

# Electric Railway Journal



Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

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## Tell People What the Fare Is When You Change

COMPANIES which realize the necessity of publicity as an aid for increasing their rates should not neglect its help to instruct people in regard to the proper car fare after increased rates are granted. Of course, the greater number of the people who live in the city know about any change in fare when one is made. But it must be remembered that the cars carry many strangers who cannot be expected to know that the fare has been increased from 5 to 6 cents or that a zone system has been installed, and it is surprising how many among the regular residents of a community will be ignorant of an event of this kind or forget about it when they have to pay their fare. In the interest of speed on the platform, we suggest that a placard giving the fares charged, placed in a position in the car where the passenger can read it when he pays his fare, would be of public help. It is particularly necessary for a year or so after the change has been made, but it would be appropriate at all times.

## N. & W. Electrification Patriotic as Well as Profitable

MEN may build better than they know. The Norfolk & Western Railway was electrified so that the road would be able to handle more coal at less cost than would have been possible with more steam trackage. The company could not anticipate that its progressiveness would be so soon rewarded in other than a monetary way. Now the whole country may moralize on how much better our fuel situation would have been last winter—and to-day—if there had been a wider application of electrification. The Norfolk & Western Railway, at least, has nothing to regret as it moves thousands upon thousands of additional cars of coal toward the great ports and manufacturing centers buzzing with war activities. To this road the worst winter of a generation proved only a spur to higher tonnage.

The article in this issue tells the story from the operating standpoint. What a bold undertaking it was for both the customer and the manufacturer to install an absolutely new type of engine! How pleasant it is to record that practice has borne out carefully applied theory so successfully that any defects developed have been rather of materials than of design, and therefore easily remedied!

The fallacy of comparing steam and electric locomotives on a locomotive-mile basis is self-evident in the light of what these electric engines are doing in handling heavier tonnage at greater speeds and with smaller personnel. Nor have the full possibilities of this electrification been reached. We venture to prophesy

that when the need arises the company will find means to increase the capacity of its heaviest grade and tunnel section to a still greater degree either by using more of the present electric locomotives per train or by securing super-electric split-phase locomotives!

## Company Sections Are Partly Missing a Splendid Opportunity for Securing Information

A QUESTION which we have not been able to answer satisfactorily is why American Association company sections and other electric railway organizations do not make greater use of the talent which is available for instructing and inspiring them. The records of company section meetings which appear from week to week in the "Association News" column of this paper contain topics and names of speakers in sufficient variety to furnish suggestions for very profitable programs. The ELECTRIC RAILWAY JOURNAL prints records of the meetings incidentally for their news value, but mainly in the hope that what one section has done will prove suggestive to others, and not only to sections of the American Association but to other company organizations as well.

When a competent speaker is secured by one section it is a fair presumption that he would be available elsewhere. His experience in addressing one section should enable him to speak better before another. Now is the time to plan for the activities of next fall. A suggestion along this line is that the files of this paper be carefully studied in order to bring to light the names of men who have demonstrated their ability to say something worth while and to say it in an interesting way.

## The Motor Truck as a Freight Jitney

INTERURBAN roads in many parts of the country are reporting serious competition in freight haulage from motor trucks doing an inter-city business. This competition comes mostly in connection with the package or less-than-carload freight of the railways and where the main highways have been well improved. The great advantage of the motor truck, of course, is its ability to take on its load at the shipper's premises and to deliver it directly at the consignee's door. But this same independence of fixed conditions which is so desirable in one way is undesirable in another since it leads, under present conditions at least, to independence in all other matters as well. Like the freebooting jitney in the passenger field, the freight truck swears allegiance to no authority save to its owner. Given the requirements that a trucking company maintain the same facilities for the convenience of its patrons and assume the same responsibility as to safe delivery of its

goods as a railway, it does not take a man of very much ability along the lines of either economics or mathematics to figure out from the standpoints of both cost and labor that the balance sheet is all in favor of the railway for haulage over any considerable distance.

Transportation of freight by truck at the present time is not only uneconomical but is highly unpatriotic since it takes both man and money power from more essential enterprises. The particular job of the railways in this connection must be first properly to equip and prepare themselves for the handling of this business, and second, both by deed and by suitable publicity, to show that of the two methods of handling the freight business, theirs is the more essential.

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### Proposed Chicago Ordinance Is Modeled Along Progressive Lines

ALTHOUGH several important steps are yet to be taken before the proposed Chicago traction ordinance, noted elsewhere in this issue, becomes effective, the fact that the aldermen of that city have approved the measure by a decisive vote indicates that service-at-cost agreements appeal strongly to the public mind.

The Chicago situation is of special interest in view of the fact that a settlement with the existing companies was worked out through a public trustee corporation when approval of combined operation under private management seemed remote. Just as the Boston trustees, however, urged the former management to remain in office, the Chicago aldermen sanctioned the appointment of Messrs. Busby, Blair and Budd on the board of trustees. Both instances are a fitting illustration of the confidence of the authorities in the ability of those who have been responsible for service in the past. Such cases augur well for efficiency under trustee control.

The Chicago franchise has been wisely drawn for an indefinite period. The existing companies have agreed to turn over to a trustee corporation, without a dollar in payment, the local properties. In return for this they are to receive a guarantee of interest on the capital investment practically equal to the present average return of the combined companies. The traction fund of about \$25,000,000, accumulated during the last eleven years from the city's share in the net receipts of the surface lines, is to be put to a good use—for the construction of subways to be rented to the new corporation.

Like the most far-sighted settlements of recent time, the Chicago ordinance provides for an unlimited sliding scale of fares to meet actual costs. An emergency fund protects the investor against loss while the fares or transfer charges are in process of adjustment. Thus the people, other than those who use the cars, are not to be burdened with transportation charges of any kind. On the other hand, the car riders are not to pay the cost of street sprinkling or cleaning if these public benefits become a drain on the service.

The managements of the surface and elevated lines are to be congratulated on having gone thus far to bring about a solution of the Chicago transportation problem. The city authorities also are to be commended for their spirit of fair play in making necessary compromises. It is to be hoped that the 800,000 voters,

as well as the members of the State Legislature, will take the remaining steps necessary to bring about the unification of facilities. The end of the war should see Chicago started on its way toward possessing one of the most extensive local transportation systems in the world.

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### Let's Tell Others What We Can Do

AS MOST of the industries of this country go, that of electric railways is an old one. Perhaps it is for that reason that electric railway managers tend to be diffident about telling folks what they are able to do. We were moved to this reflection by reading the advertisement of one of the large motor truck manufacturers published in one of the greatest advertising mediums of the country, a popular periodical which counts its readers by the million. The pith of this advertising story was that motor truck freight haulage is a vital war measure because such transport saves steel. On the basis of a 2-ton truck hauling its load 100 miles per day, it was figured that the motor truck equivalent of 50,000 freight cars with their locomotives effected a saving of 1,100,000 tons of steel. It is not our thought to argue the matter, right or wrong as the figures may be. Our thought is, How do the electric roads stand in the way of comparison?

Certainly it is not hard to find interurban railways in this country where a crew of three men operating a two-car train have the capacity and do actually haul 60 tons of freight 100 miles in a working day. Using the truck manufacturer's own estimate of 1½ tons of steel per 2-ton truck, electric cars will not have more steel in their make-up than the trucks required to haul the same ton mileage. To carry the comparison a little farther is most interesting. Electric cars will require only one-tenth the labor and one-third of the equivalent fuel, and besides there are other little matters such as life of equipment and general maintenance very much in our favor. The ability of the truck freighter to collect his load at the shipper's door and deliver it direct to the consignee is offset by the greater mileage which electric cars can make when handling local freight and the greater security offered the owner of the freight, not to count such other things as highway wear and tear which the trucker leaves to the public purse through taxes of which he ordinarily pays a minimum.

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### How the Railways Can Help in Increasing Our Man-Power Supply

AS OUR military campaign in France becomes more active and our army increases in size, we must still further increase our efforts to utilize our man power in this country to better advantage than ever before. It has been estimated that for every soldier put in the field from four to ten workers are required in the war industries at home to keep the flow of munitions and other supplies to the front unimpaired. This means that with an army of 3,000,000 men in the field the workers at home would number at a minimum 12,000,000, or a total of 15,000,000, or if the army is increased to 5,000,000 men, as is now being advocated, a total of 25,000,000 working units would have to be withdrawn from peaceful pursuits for the industry of war. As there

are approximately only 36,000,000 working people in the United States, or that was the number before the war, the size and nature of the task before this country is obvious, even with an army of from 2,000,000 to 3,000,000. Its only solution is to employ women in a large number of those positions for which men heretofore have been considered necessary and also to dispense with services which men have been performing when this can be done without seriously interfering with the national efficiency.

Fortunately, both of these ways are available in electric railway operation to a very large extent. The woman conductor supplies one of these ways and the one-man car the other. Whatever might have been the situation if there had been no war, there can be no question of the urgency of action now in all ways in which man-power can be saved. Labor should not play the part of the obstructionist, both for patriotic reasons and because there is no danger in these strenuous times of the men displaced in this way going without employment. Both the country and the men will gain by any change which transfers the latter from non-essential to essential work.

#### Is It Difficult to Sell a New Idea to a Railway Manager?

A QUESTION put to us not long ago by a manufacturer whose business brings him into contact with a wide line of industries was this: "Are railways businesslike?" Yankee style, we asked him: "Businesslike in what sense?" His reply was: "Businesslike in the sense of studying new money-saving processes on merit." Drawing then upon his experience with other industries he continued somewhat along these lines. "Compared with manufacturing industries, railway managers do not seem to have the same acute business sense. For example, several years ago we spent many thousands of dollars to develop a certain process before we tried to commercialize it. When we brought it to the attention of people in several competitive lines of business, they 'perked up' at once. No sooner had the process been explained to them than *they* began telling *us* how many thousands of dollars they would be able to save. Their only concern was that their competitors might 'beat them to it'! When we put the same proposition before the steam and electric railroads, it was a different and sadder story. A few here and there asked to be shown and then bought, but the majority were skeptical. It's hard for me to understand the difference in viewpoint. What's the answer?"

Our interlocutor had struck bottom, and we had to answer with declarative instead of interrogative sentences. We were embarrassed to make the admission, but we did say that it seemed to us that the difference was largely due to the fact that the manufacturers always had before them the costs of their operations compared with those of others who were selling to the same trade, whereas the railway company seldom had real production costs and still more seldom compared them to advantage with other properties. Furthermore, such comparison was difficult because of varying factors in different towns. Another difficulty was that the frequent change in control compared with privately-owned concerns put a premium on the use of goods of lowest first cost instead of lowest continuing cost.

"That's too bad," said our friend dryly, "but don't you think that the railway men would have been a bit keener, too, if they had to hustle everlastingly for customers?" And then we thought it was time to leave!

#### How Can We Run Cars Without Crews?

NOT having arrived as yet at that stage of progress in the transportation field where we may load passengers into an accident-proof, crewless car, and by simply pressing a button shoot them quickly, safely and comfortably to their respective destinations, the above question is at present the cause of no little worry to transportation department officials. Of course, labor scarcity pinches all along the line as far as electric railways are concerned, but the pinch is certainly most conspicuous in the transportation department.

With a few emergency repairs from time to time, cars, overhead and way can be made to give service for a considerable period without much labor being expended on upkeep. Such operating practices, however, only defer the inevitable day of reckoning, but the point is that a laborer in these departments may take a day off without causing a direct reduction in service. Besides, in these departments, old men and boys who are not physically able to stand the drive of work in the manufacturing industries can still be secured to do some of the most necessary tasks.

