as taxation, municipal ownership of street railways; franchise rights and obligations; statutory laws affecting our class of companies, municipal laws and ordinances and other questions of importance to which your minds will readily refer. The collection and preservation of data tending to throw light upon the problems of great importance that confront us are also matters deserving of attention, and in this regard it would seem that through the medium of the secretary's office, and of appropriate standing committees, an invaluable collection of data could be made and permanently preserved in such form as to be conveniently accessible to any member of the association merely upon request to the secretary."

W. CARYL ELY'S WORK EARLY BORE FRUIT

The development of the ideas thus expressed by Mr. Ely fully occupied the time of the association between the year 1904 and the entrance of America into the War in 1917. In 1905 the Accountants' Association and the Engineering Association were amalgamated with the parent association. At the St. Louis Convention in 1904 the Claims Association was organized and in 1905 was affiliated. Four years later, at a meeting in New York City the Transportation & Traffic Association came into being as an affiliated organization. The technical problems of electric railway management and operation were confided to these subsidiary organizations with good effect.

When it is considered that almost the entire work accomplished was performed by voluntary committees serving without remuneration and devoting to their tasks only such time as could be spared from their railway duties, the accomplishments of the twelve years must be regarded as remarkable.

During this period, the standard classification of electric railway accounts was worked out by the accountants in connection with the Interstate Commerce

ROBERT MC CULLOCH
President. 1896-1897

ALBION E. LANG
President. 1897-1898

CHARLES S. SERGEANT
President. 1898-1899

JOHN M. ROACH
President. 1899-1890

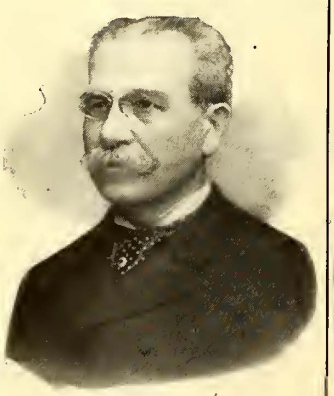
WALTON H. HOLMES
President. 1900-1901

Presidents of the American Street Railway Association and Its Successors, the American Street & Interurban Railway Association and the American Electric Railway Association 1896 to 1913

H. H. VREELAND
President. 1901-1902

JERE C. HUTCHINS
President. 1902-1903

W. CARYL ELY
President. 1903-1906



JOHN I. BEGGS
President. 1906-1907

CALVIN G. GOODRICH
President. 1907-1908

JAMES F. SHAW
President. 1908-1910

ARTHUR W. BRADY
President. 1910-1911

THOMAS N. McCARTER
President. 1911-1912

GEORGE H. HARRIES
President. 1912-1913

Commission; standard codes of operating rules for both city and interurban companies were framed by the Transportation & Traffic Association, while the Engineering Association framed, and the association promulgated thirty-seven standards, thirty-two recommendations, and forty-four suggestions as to miscellaneous methods and practices, covering all phases of electric railway engineering—way and structures, power generation, power distribution and equipment.

At the same time there was carried on, under the direction of the committee on determining the proper basis for rates and fares, and its successor, the committee on the cost of passenger transportation service, an investigation of the economics underlying electric railway fares, culminating in a report on the cost of urban transportation service, prepared by F. W. Doolittle, under the direction of the committee. This is undoubtedly the most authoritative work on the subject in existence. In co-operation with other interested organizations, specifications for the joint use of poles by public utilities have been prepared, while an equally valuable work has been done in connection with underground and overhead line construction.

Mr. Ely's prophecy as to the value to the industry of properly equipped headquarters for the collection and dissemination of information has been more than fulfilled. The modest office, opened at 60 Wall Street, in 1905, in charge of a secretary, with one stenographer as an assistant, has expanded until today, the headquarters staff consists of twenty-two persons. From files practically bare of information concerning the details of electric railway management and operation, the association has accumulated the most complete and thorough collection of data anywhere in existence. From the sending out of infrequent and desultory circulars of information, the informational activities of the association have grown, until for the year ending Sept. 30, 1919, forty-six compilations of general interest, covering all phases of operation were prepared and 1021 inquiries, queries concerning details of engineering, traffic, transportation, and the general adminstration of street railways, were answered. Moreover, the association has in addition been able to furnish for the industry the first available series of monthly statements of earnings and expenses, showing the trend of operating costs and revenues.

The saving in time and money to electric railways made possible by having in the association a clearing house of information cannot be easily calculated. That it is considerable is evident. A large number of the requests received come by telegraph and are from companies that are in immediate need of the data asked for. Without an organization which has the information already at hand, it would be manifestly impossible for companies to secure the information desired. Emergencies confront all railway companies. Quick decisions on questions of policy and practice are often necessary and can be rightly made only if there is available correct information upon which to base them. The experience of other companies is, under such circumstances, valuable. The action of public service commissions, city councils and other authorities having jurisdiction over street railways, is many times directly influenced by what has been done under like circumstances in other communities. It is not only expensive and slow for any single company to attempt on the spur of the moment to secure such information, but in many cases it is impossible. Hence the importance of having an agency such as is the association, through which the desired data can be quickly secured.

First under Secretary Bernard V. Swenson, then under Secretary H. C. Donecker and finally under Secretary E. B. Burritt, the association's facilities for securing and distributing information have been developed and amplified, until today there is no organization in the United States which is in a position to be of more service to its members in this important respect.

Specialist in Information Work Appointed in 1918

In 1918, the executive committee of the association, recognizing the great value of this branch of the association's work, adopted the suggestion of Secretary Burritt and appointed James W. Welsh, as special engineer in charge of this work of information and service. Under his direction, the records of the association are being constantly amplified, and the service further extended.

Another development of the second period of the association's activities, is to be found in the work of the committees, both of the parent and the affiliated associations. The *Proceedings* for the years between 1906 and 1917 contain in the reports of these committees the record of the evolution of the electric railway art. The progress of every improved method, practice and change in apparatus and equipment can be found in these pages. The recommendations of the best equipped men in the industry as to ways and means of improvement are contained therein. Because of the work of these committees, it was possible for the Committee of One Hundred truthfully to say in its brief to the Federal Electric Railways Commission: "The electric railway industry of this country, as represented by the association, has not been lacking either in foresight or in the effort to adjust itself to the evolution and development of local transportation, both as it affects the relations of the public and the companies, and as it affects the system of charges and the practical operation of the properties."

This can be said of the second period—that it marked the progress of the association from an organization which, while of value to its membership, made no attempt to perform for it direct service and which did little more than bring the representatives of its member companies together in annual meetings, to a strong, virile, active business organization, that had sought and found its place in the economics of the industry and was furnishing with ever increasing efficiency a service, essential and necessary to the most efficient and economical operation of the railways of the country.

Manufacturers Taken in with Full Membership Privileges

It was during this period also, under the presidential administration of Charles L. Henry, that full recognition was given to manufacturers of electric railway apparatus and supplies as full partners in the enterprise. The development of the physical side of the art has been very largely due to these manufacturers. They have performed a notable work in behalf of the industry in the past and its future physical progress depends in large measure upon their efforts. President Henry believed that their place in the association was alongside the operators of the property, that in the determination of standards of construction and equipment they should participate on terms of equality and that in the

promotion of the general interests of the industry they should be called upon to bear a full share.

With that end in view, the constitution of the association was amended at the mid-year meeting of 1916, held in Chicago, so as to permit membership of manufacturer companies on exactly the same plane as railway companies. Since that time, representatives of manufacturer members have taken their places upon the various committees both of the parent and of the affiliated associations and have made valuable contributions to their work.

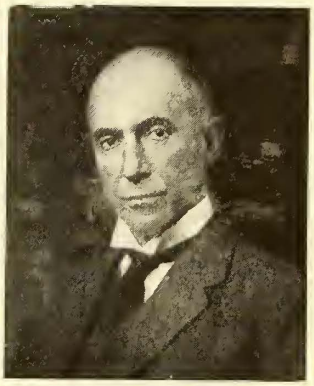
The third period of association history saw it firmly grasp an opportunity presented for putting the requirements of the industry before the people of the United States in such a way as bids fair to revolutionize the attitude of the public towards the utilities which the association represents. The question of public relations, in its modern aspect, was practically unknown to the industry in the days before the association's re-organization. Between 1882 and 1906, out of a total of 149 papers and reports presented at twenty-three association conventions, but ten dealt with subjects other than the technique of operation and management. In 1889 a committee on the public and state treatment of corporations was appointed and made a report both that year and the year following. In 1897 a committee on municipal ownership reported, or rather, P. F. Sullivan, later president of the Bay State Street Railway, presented a paper embodying his investigation of municipal ownership abroad. There were occasional papers on other public aspects of the industry, notably one by the late Charles T. Yerkes on "Investments in Street Railways: How They Can Be Made Secure and Remunerative," but perhaps because the problem was not acute little attention seems to have been given to the question of the relations of the companies and the public.

Increased Interest in Public Relations Forced Change in Proceedings

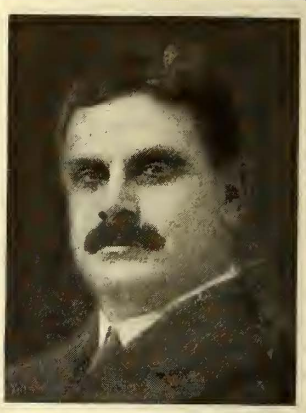
Between 1906 and 1910, thirteen of the thirty papers and addresses, and eight of the thirty-four committee reports (other than those made on strictly association matters) to the American Association dealt with public relations; between 1910 and 1917, thirty of the forty-one papers and twenty-six of the fifty-six reports, presented were devoted to the same topic. In 1906, a committee on public relations was made one of the standing committees of the parent association, and its work was continued during the following years. In 1912, under the presidency of Thomas N. McCarter, occurred the famous "swing round the circle," when Mr. McCarter, accompanied by O. T. Crosby, Charles C. Peirce and Secretary Donecker, during the entire trip, and by a number of other prominent electric railway men during parts of the trip, visited and spoke in some thirty cities between New York and San Francisco, putting the case of the electric railways directly before the business men of the various communities.

The association was "finding itself" in its new task of informing the people, during those days. The far-seeing men, who directed its policy, were fully alive to the danger that impended unless the public could be

Presidents of the American Electric Railway Association 1914 to Date



CHARLES N. BLACK
President, 1913-1914

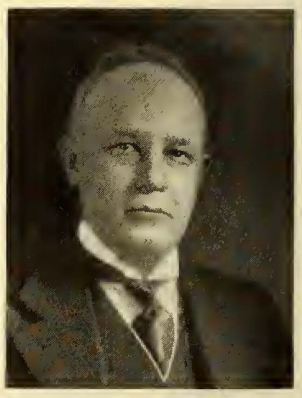


C. LOOMIS ALLEN
President, 1914-1915

CHARLES L. HENRY
President, 1915-1916

L. S. STORRS
President, 1916-1917

JOHN J. STANLEY
President, 1917-1918



JOHN H. PARDEE
President, 1918-Date

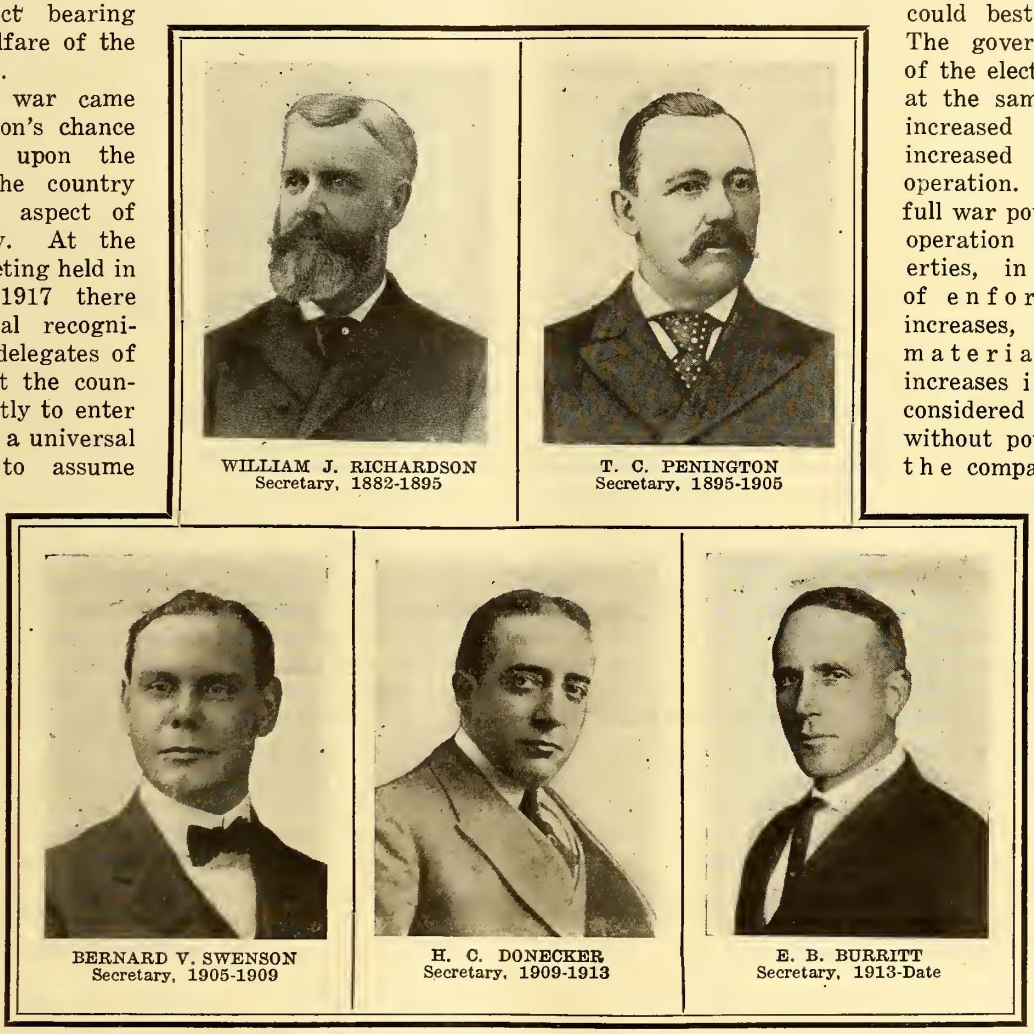
brought to a keener realization of the part that electric railways played in its affairs and the necessity of giving to the companies such treatment as would foster instead of discourage their development. The task was, however, a difficult one. The electric railway is by its nature a "local" utility. Its immediate relations are with the people whom it directly serves and its relationship to the economic and business structure of the nation is not so easily to be understood. Only in so far as the public has insisted on a universal standard of fares, regardless of conditions of operations has there been, until recently, any recognition of the industry as a national industry, of such importance that its welfare has a direct bearing upon the welfare of the entire people.

With the war came the association's chance to impress upon the people of the country the national aspect of the industry. At the mid-year meeting held in Boston in 1917 there was universal recognition by the delegates of the fact that the country was shortly to enter the war, and a universal willingness to assume on behalf of the industry, its share of the duty and responsibility that participation in the war was bound to put upon all business. The railroad system of the country was breaking down under the strain put upon it and there was necessity of using to the utmost limits every means of transportation that the country possessed. No one knew what the fortunes of war might lead to in the matter of sea control, and there was immediate necessity of putting our coast defenses in order.

When on Feb. 16, 1917, President L. S. Storrs, on behalf of the association wired to President Wilson pledging its "patriotic support of all measures which you may take in upholding the dignity and honor of our country and the rights, property and persons of its citizens on land and sea," something more than mere perfunctory loyalty was meant, as was shown by the immediate service rendered by the association in mapping the coast line of the country in order that the War Department might know the full possibilities of electric railways in connection with coast fortifications.

In November, 1917, at a meeting called by President John J. Stanley, the organization of a war board to represent the industry at Washington during the period of the war was decided upon, and the third period of association activities was thus inaugurated.

The primary purpose of the war board was to act in *liaison* between the national government and the electric railways of the country. It was constituted as a medium through which the needs of the government in connection with work to be performed by the electric railways could best be fulfilled. The government asked of the electric railroads, at the same time, both increased service and increased economy in operation. Exerting its full war powers over the operation of the properties, in the matter of enforcing wage increases, increases in material costs and increases in service, it considered itself to be without power to assist the companies in the matter of increased revenue, upon which its ability to properly carry out the government's wishes depended.



WILLIAM J. RICHARDSON
Secretary, 1882-1895

T. C. PENINGTON
Secretary, 1895-1905

BERNARD V. SWENSON
Secretary, 1905-1909

H. C. DONECKER
Secretary, 1909-1913

E. B. BURRITT
Secretary, 1913-Date

Confronted by this situation, the association's war board inaugurated that work of education which finally ended in the appointment of the Federal Electric Railways Commission. To Messrs. McCarter, Storrs, Brady and Bradlee, of the board, much credit is due, but these gentlemen have frequently united with the industry generally in agreeing that to P. H. Gadsden, the fifth member of the board and its resident member, is due the awakening of the administration to the precarious condition of the industry and that through this awakening came the more general recognition of the public to the impending crisis.

It was the war board that opened the eyes of the National War Labor Board, to the inevitable effect upon the finances of the companies of the wage increases which that body was awarding in an effort to keep labor

satisfied, and which induced the representations to the administration by Messrs. Taft and Walsh, its joint chairmen, which secured the co-operation of the Secretaries of Commerce and of Labor. It was the war board that secured, from the President of the United States, the Secretary of the Treasury and the Comptroller of the Currency, statements which had a marked effect upon state and local authorities having jurisdiction over the regulation of rates. And it was the war board that secured the inclusion in awards made by the National War Labor Board of recommendations that relief be given the companies in the way of increased rates.

All of these efforts tended to make possible the wide publicity given at a later date to the financial and operating conditions of the industry. The street railway problem which, as a purely local question, was exceedingly difficult of adjustment, was being given a national aspect and its solution hastened. Moreover, the industry itself was being aroused to the possibilities of united action and the way prepared for that splendid co-operation between the various interests which was later manifested.

The appointment of the Federal Electric Railways Commission was made in May, 1919. The commission was without power; it was without a guide as to procedure; its means of securing publicity were to a large extent non-existent; it could easily have been lost sight of in the multiplicity of governmental activities.

Under the circumstances it was fortunate for the industry that in the association it had a representative ready and equipped to present to this commission appointed by President Wilson, and through the commission to the people of the country, a true picture of the condition of the industry, and that the association had, in the person of its president, John H. Pardee, a man of vision sufficiently broad to see the opportunity that was offered and of sufficient ability as an organizer to create the machinery, for which may, perhaps, be said to be the most effective presentation of a similar cause before a public body that has occurred in the history of public utilities. The organization of the Committee of One Hundred was the work of Mr. Pardee. With General Guy E. Tripp, its chairman, and J. K. Choate, H. L. Stuart, L. S. Storrs and O. D. Young, chairmen of its sub-committees, he shares the credit of putting the case of the electric railways before the commission in such a way that there has been a marked change of attitude towards these companies and very general recognition of their needs.

THE ASSOCIATION'S AIMS AS COMPARED WITH PERFORMANCE

This new activity of the association, developed since 1917 and during the administrations of Presidents Storrs, Stanley and Pardee, fulfills another of the objects of the association as set forth in its constitution. These objects are: "The discussion and recommendation of methods and practices. The acquisition and dissemination of information. The promotion of a spirit of co-operation between its members. The encouragement of friendly relations between the public and the railways. The safeguarding of the interests of electric railways."

It seems plainly evident that the American Electric Railway Association is today fulfilling each of the objects for which it was organized in a way that is affording to its members and to the industry the maximum of usefulness at the minimum of cost. Certainly there is no other organization of the kind that is doing more and, just as certainly there is opportunity for more extended work of even greater benefit.

The measure of association utility must necessarily be the limits of the things which electric railways can do better collectively than they can individually. The relationship of the electric railway companies to the organization should be based on consideration of the fact that the activities of the association are but an extension of the activities of the company, that the functions performed by it are a part of the functions which in its absence would attach to the company itself, and that the association is as necessary to the proper operation of the company as are any of its own departments. In other words, if an organization chart of an electric railway is properly drawn, there will be assigned to the American Electric Railway Association, as a component part of the organization, certain functions which it can perform better than any of the company's own departments.

To get down to details, it is evident that the association's greatest usefulness to its members is along three general lines—policy, research, and information and service—and that along these lines the future development of the association will take place.

"Policy" is used for the lack of a better word to express just what the association has been doing in the lines of public education, in the consideration of franchise, regulatory and taxation conditions and in its dealings with the federal government, both as to laws proposed or passed by Congress, and as to relations with government departments, as illustrated by the mail pay case. In the shifting industrial conditions of the war, it includes as well the all important matter of labor.

"Research" is equally important. No two subjects are of greater moment to the industry at the present time than those of fare systems and charges, and motor-bus transportation. The need of a period of experimentation in which various suggestion methods of fare charges and collection can be worked out was emphasized in the testimony of many witnesses for the Federal Commission and it is recognized by all electric railway operators. No one can today safely prophesy what the development of motor transport will lead to. The necessity of closely observing this development and of its co-ordination with existing transportation systems is apparent. Common-sense standardization of apparatus and equipment is a move in the interest of economy and efficiency. With the manufacturers and railway companies on equal footing, the association is in a position to carry out this important task, and to make its standards effective.

The association has already done much towards the classification of the principles that should govern valuation. Much remains to be done if a correct concept of the subject is to be established. The use of the one-man car is still in its infancy, the proper application of many suggested operating economies is still to be determined, a correction of traffic conditions is necessary in nearly all communities, the problems of fare collection under new systems of charges are many, there are many problems of accounting that require study—all of these are matters which can better be handled by the association, through its various committees than through any one company.

"Information and service" means first the presentation to member companies, frequently, completely and accurately, of data upon subjects of general interest,

such as concern fares, wages, conditions of employment and kindred topics, and quick response to requests for detailed information upon subjects of special interest to the companies. There is not a department of an electric railway company that is not in almost daily need of such information. During the fiscal year 1918-1919, 114 requests of the kind covering engineering topics, 267 requests covering transportation and traffic subjects, and 640 requests covering general subjects were answered by the association. Various phrases of eighty-nine different topics were covered. The demand for this service is increasing daily so that the association is now answering such requests at the rate of more than 3,000 a year.

Under these circumstances, and with the increased use being made of association facilities by member companies, there is imperative need of strengthening the organization, both financially and in the matter of membership.

The association has proved itself to be necessary to the industry. Its further usefulness depends upon the character of the support that it shall receive.

American Methods in Italy

Can Prepayment and Safety Operation Solve the Many Riddles of Street Railway Service in Continental Europe?

By Mario Mandelli
Manager Rome Mechanical Works, Rome, Italy

THE unbalancing which the war has brought in all different branches of human activity will certainly, more than anything else, help the introduction of better operating methods and of a more rational system of car construction in Continental Europe.

Although the writer has for a number of years been advocating the adoption in Italy of door and step control and of fixed-point fare collection as the only sensible way of increasing revenue and decreasing expenses, his has been the proverbial "voice in the wilderness." It has remained for the unsettling conditions created by the great struggle to impel some Italian street railway operators to want to see American operating methods enter and gain a foothold in continental Europe.

The financial failures and the great deficiencies of service which are to be found, to a greater or less extent, in every country of Europe, caused by the high cost of labor and materials and the lack of maintenance and new construction of industrial plants during the war period, can certainly be minimized by a careful analysis of conditions, tending to a reduction of the cost of car operation.

Barring a few noteworthy exceptions, the rolling stock operated on most of the tramways in central and southern Europe is similar to that of a quarter of a century ago and long condemned as obsolete in the United States. Small motor cars, with small trailers, close reminders of horse-car days, are wasting both electric and human power, while complicated methods of fare collection and poor car design encourage the stealing of rides during the rush-hour periods, while the total absence of safety devices even of the cruder sort, materially assists the Reaper to collect his harvest of accidents and fatalities.