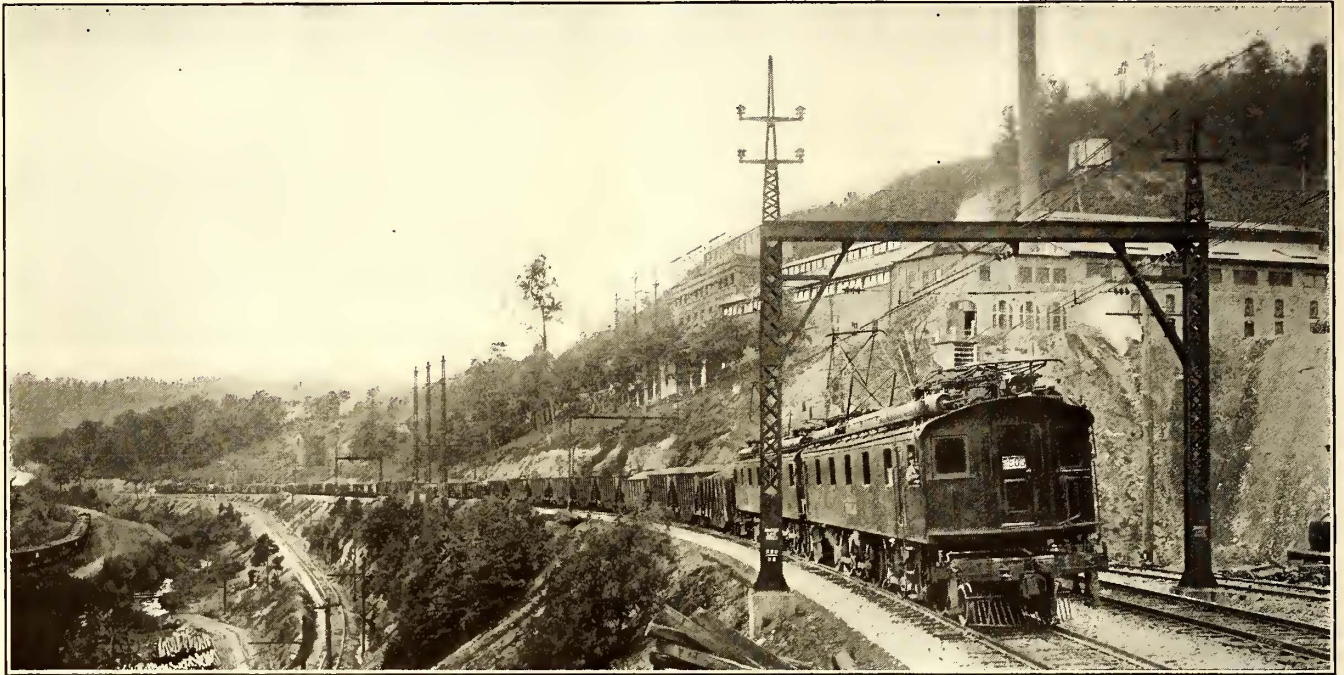
Not so in the transportation department, however. Crew men must be active and must be trained. The failure of a crew to report nowadays usually means that their car stays in the carhouse. Extra lists are either things of the past or are much abbreviated. Even in districts remote from the scene of active war preparations, suitable crew material is simply not available. Interurban lines that in the old days attracted a high class of employees are now in some cases forced to operate reduced services.

What is the solution to this problem? There is no universal answer, and in some communities no answer at all except an actual reduction in service. The injuries thus resulting to both public and railway are simply the fortunes of war, and both parties will have "to grin and bear it" the best they may. As has been noted many times before in these columns, woman conductors or one-man cars may afford the best solutions in other communities. But as in munition manufacturing districts female labor is almost as scarce as male labor and all services cannot be operated by one-man cars, neither of these proposals is a universal answer.

In some instances, notably in the shipbuilding districts, old railway men now in the shipyards assist in handling the rush-hour services. On the whole, however, to quote in substance a recent expression on the subject by a well-known operating man, the possibilities within a company are usually quite as great as any outside. In other words, the rerouting of cars to cut out dead car mileage, the changing from swing runs to straight runs where such changes will permit the regular crews to operate trippers on overtime, the use of proper cars for the service, and similar schemes are quite as productive of results from the labor standpoint as anything else.

# Norfolk & Western Electrification Helping Directly to Win the War

The Fifty Per Cent Increase in the Mountain Grade Capacity of the Norfolk & Western Through Electrification Has Permitted Millions of Tons of America's Best Coal, Otherwise Locked Up, to Go to Our Ships and Shops—An Electrification in the Very Heart of a Great Coal Region Which Has Also Proved Successful in Technical and Financial Respects



THE ELECTRIC LOCOMOTIVE COAL TRAIN SERVICE THAT IS PLAYING A REAL PART IN FURNISHING THE FUEL FOR UNCLE SAM'S SHIPS

ON page 22 of the last annual report of the Norfolk & Western Railway was the significant statement that during the month of October, 1917, when conditions were normal, the cost of freight movement with electricity was 26 per cent less than if steam had been used. For amplification of the company's operating statement it is permissible to state that the electric costs included allowance for fixed charges, depreciation, maintenance of track, line, power and shops, etc.; while the steam figures covering similar charges were calculated in accordance with the rules of the Interstate Commerce Commission.

But it must be far more gratifying to the directors of the company to know that their decision to electrify has also proved of the greatest possible value in the winning of the war. For it is the famous Pocahontas coal that is used by our Navy in millions of tons, and only through electrification has it been possible to ship 50 per cent more of this efficient fuel than would have been the case under steam operation, especially during the harsh winter of 1917-1918. Thus foresight and boldness have been doubly rewarded.

As the value of electrification from an economic basis is largely that of handling a tonnage beyond a

value critical for steam, it may be pointed out that if the Norfolk & Western had been electrified in 1905, the change might not have paid; if it had been electrified in 1910, there would have been no particular saving, while on the basis of business done since 1915, electrification was absolutely the right thing.

In the case of this company, the limitations on steam were imposed by a gauntlet tunnel through which the greatest number of trains could be handled eastbound in twenty-four hours. This permitted, with trains of 3300 tons, a maximum of about 40,000 tons a day. Compare this with the nineteen electric trains hauling 61,200 tons of coal eastbound from Elkhorn Grade, as shown in the summary of train movements made on May 4, 1918, and given in Table I.

In the old days the signal operators, knowing how liable steam trains were to stall in the tunnel, would not risk blocking the tunnel when preference freight or passenger trains were due to arrive. This deliberate holding of trains at the portals increased the congestion already due to low speeds. To-day the now-so-vital coal trains are handled electrically through the tunnel directly ahead of preference freight or passenger trains.

The importance of the Norfolk & Western Railway as a coal carrier may be gaged by the fact that in October, 1917, it carried in the electric zone 45,390,554 ton-miles of freight (mostly coal) and only 495,860 ton-

NOTE: Earlier articles in this paper to the Norfolk & Western Railroad electrification will be found as follows: Vol. 42, pages 189, 298, 650; vol. 43, page 705; vol. 45, pages 581, 1058; vol. 47, pages 311, 332, 419, 453, 644; vol. 49, page 538.

TABLE I—SUMMARY OF TRAIN MOVEMENTS FOR MAY 4, 1918

*Electric Locomotive Situation*

In hill crew service.....	7
In pusher service.....	3
Extra locomotives available.....	0
Locomotives in shop.....	2

Summary for 24 Hours Ending 11:59 p.m., Date May 3, 1918

E. B. from Elkhorn Grade.....	19 trains, 789 loads, 61,200 tons
E. B. time freights.....	2 trains, 83 loads, 3,526 tons
From Pocahontas.....	2 trains, 89 loads, 6,300 tons
E. B. from Clift yard.....	3 trains, 145 loads, 11,200 tons
W. B. time freights.....	0 trains, 0 loads, 0 tons
W. B. extras 12, crews light 12, trains 767, "empties" 18 west loads.	
Hill crew trips from Elkhorn Grade, 21.	
Hill crew trips Flat Top to Bluefield only 0.	
Pusher trips, 34.	
Hill crews reporting, 10.	
Pusher crews reporting, 7.	
Loads delivered to Radford Division, 1035.	
E. B. loads on Pocahontas division 1916, { At Bluefield, 725.	
{ At Elkhorn, 285.	
Full tonnage engine hours, 181 hrs., 58 mins.	
Reduced tonnage engine hours, 26 hrs., 05 mins.	
Trains with reduced tonnage, 2.	

TABLE II—SHOWING SOME TRAFFIC STATISTICS OF POCAHONTAS DIVISION, NORFOLK & WESTERN RAILWAY, MONTH OF APRIL, 1918

Date	No. of Trains		No. of Cars				Engine-Hours		Full Tonnage		Reduced Tonnage	
	East	West	Loaded East	Loaded West	Empty East	Empty West	Hours	Min.	Hours	Min.	Hours	Min.
1	14	14	535	49	879	139	35	0	0			
2	18	14	782	48	907	194	4	0	0			
3	24	13	1,056	126	728	228	34	0	0			
4	20	13	771	46	747	220	35	0	0			
5	22	15	885	40	898	222	18	0	0			
6	21	9	853	0	550	232	35	0	0			
7	17	13	704	146	760	168	29	3	34			
8	17	10	744	62	609	205	29	7	5			
9	21	13	894	75	798	224	45	0	0			
10	10	14	364	106	797	187	42	0	0			
11	20	16	956	124	1,054	185	20	0	0			
12	24	18	972	141	1,029	213	46	0	0			
13	18	15	837	125	800	225	14	0	0			
14	21	15	862	71	1,105	221	27	0	0			
15	22	12	896	135	705	209	17	5	35			
16	22	14	905	67	865	217	28	0	0			
17	23	13	1,053	72	782	210	46	0	0			
18	22	12	971	72	670	247	12	0	0			
19	19	31	845	70	820	213	38	0	0			
20	22	13	1,004	66	899	240	44	10	20			
21	22	18	924	22	1,257	213	17	0	0			
22	23	37	936	254	869	250	55	0	0			
23	24	16	1,001	101	914	208	49	3	0			
24	22	14	939	135	704	222	47	0	0			
25	24	15	1,035	71	908	237	1	7	25			
26	22	13	921	100	840	203	33	21	50			
27	20	16	927	127	1,032	217	0	0	0			
28	23	21	937	164	1,255	201	0	0	0			
29	15	13	522	83	766	164	42	0	0			
30	20	17	834	113	1,210	184	15	0	0			

miles of passenger trains. This is a ratio of more than 100 to 1 when addition is made of the empty cars which are not included in the foregoing figure.

Table II shows the number of cars and engine hours during April, 1918.

ELECTRIFICATION EXTENSIONS

At present the company is electrifying the main-line section from Vivian to Farm, westbound, covering approximately 12 miles of route, and also a 5-mile branch from Welch to Wilcoe reaching the assembling yards at Wilcoe where traffic originates from the United States Coal & Coke Company, a subsidiary of the United States Steel Corporation. This extension will make the electrified division cover 41 miles of route.

The next step in electrification logically would be to convert a complete division from terminal to terminal. If westbound, the distance between Farm and Williamson would be 70 miles; if eastbound, from Bluefield to Roanoke, 106 miles.