The road to salvation for many of the street railway systems on this side of the ocean seems to be the adoption of American constructional standards, slightly modified collection methods and automatic devices, both to speed up schedules and to make street car transportation safer for the riding public.

Our Italian cars, generally speaking, are still built with wooden bodies on heavy steel underframes. This gives us a weight of about 300 kg. (660 lb.) per passenger carried at maximum car capacity, as against American standard cars with 350 lb. and Birney safety cars with as little as 240 lb. per passenger carried.

The design of the cars, while it generally provides a very good opportunity for anyone who wishes to do so to avoid paying fare especially during the rush hours, seems to invite any number of dangerous habits on the part of the riding public, ranging from boarding and alighting from moving cars, to hanging onto bumpers, couplers, air hose and the like, in the hope of getting a free ride. Some roads estimate that during rush hours at least 30 per cent of the riders thus escape the payment of their fare and, incidentally, increase materially the risk of accidents and of consequent claims and expense. Platform and step accidents are very frequent and make up a large part of the total number of casualties in street railway operation.

"Prepayment," with its usual complement of door and step control, would absolutely stop the ride-stealing habit and actually decrease the very high percentage of platform accidents. At the same time it would create very much better working conditions for the car crews and limit their responsibility to their own actions, instead of being, as now, stretched to cover that of hare-brained individuals who do not seem to realize the danger of boarding and leaving rapidly moving cars.

That the Italian riding public takes very kindly to any novelty in street car operation, has been sufficiently proved by the growing interest which the prepayment cars operated in Rome are creating. The passengers are complaining and criticizing the management's action only in one respect: In that it has not used a magic wand to remodel all of its rolling stock at a single stroke.

In the writer's opinion, only by applying American improved methods of operation and by the standardization of construction of new rolling stock along three lines, pay-as-you-pass double-truck cars, prepayment single- or double-truck cars and trailers and one-man safety cars, depending on the operating conditions, will it be possible to put tramway undertakings on a new financial basis, both in this and in other countries of the European continent.

Unfortuately, modern American street railway practice is worse than Greek for many of our street railway operators, and it is probable that a well-planned educational campaign, which should also enlist the co-operation of the supervisory authorities, will have to be conducted to discourage the construction of new rolling stock of more than obsolete pattern and help the street railways to rise from the state of prostration in which they have been thrown by the world's greatest struggle.

The United Traction Company, Albany, N. Y., reports that its pit wheel grinder has been of great assistance this winter in returning cars to service promptly which were sent to the shop for having flat wheels. Eighteen pairs of wheels have been ground per day on numerous occasions.

How Do Fares Affect Traffic?

Experience of United Railways of St. Louis for Three Months Indicates No Appreciable Reduction in Traffic Following Fare Increase

THE United Railways of St. Louis inaugurated on Sept. 20, 1919, an increased fare, whose effect upon traffic conditions was naturally of much concern. So much has been said and written about the effect of increased fare being to decrease the number of car riders that the experience in St. Louis is not only interesting and instructive but also reassuring.

C. E. Smith, consulting engineer of St. Louis, has made an analysis of the situation, the results being shown graphically in the accompanying set of curves. It should be explained that the St. Louis system consists of so-called "city" and "county" lines—the former, as the name signifies, serving the urban district and the latter reaching out into the surrounding country and drawing on suburban and rural traffic. This with the half-rate fare for children made it desirable to subdivide the passenger fares on the system into four classes as shown. Furthermore, any study of number of riders for only a part of a year would be useless

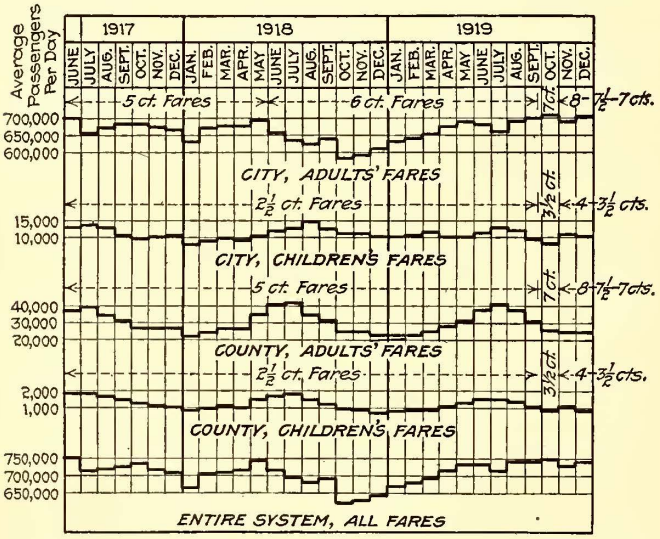


DIAGRAM SHOWING NUMBER OF PASSENGERS AND OTHER STATISTICS UNITED RAILWAYS OF ST. LOUIS

without comparison with the corresponding season of the preceding year, so the curves were drawn from June, 1917, to allow analysis of any cyclic changes in the number of passengers.

Five cent fares were charged on all city and county lines until June 1, 1918; from June 1, 1918, to Sept. 20, 1919, the city lines charged 6 cents, while the county lines continued to charge 5 cents. From Sept. 20, 1919, to Nov. 1, 1919, both city and county fares were 7 cents. Since Nov. 1 the fares on both city and county lines have been 8 cents each or two tickets for 15 cents or 50 tickets for $3.50.

The statistics of revenue passengers as plotted by Mr. Smith do not of themselves indicate that increased fares have had any appreciable effect in decreasing the number of passengers. In fact, since the increased fares became effective Sept. 20 and Nov. 1, 1919, the traffic has held up better than in the similar months of 1917, when fares were 5 cents. In detail, his conclusions are as follows:

1. The inauguration of 6-cent fares on the city lines, June 1, 1918, did not decrease the revenue passengers materially. This is best indicated by the fact that adult fares in the county, where the 5-cent fare was continued, decreased over 40 per cent in the three months from July to October, 1918; whereas, the adult fares on the city lines decreased only about 15 per cent from May to October, 1918.

2. The adverse conditions during 1918, such as the drafted men leaving home, the cessation of building operations and the influenza epidemic, are reflected by a considerable reduction of revenue passengers during the latter part of 1918, the decrease having been more apparent on county lines where fares were not increased, than on city lines where fares were increased.

3. Since the latter part of 1918 there has been a steady growth in the revenue passengers, especially adult passengers, in the city. There is nothing to indicate that the inauguration of the 7-cent fare Sept. 20, 1919, had any appreciable effect on the car riders; the city adult fares continued to increase. There was a reduction of adult fares in the county from July to October, 1919, but it is practically a duplicate of the reduction that took place in the same months of 1918 under the 5-cent fare. As about half the reduction this year took place before Sept. 20 and half since that date, the results do not of themselves indicate that the increase in fares reduced the number of car riders.

4. Undoubtedly increased fares do cause some who would otherwise ride short distances to walk, and others to seek other means of transportation if available. At St. Louis, however, where the traveling public is dependent almost entirely on the street railway system, and the great majority of the rides are long rides and there are practically no jitneys, the decrease in revenue passengers due to the fare increase has been inappreciable, and any estimate of a material reduction from that cause is not warranted.

Accountants Meet at Columbus

In Its Annual Meeting the Central Electric Railway Accountants' Association Elects Officers and Sets Date for Next Meeting

THE Central Electric Railway Accountants' Association held its annual meeting at Columbus, Ohio, on Saturday, Jan. 24. The only paper presented was the address of President A. C. Van Driesen. In addition the convention was addressed by Hon. John Price, attorney-general of the State of Ohio, and Hon. D. J. Ryan, chairman of the Ohio Tax Commission. There were informal discussions on the questions brought up.

In his address President Van Driesen expressed his gratitude to the association for having elected him president during the past year and said that it had been a great pleasure to him to assist in pulling the association out of the "slough of despond."

President Van Driesen outlined the work of the association during the past year. No formal meetings were held, but the question box was revived. This was productive of much good, and it is believed that if the hesitancy on the part of many to ask questions could be overcome, this item could be made a very valuable adjunct to the work of the association. The quarterly meetings have proven feasible and have assisted largely in putting the association on its feet. At the meeting of the association held in Fort Wayne in February, 1919,

a committee was appointed to draft the new constitution and by-laws, which were adopted at the meeting in Springfield in May of last year. At the meeting at Toledo in August the convention was addressed by E. R. Kelsey, of the Toledo Railways & Light Company. At that time a day of real rest and relaxation was enjoyed at Toledo Beach. The meeting at Lima in November was addressed by "Father" Carpenter and James Dugan.

The policy of the association has been to send letters to all managers at the same time that announcement of the meetings are mailed to members of the association. It was suggested that if the managers could realize the amount of good each member of the Accountants' Association received from the meetings, the managers would insist upon attendance. It is up to the members of the association to convince the railway managers that the association is alive and necessary.

President Van Driesen said that one of the mistakes which he had made during the past year was in appointing on the various committees a member from each state. He believes now that the best policy would be to appoint all members of one committee from localities closely connected, in order that meetings of the committee could be held without compelling a member to travel any considerable distance. When committee members are appointed from each state, it is sometimes necessary to hold meetings through the mails, and the benefit resulting from personal contact is lost.

The question of depreciation has been a much mooted one for years, but now that the American Electric Railway Association has decided upon a depreciation reserve policy, in accordance with the resolutions adopted at the Cleveland meeting on Jan. 8, the proper method of handling the matter must be worked out, and as accounting officials, President Van Driesen believes that the Accountants' Association should be prepared. Every accountant has his own ideas of the method he would use, and practically every road has a different problem to solve relative to the creation of such a reserve. The Accountants' Association had considerable work in connection with the classification of accounts, and a great many of its decisions have been upheld by the Interstate Commerce Commission. The clearing house question was bequeathed to the president-elect. President Van Driesen believes that this is a question which can be worked out to the mutual benefit of all roads.

The following new officers of the Accountants' Association were elected: President, C. B. Kleinhans, auditor Toledo & Indiana Railroad; first vice-president, A. R. Baxter, auditor Indianapolis & Cincinnati Traction Company; second vice-president, Irwin Fullerton, auditor Detroit United Railway Company; and secretary and treasurer, A. L. Neereamer.

The executive committee consists of the elected officers and E. O. Reed, auditor Western Ohio Railway; Homer Ruhl, auditor Fort Wayne & Decatur Traction Company; F. K. Young, auditor Scioto Valley Traction Company, and Karl A. George, auditor Indiana Railways & Light Company.

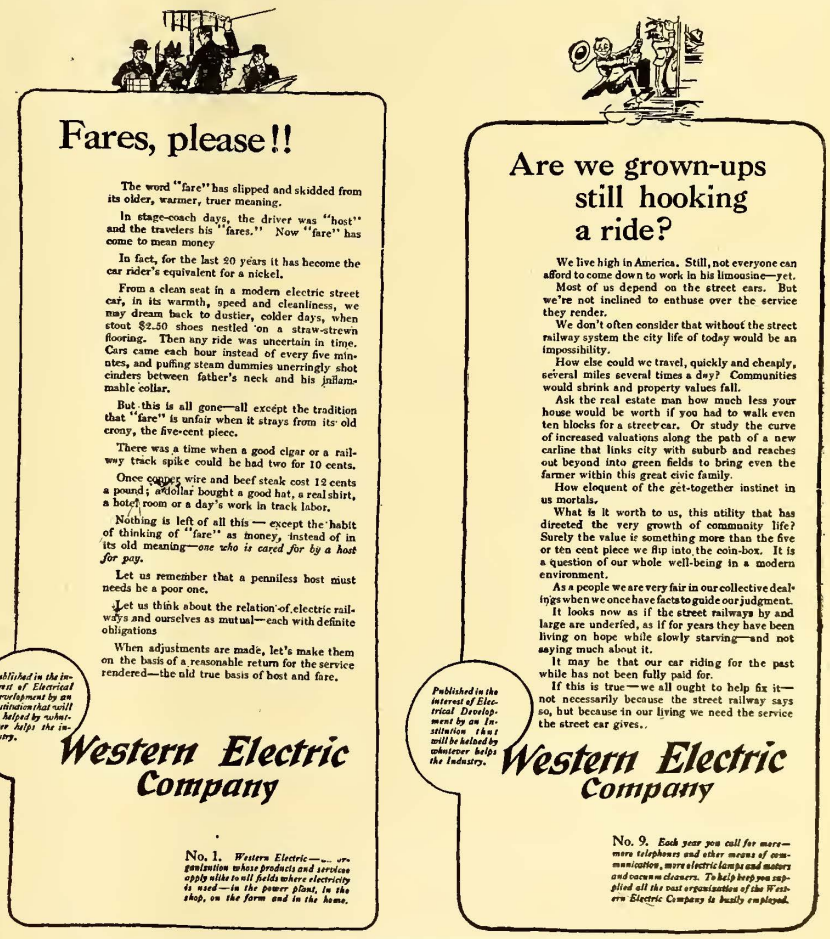
It was decided to hold the next meeting of the association at Indianapolis on April 24, 1920.

Good Will Advertising

Western Electric Begins National Advertising Campaign to Help Electrical Industry

DURING the past month the readers of this paper have undoubtedly seen in many of the popular magazines advertisements of the Western Electric Company devoted not to the merits of its own apparatus, but to explaining the pressing needs of the electric railway industry.

These advertisements are part of a campaign begun by the Western Electric Company to help make the problems of the electric railways and of the other branches of the electrical industry better known to the public. They form what the company calls "a little adventure in good will," and are published on the theory that only to the extent that the company serves the whole electrical industry can it share in the hoped-for and deserved prosperity of that industry as a whole.



TYPES OF GOOD-WILL ADVERTISING BEING USED BY THE WESTERN ELECTRIC COMPANY FOR THE BENEFIT OF THE ELECTRICAL INDUSTRY

The series prepared consists of ten advertisements of which the two relating to electric railways are reproduced. Use of these advertisements is offered to railways and other public utilities by the Western Electric Company, but it requests the privilege of using them first and that proofs be sent to the company after publication.

The Safety Car from the Mechanical Man's Point of View

While a Firm Believer in the Modern One-Man Car, the Author Cautions the Industry Against the Mistake of Ignoring the Item of Upkeep in Estimating the Savings Which It Will Produce

BY D. NEWHALL

THE increasing popularity of the safety type of car is good evidence that its merits are great and that there are many fields to which it is entirely suited. Like every good thing, however, it is apt to be treated as a cure-all and to have more expected of it than is reasonable. Hence, it may be well to consider for a minute just what it is and wherein its usefulness lies. In a few words, the so-called safety car is a short, light-weight car, so equipped as to reduce accidents to a minimum, and to require the minimum of effort on the part of the driver in operating his car and collecting fares.

But these represent only what might be termed the negative qualities of the car, and the full use of its positive qualities demand that it shall be considered as a revenue producer by the operation of more units, so that the casual passenger and short rider may be induced to ride instead of walk, by the fulfillment as nearly as possible of the slogan "a car always in sight." The effect of the adoption of this policy on the revenue and the reduction in operating costs due to reduced platform charges and power charges, are proved and need no further argument.

But the result on the cost of maintenance is not so clear at first glance, and there is a tendency on the part of the mechanical man to feel somewhat that he has been sold another of the proverbial lemons of which he, in his time, has had full measure, and which threatens to give him chronic dyspepsia.

The management, of course, looking at the total operating expense and gross revenue per car-mile, is not greatly concerned if there is a slight increase in the cost of maintenance for a line equipped with safety cars as compared with that for a line with the older types of car. The savings in directions other than maintenance are so great that a little extra cost in upkeep is readily absorbed. The superintendent of equipment, however, needs to have his attention directed to this point if peradventure he finds that inspection and routine repairs cost more than they formerly did.

In the first place, he finds that there is considerably more apparatus to look after than he has been accustomed to, and he finds that the piece of apparatus has not yet been invented that does not require maintenance, and as he awakes to the realization of this fact he sets up a mighty roar and demands to be given back his old-fashioned and crude but simple car. To add to his agony he next discovers that the apparatus belongs to a class with which the men he has are not acquainted, and that it is difficult to train men for the work and to hold them when they are trained. But the end is not yet, for he may find he is having more cars coming into the shop and that his present shop room and facilities will not take care of the work. And notwithstanding the manifold comforts and convenience supplied to the driver, he soon discovers that collisions still occur (even Homer was said to nod occasionally), and that a slight bump which the old heavy car would not notice puts a decided crimp in the face of the "safety."

And so the mechanical man arises in his wrath and damns Birney and his safety car with a great damnation and wishes that some day he could "murder the buglar" and spend the rest of his life in bed, lulled by the clanging and droning of the old and, as he calls it, "real" car.

Now the life of the mechanical man is not the most alluring, even at best, and those who add to the burdens of the man who is paid the indivisible minimum himself and who is allowed the indivisible minimum for an appropriation, must show cause why they do it, or the safety car will not obtain its full measure of success. It is axiomatic that success is impossible without co-operation, and if the mechanical man feels that the management in its usual senility has again foisted on him one of the aforesaid lemons, wherein can co-operation be hoped for?

NOW FOR SOME SPECIFIC ILLUSTRATIONS

Having thus regarded assiduously the hole in the doughnut, let us now attempt to ascertain if there be any dough at all around the hole. Then, if it appear attractive in car safety, consign it to our stomach with some degree of hope for its speedy assimilation.

It is unquestionably true that the new car carries more apparatus than the old one. To begin with, the old single-truck car seldom had an air brake. Therefore, we have added a compressor, governor, brake cylinder, various valves, and an increased number of brake levers and rods. With these are also the folding doors and steps themselves, the air engines and valves which control them, the air sander, air-operated fender and air-operated fare register. And as often happens when new equipment is purchased, apparatus is added which, though it cannot be blamed on the safety car, throws an added load on the mechanical department. Among these items may be mentioned contactors, deadman's valve, emergency brake valve, and fare box, provided prepayment was not previously in vogue.

To determine the effect of these matters we may consider first the normal distribution of mechanical department expenses, which are roughly as follows:

APPROXIMATE DISTRIBUTION OF EQUIPMENT ACCOUNTS

	Per Cent
Department overhead	15
Car bodies, including paint	25
Trucks, including brakeshoes	15
Brakes, excluding brakeshoes	10
Electrical apparatus	35
	100

In a very able and interesting paper read before the Wisconsin Electrical Association in March, 1919, H. L. Andrews of the General Electric Co. makes the following statements:

"The average operating cost for a two-man car on eleven representative roads operating in the smaller cities of the Middle West is for maintenance of equipment 2.14 cents per car-mile. Actual records of maintenance from several roads which have been operating safety cars for a sufficient length of time to obtain the maintenance costs indicate that the maintenance will not be more than 1.2 cents per car-mile. This amounts to a saving of 0.94 cent per car-mile or 43.9 per cent."

It would seem to the writer that caution should be exercised in the use of such figures as a basis for prognosticating the value of the safety car. In the first place, it is questionable if any safety cars now operating are in the condition of senile decay of the older types of car representing the equipment on many roads. In other words, it is fair to suppose that the maintenance rate of the safety car is bound to increase with age, the same as any other thing in this world, animate or inanimate. Secondly, the reduced weight of the car seems hardly to justify the maintenance saving which is claimed.

Looking at our original table, we may eliminate the item of overhead as being unaffected by weight. This leaves a balance of 85 per cent, which at a total cost of 2.14 cents per car-mile amounts to 1.8 cents and at 1.2 cents for the safety car, 1.02 cents.

With the two-man car weighing 30,000 lb. and the safety car 16,000 lb. these figures amount, respectively, to 0.12 cent per ton-mile for the large car and 0.127 cent for the small car, which leaves a margin of only 0.007 cent per ton-mile or 0.56 cent per car-mile to take care of the additional apparatus on the safety car.

The upkeep of an average air-brake equipment runs around 0.2 cent per car-mile, and it seems probable that the other additional apparatus on the safety car would cost in the neighborhood of 0.15 cent per car-mile.

Taking, therefore, a fundamental cost of 0.12 cent per ton-mile for average operation, a 16,000-lb. car, without air brake or special apparatus, would cost:

Maintenance, and without overhead	0.96 cent per car-mile
Air brake	0.2 cent per car-mile
Special apparatus	0.15 cent per car-mile
Department overhead	0.3 cent per car-mile
Total safety car	1.61 cents per car-mile
Total two-man car	2.14 cents per car-mile
Difference	0.53 cent per car-mile Or 24.7 per cent.

It would therefore seem that it is fairer to consider that the maintenance cost per car-mile will be about 25 per cent less than that of the two-man car.

Now it must be remembered that between 50 and 60 per cent of the cost of maintenance, say 55 per cent as an average, is for material, making labor costs as follows:

Two-man car	0.963 cent per car-mile
Safety car	0.725 cent per car-mile
Difference	0.238 cent per car-mile Or 24 per cent.

That is, the work of the mechanical department should be 24 per cent less with the safety car than with the two-man car.

But at this point the mechanical man is met with two facts that more than nullify this saving. The first is that the car, being lighter, is more easily damaged than the two-man car if struck, and the frequency of collision is a matter entirely out of the control of the mechanical man and to a certain extent of the motorman. A heavily loaded 5-ton motor truck, careering the streets in the fashion to which we are becoming accustomed, is just as likely to bump into a safety car as it is into a two-man car, and the severity of the blow is in no wise lessened by the safety equipment. The second matter, and the more important one, is that, as pointed out by Mr. Andrews: "Experience in the application of these cars has demonstrated that they are more than a means of reducing the cost of producing service, and that the best results can be obtained by applying them in the ratio of three safety cars to two cars of the old type. In most cases the schedules can be increased 10 per cent or more with the safety car, and by operating 30 per cent more care on a 10 per cent higher schedule a 40 per cent better service can be given with no increase in the operating costs. The 40 per cent better service means 40 per cent more mileage per day. Consequently if we are to have 40 per cent more mileage, each mile requiring 24 per cent less maintenance than with the safety car, it follows that the mechanical department is going to have a net of 5 per cent more work to do each day, as may be seen from the following simple equation:

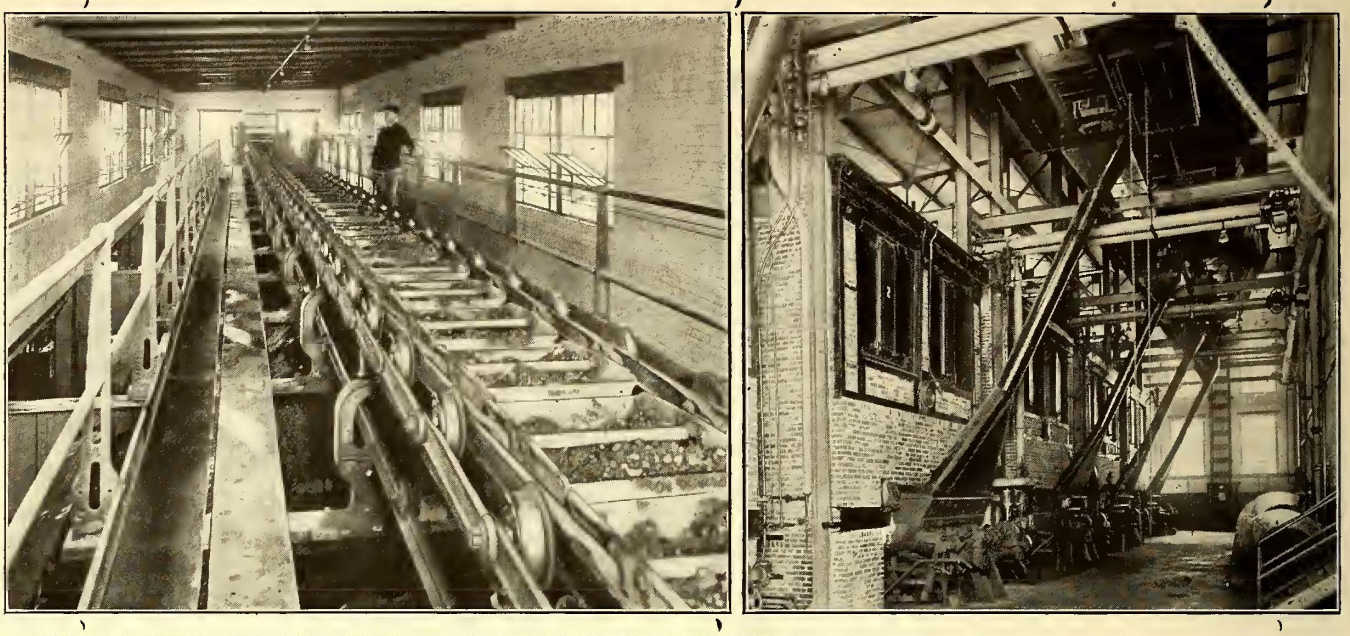
$$\text{Let } x = \text{old work per car-mile}$$
$$m = \text{old mileage}$$
$$\text{Then total old work} = mx$$
$$\text{total man work} = 1.4\, m \times 0.75\, x$$
$$= 1.05\, mx$$
$$\text{Per cent increase} = \frac{0.05\, mx \times 100}{mx} = 5 \text{ per cent.}$$

It should therefore be remembered that in any comparison made of the efficiency of conducting the mechanical department before and after the operation of safety cars, that the department must show a small increase in its total operating costs per year, that it will require as many or more men, that it may need additional shop space, and that it will do well if its cost per car-mile shows a decrease of 24 per cent.

These things are not said in criticism of the safety car, for the writer believes thoroughly in its desirability and general economic features, but it is not well to expect too much of it, nor of the mechanical force that is responsible for its upkeep.

Statistics on Engineers' Salaries

From a wide variety of sources covering the entire ocuntry, the American Association of Engineers estimates that the average salaries paid to engineers are are as follows: Tracers, $125 per month; detailers, structural, mechanical, and electrical, $175 to $200, a few companies paying up to $225 per month for experienced men; designers on all classes of work, $250 a month and up; estimaters and checkers, $300 per month; rodmen and levelmen, $125 to $150 a month; instrumentmen, $175 to $200 a month; assistant engineers, $200 and up per month; map draftsmen, $200 a month; surveyors, $175 a month; research engineers, $275 per month and up. The salaries of engineers who have reached the executive class depend entirely upon the specific organizations with which they are connected. The salaries of production engineers, chief draftsmen, chief engineers, and superintendents of construction range anywhere from $3,000 to $15,000 per annum and more in the large corporations.



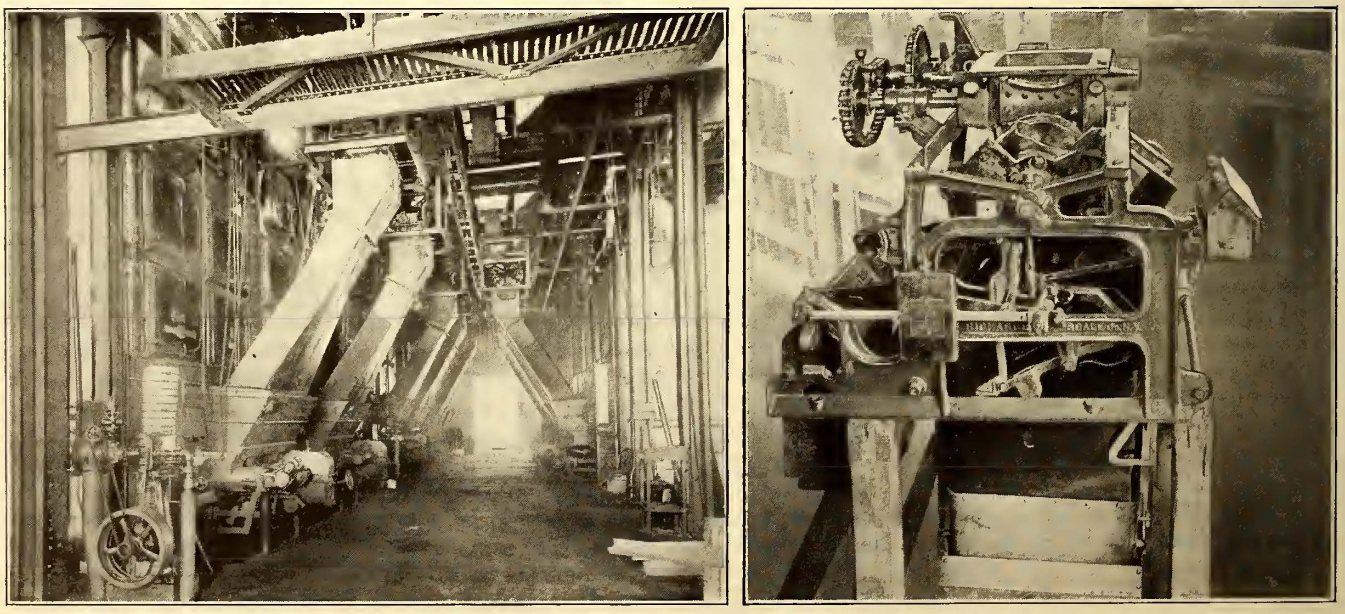
AT LEFT, CONVEYOR DISTRIBUTING COAL TO OVERHEAD BUNKERS IN BOILER ROOM. AT RIGHT, FIRING AISLE OF BOILER ROOM SHOWING "DOWNCOMERS" FROM OVERHEAD BUNKERS

Coal Handling in the Power Plant

IN THE issue of this paper for Dec. 27, page 1047, an abstract was given of the paper on "Economy in Steam Generating Stations" read by S. M. Finn, American Engineering Co., Boston, Mass., before the New England Street Railway Club on Dec. 4. When the abstract was printed the pictures with which the speaker illustrated his remarks were not available. This week it is possible to reproduce several of these, showing characteristic coal-handling installations. One of these is a "Link Belt" conveyor, distributing coal to the overhead bunkers in a boiler room. Another shows the "downcomers" from the overhead bunkers to Taylor underfeed stokers in the same plant. The elevator leg of the conveyor can be seen in the wall in the background of the picture. A third illustration shows a typical boiler-room arrangement, with provision for weighing the coal as it is distributed to the stoker hoppers. The scales used in this case are of the Richardson type. The fourth illustration shows a 1919 model of the Richardson coal scale, with an auxiliary spiked-roller agitator.

Digging Pole and Post Holes in Winter

THE digging of pole and post holes when the ground is frozen is a comparatively slow process, but frequently such work is necessary. Post hole excavators cannot be used and picks are of service for only the first few inches of the frozen soil. To meet this condition a low freezing dynamite suitable for use in the open in winter is becoming popular. Its use requires but a two-inch hole in the frozen earth, so that the stick of dynamite can be pushed to the bottom and tamped in. The firing of this breaks up and loosens the soil so that the hole can be dug to the required size in a few minutes.



AT LEFT, BOILER ROOM EQUIPPED WITH SCALES FOR WEIGHING COAL DELIVERED TO SEVERAL STOKER HOPPERS. AT RIGHT, COAL SCALE WITH AUXILIARY ROLLER AGITATOR

Testing Hack Saw Blades For Electric Railway Use

Results Are Given for Six Different Makes of Blades Tested to the Point of Failure in an Automatic Machine so that the Personal Element Was Removed

IN THE Jan. 15 issue of the *American Machinist*, Howard H. George, assistant engineer for the Public Service Railway, Newark, N. J., described some tests which were carried out for that company in order to determine the suitability of various types of blades for their use. An abstract of this article is given herewith.

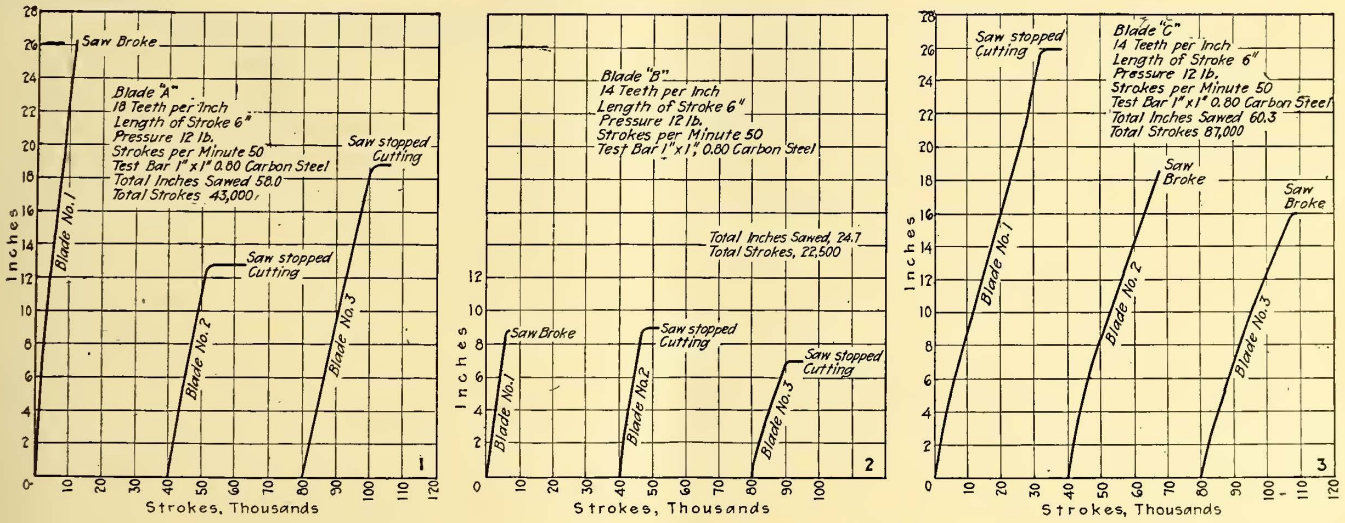
Many companies submit samples of the hacksaw blades they are using or contemplate using to so-called tests, but the latter are too often made in such a way as to have no real value whatever. As a general thing such testing is limited to a distribution of the samples among the various roadmasters to be "tried out." These men, in turn, hand them to various foremen who turn them over to a track laborer to use. "Reports" are then transmitted to the superintendent showing the "results" of the test, and it is but rarely that two reports agree as to the merits or value of the same blades. The reason for such diversity of opinion should, of course, be obvious, as should also the worthlessness of such "tests" for comparative purposes.

A hacksaw blade, in itself, may seem like a very trivial article and not one on which very much money might be saved, but a careful analysis of its use should prove that this is not true, and that an occasional test is well worth its cost in order to insure the purchase and use of the blade which will cut the most metal in the quickest possible time. For in these days of high labor rates, this item will generally amount to more than the value of the blade itself.

Some time ago, during a visit to the factory of a manufacturer of testing machines, the writer was shown a machine for the automatic testing of files in which an autographic record of the result of the tests was obtained. The large number of hacksaws being used on the property on which he was employed had previously appealed to him and the thought occurred that such a machine could easily be adapted to the requirements of a suitable test for hacksaw blades. The proposition was put up to the firm which agreed to equip the machine and make the tests and, the approval of the railway company's management having been obtained, they were arranged for.

There are many different ways in which comparable tests of hacksaw blades may be made, but it is the writer's belief that the most scientific method and the one which gives the only satisfactory and conclusive results, is one in which the blades are all of the same dimensions, have the same number of teeth per inch, or as nearly the same number as possible, and where every blade is tested to the point of destruction; that is, where the blade no longer cuts. To obtain comparable results, all the blades must be tested in the same machine, at the same length and rate of stroke, the same tension, the same pressure, and must cut the same cross-section of metal from the first stroke till the last. It would also seem desirable that the metal upon which the test is being carried out should approximate, as closely as possible, the characteristics of that in the rail or other steel on which the saws are to be used in actual practice. A saw that would give entirely satisfactory results on an ordinary rail might fail miserably on some tool steels.

In the actual tests referred to, every effort was made to eliminate the personal element and the greatest care was taken to insure uniform conditions throughout, so that any part of any test could be duplicated at any time. Manufacturer's samples, with but one exception, were not used but the blades tested were either taken from our own stock or were purchased from jobbers' stocks. In the exception referred to, the test of these



FIGS. 1 TO 3—AUTOGRAPHIC TESTS OF SAWS D, E AND F

COMPARATIVE ANALYSIS OF RESULTS OF TESTS OF HACKSAW BLADES

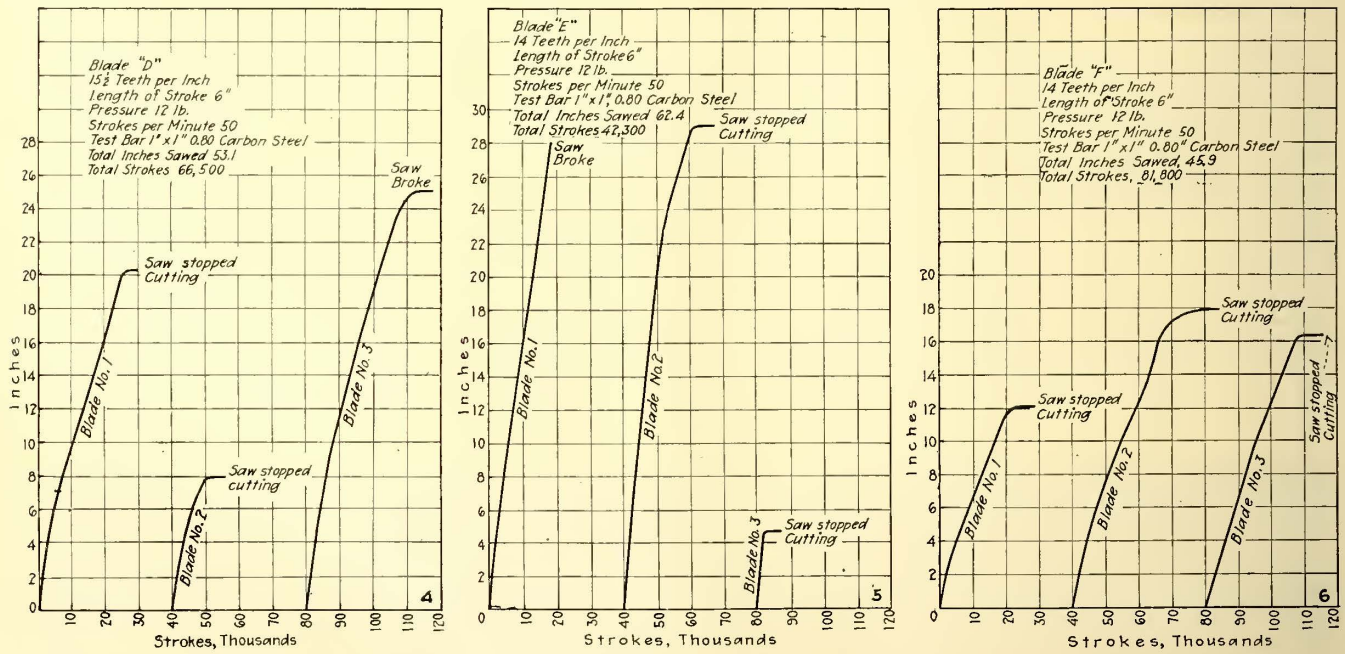
Make of Blade	Total Inches Sawed	Total Number of 6-in. Strokes	Average Cut per Stroke in Inches	Total Cost of Blades	Cost of Blades per Inch Cut	Total Time Consumed in Minutes	Time in Minutes per Inch Cut	Total Labor Cost at 18½c. per Hour (Rate Assumed)	Labor Cost per Inch Cut	Total Cost per Inch Cut	Relative Cost per Inch Cut (Cheapest = 100%)	Relative Amounts Cut by 3 Saws (Max. Cut = 100%)
"A"	58.0	43,000	0.001349	$0.11979	$0.00207	860	14.83	$2.6511	$0.04571	$0.04778	109.31%	92.95%
"B"	24.7	22,500	0.001098	0.11811	0.00478	450	18.22	1.3875	0.05617	0.06095	139.44	39.58
"C"	60.3	87,000	0.000693	0.11250	0.00187	1740	28.85	5.3650	0.08899	0.09086	207.87	96.63
"D"	53.1	66,500	0.000798	0.13188	0.00248	1310	24.67	4.0386	0.07606	0.07854	179.68	85.09
"E"	62.4	42,300	0.001475	0.11901	0.00191	846	13.56	2.6085	0.04180	0.04371	100.00	100.00
"F"*	45.9	81,800	0.000561	0.11500	0.00251	1636	35.64	5.0450	0.10991	0.11242	257.19	73.56

* Special Tungsten Alloy Steel.

blades showed them to be the least efficient of all, so there could be no claim made that the blades developing the highest efficiency were "doctored samples" especially prepared for the test.

Six different makes of blades were tested, three of each being tested to the point of failure. The pressure was obtained by means of a weight suspended over a pulley and its amount was determined by a few preliminary experiments. In each case, the cutting was done on the forward stroke only, the saw being automatically raised on the backward stroke. Care was taken to see that the tension was the same in all cases. The test specimen was a steel bar 1-in. square having as nearly as practicable the same chemical analysis as our rail, the same steel being used for every blade. The cut was made lengthwise of the bar so that all saws were at all times cutting through a 1-in. section of metal. This

It is believed that the test itself showed the relative efficiency of the various blades submitted to it beyond question. In comparing the results obtained, a value of 100 per cent. was assigned to the blade making the best average showing and the value of all the others was reduced to this basis, as shown in the accompanying table. The cost of the blades was based upon actual quotations at the time of the test, based upon an order for all the saws required for a year. In order to apply the results of the test to actual field conditions to determine as closely as possible what the amount of saving would be by using the most efficient saw, a number of observations were made in the field to determine approximately how long the old make of blades were serviceable before being discarded. The average time was in this way fixed at about 30 min. of actual cutting. The rate paid for labor at the time of the test was 18½ cents per hour, and



FIGS. 2 TO 4—AUTOGRAPHIC TESTS OF SAWS A. B AND C

insured that the rate of cutting at any time would be comparable in the case of every saw tested, and permitted the test of all blades to be made on the same bar. The length of stroke and the rate was kept uniform, and the number of strokes was recorded by a counting device attached to the machine. The autographic chart was adjusted around a vertical drum so connected as to rotate uniformly a fixed amount for each stroke. The pencil point was held in a device which moved upward on the chart at a rate depending directly upon the rate of cutting of the blade. In tabulating the results, for obvious reasons, the names of the makers of the various blades have not been referred to, the different manufacturers' blades being designated by a letter, individual blades being numbered.

upon this basis it was determined that, other things being equal in both cases, the use of the most efficient cutting saw (based upon a total requirement of 455 gross per year) would result in a labor saving of over $5000 per year.

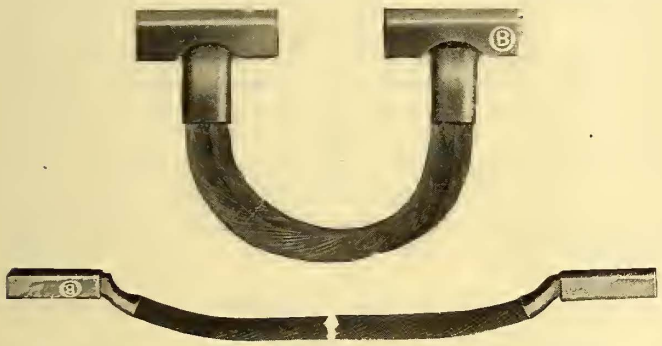
The test showed that the blade making the best showing did the same amount of work as that with the poorest record and more than two and one-half times as quickly (see column 8 of table); therefore, it is evident that the difference in time would represent the labor-saving due to the use of the most efficient blade. In addition, the saw showing the greatest efficiency cut a total of 36 per cent. more metal than the saw with the lowest efficiency. This means that the same amount of work could have been done with the most efficient saw

which in the case referred to would have meant the saving of the cost of about 120 gross of saws per year. In order to see that the saws being supplied continue up to the standard of the specimens used in the tests, additional tests of blades taken from stock should be made from time to time; but this is true of all tools or materials and is not peculiar to saw blades.

New Arc Weld Bond for Electric Railways

ELECTRICALLY welded bonds are growing in popularity, and to meet this demand the Ohio Brass Company has developed a new arc-weld bond.

The bond is made in two types, designated as AW-2 and AW-3. Essentially, these two types are alike, but differ in form of terminal. The body is of copper strand and the terminals are of copper protected by



TYPES OF ARC WELD BONDS. ABOVE, AW-2 BOND, BELOW, AW-3 BOND

a steel sleeve. This steel sleeve is mechanically and electrically united with the copper in the factory. On the job the operator welds "steel to steel with steel."

Another fundamental arc-welding principle is embodied in the bond, in that the weld is built up in a 90-deg. angle. This is to prevent the arc from playing against one side of the groove and preventing a real union in the bottom of the weld, the important place in rail bonding.

Uniformity in Accident Reports Is Needed

IN AN ARTICLE published by the National Safety Council, Dr. Royal Meeker, United States Commissioner of Labor Statistics, makes a plea for the proper use of statistics in accident reduction.

In this connection he says that the most important contribution that could be made to the further development of the safety movement would be the adoption in all the states of the Union of uniform accident reporting blanks. These blanks should call for the essential facts which safety men and factory inspectors must know to determine the causes and results of accidents. These uniform accident reports should be tabulated on the tabular form adopted and according to the rules laid down by the committee on statistics and compensation insurance cost of the International Association of Industrial Accident Boards and Commissions. Information regarding accident occurence and results collected in a uniform way from all industries and plants throughout the country and tabulated in a uniform manner would be most valuable to employers, employees, and factory inspection departments. The safety movement could then be intelligently directed toward the reduction or elimination of the more severe accidents in the industries and occupations with the highest severity rates.

Association News

Protest Against Higher Coal Cost

IN THE name of the association, Secretary Burritt has filed a protest with H. M. Robinson, chairman of the Bituminous Coal Commission, against any advance in the price of coal to electric railways, because of the recent increase to the miners. His letter says, in part:

It is the understanding of this Association, based on published statements, that in the settlement of the coal strike it was provided that the additional cost occasioned by the 14 per cent increase in wages was to be absorbed by the operators and not passed on to the consumer.

We are informed that in some cases public utility companies have already been advised by the operators that coal prices will be increased 25 cents a ton, possibly more. Electric railway companies in the United States consume about 16,000,000 tons of coal annually. An increase of 25 cents a ton will add $4,000,000 to their annual operating expenses and the possibility of having to bear this heavy additional burden in the present critical condition of the industry is viewed with grave apprehension by the executives of electric railway properties. The unfortunate financial condition of the electric railway industry is well known. It is recognized by the President of the United States who has appointed a commission to inquire into the situation and to report its findings to him.

Under the conditions prevailing throughout our industry any increase in the price of coal must of necessity have the effect of either an impairment of essential service to the public or some arrangement whereby this additional charge may be passed on and collected from the car rider. The first contingency is to be avoided. The second from the nature of our operation can only be brought about after long delays. The American Electric Railway Association therefore, urges your Commission to prevent any increase in the price of coal because of the 14 per cent increase in wages granted the miners.

Committee on Schedules Holds Preliminary Meeting

ON Jan. 31, 1920, the first conference of the committee on schedules was held at the office of Chairman Dana, in Boston, to organize the work for the coming year. Those in attendance, in addition to the chairman, were James P. Barnes, Schenectady, H. F. Fritch, Boston, J. A. Stoll. Baltimore, and L. H. Palmer, sponsor.

The committee decided to devote special study in its report to the relation of dead time to live time in schedules, a topic which was felt to be most important. Each member agreed to prepare, prior to the next meeting, a statement showing how these matters are handled on his property.

Code of Instructions Issued

ALL committeemen of the Engineering Association have been furnished, by Secretary Burritt, with a copy of the code of instructions and regulations governing the style to be followed in the preparation of specifications as well as the rules of the association for the adoption of standards and recommendations.

This information is in pamphlet form and arranged for insertion in the Engineering Manual Binder. Each committeeman is urged to familiarize himself with the contents of this pamphlet, for by so doing much of the editing work at the secretary's office in connection with the printing of the committee reports can be reduced to a minimum.