ELECTRIC LOCOMOTIVES DO THREE TIMES THE MILEAGE OF STEAM AND WITH BIGGER LOADS AT HIGHER SPEEDS

Since the day in June, 1915, when the Westinghouse split-phase electric locomotives went into service, they have been going at top load because of the rapid in-

crease in business. Here are some performances of the twelve electric locomotives, of which ten are normally in service:

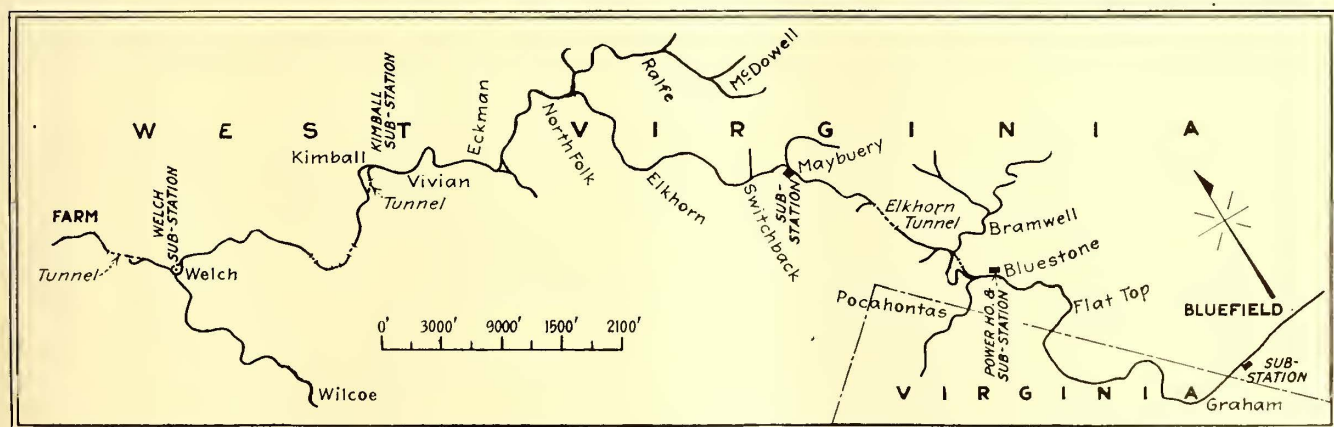
November, 1915, 31,900,000 ton-miles freight and 425,716 ton-miles passenger.

December, 1917, 41,787,000 ton-miles freight, 470,574 ton-miles passenger.

February, 1918, 48,922,000 ton-miles freight, 400,441 ton-miles passenger. The rapid increase in two months, and during a twenty-eight day month at that, will be noted.

Since electrification, the tonnage handled without additional locomotives has increased by 50 per cent. The increased burden placed upon locomotives may also be gaged by the fact that in January, 1916, the total engine, freight and passenger-miles were 35,055; in March, 1918, 47,845. On a per diem basis, the daily average during January, 1916, was 123 miles and during March, 1918, 151 miles.

A comparison with steam locomotives in the same

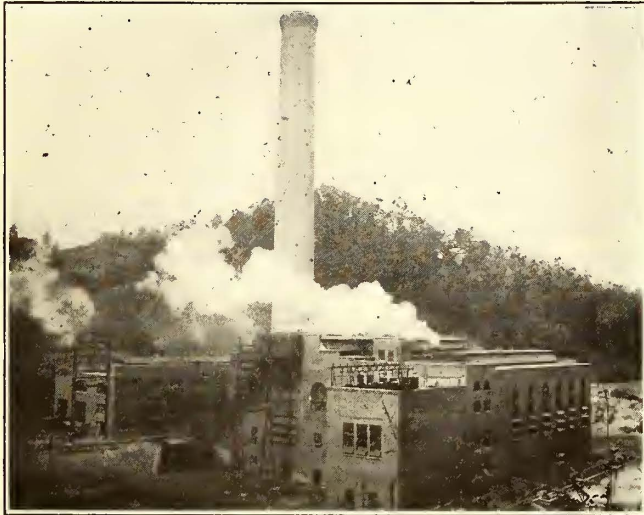


MAP OF NORFOLK & WESTERN ELECTRIFICATION, GREATEST COAL ROAD OF AMERICA

crease in business. There has been no opportunity for long shoppings, defects being repaired or weak spots strengthened with the least possible sacrifice of working time. On grades of 1½ to 2 per cent, two locomotives develop 6000 hp. at 14 m.p.h. constant speed. The locomotives weigh 274 tons each.

service just before electrification shows that the former were capable of making about one-third the mileage in a given period. They might make 1500 to 1600 miles a month, whereas the electric engines do 4000 miles easily. For March, 1918, in fact, the daily average was 151 miles or 4530 miles for the month.

So far as actual running is concerned, the steam locomotives were at a tremendous disadvantage on the heavy grades, where they averaged about 7 m.p.h., and in the tunnel the speed was as low as 4 to 3 m.p.h. The consequence was a piling up of trains outside the tunnel, many drawbar and knuckle failures due to low speeds, and a host of worries for the dispatching department.



NORFOLK & WESTERN POWER STATION

With electric operation the locomotives go up the grade and through the tunnel at the constant speed of 14 m.p.h. This has absolutely eliminated congestion and simplified dispatching wonderfully. In fact, in the words of the chief dispatcher: "Electric locomotives are as superior to steam as telephone dispatching (also used by this railway) is superior to telegraphic dispatching. Electrification plus telephone dispatching now enables six men to handle one-third more business with more ease than twelve dispatchers handled the old combination of steam and telegraph." Evidently the best boosters for electrification are the electrified!

The steam crew used to go out of Bluefield with two Mallet engines and added a Mallet pusher for 3300-ton loads between Eckman and Ruth. The electric crew goes out with but one engine for the same number of empties and adds a pusher for a load of 3300 tons. In other words, for the empties the ratio was two steam to one electric; for heavy loads, two electric locomotives were used as compared with three steam.

**ELECTRIC ENGINES HAVE AS LITTLE AS THIRTY MINUTES' TURNING TIME**

Another important reason for the superiority of electric operation is the decrease in standing time. An electric engine is allowed but forty-five minutes terminal turning time, for change of brakeshoes, journal inspection, etc.; everything in excess of that period is charged as "delay"; if need be, they are turned in thirty minutes. On the other hand, Mallet locomotives in the same service averaged ten hours terminal turning time—a ratio of 13.33 and 20 to 1!

The maximum tonnage per train varies, of course, with the profile. Where the ruling grade is 2 per cent, a train of 3300 tons with two locomotives is the standard. On the eastern slope where the ruling grade is 0.3 per cent, maximum loads of 4800 tons are permissible, while on westbound trip with a ruling grade of 1 per cent,

TABLE III—SHOWING DETAILS OF DELAYS TO ELECTRIC LOCOMOTIVES

*Abstracts from Monthly and Semi-Monthly Reports*

	1918 All Feb.	1918 J. 15-31	1918 J. 1-15	1917 D. 15-31
Total delays	66	12	23	25
Total delays, minutes	1,994	115	434	530
Delays due to mechanical and electrical defects	62	12	22	21
Minutes delay for mechanical and electrical defects	1,677	115	434	486
Average minutes delay	30	9½	19	23½
Minimum delay, minutes	3	2	2	2
Maximum delay, minutes	138	20	100	140
Eastbound, trains over Elkhorn Grade	341	175	127	155
Elkhorn crews reporting	307	149	170	143
Pusher trips	777	391	311	328
Pusher crews reporting	176	102	108	65
Average number of trips per crew	4½	4	3	5
Total engine-hours	6,009 h-50m	3,119 h-55m	2,720 h-17m	2,794 h-56m
Total engine delays due to electrical and mechanical defects, minutes	1,877	115	434	486
Percent of total engine hours delay	0.5	0.06	0.26	0.28

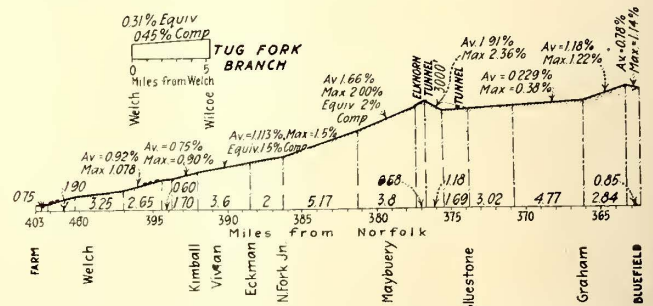
3000 tons is the limit. The latter loading is rarely attained in operation, as the principal loads are trains of empties which would not exceed 2000 tons with 100 cars.

**ELECTRIC ENGINE-HOUR LOSS LESS THAN ONE-HALF OF 1 PER CENT**

To speak generally, it may be said that the loss of engine-hours due to electrical and mechanical defects of locomotives is usually within the remarkably low figure of one-half of 1 per cent. As shown in Table III the performance for the period of Jan. 15-31, 1918, six-hundredths of 1 per cent, is simply astounding for winter service over mountain grades.

An examination of the detail records of defects and their character discloses the somewhat unexpected fact that the most novel part of the equipment—the phase converter—is also the most rugged. In fact, the mechanical parts have given more concern than the electrical parts, because of the extremely heavy service. To-day a large portion of the mechanical defects are due to plain wear. It is impracticable to go into the details of the experiences with these locomotives from the beginning, three and a half years ago. It may be observed here, however, that a general overhauling of these engines is carried out only once a year; and the pantograph shoes (sheet steel) are good for 10,000 to 12,000 miles or say quarterly replacements.

The power plant is located at Bluestone, 11 miles from Bluefield. This is not the center of the power load but



PROFILE OF THE NORFOLK & WESTERN ELECTRIFICATION, INCLUDING THE TUG FORK BRANCH

had to be chosen because it was the only place that had enough water for condensing purposes.

To the original installation of three 11,250 kva. Westinghouse turbo-generators there has been added a fourth unit alike in all respects except that the condenser pump is electrically driven to improve steam balance on light loads. This addition, of course, is to take care of the

extension. The boilers now comprise twelve instead of ten B & W Stirling units of 677 hp. each.

The transformer substation locations and equipments, varying according to grade and load conditions, are as follows:

No. 1—Bluefield station, between Bluefield and Graham for 1.22 per cent grade, two 3000-kva., 44,000/11,000-volt transformers.

No. 2—In the Bluestone power house, for 0.4 per cent grade, two 3000-kva. transformers.

No. 3—Maybeury, for 2 per cent grade, two 5000-kva. transformers.

No. 4—North Fork, for 1½ per cent grade, two 4000-kva. transformers.

No. 5—Vivian, the extreme western end of the present electrification, for 1 per cent grade, two 2000-kva. transformers.

No. 6—Substation to be built at Welch for the extension, two 3000-kva. transformers.

**POWER LOAD DISPATCHING INAUGURATED**

Until recently an electric locomotive picking up fifteen to twenty cars at a time on sidings for train make-up was out of touch with headquarters. To secure more effective operation and better load factors, a portable telephone system has been installed whereby the power director is informed by the conductor or the engineer of the leading locomotive that the train is full and ready to start. The train dispatchers are not advised by the power director unless the train is to be held say more than ten minutes.