Toledo Section Holds "Stag Party"

NEARLY 500 of the 1,200 members of "joint section" No. 11 of four national public utility associations attended the first large function held in the "Rail-Light" building in Toledo, Ohio, on Jan. 30. The program comprised the presentation of a charter to the section from the N. E. L. A. by A. D. Elsberry, secretary Union Gas & Electric Company Section, Cincinnati, Ohio; an address on the past, present and future of the electric railway business by H. H. Norris, ELECTRIC RAILWAY JOURNAL, and a number of entertainment features. M. H. Sommerville, section chairman, introduced as the honorary chairman Frank R. Coates, who presided during the more serious part of the program. A substantial luncheon was served at the close of the meeting.

Letters to the Editors

A Manufacturer Comments on Track Spikes

DILWORTH, PORTER & COMPANY, INCORPORATED
PITTSBURGH, PA., Jan. 29, 1920.

To the Editors:

I have read with considerable interest the editorial "Will the Screw Spike Replace the Cut Spike on Electric Railways?" and also the article by Howard H. George, Assistant Engineer, Public Service Railway of New Jersey. Our experience has been such that we agree in the deductions in regard to the screw spike as expressed.

In regard to the experiments made at the Civil Engineering Laboratory at Columbia University, indicating the value of pre-boring the holes for spikes, this was demonstrated years ago, but the difficulty seemed to be that no one would go to the trouble to do it.

In regard to the arguments in favor of the Goldie point: These same ideas were advanced over thirty years ago. The Goldie point was offered at the nominal cost of 5 cents per hundred pounds over the price of common spikes, and notwithstanding the increase in the number of spikes per keg, due to the Goldie point, and the recognized merits, only a few of the railroads would permit of this additional expense. We would not venture to say what success would now attend such an effort, with the labor of producing the point over three times as much as it was thirty years ago.

In regard to the specifications: The writer of the article is correct in his premise, but the difficulty again arises in the lack of a uniform specification and drawing that is practical and within the limits of manufacture on a commercial basis. The pitch of the head, the length of the head, the width, reinforcement in front or in back—all vary within a range limited only by the number of engineers who have this matter in charge for their various companies.

It is with interest we read Mr. George's statement, namely—"In order to obtain the material the company frequently found that it was absolutely necessary to purchase from manufacturers of iron spikes"—because it is now about thirty years since iron suitable for the production of spikes became difficult to obtain. This was on account of the constantly increasing production of steel, which naturally was reflected in the iron production. We do not mean to state that there was not suitable iron for the production of spikes available in this period, but not sufficient for an operating proposition on any considerable scale.

It may interest you to know that iron spikes were first made from old iron rails. This continued until iron rails went out of use.

Coincident with the lack of iron rails commenced the use of so-called iron fagots, which first consisted of four pieces of muck bar, making a box, with the interior filled with miscellaneous small iron scrap. With the increasing cost of muck, which was not reflected in any increase in the selling price of spikes, the boxes were made of two sides of muck, with top and bottom wood, the interior filled with miscellaneous scrap as before. Then came the condition that muck bar was so high, and a scarcity of small iron scrap again reflecting the increasing use of steel, so that it no longer became a matter of choice but of necessity to abandon the small and uncertain supply of iron available for spikes and to change our equipment for the use of new steel. And when you consider that this was forced upon us thirty year ago, you can appreciate that Mr. George's statement above cited is of considerable interest, for at no time in the writer's experience covering the period cited has there been a time when real iron has not sold for more than spikes, less the conversion from bars to spikes.

By all means let us have a uniform specification, and, above all, uniformity of design.

The design of spike of the Public Service Railway of New Jersey is of the best type—a spike produced by two operations. This in itself adds to the expense and would preclude its use by many corporate bodies.

W. F. SCHLEITER,
Vice-President and Secretary.

Carrying Capacities of Buses and Cars

165 BROADWAY
NEW YORK CITY, Jan. 29, 1920.

To the Editors:

I have read with interest the editorial in your January 24 issue under the caption, "Other Things the Broadway Association Overlooked," and observe there is one other "thing" which you did not mention and which is of primary importance.

I use the Fifth Avanue bus line frequently, and one very serious difficulty is that I cannot get on the bus at all. In the rush-hour peak, and often for a considerable period on either side of it, the buses are loaded near their terminals and pass blandly by with crowds of waiting passengers at every street corner all through the congested district. This is not an occasional occurrence but a regular daily condition and is due to the fact that, although the street is almost filled with buses, they have no space for standing room and enforce a rule that no passengers may board a bus if all the seats are occupied. This fact at once suggests that a comparison in the seating capacity between the bus and street car is misleading and does not represent by any means the relative carrying capacities of the two forms of vehicles. Whatever may be said by way of objection to the overcrowding of street cars by their carrying too many standees, there is probably no one who would not prefer to stand and get home rather than wait on a street corner for half of an hour or more.

CALVERT TOWNLEY.

Recent Happenings in Great Britain

Sale by Speyer Confirmed—Glasgow Has Its Pressing Problems—Bills Being Promoted to Increase Fares

From Our Regular Correspondent

Although street tramways are not included in the arrangement, considerable interest to all concerned in transportation work attaches to an announcement made by Sir Eric Geddes, Minister of Transport, in reference to the railways (including the electric railways) of the country. He stated that, apart from negotiations then going on, questions of wages and conditions of service shall, during the two years' control of railways by the Ministry, be dealt with by a control board consisting of five railway managers and five representatives of the two trade unions concerned. Failing agreement by the control board, the matters in dispute will be referred to a national wages board consisting of four railway managers, four railway workers or their representatives, and four users of the railways, of whom one will be nominated by the Parliamentary committee of the Trades Union Congress, one by the Co-operative Union, one by the Federation of British Industries, and one by the Associated Chambers of Commerce.

Conciliation Machinery Set Up

This arrangement has been agreed to between the Government and the two trade unions, and the latter have also agreed that no strike shall take place until one month after the question in dispute has been referred to the national wages board. It will thus be seen that an important piece of conciliation machinery is being set up; that the employees are to have a much more effective voice than ever before, and that the possibility of "lightning strikes" is eliminated. All that depends of course on labor adhering to the agreement and not throwing over its leaders as it sometimes does.

Another important step in the direction of giving the workmen more say in railway matters has been announced by Sir Eric Geddes. The Railway Executive Committee, consisting of managers who ran the whole system during the war and since, came to an end with the close of the year, and in connection with the control now exercised by the Ministry of Transport, the Ministry has appointed a Railway Advisory Committee to advise the Minister on matters of railway working. It consists of twelve railway managers and four representatives of the railway men's trade unions. The four representatives have hitherto been prominent leaders in agitation for improved conditions of employment. In these several ways the Government is making an effort to secure peace on the railways in the future.

Early in January the protracted negotiations between the Government and the railway men as to standard rates of pay came to a close, the representatives of the men agreeing to an offer by the Government of an increase of 5s. per week, making a total increase of 38s. per week above pre-war average rates in all grades, along with other valuable concessions. A three-days' conference of delegates of the men, however, ended on Jan. 9 in a blank refusal to accept the terms. Thus the men's leaders were once more thrown over.

Increased rates for goods and mineral traffic came into force in the middle of January. The estimated increase in revenue is £50,000,000 per annum.

The Ministry of Transport's Advisory Committee on London Traffic has started work. It is significant of the methods of the new Ministry that the committee should be hearing evidence in public. Their first sitting of the kind took place on Dec. 18 when Mr. Howard, controller to the London County Council, and Sir Albert Stanley, chairman of the underground railways group, gave evidence on the financial position of the undertakings. The former estimated that for the year 1920 there would be a deficit on working of the Council's tramways of £580,000, owing to the great increase of working expenses, particularly in wages. The only relief he could see, apart from an increase in revenue, would be a reduction of motor omnibus competition. Sir Albert Stanley, speaking for the ten companies—railway, tramway, and omnibus—with which he is associated, put the loss for 1920 on these undertakings at £2,600,000. This was without making allowance for fixed capital charges. There was not the remotest chance of meeting the loss except by an increase of fares. The services carried 1,300,000,000 passengers per annum, and an addition of a halfpenny for each passenger journey would realize £2,500,000 yearly.

A proposal to make a further increase in fares came before a meeting of London County Council on Dec. 16, but was deferred pending the review of the whole subject of London fares by the Advisory Committee on London Traffic.

Two other interesting items in regard to the underground railway group fall to be recorded. One is that the entire holding—and it is very large—of Messrs. Speyer Brothers in these undertakings has been acquired by Messrs. Barnato Brothers, the purchase price being put at £1,000,000. The other is that Sir Albert Stanley, chairman and managing director of the associated companies, has been created a Peer of the United Kingdom. He did much valuable work for the Government during the war and for a time was president of the Board of Trade. He will be remembered in America as having formerly been manager of the Public Service Railway, operating in New Jersey.

The finance and traffic arrangements of Glasgow tramways are in a difficult position. That is something new for Glasgow. The tramways committee recommended to the Town Council on Dec. 11 that fares should not be increased during the present financial year (which ends on May 31 next). This was in spite of a proposal by a finance sub-committee for an increase and of a report by Mr. Dalrymple, the manager. The report stated that for the three months ended Aug. 31 there was a deficit of £19,435. Since then the corporation had granted a further increase of wages which would mean an additional annual expenditure of £75,000. The total wages bill which was £441,000 for the year 1913-14 would reach about £1,140,000 for the current year. As to extending the system, Mr. Dalrymple could not see, if the department could not meet the ordinary working expenses, how it could possibly launch out into large capital commitments. He was satisfied that the first thing to be done was to increase revenue, and for that purpose he recommended the adding of a half-penny to each fare. The Town Council adjourned consideration of the matter. It came up again at a meeting on Jan. 8, when, despite the figures advanced by the chairman of the tramways committee as to the enormous expense pending for track renewals and other matters, it was resolved by a majority that there should be no increase in the fares during the present financial year.

Fare Increases Desired

In order to meet constantly growing costs, a large number of British tramway undertakings are promoting bills in the coming session of Parliament to enable them greatly to increase their maximum fares. The proposed new figure in many cases is 2d. per mile.

A fine example of the working of the power of veto of local road authorities over tramway schemes comes to light in East London. For ten years the London County Council has wished to reconstruct an old horse tramway on the overhead wire system in the metropolitan borough of Stepney. The Borough Council steadily refused to consent to the use of the trolley wire, and it said that the conduit system should be put in. The County Council refused on the ground that the probable traffic was not sufficient to warrant the heavy capital expenditure on the conduit system. Recently the Stepney Borough Council consented to the use of overhead wires, and on Dec. 19 a proposal was brought forward at a meeting of the County Council to proceed with the reconstruction of the tramway. The estimated cost of work in 1914 was £110,155, while now the estimate is £272,160. It was stated that the working of the line would result in a considerable deficit, but that the Council was committed to going on with it. The proposal was adopted.

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION

PERSONAL MENTION

Mayor Signs Railway Bill

Ordinance for Municipal System in Detroit Goes Before Voters on April 5

The final step assuring the submission of the railway plan of Mayor Couzens of Detroit, Mich., to the voters was taken when the Mayor signed the ordinance containing his plan after it had been passed unanimously by the Council at the regular meeting on Jan. 27.

Municipal Ownership Provided

The Mayor's plan authorizes the city to build and acquire street railway lines. It is designed ultimately to exclude the Detroit United Railway from the streets of Detroit. The ordinance will be presented to the voters for acceptance or rejection at the polls on April 5.

It has been announced that Mayor Couzens is paying the expenses incidental to preparing the plans and maps for his project out of private funds with no intention of asking reimbursement from the city. This amount, however, is believed to be small compared with the cost of previous settlement plans prepared by engineers engaged by the city.

In discussing his plan the Mayor reviewed the facts concerning previous referendums when the voters frequently approved municipal ownership when the abstract question was before them, but had consistently refused to accept it in any concrete form and had rejected various propositions granting franchises to the operating company.

The Mayor believes that when a monopoly is given as for the operation of a transportation system the community should have control, for with public utilities the public has no opportunity to say how they shall be conducted unless they take them over themselves. Although he does not consider his plan a panacea for all the ills incident to railway operation, he believes it will give relief from the present evils of inadequate service.

Mayor Against Tayler Plan

If the proposal is turned down the people will have to work out a plan for themselves or follow a leader who has worked out a plan, and no relief can be had from present conditions for several years.

The Tayler plan as applied in Cleveland, as seen by the Mayor, is a cost-plus plan which contains more evils and pitfalls than any other plan ever submitted. The Mayor's attitude has been construed to mean that he will not permit the Tayler plan to be submitted to the voters during his administration. To adopt it means that a valuation of the company's property must be agreed upon and a valuation could probably not be agreed upon that the people will accept.

The Detroit United Railway maintains that fares within the city of Detroit have averaged 20 per cent lower than those existing in other communities larger than or comparable with Detroit. The Detroit United System is made up of many companies, so a great majority of its customers are daily taking rides for one fare for which the company has had full and ample authority to collect two or more fares. The system has been unified, length of riding zones increased and a broad, liberal system of transfers put into effect which was called for in the original agreement. Except for some trackage in connection with re-routing, the Detroit United Railway has constructed or had under way before snow came, all of the lines and extensions that the civic authorities have permitted it to build.

D. U. R. Plans Improvements

While the system has been unified and extended, on surface lines alone there is required to-day an investment of not less than $15,000,000 for the extension of the system. The company stands willing to undertake this construction whenever the civic authorities make it possible, through any reasonable arrangement, to attract the capital needed. The Detroit United maintains that if extensions are not built and operated as part of a unified system the responsibility for failure must be charged to others.

Bulletin Page Dropped

With this issue we discontinue the "Bulletin Page", begun while this paper was being printed in Baltimore. At that time it was impossible for the editors to maintain an invariable printing schedule, and sometimes the reading pages had to be made up several days in advance of the time at which the paper went to press. This led to the reservation of one reading page in which a digest of all of the late news was published, dated to indicate the closing day.

We have now resumed our regular printing schedule, with the paper mailed Saturday and the news pages, which are the last to go to press, made up on the previous Friday. The Bulletin Page is no longer necessary, and the space formerly occupied by it will be used for an extension of the news department proper.

Pittsburgh Commissioner Out

Transit Head Removed Following Disagreement With Mayor Over Subway Plans

It was publicly announced in Pittsburgh, Pa., Jan. 28 that Mayor E. V. Babcock had dismissed E. K. Morse, transit commissioner for the city. Mr. Morse has consistently opposed the plan for a $6,000,000 subway terminal loop in the downtown Pittsburgh section, a plan which was personally sponsored by Mayor Babcock and the rest of the administration.

The City Council has shown a distinct inclination to oppose the Mayor in his dismissal, and granted a public hearing to Mr. Morse on Jan. 29, at which he explained his views on the traction situation in Pittsburgh. There will be a further hearing on the matter in Council on Feb. 5.

The Mayor has appointive powers and can name a successor to Mr. Morse, or can continue the position vacant, but the balance of power would seem to lie in the hands of Council, which has the privilege of abolishing the ordinance authorizing traction investigation by the city and can create in its place a similar body under the city clerk, whose choice of an occupant for the position can be dictated from Council.

The first intimation of the dismissal of Mr. Morse came in a letter from Mr. Morse to Council, notifying that body of the Mayor's action. The commissioner said in his letter that he wished to present to Council his transit program before he left the office. The hearing was set for the next day. Meanwhile, Mr. Morse made public a letter he had sent to the Mayor under date of Jan. 27, explaining the progress of the dispute between them. The letter ran, in part, as follows:

> After careful consideration of your request of Jan. 23 that I resign the office of transit commissioner of the city of Pittsburgh, I have reached the conclusion that a resignation at this time would constitute a failure in duty to the public. Your statement, in effect, was that you desired my resignation because I was standing in the way of a proposed subway loop for the downtown district. I am convinced that the construction of such a loop would be exceedingly unwise, would fail utterly to solve or even partially solve Pittsburgh's transportation problem and would render exceedingly difficult, if not prevent, a real solution of the problem in the future. Holding that view of the proposed loop and believing that plans I have worked out would provide a real rapid transit system for Pittsburgh and, for the time being, accommodate all the surface street cars the proposed loop would, I feel that I would not be serving the public interest by tendering my resignation.
>
> You declined last Friday to discuss with me plans I have made recently, which I propose to submit to you and the members of Council. These plans show how the $6,000,000 provided by bond issue could be used to construct a subway in the downtown district that would not be a loop,

but would be links in two through rapid transit lines which, in my judgment, should be constructed eventually.

In view of the fact that the ordinance governing this office provides for the appointment of a transit commissioner subject to the approval of Council, I have always had a feeling of joint responsibility to the Mayor and Council. I have heard nothing to indicate dissatisfaction in Council with my work. As you have said that you personally have not read the reports of the transit commissioner or studied his plans for a rapid transit system, I cannot feel that you have taken the steps necessary to enable you to arrive at a proper judgment of the merits of the plans or the work of the commissioner. I will co-operate to the best of my ability with you and with your department heads, but I cannot and will not sacrifice my judgment and honest beliefs to obtain any personal considerations.

In his appearance before the Council, Mr. Morse made no plea for retention, but declared it his public duty to lay before that body the results of his recent three-months study of transit matters which had led him, he said, to a conclusion much more satisfactory than the subway loop. Mr. Morse advocates a rapid-transit system combining subway and elevated and treating the downtown as a district on the through lines. The downtown subway loop advocated by the Mayor treats the downtown as the terminus for lines from all directions.

COMMISSIONER IN OFFICE SIX YEARS.

The commissioner was appointed six years ago to make a survey of the city's transportation systems and to recommend better transportation facilities. Twice Mayor Babcock has vetoed or eliminated from the budget the items providing for the maintenance of the transit commissioner's office, but Council each time restored it.

Sane Commission Rulings Encourage Investment

Harrison B. Riley, chairman of the committee of the Chicago City & Connecting Railway Collateral Trust, Chicago, Ill., in a letter to shareholders of that company, declared that recent rulings of the Public Utilities Commission, backed by the decisions of the State Supreme Court and the U. S. Supreme Court, should prove an incentive for capital to invest permanently in Illinois.

Mr. Riley finds that under the court decisions the theory that an ordinance contract made in the distant past and now impossible of fulfillment except by bankruptcy of the utility company and a wastage of its capital has been definitely abandoned and will have no further part in the relations between the community and the utility. His letter in commenting upon the court decision says:

One limitation seems to exist to the activities of a public service commission, and that is, the rate of return to a public utilities corporation shall not be confiscatory but, on the other hand, shall be so fair, reasonable and assured that the operating organization may command capital for additions and extensions in fair competition with other safe investments. These principles have been announced by the commission and sustained by the Supreme Court of the United States. The committee feels, therefore, that however long the battle and however vicious the assaults, the companies are on a firm ground and will ultimately obtain justice.

Proposed Union Terminal for Los Angeles

The Railroad Commission of California has issued a 600-page report on its investigation of a union terminal in Los Angeles. The investigation was begun in December, 1917, and has been directed by Richard Sachse, chief engineer of the commission. Twenty-four of the commission's engineers and draftsmen have been engaged on the work. In the main its recommendations are that most of the grade crossings be eliminated; that a union passenger terminal be built on what is known as the "Plaza" site; that a union freight yard be provided, and that a subway and elevated line be built on which electric trains may reach the Sixth and Main Street depot without using the city streets. The subway and elevated line would be operated by the Pacific Electric Railway and would cost $5,741,566.

Municipal Line Organizes

The annual meeting of the Norton, Taunton & Attleboro Street Railway was held at Attleboro, Mass., on Feb. 2, 1920. The following officers were elected: Lee Coughlin, Mayor of Taunton, president; William P. McDermott, chairman of the Board of Selectmen of Mansfield, vice-president; Robert W. Hewins, Attleboro, clerk. Mr. Hewins was appointed manager and superintendent of the system for the year of 1920. It was recommended at the meeting that an increase to the employees of the road be granted, on a sliding scale. This increase will give a wage of from 45 cents to 50 cents an hour.

The Norton, Taunton & Attleboro Street Railway is owned by the cities of Taunton and Attleboro and the towns of Norton and Mansfield, having been purchased in 1919. Each municipality has appropriated $3,000 for repairs.

New York Lines Hit by Storm and Coal Shortage

Rapid transit and surface lines in New York City and its vicinity are suffering from the effects of a storm of snow and sleet which has raged along the Atlantic coast for the past week. The subway and elevated roads have been able to maintain service with slight interruptions, but practically all of the surface lines in this city have been tied up.

The crippling of the steam railroads and the presence of much ice in the harbor have made the delivery of coal impossible for a number of days. Several utilities report only a two days' supply on hand. The situation was so grave on Feb. 5 that Public Service Commissioner Nixon called a conference of utility representatives to discuss measures for relief. Following the conference, Mr. Nixon sent a telegram to President Wilson urging that the Federal Railroad administration requisition no more coal en route to the city.

Inquiry at Madison

Mayor George C. Sayle of Madison, Wis., has appointed a committee of five citizens to co-operate with five members of the Common Council to investigate the Madison Railways.

For several years the condition of the railway's finances has been such that the Wisconsin Railroad Commission has refused to permit the company to consider extensions to tap rapidly growing sections of the city. One extension is now under way, financed through the proceeds of non-dividend-paying stock sold to citizens interested in the establishment of a packing plant. The packing company refused to locate in Madison unless railway facilities could be provided for its employees. The sum of $35,000 was raised to build the line.

The inquiry ordered by the Mayor will result in recommendations by the committee as to the best plan to extend the railway service.

Madison has been paying a 6-cent fare with nine tickets for 50 cents for more than a year.

The Railroad Commission has checkers ascertaining traffic distribution.

Des Moines Men Make Demands

As the time draws near for the making of a new working agreement between the Des Moines (Ia.) City Railway and its employees the hopelessness of settling the railway problem at Des Moines becomes more and more evident. A new contract is to be made March 1, when the present agreement expires. While the men have served notice of the new scale which they will demand, Emil G. Schmidt, president of the company, has announced that he will ask for a reduction from the present scale.

The demands of the men would mean an increase of 23 cents, making the top pay 80 cents an hour. Mr. Schmidt, on the other hand, asks for a reduction of 10 cents an hour from the present scale, making the maximum 47 cents an hour. According to Mr. Schmidt, if the demands of the men were acceded to it would mean an increase of 30 per cent in the present operating costs, or a total of $400,000 a year. To meet the demand would mean a further very material cut in service and Des Moines is now suffering from a cut recently authorized by Judge Wade.

In addition to the wage demands the men are asking that all cars be equipped with electric heaters for motormen and conductors; time and a half for Sunday and holiday time; a seven-day vacation on full pay once a year; all employees off every eighth day; waterproof coats and rubber boots for men on wrecking cars; double the number of men on wrecking cars and trucks, and a proportionate increase for men other than the motormen and conductors.

Mr. Schmidt and Ben Wiley, business agent of the union, plan a conference. If they cannot reach an agreement arbitration will follow.

Pittsburgh Will Insist on Paving

The service and surveys committee of the City Council of Pittsburgh, Pa., at a meeting on Jan. 22, affirmatively recommended a resolution of Councilman W. Y. English directing the city solicitor and the special city counsel for railway litigation to institute a suit against the Pittsburgh Railways to compel the company to bear a portion of the expense of paving and re-paving streets traversed by the company's lines.

Mr. English, in making his motion, declared that the railway has accumulated a fund of $1,000,000 to meet these expenses and that it was not drawing on the fund for the reason that the courts had not compelled it to do so. There was no proof submitted in support of this statement. It was pointed out that the railways company already owes the city $240,000 for cleaning streets, for bridge tolls and for other charges.

Under its franchises, the company is committed to the paving, at its own cost, of the space between the car tracks and 1 ft. on each side of the tracks. At the committee meeting it was alleged that the company has expressed a willingness to go to the courts over the matter, confident that it will be able to prove that the Public Service Commission sanctions its stand in refusing to pave streets.

Daniel Winters, a councilman, speaking against the motion, declared that C. K. Robinson, special traction counsel for the city, was opposed to a suit of this nature at this time, and had advised that nothing be done until it could be determined whether the railway really is liable for a part of the paving costs. The proceedings, Mr. Robinson was quoted as saying, would make it easier for the railway to evade payment.

Since the Council of Pittsburgh is composed of only nine members, the actions of committees are usually indicative of the action of the Council itself.

Asks Forebearance

Ralph Peters, federal manager of the Long Island Railroad, recently addressed the patrons of the company as follows:

The electric trains which we are operating between Jamaica and Brooklyn and the Pennsylvania Station and on the North Shore Division, are in many cases badly overcrowded.

The great increase in the number of commuters using our lines, due to the natural growth and to the acute housing conditions in the city, has placed a great burden upon us this winter. We were unable during the war period to secure new equipment. We now have 100 new cars under construction for 1920 delivery. We have equipped 50 of our summer trail cars with heaters, so that they can be used during the winter, and every car that we own, which is able to run, is in the service every day.

The number of commuters in the month of December was 31,319 as compared with 30,737 in November, and 29,138 in October. As compared with 1918, December shows an increase of 8,404, and as compared with 1917, December shows an increase of 11,761. This means an increase over December, 1918, of 16,808 passengers per day to be handled during the Commission Hours, or more than 100 carloads in each direction, and we are only able to take care of the traffic by doubling back the equipment and using it over again. This frequently occasions delay, which we regret, but cannot always prevent.

Under the circumstances and inasmuch as we are unable to hire or purchase cars which will give us immediate relief, we must ask you to be patient and forbearing until such time as we can relieve the situation by adding new cars to our equipment.

We are sure that if you know the facts, you will sympathize with our difficulties and help us to bear them.

Doherty & Company Optimistic

At the beginning of the year 1919, when all public utilities were faced with the serious problems of readjustment arising from the sudden cessation of hostilities, Henry L. Doherty & Company, operating the Cities Service Company, felt that there must be a period of general depression, but this period was so short that it hardly became a factor worthy of mention, and before the year was over all of the properties were operating on a basis of higher demands and output than ever before in their history. That firm says:

We feel absolutely confident in saying that the earnings of our public utilities accruing to Cities Service Company for the year 1920 will be the greatest in the history of our organization. In other words, we feel that the utility division is now making progress on a basis that indicates that the handicaps occasioned by the war have been met effectively and that we can look forward to renewed progress in this department of our activities.

Service-at-Cost Suggested for Pittsburgh

A resolution asking consideration of the service-at-cost plan in the operation of the Pittsburgh (Pa.) Railways was adopted by the executive committee of the Allied Boards or Trade, at a meeting in late January. The resolution ran:

Whereas: Upon the determination of the fair value of the properties of the Pittsburgh Railways, it will become necessary to formulate plans for the reorganization of the system and for the adoption of a definite policy between the railway and the public authorities, and in anticipation of these developments which may be expected in the near future, it is deemed expedient for the executive committee of the Allied Boards of Trade to make a statement of its position in the premises; therefore be it

Resolved: That it is the sense and judgment of the executive committee of the Allied Boards of Trade that, upon a final determination of the fair value of the properties of the Pittsburgh Railways, consideration be given to the adoption of a service-at-cost plan along the lines heretofore adopted by several large cities, namely, Cleveland, Cincinnati and Minneapolis, and that in connection therewith, plans be formulated for closer co-operation between the local authorities and the railway so that matters of service, of maintenance of properties and of extensions may, in the first instance, be under the supervision and control of a local board subject to review by the Public Service Commission of the State and also that the necessary foundation be provided for ultimate municipal ownership, by providing for a definite price upon which the properties of the company may be purchased by the public, either by the present municipal government, or by a metropolitan district duly authorized in the premises.

The executive committee of the Allied Boards of Trade favors ultimately a plan of municipal ownership, with or without municipal operation, and believes that these matters should be provided for in any plan for the future and to this end provision should be made for the acquisition by the public authorities at a fixed price.

The Allied Boards of Trade is the central body comprising all the district boards of trade in Allegheny county.

News Notes

Interurban Increases Wages.—The Washington, Baltimore & Annapolis Electric Railway, Baltimore, Md., on Feb. 2 advanced the wages of its motormen and conductors 10 cents an hour, to 60 cents an hour. The company also will pay the men time and a half after ten hours' work.

Advance for Kingston Men.—The conciliation board, to which was submitted the dispute between the West India Electric Company, Kingston, Jamacia, and its striking employees, has reported that men who have served more than ten years should receive 6 cents per hour extra, those serving more than five years, 5 cents, and others, 4 cents an hour, over the present rates.

New Working Agreement With Employees.—A working agreement for the year 1920 has been entered into by The Northwestern Ohio Railway & Power Company, Toledo, Ohio, with its trainmen as individuals. The trainmen were organized in the Amalgamated Association as a sub-division of the Toledo local, but after careful consideration they decided that it might be detrimental to their interests to insist on an agreement through the union.

Labor Contract Still Being Negotiated.—Although it is reported that several conferences have taken place between the officials of the Georgia Railway & Power Company, Atlanta, Ga., and officials of the trainmen's union relative to the making of a new wage agreement between the men and the company, nothing definite has been given out to the public and neither side will discuss the subject. Included in the new demands of the men are 60 cents an hour—the old pay being 40 cents—time and a half for overtime, Sundays and holidays, two weeks full pay during a vacation of that length, and a closed shop.

Asks $1,400,000 for Buses.—William Wirt Mills, Deputy Commissioner of Plant and Structures of New York City, appeared before the Board of Estimate on Jan. 30 and asked for an appropriation of $1,400,000 to build 200 buses to operate in place of abandoned railway lines. He explained that the previous estimate of $570,000 had to be increased because of the suspension of more railway lines. Mr. Mills stated that forty manufacturers had filed applications for the privilege of constructing buses. In his original application for an appropriation, Commissioner Whalen stated that the cost of maintaining and operating 100 buses a year would be $635,000, and that the net profit ought to be $376 a day. A vote on the matter was put over until the Comptroller could be present.

Financial and Corporate

$7,111,336 Toledo Valuation

Experts for City Find This Amount Based on Prices for Five Years Before 1915

An inventory and valuation of that part of the property of the Toledo Railways & Light Company in Toledo, Ohio, used for railway purposes, not including the power plant, has been completed by Service Director David H. Goodwillie and his associates, Prof. H. E. Riggs, Ann Arbor, Mich., and F. W. Ballard, Cleveland. It places a valuation of $7,111,336 on the property.

Mr. Goodwillie, explained to Mayor Schreiber that the valuation is based upon average prices for the five years preceding 1915 applied to those parts of the property not rebuilt or renewed since Jan. 1, 1915, and to this has been added both renewals and new construction installed during the period from Jan. 1, 1915, to date at present day costs.

Valuation on Average Prices

Mr. Goodwillie said that reasonable allowances had been made for contingencies and overhead charges. He said it was his sincere belief that the valuation represents more than the actual *bona fide* investment cost in the property. A valuation prepared by the engineers for the company based on a 1919 reproduction cost approximated $17,000,000.

Mr. Goodwillie's report was made public on Jan. 27 after it developed, following numerous conferences between him and Henry L. Doherty, operating head of the Toledo Railways & Light Company, that it would be impossible for the city and the company to agree on a valuation price Mr. Goodwillie said he and H. L. Doherty, operating head of the railway, were unable to agree upon a valuation price or on the theory of making the valuation. The service director said that he had attempted to have Mr. Doherty agree on a method of making the valuation before it was started, but that he had been unsuccessful.

Cost of Reproduction $12,112,437

The experts for the city said they are confident that the valuation of $7,111,336 can be sustained in a judicial proceeding and that they are prepared to furnish any amount of data and information, both as to court decisions and engineering statistics which they believe would substantiate the city's case in court if valuations were being determined for rate making purposes.

The representatives of the city place the reproduction cost of the property at $8,313,575, and the actual value, due to depreciation, at $7,111,336. As a matter of information and as a check upon the figure of $17,000,000 given by the company, the city representatives prepared an approximate reproduction cost valuation using 1919 prices as the basis. This indicates $12,112,437 as the cost of reproduction and $10,294,492 as cost of reproduction less depreciation.

Railway Defrays Valuation Cost

Mr. Goodwillie said that it was his personal opinion that a condemnation proceeding in the matter of acquiring the property for the city would result in the city being compelled to pay more nearly present day reproduction costs; in other words, a substantially higher value than could be secured by the city in a judicial action looking toward the establishment of a fair value for rate making purposes over a period of twenty-five years.

The cost of the valuation was $21,000. This expense was defrayed by the Toledo Railways & Light Company.

Texas Electric Railway Has Good Year

According to the annual report of the Texas Electric Railway, Dallas, Tex., as made by J. F. Strickland, president of the corporation, the gross earnings from operation in 1919 were $2,951,511, an increase of 23.9 per cent over the gross earnings for 1918. Operating expenses and taxes increased $302,019, or 21 per cent over those for 1918.

The net income of the company after interest charges for 1919 was $735,454, or at the rate of 2.8 times the annual dividends on all preferred stock. The balance available for common stock was $476,454.

According to the report, regular dividends have been paid at the rate of 7 per cent per annum on the first and second preferred stock and an initial dividend at the rate of one-half of 1 per cent on the common stock for the quarter ended Dec. 31, 1919, has been declared payable on March 1, 1920.

Of the six railway systems operated by the corporation in North and Central Texas, Denison reported the only gain in income after depreciation values had been deducted. At that place the gross revenue was $34,647 for the year. Operating expenses and taxes were $22,286, and depreciation was assessed at $6,783, or an income after depreciation of $5,578. The gross revenue from the Waco railway was $341,518 for the year, with operating expenses and taxes placed at $287,404. Depreciation was given as $75,780, or a deficit in income of $21,666. The deficits at Waxahachie, Corsicana, McKinney and Sherman were given at $7,767, $6,820, $6,107 and $720, respectively.

Harlem Starts Operation

Court Orders Third Leased Line of New York Railways Returned to Owners—Most Transfers Cut Off

The Fourth and Madison Avenue and the Eighty-Sixth Street Crosstown Lines in New York City which had been operated since June 11, 1896, under a 999-year lease were returned on Feb. 1 to their owners, the New York & Harlem Railroad, and will be operated under the name of the New York & Harlem Traction Lines. The order was signed on Jan. 20, 1920, by Federal Judge Mayer, following a demand by counsel for the owner that the rental in arrears be paid or the property returned. No rentals or taxes have been paid by the New York Railways since Oct. 1, 1918.

Lease Terminated

Under the lease, which was terminated, the New York Railways paid a rental of $400,000 a year besides all taxes and $2,500 for organization expenses, making a total yearly rental of $448,850. Based on the allotted outstanding capital stock invested in these lines of $2,850,544, as used by Stone & Webster in their Interborough reports, this rental, which is 4 per cent on the total $10,000,000 capital, actually represents 14 per cent on the stock in the city railway. The New York Central also pays rental for that portion of the line extending from New York to Chatham. Outstanding bonds amount to $12,000,000.

This is the third important surface line that has been returned to its owners since the New York Railways passed into the hands of Receiver Job E. Hedges on March 20, 1919. This road, however, has no carhouses or power houses of its own, but plans have been made temporarily to secure storage facilities and power from the New York Railways.

Transfers Cut Off

The route of the separated line extended from the Madison Avenue Bridge at East 135th St., via Madison Ave., to East 42nd St., thence to Park Ave., Fourth Ave., and the Bowery, then through Broome St., to Center St., to Park Row to the Post Office at Broadway. Going North the same route was followed except the passage from Center St. to the Bowery was through Grand St. There was also a short branch from the Bowery with a terminal at Astor Place and Broadway. The propriety rights in the Eighty-Sixth Street Crosstown line extended from Madison Ave., to Second Ave. The mileage involved in the lease amounted to 9.2 miles of line, equivalent to 18.394 miles of single track.

Transfers heretofore issued between the Fourth & Madison Avenue line on payment of 2 cents have been abolished at Delancey, Eighth, Fourteenth, Twenty-third, Thirty-fourth, Fifty-ninth, Eighty-sixth and 116th Sts. This affected many passengers for this

route alone carried more than 16 per cent of the total passengers that were hauled previously by the New York Railways.

New Plan of Operation

Under the operation of the New York & Harlem Traction Lines two routes will be operated namely, the main line, which extends from Mott Haven at Madison Ave. Bridge to the Post Office as heretofore. The other, which is a crosstown route, will operate from Eighth Ave., through the Transverse Road in Central Park, thence through East Eighty-fifth St. to Madison Ave., to East Eighty-sixth St. to Avenue A to the Ferry Terminal at East Ninety-third St. Arrangements have been made whereby the new operating company will continue to use the franchise in Central Park, owned by the city of New York. It has likewise taken over the joint trackage agreement with the Second Avenue Railroad providing track and power facilities to reach Ninety-third St. Ferry, and with the Third Avenue Railroad providing for track facilities on Forty-second St. between Park and Madison Aves.

Four of the previous transfer points are retained and free transfers will be issued on payment of regular fare good for acceptance at Eighty-sixth St., Thirty-fourth St., Twenty-third St., and Fourteenth St. No transfers will be issued or accepted at 116th St., Fifty-ninth St., Eight St., and Broadway.

The New York Railways has turned over to the new operators 120 cars for the Fourth Ave. & Madison Ave. line and twenty-three cars for the Eighty-sixth St. Crosstown line together with snow sweepers and other service cars and equipment.

Crews to man the cars have also been allotted and temporary arrangements have been made to furnish storage facilities at the Eighty-sixth Street and Thirty-second Street carhouses. It is expected that later some other arrangements will be made for carhouse facilities and shops.

No Curtailment of Service

Mr. McDougall, who is the general manager, announces that there will be no immediate curtailment of service, but that cars will be added or withdrawn in accordance with the traffic demands. About 110 cars have been operated regularly in the past during the night rush hour.

The operating organization is under the heads of departments of the New York State Railways with R. E. McDougall as general manager. Local officers are as follows: H. L. Pitner, engineer way and structures; Walter Uffert, master mechanic, and Sigmund Sachs, superintendent of transportation. All purchases will be under the direction of P. J. Honold. C. L. Cadle is chief engineer, J. F. Uffert, superintendent of equipment and J. M. Joel, general auditor.

Temporary offices are located at the Fourth Ave. carhouse at the corner of Thirty-second St.

Former Railway Executive Outlines Reorganization Requirements

Duff F. Sherman, former vice-president of the Rhode Island Company, Providence, R. I., predicts that unless there is a speedy compromise of all interests involved in the reorganization of the company the electric railway system of the State is doomed.

Mr. Sherman declared that the owners must scale down the present valuation of $29,000,000 to $23,000,000 and secure new cash working capital from $1,000,000 to $3,000,000. He said that the reorganized company must be relieved of due and subsequent franchise taxes, "a relic of horse-car days," and cost of street construction and maintenance and other expenses must be cut to the bone under this plan.

As an incentive for efficiency, cooperation and economy by all interests, Mr. Sherman suggests that all amounts earned over 6 per cent on the proposed revised capital investment be divided among operating officials of the company, its employees, the State and the company itself.

Under the provisions of his plan, Mr. Sherman expressed confident belief that the service required would be rendered, the property become self-supporting and the mass of troubles now apparent disappear.

Regarding jitney competition, Mr. Sherman said it has been recognized that the two services cannot survive and it is up to the public to determine which they shall choose. Mr. Sherman did not think that any reorganization could be affected under the act passed by the Legislature last year. He declared it is essential that the system be kept intact and that the act imposes restrictions which would make it impossible for reorganization to be undertaken under its provisions.

Receiver for Pensacola Electric

On complaint of the Old Colony Trust Company, Boston, Mass., Judge Sheppard, of the United States District Court, on Jan. 26 appointed James G. Holtzclaw receiver for the Pensacola (Fla.) Electric Company. Inability to operate at a profit on a 5-cent fare is the principal reason given for the application. Mr. Holtzclaw, the receiver, is superintendent of the company.

Peter O. Knight, general counsel of the company, is quoted as follows:

The prime cause of the receivership of the property is its utter inability to operate upon a 5-cent fare, and by reason thereof it is also unable to have sufficient credit to borrow any money to pay its debts. It could therefore not pay the indebtedness of the Old Colony Trust Company, and the complainant knowing that the Pensacola Electric Company was unable to pay the interest, amounting to $30,000 on the bonds of the company due on Feb. 1, 1920, and knowing that if such interest was not paid the default would permit the trustees of the mortgage given to secure the bonds to foreclose the same, the result of which would be the probable dismemberment of the railway as a going concern, for its own protection and others in like situation, requested the appointment of a receiver for the purpose of preserving the property for the benefit of the public, the creditors and the stockholders.

I imagine that after the receiver takes charge of the property and goes into the situation fully he will apply to the Florida Railroad Commission, to fix just and reasonable rate for the carriage of passengers of the railway. Such is the course that has been pursued in the Jacksonville Traction Company situation. The Supreme Court of Florida in the Tampa water works case held that section 30 of article 15 of the constitution of 1885, reserved to the Legislature the power to regulate by its own act or through some other instrumentality the rates to be charged by public service corporations and that every charter granted subsequently to public service corporation and every contract made with them by the Legislature of a municipality are granted, made and accepted subject to and in contemplation of a possibility of the subsequent exercise of the power which by that section is declared to be vested in the Legislature.

Fails to Meet Interest Payment

The City & Suburban Railway, one of the subsidiaries of the Washington Railway & Electric Company, Washington, D. C., was unable to meet an interest payment of $43,750 on its first mortgage bonds, which fell due on Feb. 1. The company will have three months of grace, which means that the interest will have to be paid by May 1.

William F. Ham, president of the Washington Railway & Electric System, points to this inability of the City & Suburban to meet its interest charges as further evidence of the urgent need for a 7-cent fare. Mr. Ham has said that he does not think the company can get along without the increase while Congress is considering the bill designed to provide for the merger of the Washington Railway & Electric Company and the Capitol Traction Company.

According to Mr. Ham, the operating expenses of the City & Suburban Railway during 1919 exceeded its earnings. In August of last year the City & Suburban Railways found itself unable to meet the interest on its bonds. Before the three months of grace expired in October, however, the commission granted a rate of four tickets for a quarter. This enabled the Washington Railway & Electric System as a whole to meet the payment.

The City & Suburban Railway runs from the Treasury to Laurel and other Maryland suburbs.

Stock Offered Locally

The Pine Bluff (Ark.) Company is offering its 7 per cent preferred stock for subscription locally through *Public Service*, published by the company in its own interest for circulation among the residents of the city. The company, in announcing the stock for subscription, says:

$1,000

Invested in this stock will earn a quarterly dividend of $17.50 or $70 per year.

The average water bill is about $50 per year, which means that stockholders with $1,000 invested in this stock would not only take care of his light and water expense but would earn a surplus of $20 per year to apply on insurance or other purposes.

We want to pay dividends to the citizens of Pine Bluff and keep this money at home instead of sending it away, and would like to see every citizen of Pine Bluff a stockholder.

Send in your application at once for the number of shares you desire, or call Walter Stovall at the office of the company, 'phone 2810.

Foreclosure Decree Entered

An order has been entered in the United States District Court at Wheeling, W. Va., by Judge Alston G. Dayton directing the sale of the West Virginia Traction & Electric Company's holdings, as a result of a foreclosure suit brought some time ago by Albert M. Cook and others of New York.

At the instance of the New York people, Judge Dayton recently named J. D. Whittemore, then manager, receiver for the company and the matter was referred to Judge Frank Nesbitt, special commissioner, who recently filed his report of the assets and liabilities with the district court.

For some time the road has been unable to pay interest on its bonds and proceedings to force it into bankruptcy were instituted several months ago.

The order affects all of the properties of the company, including the line between Wheeling and West Alexander.

Interborough Income Improving

The comparative statement of income of the Interborough Rapid Transit Company, New York, N. Y., for December and for the six months ended Dec. 31, 1919, is as follows:

December	1919	1918
Gross operating revenue	$4,668,268	$3,782,224
Operating expenses	2,855,951	2,320,280
Net operating revenue	$1,812,317	$1,461,944
Total taxes	228,557	247,006
Income from operation	$1,583,760	$1,214,938
Non-operative income	53,988	69,839
Gross income	$1,637,748	$1,284,777
Interest, rentals, etc., including Manhattan guarantee	1,659,918	1,509,381
Deficit	$22,170	$224,604
Passengers carried (rev.)	84,771,977	70,780,818
Six months ended Dec. 31.		
Gross operating revenue	$24,200,226	$19,953,159
Operating expenses	15,175,220	12,187,428
Net operating revenue	$9,025,006	$7,765,731
Total taxes	1,297,517	1,820,297
Income from operation	$7,727,489	$5,945,434
Non-operative income	271,930	303,299
Gross income	$7,999,419	$6,248,733
Interest, rentals, etc.	9,919,785	8,739,865
Deficit	$1,920,366	$2,491,132
Passengers carried (rev.)	445,396,934	374,684,097

Atlanta Officers Re-elected

An increase of 8,144,852 passengers in 1919 over the previous year is shown in the report of Preston S. Arkwright, president of the Georgia Railway & Power Company. The report was submitted at the company's annual meeting on Jan. 27.

The total number of passengers hauled during the year 1919 was 93,596,056. Of this number 76,804,565 were pay passengers; this is a gain of 6,228,972 over 1918. Transfer passengers were 16,704,145, a gain of 1,874,233 over 1918. Passengers on passes were 87,346.

Stockholders of the company decided at this meeting to continue the Tugalo water power development and to have moving pictures made of the work as it progresses. These pictures will be exhibited to the public.

Plans were discussed to arrange a trip to the Burton dam improvement in the spring of the year for the 1,200 shareholders of the company. This dam will be completed about March 1, and power brought into use immediately.

The officers were re-elected.

Properties at Gadsden Sold

The Gadsden Railway, Light & Power Company, Gadsden, Ala., of which R. A. Mitchell, Gadsden, is president, has acquired the railway lines, lighting system and ice and refrigerating plants of the Alabama City, Gadsden & Attalla Railway and the Gadsden Railway. The Gadsden Railway operates to the Gulf States Steel Company's plant, while the Alabama City, Gadsden & Attalla Railway owned and operated the electric lines connecting Gadsden, Alabama City and Attalla, and the ice and refrigerating plants. In all, the new company, which has just recently been organized, acquires between 12 and 15 miles of railway.

E. T. Schuler and associates, the former owners of the Alabama City, Gadsden & Attalla Railway and the ice and refrigerating plants, some time ago offered the property for sale and the new company was organized to take it over. Later on the properties will be transferred to the Alabama Power Company, which has the contract to supply power.

The sale price was not made public, but it is understood to be slightly under $1,000,000. The new company has taken possession of the properties which it has purchased.

Interest Payments Authorized

Judge C. P. Orr, of the United States District Court at Pittsburgh, Pa., on Jan. 10 handed down an order directing the receivers of the Pittsburgh Rys. to pay certain fixed charges consisting of interest on mortgages of companies underlying the Consolidated Traction Company. The interest was due last on July 1, to the Fidelity Title & Trust Company, trustee on the mortgages.

The mortgages affected and the amounts ordered to be paid were: Duquesne Traction Company, $36,750; Federal Street & Pleasant Valley Passenger Railway (issue of 1899), $2,300; Federal Street & Pleasant Valley Passenger Railway (issue of 1892), $26,825; Troy Hill Passenger Railway, $925; Allegheny Street Railway, $675; Allegheny & Bellevue Street Railway, $75; Central Traction Company, $9,375. The Consolidated Traction is one of the subsidiaries of the Pittsburgh Railways system.

The court also granted a rule on the receivers to show cause why they should not pay an aggregate of $151,950 interest due for three semi-annual interest periods to the Maryland Trust Company, trustee for a mortgage of the Second Avenue Traction Company.

Conserving the Company's Resources

The officers of the Lehigh Valley Transit Company, Allentown, Pa., state that they have received no papers in the reported equity suit filed by William F. Doohan to compel the declaration of dividends on the company's capital stock, and that they have no information or knowledge that such a suit had been commenced or is contemplated by Mr. Doohan except as contained in the recent newspaper reports to that effect.