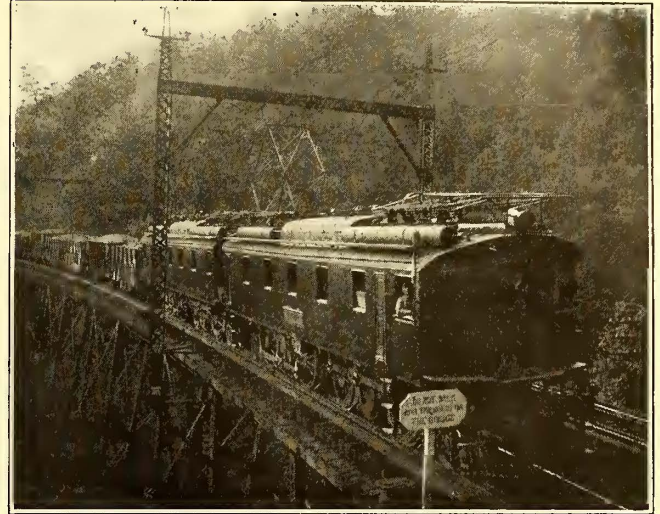
These telephones are at the various stations, starting in order from Graham, Flat Top, Bluestone, Maybeury, North Fork, at various coal operating or outlet tracks, at Eckman and at Vivian. There are three power directors, each working an eight-hour trick.

The desirability of this load dispatching may be appreciated by stating the coal-loading conditions. There is a large yard at Vivian and a still larger one at Eckman, at which end is also the heaviest grade—the 2 per cent rise beginning at Ennis. An engine originating at Bluefield, the eastern end, will go westward either with trains

IV. This summary shows that on that day nineteen trains handled 789 loads, totaling 61,200 tons.

That the Norfolk & Western is as progressive in its steam activities as in electrification may be shown by citing a few of the things that it is doing, such as the following:

Construction of steel frame and wooden side coal cars.



CLOSE-UP OF THE NORFOLK & WESTERN LOCOMOTIVE

Completion of sixteen, home-designed and home-built, locomotives (incidentally the largest passenger locomotives in the world) during the first four months of 1918.

Development and construction of 1750 of the largest coal cars ever made. These cars carry 100 tons net.

Installation of electric furnace for steel castings.

Ordinarily the company designs and builds all of its freight cars and such engines as shop room will permit.

To-day, the company has in use approximately 180 Mallet engines and has recently bought another fifty because of the tremendous pressure of business.

**Compressed Air Society Adopts Definitions to Eliminate Confusion**

UPON recommendation of its technical committee the Compressed Air Society, 30 Church Street, New York City, has adopted the following definitions of certain compressed-air terms in order to eliminate confusion as to their exact meaning:

**Displacement**—The displacement of an air compressor is the volume displaced by the net area of the compressor piston.

**Capacity**—The capacity should be expressed in cubic feet per minute and is the actual amount of air compressed and delivered, expressed in free air at intake temperature and at the pressure of dry air at the suction.

**Volumetric Efficiency**—Volumetric efficiency is the ratio of the capacity to the displacement of the compressor, all as defined above.

**Compression Efficiency**—Compression efficiency is the ratio of the work required to compress isothermally all the air delivered by an air compressor to the work actually done within the compressor cylinder as shown by indicator cards, and may be expressed as the product of the volumetric efficiency (the intake pressure and the hyperbolic logarithm of the ratio of compression), all divided by the indicated mean effective pressure within the air cylinder or cylinders.

**Mechanical Efficiency**—Mechanical efficiency is the ratio of the air indicated horse-power to the steam indicated horse-power in the case of a steam driven, and to the brake horse-power in the case of a power driven machine.

**Over-all Efficiency**—Over-all efficiency is the product of the compression efficiency and the mechanical efficiency.

TABLE IV.—SUMMARY OF LOG SHEET FOR TWENTY-FOUR HOURS ENDED 11:59 P.M., MAY 3, 1918

Eastbound extras from Elkhorn grade	19 trains, 789 loads, 61,200 tons	
Eastbound time freights	2 trains, 83 loads, 3,526 tons	
Eastbound from Pocahontas	2 trains, 89 loads, 6,300 tons	
Eastbound from Cliff yard	3 trains, 145 loads, 11,200 tons	
Westbound time freights	0 trains, 0 loads, 0 tons	
Westbound extras 12-C. L.	12 trains, 767 cars, 18 West loads	
Hill crew trips from Elkhorn grade, 21.		
Hill crew trips from Flat Top to Bluefield only, 0.		
Pusher trips, 34.		
Hill crew reported, 10.		
Pusher crew reported, 7.		
Loads delivered to Radford Division, 1035.		
Eastbound loads on Pocahontas Division, 1916, including 725 at Bluefield and Elkhorn, 285.		
Engine ours at full tonnage, 181 hours, 58 minutes.		
Engine hours at reduced tonnage, 26 hours, 05 minutes.		
Number of trains with reduced tonnage, 2.		
Weather	Time Power Directors	
	7:00 a. m. to 3:00 p. m.	
	3:00 p. m. to 11:00 p. m.	
	11:00 p. m. to 7:00 a. m.	

of empties for delivery to the mines; or the engine may leave Bluefield light westbound, and pick up loaded cars at Flat Top yards and take them through to Eckman or Vivian. On the return trip, when the train has been filled out to capacity, the power director is advised that the train is ready to move.

All information is recorded on a log sheet, of which the summary for May 3, 1918, is reproduced in Table

# Some Pitfalls in Regulating Depreciation

**In Determining Past Investment Commissions Should Adopt a Reasonable Depreciation-Deduction Rule Regardless of Subsequently Used Methods of Computing Depreciation—Future Deductions in Rate Cases, However, Depend Upon Financial and Accounting Policies Followed**

By JOHN BAUER  
Princeton University

THE Colorado Public Utilities Commission recently laid down a rule on depreciation and valuation which should be subjected to very careful analysis, because it threatens to become a bad precedent in rate valuations.<sup>1</sup> The commission states that allowance should be made among operating expenses for depreciation or replacement of property, but that the deduction of past accrued depreciation from the appraisal for rate purposes depends upon whether the depreciation allowance in the operating account is based upon the sinking-fund or the straight-line method.

If the depreciation allowances are determined by the sinking-fund method, then the earnings of the fund (so the argument runs) are credited to the depreciation reserve and to that extent relieve the consumers from paying directly for replacement of property. No deduction, therefore, should be made from the appraisal for depreciation. But, if the allowance is computed on the straight-line theory, then larger charges are made to operating expenses for depreciation, and the earnings of the fund are not credited to the reserve. In order, therefore, not to place larger burdens upon consumers than by the sinking-fund method, the depreciation reserve should be deducted from the appraisal.

A careful analysis of this opinion is worth while because of the tremendous effort that is being made by public service corporations all over the country to secure the adoption of the principle that past accrued depreciation should not be deducted from cost new of property valued for rate purposes. The opinion goes a long way toward granting the companies' contention, and it is likely to be used as a leading precedent for their purpose. Much of what is said is excellent, but the issues are not so simple as they are represented. The principle involved is so important that no unwarranted conclusion should go unchallenged. A proper analysis has importance, therefore, far beyond the particular case at issue.

The proposition regarding the different handling of the depreciation item under the sinking-fund and straight-line methods might be satisfactory enough, if the uncertainty of past investment were cleared up and if the proper accounting and financial policies were enforced. If the investment entitled to a fair return were once determined, the commission's distinction might be properly followed for the future, but even that would depend on the precise accounting and financial methods followed. For the past, however, when the amount of the investment is uncertain, when the accounting methods have been unreliable, when no fixed financial policies were pursued and when rates to

consumers were not based upon cost but were fixed according to what the traffic would bear—when, in short, there were no clear methods of regulation, the commission's view is palpably wrong. The following analysis makes a clear-cut distinction between cases involving past uncertainties and those based upon ascertained facts and involving definitely prescribed future methods of regulation.

## HANDLING OF THE PAST MUST BE BASED ON REASONABLENESS

Let us consider, first, the commission's view from the standpoint of cases that require the clearing up of facts before definite regulation may be attempted. Apparently the particular case before the commission was of this sort—there was uncertainty as to the investment, there had been no definite method for providing for depreciation or renewals and the rates had not been based on any clear regulatory system. An appraisal was made of the property, with the usual difference between the company's figures and those of the commission, and the fair value was finally placed at approximately \$140,000. In arriving at this amount, the commission considered that the "annual depreciation requirement will be determined and set aside on the sinking-fund basis, and has, therefore, in accordance with the principles hereinbefore announced, made no deduction on account of accrued depreciation."

The purpose of the appraisal was to determine the investment on which a return should be allowed. For the future no appraisal will be required for any subsequent rate determination, provided the commission sets up a definite depreciation and financial policy and institutes the proper accounting control for the purpose. But before such an automatic procedure may be established, past uncertainties must be cleared up, and, especially, a fair investment figure must first be determined. This is the sole object of a physical appraisal. The valuation merely furnishes the starting point for any future automatic control of rates and return on investment. Why, then, should the future particular method of providing for depreciation have any bearing on determining the valuation? Are the reasonable present claims of the investors against the public any different whatever future depreciation policy may be adopted? Why should investors get more or less, whether the sinking-fund or straight-line method be employed? Are they not entitled to a fair return on a fair valuation? Should that not be the same by whatever way depreciation may hereafter be computed?

The precise future treatment of depreciation in any comprehensive plan of regulation is principally a question of apportioning operating costs among consumers; it is not a factor in the valuation. The straight-line

<sup>1</sup>The City of Lamar, Col., vs. The Intermountain Railway, Light & Power Company.



method places relatively larger renewal costs upon the consumers during the early years of the property, while the sinking-fund method provides ideally for an equal annual distribution; but the investors are not interested in this, provided they get a fair return on their investment. In other words, they are entitled to a return on an amount determined independently of the method by which renewal costs are borne by the company's consumers.

In determining past investment, then, the commission should adopt a reasonable rule independent of any future operating policy. Various rules may be adopted, each having its own special advantages and disadvantages. First, there is the choice as to whether reproduction cost or actual installation cost should be used; and, second, as to whether or not a deduction should be made for depreciation. But, once more, the deduction for depreciation has nothing to do with the policy of future provision for renewals. It is merely a question whether in clearing up past investment any allowance should be made for physical condition of the property due to wear and tear, obsolescence and inadequacy. It is a question of reasonableness, and nothing more. No matter how future depreciation be treated in the operating account, would it make sense to fix the same basis of return to the investors whether the property is new, up to date and in every way suitable for its purpose, or whether it is old and worn and is extensively obsolete and inadequate? The inventory, of course, would be identical, but should the valuation or investment be counted the same? Is not this the essence of the problem of whether depreciation should be deducted from cost new in an appraisal? If so, does it depend in the least on the method by which depreciation may be computed hereafter?

#### HOW THE FUTURE DEDUCTION OF DEPRECIATION IS DETERMINED

As for the future, when we start with a definite rate base on which a fair return should be allowed, then, it is true, in keeping the rate base up to date there is a question whether the depreciation reserve should be deducted from cost new of the property. Even so, however, the deduction does not depend altogether on whether depreciation is computed by the sinking-fund or the straight-line method. It depends rather on the precise accounting and financial policy that may be required by the commission and followed by the corporation. The fundamental consideration should be that investors get a fair return on their ascertained investment and no more.

Let us assume that for the future a company is entitled to a fair return on its fair known investment, and that the sinking fund method of providing for depreciation is used. This usually assumes that for all depreciable property an equal annual sum is paid into a fund, which together with interest at a given rate will furnish sufficient funds for all future renewals. Suppose that the investment (as in the particular Colorado case) is \$140,000, that the equal annual sinking-fund allowable for depreciation is \$5,000 and that the investment remains unchanged so that the company is regularly entitled to a return of 6 per cent on \$140,000. The usual accounting procedure would be to charge \$5,000 a year to operating expenses for depreciation,

credit the amount to the depreciation reserve and then set aside \$5,000 cash in a special depreciation fund; then also to credit the interest earnings to the depreciation reserve and add the cash to the depreciation fund. The depreciation reserve and the corresponding fund would then always be equal; the two must not be confused.

Now, should the depreciation reserve be deducted from the cost new of the property? The Colorado Public Service Commission says "No!" This view is correct if the depreciation funds themselves are not included in the property. But if they are included in the property, the reserve should be deducted, or the investors will get a return also on the depreciation funds contributed by consumers through the rates paid for service. The investors are entitled to a fair return on \$140,000 and no more.

The foregoing is the usually assumed procedure when the sinking-fund method is used, *i. e.*, that the funds are accumulated with interest and are used only for renewals, and that the depreciation fund and the depreciation reserve are equal. But the sinking-fund method may be used without the accumulation of cash funds for renewals equal to the accrued depreciation reserve. The essence of the method is merely that property be written down through credits to the depreciation reserve at an increased annual amount (increasing at a fixed rate); the funds themselves may be used for any corporate purpose. The important thing is that money be kept in the business through charges to income; it may better be used for additions and improvements to the property than be kept exclusively for renewal purposes.

In such cases, where under the sinking-fund method the funds are put into improvements, obviously the property is built up out of the contributions by the consumers, and the full cost of the property will exceed the company's investment of \$140,000 by the amount of the depreciation reserve. It will be necessary, therefore, to deduct the depreciation reserve from the cost of the property, even though the sinking-fund method of computing depreciation is used.

There are other variations in procedure that may be followed in connection with the sinking-fund method; and whether the depreciation reserve should be deducted from the cost of the property to show the investment, will depend upon the special circumstances. In any case, however, the investors should receive a return on their actual investment of \$140,000, regardless of the precise accounting and financial plan by which the property is maintained.

Likewise, if depreciation is computed by the straight-line method, the commission's rule that the reserve should be deducted from cost new cannot be followed indiscriminately. The straight-line method assumes that the cost of property is charged off to operating expenses and credited to the depreciation reserve in equal annual amounts during the life of the property. But beyond this general statement, the exact procedure may be of a varied character. The money retained in the business may be put into new property, or it may be set aside into a special renewal fund. If it is put into property, the earnings are necessarily merged with the general operating revenues and clearly the depreciation reserve should be deducted from the cost of the

property to show the company's investment of \$140,000.

If, however, special renewal funds are kept, the deduction of the depreciation reserve depends upon the accounting of the interest earnings from the funds; in any event, the funds are contributed by consumers and should go to their benefit. If the earnings are included in the operating revenues to relieve the consumers through the rates for service, then the reserve should not be deducted—unless the funds too are included in the property. But if the earnings are not included among the operating revenues but go to the investors as non-operating income, then the depreciation reserve should be deducted from the cost of the property; otherwise, the company would get the full return on the investment of \$140,000, and besides would get the interest from the funds contributed by the consumers. Finally, if the funds themselves are listed with the property, the interest should go to operating revenues and the reserve should still be deducted from the property.

#### ULTIMATE TEST IS FAIR RETURN AND NO MORE

The test should always be that the investors get from the consumers a fair return and no more. The investment in the particular case is placed at \$140,000; this should be maintained by the public and should not be changed by any particular method of providing for renewals.

There are many pitfalls in the proper treatment of depreciation in a comprehensive plan of regulation. The Colorado Public Service Commission has evidently fallen into several at the same time. The serious one is the confusion between clearing up past investment and other financial uncertainties, and setting up a definite policy of control for the future. The view is almost absurd that any deduction for past depreciation in a rate case should depend on the future method of computing depreciation for operating purposes. Yet it is exactly this general view that is being vigorously urged by utility interests for the sake of establishing a larger rate base.

When the investment has once been determined, the method whereby depreciation is computed, how the funds are kept and how the revenues are treated in the future deduction of the depreciation reserve from the cost of the property does depend on the particular accounts. But the future method of treating depreciation in the operating account simply has no bearing on the reasonable determination of the investment entitled to a return when a company is first brought under a plan of regulation.

### Women as Station Agents in Japan

The Mino (Japan) Electric Railway, reported recently in the *ELECTRIC RAILWAY JOURNAL* as experimenting with the employment of women conductors, has gone a step further in deciding to appoint women "station-masters" in future at all stations of the line. Most of the women employees in the service of the railway are young girls about twenty years old, and complaints are already beginning to be heard from the male operatives who are annoyed to receive orders from girls of such tender age.

## An Interurban Bus That Pays

### Seattle-Bothell Bus Line Eliminates Competition After Three Years of Consistent Service— Three Other Lines Previously Abandoned

SOME years ago when Stone & Webster interests in Washington were confronted by the problem of giving transportation in certain territories too sparsely peopled for a railway, they undertook operation with auto buses. For this purpose a separate corporation—the Washington Auto Bus Company—was formed with no railway connections except a transfer arrangement at Seattle with the Puget Sound Traction, Light & Power Company. Even this was abolished as early as Aug. 1, 1917, because passengers preferred to stay on the buses instead of transferring to street cars at Cowen Park, 5 miles from the center of Seattle. As a matter of fact, this arrangement during the twenty-two months it lasted cost the bus company \$2,731.55, which was 7.6 per cent of its gross receipts. The buses now come down to the upper business district at Fifth Avenue and Pine Street, which is also the terminus of the Seattle-Everett interurban railway.

The origin of the bus service was described in the Sept. 18, 1915, convention number of the *ELECTRIC RAILWAY JOURNAL*; a description of the several types and makes of buses bought appeared in the same article, followed by a detailed story on Jan. 22, 1916, on the three Brill buses with International Motor Company's 2-ton Mack chassis which are still in use. A second review of operating results appeared in the Aug. 4, 1917, issue.

The following tells the story of the sole bus survivor after December, 1917, out of the four routes tried. This is the Seattle-Bothell line, which began operation on Nov. 15, 1915. Through consistent, excellent service



ONE OF THE 2-TON BUSES ON THE SEATTLE-BOTHELL LINE

it has secured the field to itself. Rival buses disappeared in June, 1916, but a few jitneys held out until October, 1916. It was not before May, 1918, that the company had wiped out early losses and could show \$300 on the right side of the ledger.

The Seattle-Bothell line is 16 miles long. It is favored by excellent roadway conditions, the 16 miles being

made up of 5 miles of brick or asphalt within Seattle, followed by 7 miles of Warrenite asphalt and 4 miles of brick. This accounts for the fact that the pneumatic front tires average 10,000 miles, equivalent to 0.83 cent per mile per wheel. The solid block tires for the rear wheels averaged 7000 miles, equivalent to 1.8 cents per mile per wheel. Thus the total tire cost per mile per bus was  $2 \times 1.8 + 2 \times 0.83$  or 5.2 cents.

factory results is that it can get a reasonable rate of fare. To take care of increased costs it raised its rates 8 per cent (in addition to the 8 per cent war tax) on Feb. 1, 1918. This makes the cost per mile as follows: One-way, 2.75 cents; round trip, 2.30 cents; ten-ride commutation, 1.75 cents.

The increased rate has raised the average return per bus passenger from 20 to 22 cents. Fares are recorded on a special locked type of the National Cash Register Company whereby the total and number of fares of every class are printed on a tape.

The buses are run at any headway necessary to meet traffic, the range being from fifty minutes down to two and one-half hours. The seat-use factor since competition ceased is high—85.5 per cent. In winter 300 to 350 passengers are carried every day; in summer 400 to 500. Between October, 1917, and February, 1918, travel increased 21.4 per cent and receipts rose 27.8 per cent.

One other factor besides those named has had a big part in making the auto-bus a success—and that is the use of but one operator per bus. Up to April 1, 1918, such operators received 50 cents per trip. Now they get 60 cents. A trip covers fifty-five minutes exclusive of layover. Curiously enough, the Puget Sound Traction, Light & Power Company did not have its one-man safety car operation approved so readily although less skill is required to pilot a street car.

Detail bus figures follow:

STATISTICS OF MOTOR BUS OPERATION, SEATTLE-BOTHELL ROUTE, 16 MILES		
	1917	1916
Bus-miles.....	134,352	113,040
Revenue from operation.....	\$27,032.56	\$19,213.29
Operation expenses.....	\$21,045.11	\$16,551.44
Depreciation.....	\$4,142.24	\$5,193.30
Taxes (covering 1916 operation).....	\$126.24	.....
Total.....	\$25,313.59	\$21,744.74
Deficit.....	.....	\$2,531.45
Surplus.....	\$1,718.97	.....

On the basis of the bus-mile unit, receipts in 1916 averaged 17 cents and in 1917, 20.12 cents. Operating expenses including depreciation dropped from 19.23 cents in 1916 to 18.84 cents in 1917, but excluding the reduced allowance for depreciation the operating expenses for 1917 were 15.66 cents per bus-mile against 14.64 cents in 1916.

### B. R. T. Employees Active in War Thrift Movement

In a little more than three months of organized War Savings activity the employees of the Brooklyn Rapid Transit Company have bought more than \$50,000 in Thrift and War Savings Stamps. During the month from June 15 to July 15 alone a record of \$17,416.21 was made, against \$13,580.01 for the month previous. Strong war savings societies have been formed in the transportation departments and the mechanical department. In these approximately 85 per cent of the employees are regularly enrolled in societies. The management of the company has at present arranged to lend to the Brooklyn War Savings headquarters the services of Charles W. Roberts, of the legal department, in districts that have not been satisfactorily covered thus far.

The *Pioneer Bulletin*, published by the commercial, industrial and professional divisions of the War Savings Committee of New York in the interest of the local campaign, contained recently an article complimenting the company upon the excellence of the results obtained.



THE BUS OPERATOR RECORDS FARES ON AN ORDINARY CASH REGISTER

As the solid tires did not give sufficiently smooth riding they have been replaced by pneumatics. The buses have a maximum speed of 25 m.p.h., and an average schedule speed of 20 m.p.h. The average gasoline consumption is 1 gal. for every 7.4 miles.

A pleasant surprise was the sturdiness of the buses in this service. This is indicated by the fact that depreciation is now on the basis of a four-year life instead of three. Consequently the allowance for four buses is now \$338.55 instead of \$470 a month.

The present equipment comprises the original three 2-ton Mack chassis machines, a 1-ton Mack added in July, 1916, and intended only for double-heading but actually used as a regular, and a fifth 2-ton bus of the same type. All buses seat twenty riders. The 1-ton bus displaced an inferior vehicle of other make. These twenty-seat buses were bought f.o.b. Seattle at \$4,600 each or \$230 per seat. One would cost now at least \$5,500.

Judging from the weights of these machines, bus designers appear to take more pains to save gasoline than many car designers of the past (and some of the present) do to save electricity. Although these buses have to carry their own generating plant, their weight per seat ranges from 335 lb. to 395 lb. only.

One reason why the company is able to show satis-

## Traffic Problems Confront the Rose City

**Return of Jitneys Is Threatened in Portland, Ore., Because of 6-Cent Railway Fare in Jitney Zone—Platform Shortage Is Keeping Company Astir**

ON MAY 17 the citizens of Portland, Ore., indicated their disapproval of the 6-cent fare, granted by their own State Public Service Commission and approved by their own courts, by voting for the return of the jitney. First, they reduced the bond per jitney from \$2,500 to \$1,000 and adopted the device of a blanket bond of \$10,000 for 100 jitneys in the name of the Jitney Drivers' Union. Second, they failed to pass more definite restrictions as to service continuity and the like.