The officers further state that the failure of the company to pay dividends during the past year and a half has been due to the unusual financial situation confronting electric railways in general and the desire to conserve the earnings and cash resources of the company in order to meet the needs of its property.

San Francisco-Oakland Road Sold

The entire system of the Oakland, Antioch & Eastern Railway was sold in the Superior Court at Martinez, Cal., on Jan. 28, to a reorganization committee for $1,200,000, the minimum price set by the court. The sale was really made to the San Francisco-Sacramento Railroad. The sale was made by Commissioner A. E. Dunkel to H. A. Mitchell, chairman of the reorganization committee and traffic manager for the road.

The plans for the reorganization of the company as approved by the Railroad Commission of California have been reviewed previously in the ELECTRIC RAILWAY JOURNAL. The successor company starts with an authorized capital of $1,500,000 of preferred stock and $6,500,000 of common stock. Of the preferred stock $1,330,000 will be issued at this time, while all of the common stock will be issued. There is an authorized issue of $3,000,000 of first mortgage 6 per cent serial gold bonds of which amount $840,000 is to be issued at this time.

New Receiver for Second Avenue Line

Justice Platzek in the Supreme Court on Feb. 5 appointed Charles E. Chalmers receiver of the Second Avenue Railroad, New York, N. Y., to succeed Andrew E. Kalbach, who died on Feb. 2. Mr. Chalmers has been connected with the company for twenty-one years, and since the road went in the hands of a receiver on Sept. 19, 1908, he has served as the receiver's counsel.

With the appointment of the receiver the court signed an order permitting a committee representing the holders of ninety-six of the outstanding receiver's certificates to intervene as co-defendants in the foreclosure action against the company. The total issues of receiver's certificates made between Sept. 26, 1913, and Sept. 26, 1916, amount to $3,140,000. Intervention of the committee was con-

sented to by Brainard Tolles, attorney for Alexander J. Hemphill, and other holders of first consolidated mortgage bonds of the company.

The suit was begun by the Guaranty Trust Company, representing holders of $5,631,000 in bonds. George W. Linch, the first receiver died on Dec. 15, 1915. George W. Beaver, the second receiver, died April 19, 1917, and then came Mr. Kalbach. A recent opinion by the Supreme Court was to the effect that the company was without hope of resurrection.

Service Resumed

On Feb. 1 service was resumed by the New York Railways with storage battery cars on the Spring & Delancey Street Line in New York City, on which service was discontinued last September. The former line as a whole, however, is in only partial operation, the cars running only from Clinton and Delancey Sts., thence through Delancey St. to the Bowery to Spring St. to Broadway, a distance of 0.80 mile, involving 1.70 miles of track.

Transfers will be issued on payment of an additional 2 cents to certain other lines.

The storage battery cars will compete with the buses installed under the direction of Grover Whalen, head of the New York City department of Plant and Structures, when the railway suspended operation.

City Won't Buy Railway for $1

The Wisconsin Valley Electric Company, Wausau, Wis., which operates the 2-mile, four car railway in Merrill, Wis., wanted to discontinue operation with the expiration of its thirty-year franchise on Dec. 31, 1919. It was stated in the notice to the city that the railway could not be made to produce sufficient revenue to pay operating expenses at any reasonable rate of fare. The city objected and the company offered to sell the railway to the city for the consideration of $1. The purchase was refused by the City Council. The company then offered to give the city free power to operate the railway for a reasonable period if it would take over the property. The City Council also refused to do this and in lieu thereof started proceedings before the Wisconsin Railroad Commission to compel the company to operate. The company then agreed with the city to run the road through the winter, or until it could negotiate further with the city. The property is still being operated under this agreement with a 7-cent fare.

Government Control Not Profitable to West Jersey & Seashore

The twenty-third annual report of the West Jersey & Seashore Railroad for the year ended Dec. 31, 1918, just issued, shows the compensation accrued under Federal control for possession, use and control of the property was $952,681. Other corporate income increased the gross income to $1,090,191. Deductions of $403,471 left a net income of $686,719.81, which gave an increase of 2.04 per cent over the previous year.

Actual operating financial figures, however, show that the road was not self-supporting as a unit although the revenue from operation increased $2,044,496, or 24 per cent, due principally to a 26 per cent increase in passenger receipts, that the net income from railway operation decreased $1,059,234 due to an increase of $3,103,730 in operating expenses, equivalent to 44.4 per cent over the previous year. Deducting taxes and rentals the net railway operating income shows actually a deficit of $85,368, as against a surplus of $948,167 the previous year.

Financial News Notes

Sale Under Foreclosure Ordered.—United States District Judge Sater has ordered the properties of the Springfield Terminal, Railway & Power Company, Springfield, Ohio, sold, on the petition in the receivership suit of the Central Trust Company of Illinois and William T. Abbott, trustees.

Voting Trust to Be Dissolved.—The voting trust under which the stock of the Philadelphia (Pa.) Rapid Transit Company is deposited was to have remained in existence until 1921, but it has been decided to dissolve the trust on Feb. 12, the reason advanced being that the arrangement has served its purpose of rehabilitating and refinancing the company.

Wants Receiver Appointed.—C. H. Walsh, Davenport, Ia., has filed suit in United States Court asking the appointment of a receiver for the Rock Island Southern Railway, operating between Rock Island and Monmouth, Ill. He says that the company owes him $6,600 and that other creditors propose to bring suit in an effort to collect sums due to them. The hearing has been set for Feb. 9.

Petition for Receiver Granted.—Associate Justice John A. Marrill at Saco, Maine, has granted a petition of the Belfast Savings Bank for the appointment of a receiver for the Sanford & Cape Porpoise Railway, Sanford, Me. The Belfast Bank is the holder of bonds of the railway to the amount of $25,000. The Poland Savings Bank is also a creditor of the railway. Interest is in default.

Twin City Common Dividend.—The Twin City Rapid Transit Company, Minneapolis, Minn., has declared an annual dividend of $2.50 on the common stock payable on Feb. 20 to stock of record of Feb. 9. Following the directors meeting it was announced that payment of $2.50 on the common at this time was intended as being a disbursement on the junior issue for last year. Twin City Rapid Transit common up to December, 1917, paid dividends at the rate of $6 annually. For the first quarter of 1918 the quarterly disbursement was reduced to $1 and passed at the meeting in June, 1918. A dividend of $1 was paid Jan. 2, 1919, and none for the balance of the year.

Receiver Opposes Sale of Road.—An application has been filed by the Guarantee Title & Trust Company, Pittsburgh, Pa., requiring C. G. Taylor, receiver of the Sandusky, Norwalk & Mansfield Electric Railway, Norwalk, Ohio, to appear before the Federal Court at Cleveland, Ohio, on Feb. 14 and explain why an order for the sale of the property should not be granted. It is stated that the majority bondholders desire to sell the property as junk. C. G. Taylor, receiver of the company, says he will oppose an application for abandonment on the grounds that if gasoline coaches are substituted for the electric cars the property can be placed on a paying basis.

Swing Line Sold for Junk.—The property of the Cincinnati & Columbus Traction Company, Cincinnati, Ohio, known as the Swing line, which operates between Norwood and Hillsboro, was sold on Jan. 31 for the account of the bondholders on a joint bid to Joseph Joseph & Brother, New York, N. Y., and the Hyman Michaels Company, Chicago, Ill. The purchasers will dismantle and junk the road. The sale price was not disclosed. The Union Savings Bank & Trust Company, Cincinnati, was trustee for the holders of the bonds of the company. Efforts failed which had been made by residents along the line to raise funds to refinance the road and keep it in operation.

More Car Trust Certificates Offered.—Edward B. Smith & Company, Philadelphia, Pa., are offering on a 6½ per cent basis $114,000 of J. G. Brill Company, Birney safety equipment 6 per cent gold trust certificates, Trust No. 5, Series "A." The certificates are dated Jan. 15, 1920, and mature $29,000 on July 15, 1921, $28,000 on Jan. 15, 1922, $29,000 on July 15, 1922, $28,000 on Dec. 15, 1922. They are redeemable at 100 and dividends on any dividend date, on ten days' notice, in order of the priority of the maturity of certificates then outstanding. The Fidelity Trust Company, Philadelphia, Pa., is trustee of the issue. The certificates are secured by assignments of leases covering Birney one-man safety cars, for which purpose money notes aggregating $187,082 of the Kansas City (Mo.) Railways, to which these cars are leased, have been deposited. The issue of certificates represents about 50 per cent of the selling prices of the cars, the balance having been paid in cash and by an issue of $56,000 of Series "B" certificates maturing in monthly installments from Feb. 15, 1920 to Dec. 15, 1920, both inclusive.

Traffic and Transportation

Increase on Long Island

Supervisors Modify Franchise to Permit Increase in Fare—Matter Before Commission

The Board of Supervisors of Nassau County adopted a resolution on Feb. 2, modifying the several franchises of the New York & North Shore Traction Company, Roslyn, Long Island, permitting an increase of the rates of fare.

At the present time there are four 5-cent zones between the New York City Line (Little Neck) and Mineola and the same number of 5-cent zones between Port Washington and Mineola. Between Mineola and Hicksville there are now two 6-cent zones. Under the new rates of fare 7 cents will be charged in each of the present 5-cent zones and 8 cents in each of the two zones where the fare is now 6 cents.

Campaign of Publicity

About two months ago the company started a series of four articles which were published in the local weekly papers in Nassau County for four successive weeks. These articles informed the people as to the financial condition of the company and the necessity for an increase of the rates of fare.

Following the publication of these articles petitions addressed to the Board of Supervisors requesting the modification of the company's franchises so as to permit of the charging the above mentioned rates were circulated in the various communities along the lines of the company in Nassau County and more than 2000 signatures were obtained. These petitions, together with the company's formal application, were filed with the board on Jan. 26. A hearing date was set for Jan. 31. No one appeared before the Board of Supervisors to object, but several prominent citizens appeared who stated that the people were unanimously in favor of the company obtaining an increase of fare. It will be noted that the resolution amending the franchises was adopted just one week after the company presented its application.

Commission's Approval Required

A certified copy of the resolution amending the franchises, together with a revised tariff, will be submitted to the Public Service Commission for the Second District, for its approval, and it is expected that the new rates of fare will become effective before March 1, 1920.

The New York & North Shore Traction Company obtained an increase of fare from the Public Service Commission for the Second District, on parts of its line in Nassau County in July, 1917.

The Public Service Commission for the First District issued an order on Aug. 28, 1919, permitting the company to increase its fare in Queens Borough, New York City, under a zone system, instead of charging a flat 5-cent fare. This increase went into effect on Aug. 29, 1919, but the company was compelled to increase the wages of its employees 13 cents an hour the same day the increase of fare became effective, so that additional revenue derived from the advance in rates has only been sufficient to take care of the increase in payrolls.

The officials of the City of New York have been endeavoring to compel the commission to rescind its order, although at three different meetings held in Flushing several hundred patrons of the lines in Queens Borough expressed themselves in favor of the company obtaining an increase of fare, so that operation might be continued. The first meeting in June, 1918, was attended by Mayor Hylan, Comptroller Craig and Borough President Connolly of Queens. Before the company obtained the increase of fare in Queens Borough, several hundred people voluntarily paid a 7-cent fare daily.

Fare Inquiry in Buffalo

A large staff of experts is sorting, compiling and tabulating the transfers issued and received over the various lines of the International Railway in Buffalo with a view of determining how much the revenue would be increased by maintaining the basic 5-cent fare and making a 2 or 3-cent transfer charge.

As stated previously in the ELECTRIC RAILWAY JOURNAL Thomas E. Mitten, president of the Philadelphia Rapid Transit Company and a member of the bondholders' protective committee of the International Railway, of which at one time he was operating head, favors the restoration of the all-night car service in Buffalo and the continuation of the basic 5-cent fare. It is even reported that Mr. Mitten is seeking to have the municipal authorities grant the company the right to make a charge of 2 or 3 cents for transfers if the basic 5-cent fare is retained rather than increase the fare to 7 cents as authorized by the Public Service Commission.

A survey of traction conditions in Buffalo has been made by Mr. Mitten in company with H. G. Tulley, acting president of the International Railway and vice-president of the Philadelphia Rapid Transit Company, and it is reported that he favors the retention of the 5-cent fare despite the objections of other members of the bondholders' committee who seek to put the 7-cent fare into effect at once.

100 Autos to One Car

Toledo Traffic Study Shows Railway's Utility but Emphasises Need for Traffic Separation

Immediate elimination of useless lines in congested districts and the construction at once of connecting portions of belt lines is proposed by Harry C. McClure, engineering commissioner of Toledo, Ohio, in a report submitted to Mayor Cornell Schreiber. Mr. McClure's report was submitted after exhaustive study. He says that a material influence on the report is the necessity for vehicular transportation routes free from all railway influences and steam railway grade crossings.

Changes Very Helpful

Ultimately by the changes which have been suggested, twelve things will be accomplished:

1. Big reduction of the areas of the residential portions not now within the one-quarter mile service by approximately 2 miles.
2. A reduction in the street mileage on which cars will be operated by 3 miles.
3. Direct service between the business and residential areas in all possible directions.
4. Short-circuit service to and from the various portions of the residential and outer areas without travel through the congested district.
5. Direct service by belts between the workingmen's districts and the industrial areas, a great deal of which can be accomplished without the necessity of transfers.
6. Three independent connections to the East Toledo district.
7. Two connectons to the West Toledo area with a possibility for a third as this district expands westward.
8. Provides motor traffic arteries free from street car interference or obstruction, thereby relieving street car arteries of a goodly portion of the interfering motor traffic.
9. Possibility of expansion in any direction when the demand arises without interfering with existing direct or belt service, a condition not possible with the belt lines as now operated.
10. Direct service to the present Union station and to the probable location of the Pennsylvania station from both residential and business areas.
11. A reduction in the number of railway grade crossings, not including the Detroit branch separations suggested.
12. An opportunity to force the question of proper grade separations on the railway lines to Detroit without the necessity for property destruction and at no increase in the total cost of probable necessary separations.

Would Abandon Some Lines

In the new plan, 48.77 miles of the present 67.81 street miles would be used, and 1904 miles would be abandoned. It would be necessary to build 16.04 miles of trackage and this done, saving 3 miles of tracks, 2 additional square miles of territory would be much more adequately served.

An attempt to eliminate railway traffic from narrow streets, with recommendation for widening other streets upon which car traffic is necessary are features of the report.

The fact that in 1920 there are probably 30,000 motor vehicles on Toledo streets, McClure says, makes it imperative that care for this traffic be taken in planning for any car re-routing, as the motors outnumber the street cars by about 100 to 1.

Mr. McClure's research in other cities shows that comparatively few people live more than 1,000 ft. from a car line.

Little News at New York Inquiry

Mayor and Comptroller Go Over Much of Ground Covered in Previous Legislative Inquiry

Frank Hedley, president and general manager of the Interborough Rapid Transit Company, New York, testifying before the Board of Estimate, denied that there was any extravagance in the company prior to the time of his becoming president, but admitted that he was at present economizing by reducing salaries of the office staff and investigating the expenditures of the department of supply. When questioned as to the contracts for third tracking the elevated, he stated that the contracts were made with T. A. Gillespie & Company on a cost-plus-15-per-cent basis, making a total of $10,816,000. The profit on this contract was $1,339,734.

Inquiry Into Elevated Contracts

Contract for third tracking of the elevated was made with T. A. Gillespie & Company, associated with Terry & Tench, and with Snare & Triest. The Gillespie Company did 10 per cent of the work, receiving $755,905; the other contractors, doing 90 per cent of the work, received $475,000. James M. Quackenbush, counsel for the company, explained the conflict between the evidence of Mr. Hedley and the evidence of Thompson committee by the statement that the Public Service Commission did not improve the percentages in the acutal making of the contract. It did supervise the actual construction of the work. The Interborough Company insisted on the right to hire contractors of its own choosing because the work was extremely hazardous. He stated the Thompson committee, which conducted a legislative inquiry into the affairs of the company several years ago, could find no evil.

In the course of the testimony as to the company's deferential of $6,335,000 under contract No. 3, Mr. Quackenbush pointed out that $3,178,000 could be used for dividends, the rest for fixed charges. Controller Charles S. Craig, estimating the dividends for forty-nine years, stated that the company had driven a very good bargain with the city in the $154,722,000 it would receive.

Old Ground Gone Over

Mayor Hylan demanded from President Hedley whether it was the company's policy to put the profits into the pockets of its stockholders when they were earned, but when there was a deficit it should be paid by the public. President Hedley answered he thought the public should pay as they go, in order to give a return to all parties.

Much of the old ground gone over in the Thompson investigations is again being traversed in the present inquiry. Bonuses are being investigated and inquiry being made into commissions paid for banking help and in banking syndicate operations.

For the most part a general atmosphere of gloom pervades the whole proceedings. Occasionally, however, a lively bit of repartee livens things up. Here is the Mayor solemly (apparently) asking Mr. Hedley if he knows the difference between waste and thrift, and Mr. Hedley looking surprised. Each is apparently tired of looking at the other's face, but the passage at arms over this incident is couched in such soothing language that one might think that each of the participants was ready to fall upon the neck of the other and weep.

On Jan. 20 Mr. Hedley issued a statement stressing the fact that the transit problem could not be solved by an appeal to the past, but that the future was all-important. Having escaped receivership on the first of the year through grace of creditors and by dint of emergency measures exhausting the company's last resources, the Interborough, Mr. Hedley asserts, faces fresh difficulties. He gives the following analysis of conditions during the next six months:

The officers of the company are of opinion that the present heavy increase in travel will continue to a certain degree during this period and estimate that the income from passengers for the first six months of the year will be $2,264,000 greater than for the same six months of last year. This passenger revenue, added to its other sources of revenue, would give the company a total estimated value in that period of $26,800,000. Out of this money it must meet all of its expenses for operation and maintenance, together with further taxes and interest on its debts and rentals, as follows:

Payrolls (estimated)	$13,450,000
Taxes	1,279,000
March 1 interest on 7 per cent notes	850,000
April 1, Manhattan interest and rentals	1,880,900
March 31 and June 30 interest on bonds issued by the city for construction of the original subway	950,000
Coal bills and other essential operating supplies and expenses	5,450,000
Total	$23,859,900
Balance	$2,940,100

On June 30 the company must meet the interest and sinking fund on its 5 per cent bonds, requiring $5,010,000, together with the rental for the use of the Manhattan property of $1,050,000, with interest on the Manhattan Company's second mortgage, requiring $90,500, or a total disbursement for interest and rental on June 30 of $6,150,500, which payment, if not made, would result in a default, and, as herein shown, the company will be short in the sum of $3,210,400, assuming that all current obligations already incurred, recited above, have been met.

On June 30 the company is also obligated to pay the principal and interest of the $2,900,000 note issue made on Dec. 31 last, which represents the amount of money borrowed to weather the crisis of Jan. 1, 1920. It is expected that the contemplated auction sale of real estate will take care of a substantial proportion of this particular debt.

In the course of the inquiry it was brought out that Ivy L. Lee, who is conducting the publicity in connection with the campaign of the company for an increase in fares, was compensated at $12,000 a year. The Mayor was inclined to construe this to mean that the city was virtually paying for advertisments and publicity which were injuring its property. Mr. Gaynor, the auditor of the company, defended the publicity work on the ground that it was in keeping with the spirit of the times.

In his formal statement, Mr. Hedley pointed out that many of the facts brought out at the inquiry were available in the printed reports of the company issued annually.

Barney Frauenthal Gives Views on Public Relations

Barney W. Frauenthal, general traffic agent of the United Railways, St. Louis, Mo., in an article contributed to a recent issue of the *United Railways Bulletin*, the official publication of the company, analyzed the problems confronting employees who come in contact with the public. Mr. Frauenthal, who was formerly general station agent in charge of the Union Station, St. Louis, has had many years' experience in dealing with the traveling public.

The article in the *Bulletin* said in part:

The misunderstanding of what really constitutes "The Public" is a fruitful source of many of our troubles. A street railway employee who divides the world into two classes, i. e., those who work with his company and those who do not, is one to whom I would especially appeal. When such a person buys a steam railroad ticket to go on a journey he would naturally, and rightfully, resent such a class division, where he plays the part of the "Oppressed Public," and on the other hand the railroad employee who inflicted an injustice upon the street railway employee would naturally and rightfully resent the same treatment he inflicted upon his victim when he in turn became the oppressed party.

Every person who enters a public conveyance expects transportation to his destination in a reasonable scheduled time; he expects clean, comfortable and pleasant surroundings. The street car employee exacts this when traveling on a steam railroad train and the steam railroad employee has the same right to expect it on the street car.

A train crew has to spend about eight hours on a train and for that period it becomes their home. It shall be as clean, as comfortable and as pleasant for themselves and the public as they desire to make it. The personal appearance of the crew, the condition of the vehicle, and the pleasant atmosphere that surrounds it are all matters within control and constitute a direct reflection upon our personality, either for good or for ill.

The point which marks the line where we define one man as a gentleman and another as not is one that calls for fine distinctions in the manner of reckoning today. A gentleman radiates courtesy. If compelled to refuse a request he says "No" with a polite but nevertheless firm conviction. The refusal in such a case rather tends to prejudice the mind of the person asking the favor, but the storms of opposition, prejudice, or anger are often quieted by the demeanor and the tone of the refusal.

Car crews have some trying experiences, unreasonable requests are often made, and some persons are not only impolite, but sometimes insulting in manner or language. It is here when the test of gentlemanly conduct is brought to the straining point. A soft answer turns away wrath and courtesy becomes a mighty weapon for the one who intelligently applies it.

In a car full of passengers there are always a majority of fair-minded people, and when a controversy reaches such a stage as to attract their attention the employee whose conduct and courtesy are above reproach can invariably depend upon the sentiment being in his favor.

The employee who properly attends to his duties and gives consideration to the comfort, convenience, and pleasant surroundings of patrons is not only making friends for himself, but is building up for his company the good opinion of the public, which is the aim of all public service corporations.

Active Safety Campaign

Former Federal Safety Organizer Retained to Head New Department of Georgia Railway & Power Co.

Organization of a safety department that will carry on this work along the same lines as the regional safety departments of the United States Railroad Administration has been effected by the Georgia Railway & Power Company, Atlanta, Ga. To further this work the company has recently appointed George A. Deibert as director of the safety department. For two years Mr. Diebert was assistant supervisor of safety with the United States Railroad Administration in the Southern Region. For twelve years prior to that he was with the Atlanta Coast lines and a part of this time he was actively engaged in safety work.

In the Southern Region the railroad administration carried on its safety work under the direction of three pertinent committees appointed by the regional supervisor of safety. These were known as the Grade Crossing, Educational and Bulletin committees.

It is the plan of the Georgia Railway & Power Company to carry on its safety work and conduct its safety department in the same manner as described above. Special stress will be laid on the latter plan—the appointment of safety committees among the employees in the various shops. There are eighteen of these shops and in each of these the employees will hold a meeting and elect their own safety committees. Each committee will hold a regular monthly meeting at which time the members will discuss every accident that may have occurred during the past month, and suggestions will be offered as to ways and means of avoiding such accidents. These committees will also suggest bulletins which the company will issue and distribute in the various shops. These bulletins will be posted where the employees can see them at all times, thus serving as a constant reminder that carefulness will save life and limb.

What the railroads of the Southern Region have accomplished in safety work during the past year served to impress officials of the Georgia Railway & Power Company with the fact that organization for such work was really a worth-while venture. Mr. Deibert said:

> We confidently expect to reduce accidents in all of our shops by at least 50 per cent in the course of a very few months. Right now our work will be largely a matter of educating our employees in the principles of "safety first," but later we expect to cover all branches of safety work and to spend thousands of dollars in the furtherance of this project.

Statistics show that machinery is the main cause of accidents among employees of the company. There are more "eye" injuries than any other kind. Injuries among employees are confined mainly to the men in the shops. Very few transportation men are injured. At the outset the company's principal safety work will be carried on among the shop employees.

Among passengers the principal cause of accidents is collisions with automobiles and injury to people leaving or boarding cars while in motion. To educate the people who patronize its lines in the principles of safety is another plan of the new safety department. This campaign will be carried on principally through publicity in the newspapers and the issuance of safety bulletins.

Unsentimental Journeys in Staten Island

Three weeks have passed since the Staten Island Midland Railway suspended operation, and the island borough, outpost of New York City's civilization, is settling down to real frontier life. Its worthy burghers are learning to rough it in good old Toledo style. They are becoming seasoned hikers, and don their mufflers and overshoes these frosty mornings with a glow of anticipation at thought of the five-mile tramp to the St. George Ferry, where they are wont to embark for Manhattan or little, old New York, and the office elevator.

True, transportation of a sort is not altogether lacking. Mayor Hylan, guardian of New Yorkers' welfare, has had imported a weird assortment of vehicles which he calls buses. Heatless and lightless, these "mystery wagons," as the quaint islanders term them, career madly through the highways and byways of the borough at the whim of drivers whose chief claim to a knowledge of their present jobs is that some of them were formerly bus boys at Childs'. Cockroaches and pickpockets flourish in the dark recesses of these vehicles, and many a burgher has returned at night to his commuter's shack minus his wallet. Most of the islanders, however, do not get a chance to taste the delights of the Mayor's buses, for these are few and far between. So walking is the chief pastime of the island these days.

Meanwhile His Honor and the other City Fathers are well pleased, for they are championing the people's cause. They would not allow the Midland to rob the taxpayer by charging 7-cent fares. They have given the people an efficient bus system. Now they are beginning to wonder why so many pleas are coming in for the return of the trolleys. They are surprised when the islanders ask for the privilege of paying fares of 7 cents or even 10 cents. They consider the people unappreciative.

Laurence Sterne crying over his dead ass was indeed a pathetic picture. His was a sentimental journey. Here is a whole island crying over its lost trolley cars and making unsentimental journeys in peripatetical buses, sitting in each other's laps and standing on each other's toes while the vehicles seek their uncertain destinations. It's a great life on Staten Island these days. If you don't believe it ask anyone who lives there.

Seven Cents in Auburn

The Auburn & Syracuse Electric Railroad, Auburn, N. Y., has received permission from the Auburn city authorities to raise its fare from 6 cents to 7 cents. The company had applied for an 8-cent fare. Twice the petition of the company for an increase was turned down by the old form of city government in Auburn. The third petition was presented to the new city manager on Jan. 6. He asked permission to go over the books of the company, and a compromise on 7 cents was agreed upon as a result.

The new rate will continue in effect for a period of three years, according to the agreement. If conditions have not improved by that time the agreement provides that the company may petition to the city for another increase. The company's employees have asked for a wage advance of 3 cents an hour in the city of Auburn and 4 cents on the line between Auburn and Syracuse. Wages were increased to 45 cents an hour for city trainmen and 47 cents on the Syracuse-Auburn line following a strike in May, 1919.

Safety Cars Success in Birmingham

Sixteen one-man safety cars were placed in operation by the Birmingham Railway, Light & Power Company, Birmingham, Ala., on Jan. 25, on the Highland Ave. and Lakeview lines. Vigorous protests were entered against the operation of the cars before the City Commission. The local trainmen's union and other union organizations made protests to the commission. Some citizens protested on the ground that the operation of the cars might result in race troubles.

A conference was held on Jan. 24 between the members of the city commission and J. S. Pevear, general manager of the Birmingham Railway, Light & Power Company, and other officials. At the conclusion of the session, the commission announced that it would not interfere with the operation of the cars. It was stated by Commissioner J. Ellis Brown that the company would be permitted to give the cars a thorough try-out, and that if anything developed to make a reconsideration of the matter necessary, the authorities would be ready to act.

Forty-nine thousand persons rode on the new cars during the first seven days of their operation, according to a statement issued by the company. The operation of the safety cars has proved a great success, according to the company's announcement. A five-minute schedule was maintained on each of the lines during the rush hours of the day. There was no race trouble of any kind as a result of the common entrance and exit system. In all, twenty-five of the cars have been ordered. The cars formerly in use on the Highland Ave. and Lakeview lines, have been sent to the company's shops for rebuilding.

Transportation News Notes

Lower Fares in Chelsea.—The public trustees of the Eastern Massachusetts Street Railway, Boston, Mass., have announced a reduction in the fare in the Chelsea district. Sixteen tickets will be sold for $1.

Worcester Six-Cent Fare Stands.—The Massachusetts Department of Public Utilities has notified the Worcester city authorities that, unless objection is raised by the city or the Worcester Consolidated Street Railway, the present 6-cent zone fares in effect on the company's lines, will continue indefinitely. The 6-cent rate was installed early in January, after a trial of thirty days.

Propose Referendum on St. Paul Fares.—The city officials of St. Paul, Minn., are considering submitting to the voters of the city an amendment to the franchise ordinance under which the St. Paul City Railway operates. The amendment will permit of increasing the car fare to not exceeding 7 cents in consideration of which the company must furnish adequate equipment and service.

Would Raise Fare on Washington Interurban.—The North Coast Power Company, Vancouver, Wash., has applied to the State Public Service Commission for permission to increase rates on its line between Centralia and Chehalis. The present rate is 10 cents, with a 5-cent fare to the fair grounds, the half-way mark. The company proposes to raise the fare between the two cities to 15 cents.

Spokane Jitneurs Would Resume.—Jitney operators in Spokane, Wash., who on Jan. 1 ceased to operate their cars under orders from the City Council, have asked permission to resume operation in districts which are not served by electric railway cars. Formerly they operated wholly in competition with the lines of the Spokane & Inland Empire Railroad and the Washington Water Power Company.

No Fare Increase in Westchester.—The Public Service Commission for the First District has issued an order disallowing the proposed increase of fares by the New York, Westchester & Boston Railway, New York, N. Y., for which the company filed a new tariff on Oct. 20, 1919. The new tariff, if the commission permitted it to go into effect, would have increased the fares between stations in New York City from 5 cents to 7 cents.

More New York Transfers Abolished.—Transfers were abolished on Feb. 1 between the lines of the New York (N. Y.) Railways and the Fourth & Madison Ave. and the Eighty-sixth St. Crosstown lines. The latter, formerly a part of the New York Railways system, were returned to their owner, the New York & Harlem Railroad, on that date under an order of Federal Judge Julius M. Mayer, as noted elsewhere in this issue.

Seven Cents on Schenectady Cars.—The Public Service Commission for the Second District on Jan. 28 authorized the Schenectady (N. Y.) Railway to raise its fare from 6 cents to 7 cents where it operates over the lines of the United Traction Company, Albany. The decision covers Schenectady cars operated in Albany, Troy, Green Island and Watervliet. The United Traction Company was recently allowed to raise its fare to 7 cents.

Window Signs Banned in Buffalo.—The International Railway, Buffalo, N. Y., has prohibited the placing of advertising signs on the windows of its cars, including those on the suburban lines. Those signs were placed on the cars free by the company and the nuisance became so great that the latter was forced to prohibit the signs altogether. Announcements of dances, card parties, and other entertainments frequently obstructed the view from a dozen windows in each car.

Tacoma Rise Postponed.—The State Public Service Commission has suspended for a period of sixty days the 10-cent fare which the Tacoma Railway & Power Company, Tacoma, Wash., planned to make effective on Jan. 18. In the meantime, a hearing will be held on the question of granting the increase. Mayor C. E. Riddell and City Attorney U. E. Harmon are negotiating with the company for a plan whereby the city will have a share in the management of the lines.

Forty-Five Passengers Safety Car Limit.—William M. Myers, Director of Public Safety of Richmond, Va., has issued regulations for the operation of one-man cars by the Virginia Railway & Power Company. By order of Director Myers no more than forty-five persons will be allowed on one of the cars at any one time. No passengers will be allowed to stand in the aisles of the cars at any point in advance of the rear of the motorman's seat, thus leaving the platform clear.

Racine Decision Soon.—John Allen, of the Railroad Commission, has returned to Madison, Wis., from Racine where he conducted a public hearing into the service furnished in that city by the local lines of the Milwaukee Electric Railway & Light Company. A decision by the commission in the matter will be handed down within the next three weeks. Citizens protested to the commission following the granting of authority to the railway by the commission to install one-man cars on its Racine lines.

Winnipeg Fights Six-Cent Fare.—The order of P. A. Macdonald, Public Utilities Commissioner of Manitoba, under which the Winnipeg Electric Railway has been charging 6-cent fares, has been attacked in the courts by the city of Winnipeg. The city is seeking an injunction to restrain the company from collecting the increased fares. The commissioner issued the order in October, 1919. The city obtained a temporary stay, but a permanent injunction was refused at that time. The case was argued before Justice Curran on Jan. 26.

Indirect Relief Proposed.—Indirect relief would seem to be in prospect for the Humboldt Transit Company, Eureka, Col. The Eureka Standard said recently: "Realizing that the Humboldt Transit Company cannot continue to operate unless income meets at least the expense of operation, public opinion is now rapidly developing toward action which will mean the elimination of the franchise tax now paid by the company. This relief, it is declared, would permit the company to make improvements and maintain its service. Although technicalities are involved in the elimination of the tax, it is believed that heroic treatment is necessary and that it is no longer wise to quibble over legal points when to do so will mean the loss of the entire system."

Permanent Order on Milwaukee Fares.—The Wisconsin Railroad Commission has handed down a permanent order superceding and modifying its provisional order of Oct. 30, 1919, fixing the rate of fare to be paid on the Milwaukee city lines of the Milwaukee Electric Railway & Light Company. The single cash fare remains at 7 cents as fixed on Oct. 30, but the sale of tickets is now to be made on a basis of nine for 50 cents instead of eighteen for $1. Universal transfers have been ordered. The company is also ordered to put on 100 new cars, fifty by Sept. 1, 1920, and fifty more by Nov. 1, 1920. In its permanent order the commission says that the new equipment must be in addition to any now owned and operated by the company in the city of Milwaukee.

Court to Pass on St. Louis Fare.—The city of St. Louis, Mo., on Jan. 25 applied to Circuit Judge Shields for a writ of certiorari to compel the State Public Service Commission to submit to court review its order authorizing the United Railways to collect an 8-cent cash fare. Judge Shields allowed the city ten days in which to file briefs in the case, and the commission ten days additional in which to file its answer. City Counsellor Daues, representing the city, argued that the company could operate profitably on a 6.25 cent fare. He declared that the number of fares had increased 17.5 per cent in 1919 over the figure shown for 1918. Counsel for the company contended that the commission's order had not been ineffect for a sufficient period to determine whether the rate was excessive. The 8-cent cash fare was installed last September. The commission's order provided for the sale of tokens at 7:5 cents each in lots of less than fifty, and at 7 cents in lots of fifty or more.

Legal Notes

CALIFORNIA—*Negligence to Let Trolley Rope Swing Loose*

To operate a trolley car upon a crowded thoroughfare with the trolley rope swinging in a loop, which might strike pedestrians, was itself a negligent act. [Sallee *vs.* United Railroads of San Francisco, 180 Pacific Rep., 74.]

ILLINOIS — *Contract for Power in Perpetuity is Valid.*

A contract by which a manufacturing company transferred to a power company, power created by its dam, in consideration of the power company's agreement that it and its successors should furnish the manufacturer perpetually thereafter certain power agreed upon, is not invalid, as otherwise the manufacturer would be deprived of property without due process of law, there being nothing in such contract injurious to public welfare. [Schiller Piano Co. *vs.* Illinois Northern Utilities Co., 123 Northeastern Rep. 631.]

ILLINOIS—*Injury to Conductor While Ordering Lunch Within Workmen's Compensation Act.*

A conductor's act in stopping his car in front of his home and going there to order his lunch to be carried to the place allowed for the regular lunch period is an incident to his employment, and his injury by a car on another track arises out of and in course of employment, within the workmen's compensation act. [Rainford *vs.* Chicago City Ry., 124 Northeastern Rep. 643.]

ILLINOIS—*Disobedience of Lineman Did Not Relieve Company of Liability.*

Where a lineman was doing his work on top of a tower carrying an electric transmission line, his contributory negligence in failing to observe a direction not to go near certain live wires did not relieve his employer from liability to make compensation for his death under the workmen's compensation act. [Mississippi River Power Co. *vs.* Industrial Commission et al., 124 Northeastern Rep., 552.]

MASSACHUSETTS—*Injury to Passenger Pushed from Car by Crowd.*

Where a passenger is forced out of a car by the pressure of the crowd at a station where the door of the car was properly opened, the railway was not liable for her injuries. [Knowlton *vs.* Boston Elevated Ry., 123 Northeastern Rep., 681.]

MISSOURI—*Injury to Mother Trying to Save Child.*

Where a mother, observing her child close to the track on which a street car was approaching, rushed into the street in an effort to save the child and was killed, the company cannot claim that knowingly, willfully, or wantonly she placed herself in front of a moving car. [Sherman *vs.* United Rys., of St. Louis, Mo., 214 Southwestern Rep., 223.]

NEW JERSEY — *Unauthorized Switch Had to Be Removed After Twelve Years' Use.*

As the State statutes declare that a municipality in granting consent may act only by ordinance and not otherwise, it was held that where a street railway which had obtained permission by ordinances of the township committee and county board of freeholders to construct, maintain and operate its road on a township highway, located a turnout at a point other than that specified on the map, the fact that members of the committee and board of freeholders knew of the change and that no objection was made for twelve years does not stop the township from compelling removal. [Trenton & Mercer County Traction Corporation et al. *vs.* Inhabitants of Ewing Tp. et al., 107 Atlantic Rep., 416.]

NEW YORK—*Injury from Trolley Wire Under Bridge.*

Where a trolley wire passing under a bridge was so placed that no one standing on the bridge or even bending over the parapet could reach it, the company was not liable for injury to a boy who in crossing the bridge swung a wire about 8 ft. long, bringing it in contact with the trolley wire. [Adams *vs.* Bullock, 125 Northeastern Rep., 93.]

PENNSYLVANIA—*Agreement in Lease to Pay Taxes Requires Payment of Federal Income Taxes.*

An agreement in a street railway lease to pay all taxes lawfully imposed upon lessor, or for which lessor would be liable on account of its earnings or profits, is broad enough to include the federal income tax and the war excess profits tax, although such taxes were not in existence when lease was executed. [Philadelphia City Passenger Ry. *vs.* Philadelphia Rapid Transit Co., 107 Atlantic Rep., 329.]

RHODE ISLAND—*Motorman May Assume Persons on Track Will Exercise Reasonable Care.*

A motorman is entitled to act on the presumption that one approaching the track is in possession of all his faculties, and will exercise reasonable care. Hence, where he does not slacken the speed of his car until he sees an automobile will not leave the tracks, and then exercises all reasonable means to stop, the company is not liable, under the last clear chance doctrine. [Halliday *vs.* Rhode Island Co., 107 Atlantic Rep., 86.]

TEXAS—*Accident to Merry-Go-Round Operator from Defective Switch.*

An electric merry-go-round operator, having no experience with electricity and no knowledge that a switch was defective and likely to close the circuit by its own weight so as to start the machine while he was making repairs is not chargeable with knowledge of the danger. [Hutcherson *vs.* Amarillo St. Ry., 213 Southwestern Rep., 931.]

WEST VIRGINIA—*Cancellation of Pass May Be Authorized Under Commission Law.*

Services rendered or materials furnished to a public service corporation subject to the provisions of the Public Service Commission Act must be compensated for by payment in money, not by a pass; and a contract for a pass, though valid when made, becomes illegal and unenforceable under the provisions of the act.

A contract of a public service corporation that conflicts with public duties imposed upon it by law is not within the protection of the constitutional provision inhibiting impairment of the obligations of contracts. [Shrader *vs.* Steubenville, East Liverpool & Beaver Valley Traction Co., 99 Southeastern Rep., 208.]

New Publications

Radio Engineering Principles

By Henry Lauer and Harry L. Brown. McGraw-Hill Book Company, Inc. 300 pages, 6 in. x 9 in., 250 illustrations, eight special plates.

Many electrical engineers connected with electric railways and central stations are taking a new interest in radio, since the successful development of the radio telephone, because of the possibility it offers of solving the trouble with the wire communication system in train and load dispatching. Usually when serious trouble occurs on a power line, the telephone line is also made inoperative. This is the time that an auxiliary radio system would be invaluable. The theory of the radio telephone is fully presented in this new book, which is the first one to cover the important developments in radio communication made during the war. The book is written to serve the purpose of a general textbook on the subject, so that it treats of the principles involved in the older radio apparatus as well as the newer. The theory behind all of the numerous kinds of circuits is clearly presented and the means are pointed out for adapting a circuit to any particular requirements. Little mathematics has been resorted to by the authors, a point mentioned by Major-General George O. Squier, chief signal officer of the army, in a foreword which he wrote to convey his indorsement of the book. In other words, this highly theoretical subject has been presented in a very practical manner.

Personal Mention

H. V. Bozell Joins Staff

Has Specialized in Questions Relating to Valuations and Regulation of Public Utilities

The JOURNAL announces the addition of Harold V. Bozell to its staff as associate editor. For the past three and a half years Mr. Bozell has been assistant professor of electrical engineering at Yale University, and for the time being, will continue this connection, devoting a part of his time to work at Yale.

Mr. Bozell was born in Kansas in 1886. He was graduated from the University of Kansas in electrical engineering in 1908 and in 1915 received the degree of electrical engineer. In the fall of 1908 he accepted an offer from the University of Oklahoma as instructor in electrical engineering and later became director of the School of Electrical Engineering, subsequently established there. This position he held until he went to Yale in 1916. While at Oklahoma, Mr. Bozell was largely instrumental in the organization of the Gas, Electric & Street Railway Association of Oklahoma (now the Oklahoma Public Utilities Association) and was its secretary-treasurer until he left Oklahoma in 1916. He also carried on a consulting practice, for a time having as a partner H. B. Dwight, now electrical engineer of the Colorado Public Utilities Commission. Some of the work of this character consisted of valuations of three or four electric light and power companies as well as rate and financial investigations of public utilities.

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HAROLD V. BOZELL

During the war, Mr. Bozell devoted most of his time to war service, though still conducting necessary instructional work at Yale. He carried on special engineering investigations for the Naval Consulting Board during the entire period; was a consulting electrical engineer to the Bureau of Standards, chiefly on public utility matters, though devoting some time in consultation on the preparation of a radio text for the Signal Corps by the Bureau, and in July, 1918, became supervisor of communication training for the War Department's committee on education and special training. An important piece of this latter work was the School for Signal Corps Officer Candidates (numbering almost 500) which he personally directed at Yale.

In his teaching experience Mr. Bozell has had to handle many subjects, among them electric railways. One of his principal interests, both at Oklahoma and Yale, has been public utility economics, commission regulation, etc.

W. C. Harrington has been elected secretary of the Tyler Traction Company, Sistersville, W. Va.

S. G. Pyle has been elected president and general manager of the Tyler Traction Company, Sistersville, W. Va.

W. J. Neuemchwander, treasurer of the Tyler Traction Company, Sistersville, W. Va., has been elected vice-president of the company.

L. M. Stover, formerly manager of the Baton Rouge (La.) Electric Company, is at present connected with the home office of Stone & Webster, Boston.

Charles M. Durell, formerly superintendent of the Biddeford & Saco Railroad, Biddeford, Me., has been appointed superintendent of the Barre & Montpelier Traction & Power Company, Montpelier, Vt.

Arthur W. Loasby, president of the Auburn & Syracuse Electric Railroad and the Rochester & Syracuse Railroad, has been elected vice-president of the Equitable Trust Company of New York. Mr. Loasby is president of the First Trust & Deposit Company of Syracuse, N. Y.

Henry S. Day, formerly connected with the engineering firm of Sanderson & Porter, New York City, has been appointed equipment engineer of the Kansas City (Mo.) Railways. Mr. Day entered the employ of the Westinghouse Electric & Manufacturing Company in 1907, remaining with that company in various capacities until 1909. In that year he was placed in charge of the shops of the electrified zone of the New York, New Haven & Hartford Railroad, resigning in 1917 to join Sanderson & Porter, for whom he was engaged in the valuation and appraisal of public utilities. He served during the war as a captain with the 37th Engineers.

R. B. Hill Promoted

Appointed Superintendent of Operation of the Los Angeles Railway—Office Recently Created

Robert B. Hill, until recently chief dispatcher of the Los Angeles (Cal.) Railway, has assumed the duties of superintendent of operation of the company. The office which Mr. Hill now occupies is a new one, having been created upon the joint recommendation of the California Railroad Commission and the Los Angeles Department of Public Utilities after an exhaustive investigation of the service and organization of the company. In his present capacity he has charge of the operation of the entire system of the Los Angeles Railway. The company employs approximately 2,500 men and operates 742 cars.

Mr. Hill is a native of Illinois and is forty-six years of age. He has been in the employ of the Los Angeles Railway since 1902, when he entered the company's service as a conductor. In 1905 he was promoted to dispatcher, continuing in that position for four years. From 1912 to 1916 he was employed in the schedule office of the company. In the latter year he was appointed chief dispatcher, holding that position until his appointment as superintendent of operation.

R. B. HILL

Thomas L. Small, formerly secretary and assistant treasurer of the Savanah Electric Company, has been appointed manager of the Baton Rouge (La.) Electric Company, a Stone & Webster property. Mr. Small entered the employ of Deering, Milliken & Company, dry-goods commission merchants of New York City, in 1910. Three years later he joined the Stone & Webster organization. Prior to his appointment as manager of the Baton Rouge Electric Company he was connected with the Stone & Webster properties in Dallas, Tex., Brockton, Mass., and Savanah, Ga.

Mr. Blair Made Head

Has Been Elected Chairman of Board of Operation and President of Chicago Surface Lines

Henry A. Blair was elected chairman of the board of operation, chairman of the executive committee and president of the Chicago (Ill.) Surface Lines at the meeting of the board of operation on Feb. 4. This marks the transfer of the operating responsibility of the Surface Lines from the Chicago City Railway interests to the Chicago Railways interests. Leonard A. Busby, former president, retains a position on the executive committee, but the control of the company is now held by Mr. Blair.

Rumors regarding the election had it that Mr. Blair would be elected president temporarily until an operating head could be secured, but this is in error. Mr. Blair has been elected for the regular term of three years and will continue to hold the three offices to which he has been elected for the full term and probably for the next four-year term, which terminates the operating agreement between the companies in 1927.

There has been a growing dissatisfaction over the operating policies followed by the Chicago City Railway control because it is said that the enmity of the public and public officials has been incurred. This and a clash as to the future operating plans are believed to have brought about the determination of the Chicago Railways intersts to exercise their majority representation on the board, and secure full control.

As a preliminary to the meeting of the board of operation, the board of directors of both companies held meetings and elected officers. Mr. Blair and Mr. Busby were re-elected president of their respective companies. The Chicago Railways elected Mr. Blair, Frederick H. Rawson, John M. Roach and Wallace Heckman as its four representatives on the board of operation of the Chicago Surface Lines, and the Chicago City Railway elected Mr. Busby, Harrison B. Riley and F. O. Wetmore as its three. The only change on the board of operation was the substitution of Mr. Rawson for Charles C. Adsit.

The meeting of the board on Feb. 4 adjourned without electing its remaining officers. These include the general auditor, treasurer, secretary and assistant treasurer, assistant secretary and general counsel. The elections will be made at the next regular meeting of the board, which is on Feb. 23 unless a special meeting is called before then.

Mr. Blair will secure the services of some particularly capable traction man to take direct charge of the operation of the Surface Lines, who will probably be given the title of general manager. Several men are being considered for the place, but it has not been definitely offered to any one except Matthew C. Brush, the former head of the Boston Elevated Railway, up to the time of this writing. Mr. Brush has declined the offer because his present associates in the American International Corporation were not willing for him to leave that organization.