In spite of these acts, however, one driver on June 13 stopped operating the Linnton suburban bus line rather than have the expense of filing a bond on top of the losses suffered by his disgrusted predecessor. Nor

the real danger of the jitney's returns at Portland or elsewhere.

Many a present restrictive ordinance may be wiped off the books in a great wave of unreasoning sympathy for the unemployed—unreasoning because the jitney man's gain is the platform man's loss, regardless of the economic waste of the jitney itself. Therefore the electric railway must be able to win out on the basis of giving a service that will keep out the jitney—ordinance or no ordinance. This means two things: (1) Shorter headways at higher speeds due to smaller one-man cars of fewer stops and higher acceleration and braking rates; (2) short-haul fares which do not exceed that of the jitney.

### HOW THE JITNEYS LAPPED OFF THE CREAM

The recent capable, though unsuccessful, campaign against the return of the jitneys in Portland revealed interesting conditions. In a letter to the electorate on May 11, the Portland Railway, Light & Power Company pointed out that electric railways, on a single-fare basis, had to take the lean with the fat. This put them at a great disadvantage with the jitneys, which merely went after short hauls in the densest territory. This statement was backed up by a map.

For the convenience of ELECTRIC RAILWAY JOURNAL readers, this map in reproduction here has been amplified to show by surrounding lines how carefully the jitneys running in June, 1917, kept away from both outlying and hilly sections. In two districts a service with big buses was tried and voluntarily given up, except that a few jitneys ran into part of one district for short hauls. Where there were hills, even a short haul could not induce the jitney to come out. One would suppose that a map like this would convince anybody with eyes to see and a brain to judge. Nevertheless, the pro-jitneyites won by a big majority in every district except those where large numbers of platform men live.

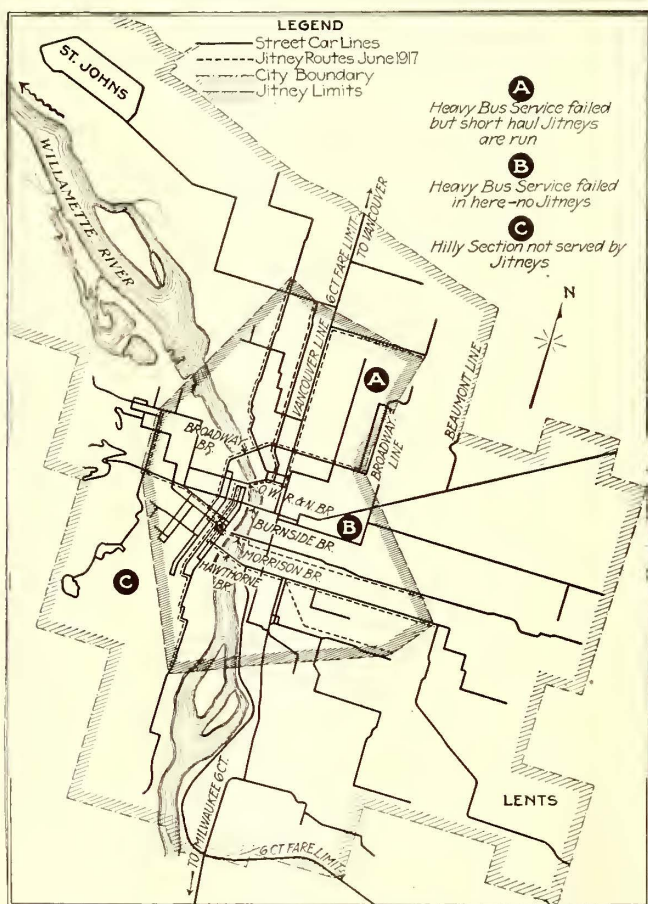
The map shows clearly the relationship between the 5-cent jitney area and the 6-cent railway area, which really runs beyond the city boundaries. About 15 per cent of the railway riders actually pay only 5½ cents, using fifty-ticket books sold for \$2.75, while 1½ per cent have 4-cent school tickets, sold twenty-five for \$1. In general, the jitneys formerly drew travel from within a 2-mile to 3-mile well-populated zone, while the electric railway was graciously permitted to carry people three times that distance at 5 cents or less.

### THE PUBLIC DOES NOT UNDERSTAND

It is evident from the foregoing facts that if the Portland company had retained the 5-cent fare for all or a greater part of the jitney zone, there would have been no desire to bring back the jitney, since the suburbanites knew perfectly well that they could expect no help from that irresponsible and non-philanthropic vehicle. In fairness it should be added the railway management simply put it up to the commission to grant relief, and it would have been satisfied with any course that produced such relief.

The Portland management is cognizant of the advantages of the safety car for beating the jitney. Twenty-five have been ordered.

While it is true that despite the 6-cent fare effective



HOW RAILWAY AND JITNEY SERVICES IN PORTLAND COMPARED IN JUNE, 1917

had the Jitney Drivers' Union come through with its \$10,000 bond by June 14, nearly one month after the passage of the ordinance.

Of course, with 36,436 men reported in Portland shipyard service on June 15, it is not likely that the jitney will reappear in large numbers during the war boom, for only the most short-sighted "ne'er-do-well" would run a jitney to earn a precarious living in eighteen hours when he could readily make twice as much money in one-half the time. Yet one should look beyond the period of the war when thousands of men may be glad to get anything to do. Herein lies

since Jan. 15, 1918, traffic has risen 20 per cent compared with a year ago and receipts 44 per cent (this discrepancy is due to the 6-cent fare and to increases in the 15-cent Vancouver line), one must not overlook the influence of the enormous activity and great influx of industrial population. This great increase in receipts is practically offset by increase in operating expenses due to the great advance in wages in all departments and the much higher cost of all material entering into maintenance. This prosperous condition also beclouds the issue, whereas the pro-jitney vote has the potentiality of great harm, for it shows the public misunderstands.

Probably the real increase in business is greater than the figures show, for even with a wage scale ranging from 38 cents to 45 cents an hour, the company cannot hold its men. Because of the frequent necessity for overtime, some carmen are earning in excess of \$200 a month. Still, what's that alongside the honorarium of a champion riveter?

The conditions in this great shipyard city are difficult to describe. About 50 per cent of the men have resigned within the year, so that to-day about 600 men are new hands. In the meantime, there has been the need of meeting a base schedule of 175 cars and a rush schedule of 450 cars. Under the circumstances the company considers itself fortunate that the schedule speed has dropped only from 9.52 m.p.h. to 9.35 m.p.h. Doubtless the sale of tickets, including the five-for-30-cent kind, has helped to avoid the great increase in car-hours which may follow the use of an odd-unit fare.

The case of Portland—5-cent short-haul jitney versus 6-cent long-haul trolley—certainly indicates how electric railways lay themselves open to loss through subsidizing the suburbanite. What makes the long-haul situation at 5½ to 6 cents even worse is that so many suburbanites use private automobiles, especially for the mid-day shopping.

It is safe to prophesy that if the short-haul rider gets a 5-cent fare in the faster automatic-type one-man car, while the suburbanite is made to pay for the long haul through thin territory, jitneys would neither be invited to return by a majority nor find it possible to live if they did return.

## Real Rapid Transit for Ship Workers

**Five-Car Train Operation Over the Lines of the Pacific Electric Railway Gives a High-Grade Service—First Train Out Two Minutes After Whistle**

THE great superiority of train over single car service in handling shipbuilding traffic is demonstrated by the comparative ease with which the Pacific Electric Railway is taking care of the heavy increase in traffic to San Pedro, the harbor of Los Angeles, Cal. As San Pedro itself has little housing accommodation, most of the workers come from Los Angeles, 22½ miles distant, and from Long Beach, 8½ miles away, with a few from Redondo *via* the San Pedro-Torrance line.

There are four shipyards in the San Pedro section: The Los Angeles Shipbuilding & Drydock Company, which is building eighteen 8800-ton steel vessels; the Fulton Shipyards, which is building wooden boats at Wilmington; the Chandler Shipbuilding Company,

which is also building wooden ships, and the latest comer, the Southwestern Shipbuilding Company, which has a contract for ten 8800-ton steel vessels. The last-named company is on an island reached by ferry from San Pedro.

### VARIED WAR SERVICE GIVEN

Not all of the traffic is from shipbuilders, for besides these and the ordinary local riders there are many soldier and sailor passengers, on account of the presence of Fort MacArthur and a naval reserve station.

An idea of the character of travel may be gained from the following figures for June 3:

Out of Los Angeles between 5.20 a.m. and 6.51 a.m., 4066 passengers in seventy-one carloads.

Out of Long Beach between 5.50 a.m. and 7.10 a.m., 1724 passengers in thirty-two carloads.

*Via* San Pedro-Torrance line, 219 passengers.

Returning from San Pedro to Los Angeles between 3 p.m. and 9.45 p.m., 5485 passengers in 104 carloads.

Returning from San Pedro to Long Beach between 3 p.m. and 7.15 p.m., 2087 passengers in forty-two carloads.

The speed with which the cars are boarded and sent off is indicated by the fact that on June 3, fifty-one cars were observed to pass the Wilmington substation at San Pedro in fourteen minutes. From the blowing of the whistle at 5.45 p.m., it is just two minutes to the departure of the first train! The maximum train length is five cars, this limit being set by the type of air brakes.

Fares are paid in tickets, both commutation and excursion. A ticket office has been built at the plant of the Los Angeles Shipbuilding & Drydock Company.

Within a year, comparing April, 1917, with April, 1918, the number of passengers on the Los Angeles-San Pedro line has risen from 123,000 to 434,000 and on the Long Beach line from 46,000 to 155,000. These lines have regularly had a thirty-minute service, but this is now reinforced by longer trains and specials as required.

### POWER AND TRACK FACILITIES ADDED

In order to handle this business properly, the company enlarged both its power and its track facilities. In the first place it concentrated three portable substations (two 600-kw. and one 1000-kw.) along the line, and it has ordered two 1000-kw. General Electric rotary converters and one 1000-kw. Westinghouse motor-generator set to be delivered early in 1919. These will be operated as automatic equipments. At the Wilmington substation there is now a 1000-kw. motor-generator set automatically operated.

The trackage at San Pedro was increased by building 1450 ft. of storage track with inspection pits, and also by installing 1650 ft. for freight-house use. Curves totaling 6500 ft. were double-tracked between Long Beach and Wilmington, and three-position all-electric block signals were taken from less busy lines to add to the protection of this one. The company also placed 3030 ft. of second track on the Gardena-San Pedro line in San Pedro, to be used not only for transporting the 4000 employees of the Los Angeles Shipbuilding & Drydock Company but also for carrying construction material.

Owing to the increased travel on these and other lines, the company has purchased a number of used cars of fast suburban type, nine from San Diego and two each from Visalia and Fresno.

# Electric Railway Executives Confer in New York

**Meet on Short Notice at Call of American Association to Consider Grave Problems Incident to War-Time Operation of Properties — Executive Committee Decides to Omit Atlantic City Convention**

**I**N RESPONSE to the general call to electric railway executives issued last week by the executive committee of the American Electric Railway Association a large number of men occupying the highest positions in the industry and representing electric railways from all over the country held a conference on Aug. 22, at the United Engineering Societies Building, New York City. The object of this conference was to consider the recent decisions of the National War Labor Board and their probable effect on the electric railway industry as a whole. President Stanley presided at the conference.

Philip H. Gadsden, resident member of the Electric Railway War Board at Washington, discussed in considerable detail the work of the board in connection with the recent hearings of the National War Labor Board. He took up also the work now being carried on in Washington in an effort to set before the proper governmental officials the present serious condition of the electric railway industry.

Mr. Gadsden said that the work of the board had been hampered by lack of accurate data relative to the financial and operating conditions of the electric railways, both as an industry and as individuals. He advocated a stronger organization of the railways in order that the benefits of co-operation and the uniform presentation of cases before federal boards and regulative bodies be secured. He also pointed out that only by mutual assistance can anything be accomplished.

## WAR BOARD WANTS ACCURATE DATA

Regarding the questionnaires sent out to a number of railways in the spring for the purpose of furnishing working data for the board, Mr. Gadsden stated that more than 150 were returned to the board. An analysis of these made by the research committee attached to the staff of the Director-General of Railroads shows that during the current year the net revenue applicable to the payment of dividends has, for the industry as a whole, practically reached the zero point. The data for this analysis were collected before the National War Labor Board decisions were made. If applied to the whole industry these would increase the annual operating expense by \$100,000,000 more for labor alone.

A new questionnaire is now being sent out to all of the 1260 electric railway companies of the country and Mr. Gadsden urged emphatically that the forms be filled out and returned to the War Board with the utmost expedition.

With the regard to the present critical situation, an increase in fares is by no means a universal remedy, the available data indicating that in most cases an increase in fare is accompanied by a decrease in volume of traffic, so that a 20 per cent increase in fare may not

result even in a 10 per cent increase in gross revenue. The situation calls urgently for federal aid of some kind or other if the electric railways are not to be doomed.

## CONVINCING TESTIMONY THAT THE SITUATION IS CRITICAL

In the discussion that followed Mr. Gadsden's presentation of the work of the Electric Railways War Board it was pointed out that local referendum votes do not always give relief in the fare situation even when the request of the railway is backed by the labor unions. It also seemed to be a rather general impression that the public does not believe the statements about the serious condition of the electric railway industry and can be brought to do so only by some radical means.

C. M. Clark, of E. W. Clark & Company, explained the rather drastic plan applied by the Columbus Railway, Light & Power Company in practically doubling the fares to secure the revenue wherewith to meet the increased operating expense. When actually confronted with the situation the Columbus public proved to be reasonable.

Horace Lowry, president Twin City Rapid Transit Company, emphasized that the public does not believe the railways to be in as bad a condition as they claim. The problem is to convince the public of the actual situation.

Thomas N. McCarter, president Public Service Railway, described the fare situation on that property with particular reference to the rehearing of the higher fare case which is to take place before the Public Utilities Commission next Thursday. The company has asked to have the case heard again in the light of the wage awards made by the National War Labor Board. Higher fares are absolutely necessary on this property to preserve its financial integrity.

The basis of a statement made and illustrated by J. D. Mortimer, president North American Company, was that wage increases must be behind applications for fare increases if the latter are to be effective. The urgent thing is somehow to convince the public that it is dependent upon good railway service. Then co-operation will come.

## WHAT IS THE RELATION BETWEEN HIGHER FARES AND RIDING?

H. G. Bradlee, vice-president Stone & Webster, outlined briefly the results of the increase in fares to 7 cents in Tacoma, Wash. There has been an apparent increase of about 20 per cent in income, with a 10 per cent falling off in riding. Part of the loss will probably be made up and with the natural increase the riding may soon reach its previous volume.

Richard McCulloch, president United Railways of St. Louis, said that prompt action on the fare increase was

secured in that city on account of the close relation of wages for labor and rate of fare. He thought that it may be necessary to ask for further increase, although a reasonable increase in income resulted from the recent raise.

#### INTERURBANS MUST NOT BE OVERLOOKED

L. J. Wolf, Aurora, Elgin & Chicago Railway, compared the situation in the interurban field with that in the city field, showing that the two are different. There is a limit to which the interurban rates can be raised, which is determined by competing facilities. The interurban presents its own problems which will require solution in these times. Charles L. Henry, president Indianapolis & Cincinnati Traction Company, emphasized this point by showing that there are many factors which affect interurban revenue besides the matter of fares. The general development of the saving habit by the people in order to permit them to help finance the war is one such factor.

C. L. S. Tingley, vice-president American Railways, brought out the fact that whether or not a raise in fare will produce an increase in income depends in part upon the nature of the territory in which a road operates. For example, where war industries abound, an increase can be expected; otherwise it may not be realized.

P. F. Sullivan, president Bay State Street Railway, pointed out the importance of a general grasp of the present situation. We are dealing with millions now where thousands were dealt with before. Details are important, but most important of all are the fundamental principles involved. Like Mr. Tingley, Mr. Sullivan considers that income is determined now largely by factors other than rates of fare, notably by the losses in revenue due to absence of men from the territory and by the presence or absence of war industries.

#### THE INVESTORS' POINT OF VIEW

O. B. Willcox, representing the Investment Bankers' Association, said that bankers had hoped that the War Finance Corporation would realize that the electric railways face war problems. War burdens will be borne by our citizens cheerfully if equitably distributed, but at present invested capital is being asked to carry more than its share. The result will be bankruptcy, or a contribution by the public to care for deficits. The latter can be done nationally or locally. Before the war electric railways were about holding their own financially. They should have assistance now because they are essential and because unless relief is given their property will be confiscated. War conditions threaten the integrity of a vast property.

F. W. Frueauff, H. L. Doherty & Company, said that some kind of a subsidy is necessary if railways are to continue, and this idea was reiterated by other speakers, particularly by M. C. Brush, president Boston Elevated Railway. Mr. Brush gave details of the trustee plan under which the Boston Elevated Railway is now operating and showed how the public will pay for the service which it demands. By having representation of all interests on the board of trustees it is possible to get suitable action on any real need of the railway. In Mr. Brush's opinion it is possible to secure local subsidies in some form or other.

In addition to the speakers mentioned above brief remarks were made by the following: P. J. Kealy,

president Kansas City Railways Company; T. W. Wilson, president Wilmington & Philadelphia Traction Company, and Rankin Johnson, president Trenton & Mercer County Traction Company. Numerous questions were put to Mr. Gadsden, who in reply gave many interesting sidelights on the ramifications of the work of the Electric Railway War Board.

#### ANOTHER CONFERENCE TO BE HELD

Before the meeting adjourned a resolution, moved by Mr. Wolf, was passed to the effect that the meeting, as far as it represented the industry, stand back of the American Electric Railway Association War Board. On Mr. McCarter's motion it was decided that the meeting, when adjourned, should be adjourned subject to further call by the War Board.

#### NO CONVENTION THIS YEAR

At a meeting of the executive committee of the American Association held in New York, immediately after the conference, it was decided to omit the convention scheduled to be held at Atlantic City early in October. In its place will be a brief meeting in New York on a date still to be determined.

### Freight and Express Service Started in Kansas City

THE Kansas City Railways recently instituted express and freight service between the interurban freight station at Kansas City, Mo., and two terminals. One of these terminals is in Independence, Mo., the cars running over the company's tracks, while the other terminal is at Zarah, Kan., 18 miles out over tracks of the Kansas City, Lawrence & Topeka Railway Company.

A motor truck line has been operating between Independence and Kansas City for three years and has a large business. One of the largest department stores has considerable deliveries to Independence, which heretofore have been largely taken care of by its own trucks. The freight cars on the railway tracks now receive this merchandise from the retailer at the interurban station and carry it to the public square at Independence, Mo., where a railway waiting station has been transformed into a receiving station for freight. The bulk of the freight business on both lines from Kansas City outward is from wholesalers, and largely from grocery jobbers. The goods are delivered practically at the doors of the suburban merchant, since their stores are usually located along the electric railway line.

In order to accommodate the citizens along the line, the interurban company is carrying milk cans in its passenger cars until other arrangements can be made. The cars are loaded in the early morning, when there are comparatively few passengers, and thus do not interfere with the passenger traffic.

Despite the agitation for the use of trucks on highways, there has been comparatively little attempt to establish truck service around Kansas City. There are two or three truck lines operating now on rock roads, only one of which serves a community already served by interurbans. The other truck lines are being developed in competition with steam roads.

# Study of Car Energy Saving at Dubuque

## Tests Made on Level and Hill Lines Show that Savings as High as 26 per Cent Can Be Obtained by Use of Meters as Checking Devices

By L. E. GOULD

President Economy Electric Devices Company, Chicago, Ill.

A STUDY was conducted last winter on the lines of the Dubuque (Iowa) Electric Company to learn the probable saving in car energy consumption that could be expected from an installation of energy-checking devices on the cars. Referring to the map of the Dubuque lines, Fig. 1, the tests with which this article is concerned were made on the Main Street line and the West Dubuque-Eighth Street line. As the physical conditions of these lines are widely dissimilar, they afford an excellent example of the comparative results obtainable with the same car equipment on level lines and on hills. The tests were conducted by the Economy Electric Devices Company, Chicago, Ill.

The route of the Main Street line, Fig. 1, is parallel with the Mississippi River and its profile is practically level. There are twelve fixed stops and fourteen curves on each round trip, the distance of 5.6 miles being made at an average schedule speed of 8.4 m.p.h. The normal headway is ten minutes with a rush-hour headway of five minutes, but as all other lines in the city use part of the Main Street tracks the average car spacing is less than one minute. The car equipment used was that which is regularly operated on the line. These cars are

steel, low-floor, pay-as-you-enter, double-end, with a seating capacity of forty and a weight of 34,500 lb. The cars are equipped with two GE-203-G, 50-hp. motors geared for a free running speed light of 28.25 m.p.h.; Brill 39-E maximum traction trucks, a GE CP-25 compressor, S. G. 2-valve air brakes, two G.E. K-36-J controllers, and hand-operated doors and steps.