W. M. Weatherwax Resigns

W. M. Weatherwax, for the past six years superintendent of transportation of the Chicago (Ill.) Surface Lines, resigned on Jan. 31. Mr. Weatherwax was born on a farm near Lansingburgh, now Schaghticoke, N. Y., in 1866. He was educated in the country schools and worked on the farm during vacation time. He began street railway work as a conductor on the Troy & Lansingburgh Street Railway, Troy, N. Y., in 1884. He left railway work after a few months' service and went to Chicago.

His first employment in the West was with the Northern Transportation Company, where he advanced successively from watchman to lookout and finally to wheelman of a large lake freighter plying between Chicago and Ogdensburg, N. Y. In 1886 he entered the service of the Chicago City Railway as a driver of tow horses. He was soon thereafter transferred to general carhouse service. He was next made a conductor, in which position he remained until April, 1890, when he was advanced to assistant foreman in charge of cars and trainmen at one of the carhouses. In April, 1893, he was made foreman in charge of one of the carhouses, and later was transferred to what is now known as the Englewood carhouse with the same title.

In 1906 he was made superintendent of transportation of the Chicago City Railway. He held this position for eight years, at the end of which he became superintendent of transportation of the Chicago Surface Lines.

W. A. Ernst has been appointed master mechanic of the Maryland Electric Railways, Annapolis, Md. Mr. Ernst was formerly general electrician for the Newport News & Hampton Railway, Gas and Electric Company, Hampton, Va., and before that was in charge of the electrical department of the Holyoke (Mass.) Street Railway.

L. C. Haynes, vice-president of the East St. Louis & Suburban Railway, East St. Louis, Ill., has retired from active business life after rounding out a quarter of a century of service with public utility properties controlled by E. W. Clark & Company, Philadelphia, Pa. Mr. Haynes will retain his official connection with the utility properties in East St. Louis and his membership on their boards of directors, but will in the future be free for travel and other recreation.

Frederick Nicholas, contributing editor of the *Electrical World*, has resigned. Mr. Nicholas began his service with the McGraw Publishing Company in May, 1908, as a result of the consolidation of the *Street Railway Journal* and the *Electric Railway Review*, forming the ELECTRIC RAILWAY JOURNAL. He had been associate editor of the *Electric Railway Review* and the *Railway Age*, then published by the Wilson Company, Chicago, from January, 1907. His work with the McGraw Publishing Company was at first mainly on the ELECTRIC RAILWAY JOURNAL, with occasional contributions to the *Electrical World*. Later he divided his time about equally between the two papers. For some years his work has been entirely on the editorial staff of the *Electrical World*.

W. Tuke Robson, former manager of the Southampton Corporation Tramways, has returned to Great Britain on the *Empress of France*, sailing from St. John's, New Brunswick, on Jan. 21. During his stay of several months in the United States, Mr. Robson made a first-hand study of American electric railway practices in cities as far west as Chicago and Milwaukee, and as he spent the Christmas holidays in Florida he had the opportunity to see a fair-sized fraction of Uncle Sam's domain. Mr. Robson says that the most impressive feature of American electric railway practice is the one-man safety car for which he sees a good field in the smaller British cities. He is also planning to introduce to his home country a number of other American practices, but he is less enthusiastic about the success of some of the roads he has seen as regards the re-adjustment of contractural relations with their communities. A good deal of what is going on in the latter field made him feel that he was viewing a ten-ring circus!

Obituary

J. T. Voss, pioneer street railway builder of the South, died in Fort Worth, Tex., on Jan. 25. Mr. Voss was born in Tennessee in 1847. He built and owned several street railways in Georgia and Tennessee, and was manager of the Nashville Traction Company in 1895. In that year he went to Forth Worth and bought the 9-mile belt-line of mule cars, later absorbed by the Northern Texas Traction Company. He later became connected with the Fort Worth Light & Power Company, retiring two years ago.

Andrew E. Kalbach, receiver for the Second Avenue Railroad, New York, N. Y., died suddenly on Feb. 2. Mr. Kelbach was formerly general manager and electrical engineer of the New York City Interborough Railway, now controlled by the Third Avenue Railway. He was a graduate of the Annapolis Naval Academy. He resigned from the Navy in 1903 to become assistant engineer for the Rapid Transit Subway Construction Company, New York. He subsequently became connected with the New York City Interborough Railway. He was appointed receiver for the Second Avenue Railroad in 1917.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER.

SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Car Orders for January and February May Exceed 600

Present Indications Are that Buying Movement Will Extend Throughout Year as the Different Railways Receive Fare Increases—Many Railways Coming Into the Market for Safety Cars

Railways from all parts of the United States are coming into the market for rolling stock and equipment, and if the amount of business placed during the month of January and orders now pending can be taken as an indication, the rolling stock market is now more active than it has been for the past three years. Orders for January and February will probably exceed 400 cars and may even amount to 600 cars if certain large orders now pending, are placed during the next three weeks. Many large railways are in the market for large numbers of cars including subway, elevated, double-truck surface cars and safety cars. Also a far greater number of small railways are ordering safety cars in lots of two, four, five, seven or ten each. Many companies which are not able to purchase safety cars are making extensive plans to remodel their cars to produce more car miles and to increase the revenue per car-mile.

Heavy Demand for Cars in New England

Conditions in New England are active. The Boston (Mass.) Elevated Railway trustees have authorized the purchase of 100 new cars. Forty of these will be for use on the elevated lines, to replace an equivalent number which have been worn out. Thirty will be of the standard center-entrance double-truck surface type, and will be equipped for train operation. Thirty standard safety cars are also included in the authorization and orders for these have actually been placed with the J. G. Brill Co. The Concord (N. H.) Electric Railway expects to place an order for four safety cars. Biddeford & Saco Railroad Company, Biddeford, Me., has recently ordered two safety cars from the Wason Manufacturing Company. The Connecticut Company, New Haven, Conn., is expected to place an order for safety cars shortly. Other railways in this section are considering plans for financing purchases and as soon as these arrangements are completed, many additional rolling stock orders will be announced.

Demands in the district in and near New York have been for cars of the heavier types. Much interest is now centered in the needs of the Hudson & Manhattan Railroad Company, reported as being in the market for twenty-five cars for the Hudson tubes. With the exception of a few minor changes, these cars will be almost the same as the ones now in use. The Long Island Railroad Company, New York, N. Y., recently has placed orders for 100 cars, of which forty motor-passenger and thirty trailers were ordered from the American Car & Foundry Company and the remaining thirty cars, which are passenger coaches without motors, have been placed with the Standard Steel Car Company.

In addition to demand for heavy cars, safety car orders are plentiful. Trenton & Mercer County Traction Company, Trenton, N. J., has placed an order for forty safety cars with the J. G. Brill Company, which is also reported as having received an order for six safety cars from the Trenton, Bristol & Philadelphia Street Railway. Pennsgrove Traction Company is reported as being in the market for six safety cars. The Empire State Railroad Corporation (Oswego, N. Y.), (city division), which lost its carhouse in Oswego in a recent fire is reported to be in the market for safety cars which will be used to replace the heavier cars destroyed. United Railways & Electric Company, Baltimore, Md., is reported to be in the market for thirty safety cars which are expected to be placed within a short time. In addition, this company is contemplating the purchase of additional rolling stock which will be noted at a future date.

Middle West Plans to Buy Heavily

Indications are that safety cars will be purchased heavily during 1920. Recent reports from Terre Haute to the effect that fifty-six safety cars have replaced twenty-six heavy cars there, one result being that January, 1920, was the best January from a traffic viewpoint in the history of Terre Haute. Other similar cases are receiving a great deal of consideration at this time. Indiana Railway & Light Company, Kokomo, Ind., has purchased ten safety cars from the American Car Company. Tri-City Railway Company, Davenport, Iowa, is reported to be in the market for a number of safety cars. Pittsburgh (Pa.) Railways are expected to be in the market for cars in the near future according to reports received. Hodenpyl, Hardy & Company, New York, N. Y., is expected to be in the market within the next few weeks for a large number of cars for the Northern Ohio Traction & Light Company and other western railways, both city and interurban, which they control. The number of cars is expected to be between fifty and 100.

Pacific Coast Favors The Safety Cars

Safety cars are still going strong on the Pacific Coast. A number of companies are either planning to purchase safety cars or to remodel the present cars. The Los Angeles Railway has just placed an order with the American Car Company for forty-five safety cars. These cars will be 28 ft. long and seat thirty-two persons as compared with the present cars which are 44 ft. in length and accommodate forty-four passengers.

From reports received from a large number of railways in the United States, the outlook is very promising for a heavier purchasing of rolling stock than has been experienced for the past four years.

Prospects Poor for Car Window Glass

Purchase by Motor Interests of Three Glass Factories Expected to Cut Available Yearly Production About 20 Per Cent

Double-thick window glass and the heavier thicknesses are now scarcer than ever. Manufacturers are heavily oversold, the majority of them being out of the market altogether. Prices are stiffening but little attention is paid to prices, the main object being to increase production. The present cold spell is curtailing production when it is vitally necessary.

Stocks of different jobbers are almost bare with not a bit of $\frac{3}{16}$ in. polished plate glass anywhere to be found. Users are being advised to place orders for their requirements now in order that they may possibly be included in the partial allotments of glass that will no doubt be made in April when some new stock will be available.

Easily the most disturbing matter before glass users today is the announcement that the Fisher Body Company, a subsidiary of the General Motors Company, unable to purchase its glass requirements in the open market,

has bought up three plate mills, the Saginaw Plate Glass Company, Saginaw, Mich., the Columbia Plate Glass Company, Blairsville, Pa., and the Federal Plate Glass Company of Ottawa, Ill. According to reports, an unsuccessful attempt was made to buy the Standard Plate Glass Company of Butler, Pa.

Total yearly glass production for the United States is estimated at 60,000,000 sq.ft. of which it is claimed, the above plate mills produce 10,000,000 to 12,000,000 sq.ft.

Rail Capacity in Mills Commandeered

No Prospects For Railways to Obtain Mill Space Until Second Quarter Except for High T and Girder Rails

The Government has issued a wartime order on all of the rail mills asking for 72,500 tons of rail by March 1, in addition to the 42,500 tons which the Railroad Administration placed a short time ago for March delivery. From reports received by the Electric Railway Journal from different steel companies, this order virtually shuts the electric railways out of any mill space for the first quarter with the exception of some little space still available in a number of manufacturers' plants where special work, high T-rails and grooved girder rails are made. This space, however, is very small and at the present rate of business, will be filled within the next few weeks.

Orders for standard rails are showing considerable improvement, and a great rush for mill space for second quarter is anticipated.

Rolling Stock

Tri-City Railway, Davenport, Iowa, expects to be in the market soon for a number of safety cars.

Connecticut Company, New Haven, Conn., is expected to place an order shortly for a number of safety cars.

Los Angeles (Cal.) Railway has placed an order with the American Car Company for forty-five safety cars.

Northern Ohio Traction & Light Company, Akron, Ohio, is expected to be in the market for cars in the near future.

Biddeford & Saco Railroad, Biddeford, Me., has purchased two safety cars from the Wason Manufacturing Company.

Indiana Railway & Light Company, Kokomo, Ind., has placed an order with the American Car Company for ten safety cars.

Hudson & Manhattan Railroad, New York, N. Y., is reported to be in the market for twenty-five cars for the Hudson tubes.

Trenton & Mercer County Traction Company, Trenton, N. J., has placed an order with the J. G. Brill Company for forty safety cars.

Trenton, Bristol & Philadelphia Railway, Philadelphia, Pa., is reported to have placed an order for six safety cars with the J. G. Brill Company.

Long Island Railroad, New York, N. Y., has purchased forty motor passenger and thirty trailers from the American Car & Foundry Company and thirty passenger coaches from the Standard Steel Car Company.

United Railways & Electric Company, Baltimore, Md., is reported in the market for thirty safety cars for outlying lines and for additional equipment to be used in the congested sections. Pittsburgh (Pa.) Railways is reported as considering the purchase of some cars.

Boston (Mass.) Elevated Railway trustees have authorized the purchase of 100 new cars. Forty of these will be for use on the elevated lines to replace an equivalent number worn out. Thirty will be of the standard center-entrance, double truck surface type and will be equipped for train operation. Thirty standard safety cars are also included in the authorization. Orders have actually been placed with the J. G. Brill Co. for the safety cars.

Franchises

Montgomery Light & Traction Company, Montgomery, Ala.—Ray Rushton, receiver for the Montgomery Light & Traction Company, has submitted to the City Commission a proposed ordinance providing for changes in the company's franchise to permit the company to take up some tracks and to relay them in other streets.

Recent Incorporations

Citizens' Electric Company of Valley View, Ashland, Pa.—The Citizens' Electric Company has been organized with a capital of $30,000 to build an electric railway between Ashland and Klingerstown.

NEW YORK METAL MARKET PRICES

	Sept. 16, 1919	Feb. 4, 1920
Copper, ingots, cents per lb.	22.12½	19.00
Copper wire base, cents per lb.	26.00	22.25
Lead, cents per lb.	6.25	8.75
Nickel, cents per lb.	41.00	45.00
Spelter, cents per lb.	7.55	8.70
Tin, cents per lb.	56.00	58.00
Aluminum, 98 to 99 per cent, cents per lb.	32.00 to 33.00	32.50

OLD METAL PRICES—NEW YORK

Heavy copper, cents per lb.	19.00 to 19.50	17.75 to 18.00
Light copper, cents per lb.	15.50 to 16.00	15.50 to 16.00
Heavy brass, cents per lb.	10.00 to 10.50	10.00 to 10.50
Zinc, cents per lb.	4.75 to 5.00	5.00 to 5.25
Yellow brass, cents per lb.	8.50 to 9.00	8.50 to 9.00
Lead, heavy, cents per lb.	5.00 to 5.10	6.75 to 7.00
Steel car axles, Chicago, per net ton.	$26.00 to $27.00	$33.00 to $35.00
Old carwheels, Chicago, per gross ton.	$25.50 to $27.00	$35.00 to $36.00
Steel rails (scrap), Chicago, per gross ton.	$22.75 to $23.75	$29.00 to $30.00
Steel rails (relaying), Chicago, gross ton	$26.50 to $27.50	$34.00 to $35.00
Machine shop turnings, Chicago, net ton	$9.25 to $9.75	$14.50 to $15.00

ELECTRIC RAILWAY MATERIAL PRICES

Rubber-covered wire base, New York, cents per lb.	30	30
Waterproofed wire (100 lb. lots), cents per lb., New York	34	27.50
Weatherproof wire (100 lb. lots), cents per lb., Chicago	33	27.00
T rails (A.S. C. E. standard), per gross ton	$49.00 to $51.00	$55.00 to $57.00
T rails (A. S. C. E. standard), 20 to 500 ton lots, per gross ton	$47.00 to $49.00	$51.00 to $53.00
T rails (A. S. C. E. standard), 500 ton lots, per gross ton	$45.00 to $47.00	$45.00 to $47.00
T rail, high (Shanghai), cents per lb.	3	3
Rails, girder (grooved), cents per lb.	3	3
Wire nails, Pittsburgh, cents per lb.	3.25 to 3.50	4.50
Railroad spikes, drive, Pittsburgh base, cents per lb.	3.50	3.35 to 3.85
Railroad spikes, screw, Pittsburgh base, cents per lb.	7.50 to 9.00	7.50 to 9.00
Tie plates (flat type), cents per lb.	2.75	3.00
Tie plates (brace type), cents per lb.	2.75	3.00

ELECTRIC RAILWAY MATERIAL PRICES

	Sept. 16, 1919	Feb. 4, 1920
Tie rods, Pittsburgh base, cents per lb	7.00	7.00
Fish plates, cents per lb.	3.00	3.00
Angle plates, cents per lb.	3.90	3.90
Angle bars, cents per lb.	3.90	3.90
Rail bolts and nuts, Pittsburgh base, cents per lb.	4.50	4.50 to 6.50
Steel bars, Pittsburgh, cents per lb.	2.35	
Sheet iron, black (24 gage), Pittsburgh, cents per lb.	4.20	4.35 to 4.60
Sheet iron, galvanized (24 gage), Pittsburgh, cents per lb.	5.25	5.75 to 5.95
Galvanized barbed wire, Pittsburgh, cents per lb.	4.10 to 4.20	4.10 to 4.45
Galvanized wire, ordinary, Pittsburgh, cents per lb.	3.70 to 3.80	3.70 to 3.95
Car window glass (single strength), first three brackets, A quality, New York, discount†	77%	77%
Car window glass (single strength), first three brackets, B quality, New York, discount	77%	77%
Car window glass (double strength, all sizes AA quality), New York, discount	79%	79%
Waste, wool (according to grade), cents per lb.	16 to 19	20 to 23
Waste, cotton (100 lb. bale), cents per lb.	10 to 14½	19 to 22
Asphalt, hot (150 tons minimum), per ton delivered	....	....
Asphalt, cold (150 tons minimum, pkgs. weighed in), per ton	....	$25.00
Asphalt filler, per ton	$30.00	$30.00
Cement (carload lots), New York, per bbl.	$2.90	$2.90
Cement (carload lots), Chicago, per bbl.	$3.05	$2.00
Cement (carload lots), Seattle, per bbl.	$3.13	$2.68
Linseed oil (raw, 5 bbl. lots), New York, per gal.	$2.15	$1.93
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	$2.17	$1.95
White lead (100 lb. keg), New York, cents per lb.	13	14½
Turpentine (bbl. lots), New York, cents per gal.	$1.63	$1.97

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

Spokane & Eastern Railway & Power Company, Spokane, Wash.—The Spokane & Eastern Railway & Power Company and the Inland Empire Railroad have been incorporated as the successors to the Spokane & Inland Empire Railroad. The Spokane & Eastern Railway & Power Company is capitalized at $3,000,000 and the Inland Empire Railroad at $1,000,000.

Track and Roadway

Vallejo, Cal.—An allotment of $47,500 has been received by the Public Works Department on Mare Island for the electrification of the causeway and the construction of a number of electrified spurs to be used in handling the transcontinental freight shortly to be brought to the navy yard by car barges from the lower bay.

Cumberland & Westernport Electric Railway, Frostburg, Md.—The Cumberland & Westernport Electric Railway has completed extensive improvements on its lines in Frostburg, Pekin and Westernport, Md. At Frostburg the tracks have been extended to the corner of Main and Water Sts., where the company's office is now located.

Worcester (Mass.) Consolidated Street Railway.—The State Department of Public Utilities has issued an order approving the granting of track locations in Belmont and Shrewsbury Sts., Worcester, to the Worcester Consolidated Street Railway.

Interborough Rapid Transit Company, New York, N. Y.—The Interborough Rapid Transit Company contemplates the construction of a new substation for its Westchester branch on Westchester Ave. near St. Peters Avenue, to cost about $50,000. This is substation No. 48 under the municipal contract.

Power Houses, Shops and Buildings

Ohio Valley Electric Railway, Huntington, W. Va.—This company is planning to purchase additional power house equipment during the coming year.

Trade Notes

Robert T. Lozier, New York, has resumed his practice as consultant in industrial and public utility lines and has opened an office in the Woolworth Building.

Johnson Coin Counting Machine Company announces that after Feb. 2, 1920, it will occupy the building which it has recently purchased at 10 Anable St., Long Island City, N. Y.

Charles Cory & Son, Inc., New York, N. Y., manufacturer of electrical signaling apparatus, etc., is rushing work on the construction of its new plant at 183-187 Varick St., which should be in operation by May 1.

Chicago Pneumatic Tool Company, Chicago, Ill., announces that C. E. Laverenz, formerly an inspector in the Ordnance Department, has been made special railroad representative of the company with headquarters at Chicago.

Electric Railway Material Needed in Scandinavia.—Material and equipment are needed for a railway to be built in one of the Scandinavian countries (No. 30,918). Locomotive power may be steam or electrical traction (probably the latter). Information, descriptions, illustrations, estimates, etc., are desired.

Doehler Die-Casting Company, Brooklyn, N. Y., at its Jan. 5 directors' meeting, re-elected the following officers: H. H. Doehler, president; H. B. Griffin, vice-president; O. A. Schroeder, treasurer; O. A. Lewis, assistant secretary. The company also added to its list of officers J. Kralund, second vice-president, in charge of production, and Charles Pack, secretary and chief chemist.

The Bussmann Manufacturing Company, St. Louis, Mo., has completed the purchase of a modern factory in East St. Louis totaling 22,000 sq.ft. of floor space. The new factory will be operated as plant No. 2 and will double the capacity of the Bussmann company, which manufactures electrical fuses of all types. Its sales in 1919 amounted to 16,000,000 fuses, and the 1920 production is based on an estimated output of 40,000,000.

Blaw-Knox Company, Pittsburgh, Pa., announces that A. W. Ransome, manager of the New England territory of the company, has been transferred to San Francisco, Cal., as manager of the Pacific Coast territory, with offices in the Monadnock Bldg., San Francisco. O. A. Olstead, formerly of the New York office of the company, succeeds Mr. Ransome at Boston.

Buda Company, Harvey, Ill, announces the appointment of R. B. Fisher as general sales manager, who will direct all domestic and foreign sales and the advertising department. William P. Hunt, Jr., will continue as sales manager of the railway department; Mark J. Ross, sales manager of the headlight department, H. L. Miller, sales manager of the frog and switch department, J. L. Artmaier as sales manager of the export department, and S. G. Hyde as advertising manager.

Material Handling Machinery Manufacturers' Association, 35 West Thirty-ninth St., New York, N. Y., has changed the date of its meeting from Jan. 29-30 to Feb. 26-27. The sessions will be held at the Waldorf-Astoria Hotel, and the association invites to them all manufacturers of cranes of various types, hoists, winches, conveyors, industrial trucks, tractors and trailers, bulk-handling machinery, elevators and all forms of equipment and supplies used in construction and operation of mechanical handling machinery. Zenas W. Carter, 35 West Thirty-ninth St., is secretary.

Locke Insulator Manufacturing Company, Victor, N. Y., announces that, as of Jan. 1, Kent A. Hawley will have charge of the company's New York City office, at 233 Broadway. Mr. Hawley is a graduate of the University of California and has been connected since 1907 with the following firms and projects: Simmen Automatic Railway Signal Company, of Los Angeles; Charles C. Moore & Co., on the test of the Redondo power plant of the Pacific Light & Power Company; Great Western Power Company, on the construction of the Great Bend power plant with Vielè, Blackwell & Buck, engineers; design and construction of the Oakland substation and auxiliary power plant, and the construction of the generating and substations of the Appalachian Power Company. He was with the construction department of the General Electric Company at the McCall's Ferry power plant of the Pennsylvania Water & Power Company, and with Gibbs & Hill of New York on the electrification of the Norfolk & Western Elkhorn grade, the Pennsylvania Railroad at Philadelphia, the New York Connecting Railroad on Long Island, and recently on the electrified zone of the New York, New Haven & Hartford Railroad.

New Advertising Literature

Perry Manufacturing Company, New York, N. Y.: An illustrated pamphlet dealing with the question as to why prepayment terminals are operated by electric railways.

Hickey & Schneider, Elizabeth, N. J.: Bulletin No. 15 on its different types of disconnecting switches.

Templeton, Kenly & Company, Chicago, Ill.: A circular announcing a new model automatic raising and lowering pole pulling and pole straightening jack.

Pyrolectric Instrument Company, Trenton, N. J.: A forty-page booklet covering pyrovolter type instruments and thermocouples.

Ohio Brass Company, Mansfield, Ohio.: Price list No. 206, effective Dec. 15, 1919, applying to catalogs 201, 202, 202-A, 203, and 205 on Crouse-Hinds Imperial headlights of the arc and incandescent types.

Economy Electric Devices Company, Chicago, Ill.: A mailing card with the title "Meter the Energy—'That's What You Want to Save'," showing how the economy meter is used, first, as a power-saving device, second, for equipment inspection, and third, as an engineering device.

Northern Equipment Company, Erie, Pa.: A twenty-four-page booklet on "Saving Fuel Automatically and Scientifically in the Boiler Room," the subject matter of which was based upon information prepared for the United States Fuel Administration during the war. Hand and mechanical regulations are compared as performed by Copes regulators.