The test cars were each equipped with a 100-amp. capacity Sangamo Economy meter to record the actual energy consumed by the car motors. The test included two periods, the first a blind period, and the second an instruction period. During the blind period the cars were operated with meter dials covered, the meters being read at the carhouse nightly. The data of car mileage and total passengers were obtained from the auditing department. The runs were operated by the regular crews without instructions of any kind. This period lasted three days and from the data obtained the average base figures of energy consumption per car-mile and passengers per car-mile were obtained. A basic figure of 2.093 kw.-hr. per car-mile was thus secured against which to make comparisons. It is quite probable that this figure is slightly lower than the average because of the presence of the meters on the cars, even though

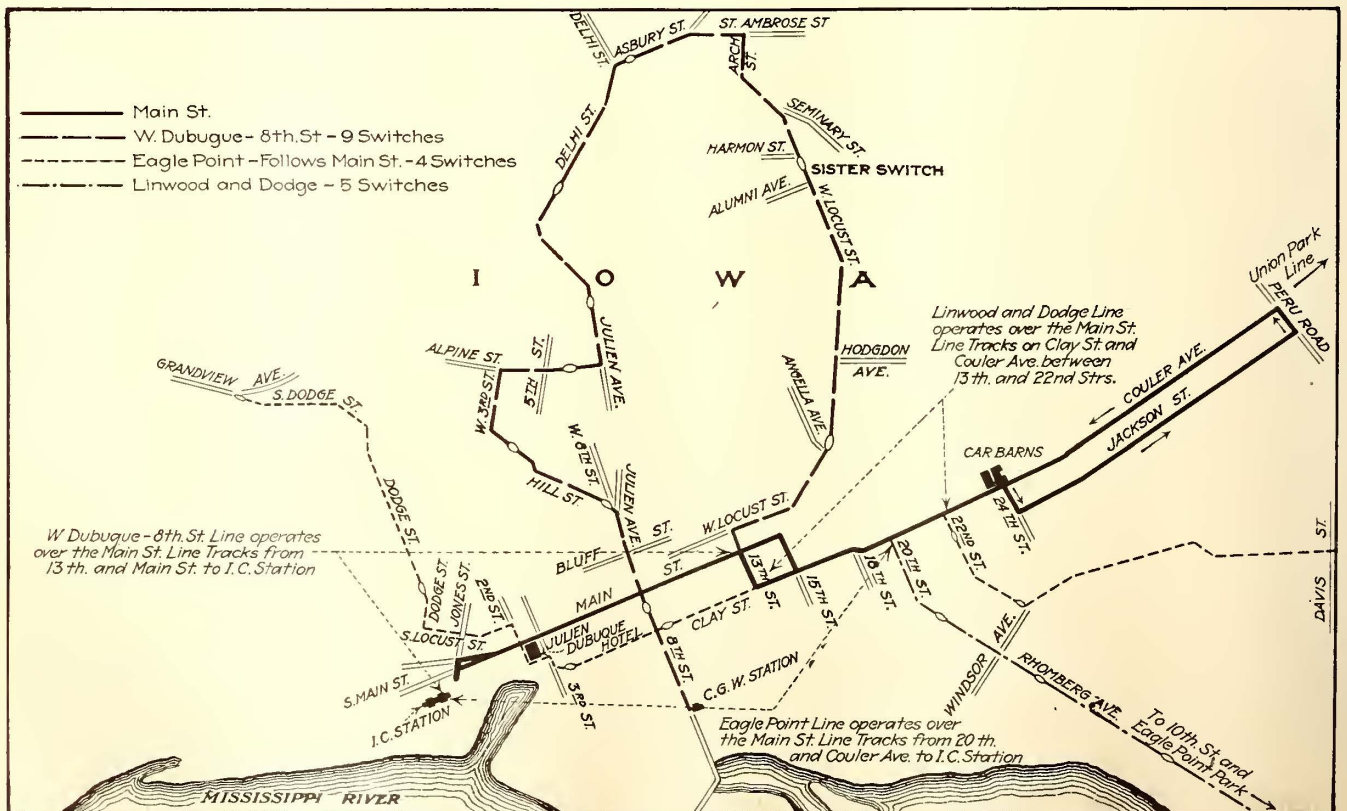


FIG. 1—MAP OF DUBUQUE (IOWA) ELECTRIC COMPANY'S RAILWAY LINES



the dials were masked so that the readings could not be observed by the men.

At the start of the second period the motormen as a group were given a talk on energy-saving methods by A. H. Smith, superintendent. Personal instruction also was given on the cars. Meter record cards of the form here shown were used by the motormen, to set down their energy readings by trips.

RESULTS OF LEVEL LINE TEST

The following tabulation of the test results together with the graphic representation of Fig. 3, will show the comparison between the operating efficiency of the crews during the blind, uninstructed period and afterward when instruction had been given and the meters were being read so that the car energy consumption of each round trip could be reported by the motormen. Due to better handling of the controllers and brakes, the car energy consumption was reduced 0.253 kw.-hr. per car-mile (a saving of 12.1 per cent.) notwithstanding a traffic increase of 1.1 passengers per car-mile (16.7 per cent.). While this saving is not notably large, the type of car used is highly efficient from the energy standpoint, and the transportation department of this road has been consistent in thoroughly training its platform men to maintain efficient power operating methods. Also the basic figure of 2.093 kw.-hr. per car-mile was obtained during a period when the mean average temperature was +23 deg. Fahr. and the saving was made in a period when the average temperature was -1 deg. Fahr. Snow caused slipping of wheels and frozen brakes during both periods and a heavy increase in traffic due to the severely cold weather and the approach of the holiday season filled the cars to capacity. These conditions operated against a maximum saving.

ECONOMY METER CARD			
Line <i>Main St.</i>			
Motorman <i>W. Crahan</i>			
Car No. <i>220</i> Date <i>12/6/17</i>			
Time	Meter Rds.	Diff.	Remarks
650 p.m.	1082	7	Peru Rd to Barn
625 p.m.	1075	11	I.C.
545 p.m.	1064	12	I.C.
505 p.m.	1052	10	I.C.
425 p.m.	1042	10	I.C.
345 p.m.	1032	8	I.C.
305 p.m.	1024	11	I.C.
225 p.m.	1013	12	I.C.
145 p.m.	1001	12	I.C.
105 p.m.	0989	8	I.C. Station
1240 p.m.	0981	START	Barn to Peru Rd.
SPACES BELOW FOR OFFICE USE			
51.77	101	1.95	
Mileage	KWH	KWH-CM	

FIG. 2—METER RECORD CARD USED IN TEST

One of the units in the Main Street test was car No. 200. During the blind portion of this test while meter dials were hooded, there was nothing in the power readings obtained from this car to indicate an abnormal condition. However, on the first day of the second period, when meter readings were being taken by the crews, complaints were made relative to difficulty experienced in maintaining schedules without the continuous application of the power, which made saving impossible. The condition of the car continued to become worse, and instead of a decrease in power consumption as made by other cars, it showed an actual increase of 7.01 per cent

during the second period over power requirements during the blind period. It was found that the excessive power required was due to a defect in a side bearing, which was subsequently corrected in the shops. After this the energy consumption of car No. 200 returned to normal.

A separate graph on Fig. 3 shows the erratic action

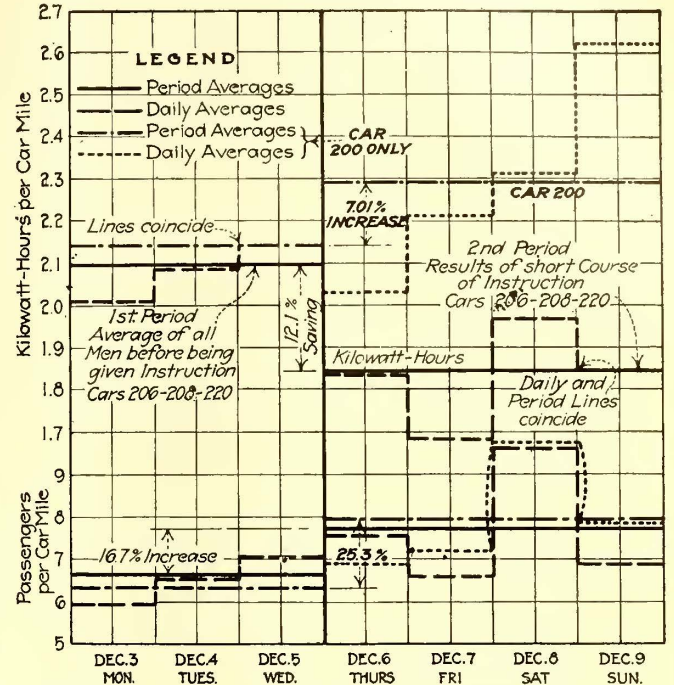


FIG. 3—GRAPH SHOWING RESULTS OF POWER SAVING TEST ON MAIN STREET LINE

of car No. 200. While interfering with the best test results, the action illustrates that in a meter installation: (a) The meter readings will indicate equipment defects; (b) that the car crews are on the alert to report any condition of their cars which prevents them from making satisfactory records. Before the use of meters with instruction, the other crews operating cars in good condition had power readings as high, and in some instances higher, than car No. 200 showing that when no incentive is given for economical use of power,

SUMMARY OF MAIN STREET TEST

First Period					
Date	Mileage	Kw.-Hr.	Kw.-Hr. Per Car Mile	Passengers	Passengers per Car Mile
3	296.04	597	2.01	1760	5.95
4	446.81	935	2.09	2925	6.55
5	446.81	958	2.14	3163	7.08
Totals	1,189.66	2,490		7,848	
Average kilowatt-hours per car-mile for first period				2.093	
Average passengers per car-mile for first period				6.6	
Second Period					
Date	Mileage	Kw.-Hr.	Kw.-Hr. per Car-Mile	Passengers	Passengers per Car Mile
6	446.81	821	1.835	3386	7.58
7	296.04	498	1.68	1951	6.59
8	391.81	771	1.965	3762	9.61
9	419.31	770	1.84	2870	6.84
Totals	1,553.97	2,860		11,969	
Average kilowatt-hour per car-mile for second period				1.840	
Average passengers per car-mile for second period				7.7	
Comparisons of Two Periods					
Kilowatt Hour per Car Mile				Passengers per Car Mile	
First Period.....	2.093			6.6	
Second Period.....	1.840			7.7	
Difference.....	0.253			1.1	
Decrease = 0.253 kilowatt-hours per car mile = 12.1%. Increase in passengers per car-mile = 1.1 = 16.7%.					

a much greater amount than necessary will be used. When the crews received instruction which enabled them materially to reduce their power readings on other cars, the condition of car No. 200 prevented such a saving and this fact immediately became noticeable to the operating crew.

#### TEST ON HILL LINE

The route of the West Dubuque line is between the business district and West Dubuque, located on the river bluffs. This line is largely single track and its steepness is indicated by the fact that it is in competition with a cable-incline railway. There are many safety stops, curves and turnouts on this line, and heavy grades reaching a maximum of 10 per cent as shown in Fig. 4. The round trip mileage is 10.6, the scheduled speed is 7.95 m.p.h., and a normal headway of ten minutes and a rush-hour headway of five minutes are maintained. The same equipment was used for this test as on the Main Street line.

The West Dubuque test included two periods similar to the Main Street test but was conducted with different crews. Weather conditions were about the same until the test was terminated on Dec. 12 by a blizzard

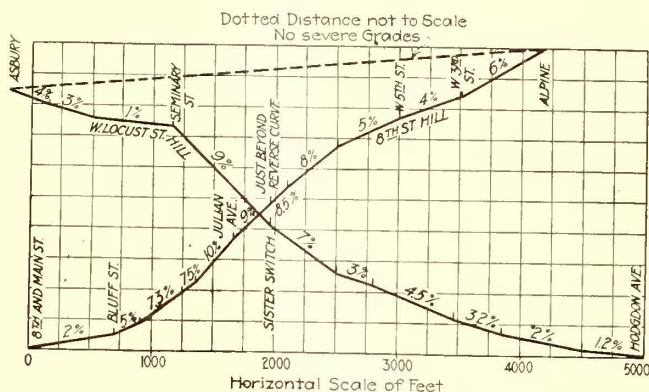


FIG. 4—PROFILES OF WEST DUBUQUE EIGHTH STREET HILL LINE

which interfered with the operation of most roads in the Central States. On the West Dubuque line the energy consumption before the meters were used by the motormen was found to be 3.41 kw.-hr. per car-mile. Improved operation reduced this to 2.52, a net saving for the test period of 0.89 kw.-hr. per car-mile, or 26.1 per cent. A portion of this substantial saving is credited to a reduction of passenger traffic, although most of it is clearly due to improved handling of the controllers and brake equipment.

This line is so steep that power must be applied continuously during the up-grade part of the trip and brakes must be applied hard almost all the time when descending the hill. There is practically no opportunity to coast on the major part of the route. In the opinion of those conducting the test the saving is very largely due to the motormen taking particular care to accelerate better and not to run unduly on the resistance notches, and also to the fact that they avoided coasting up the severe grades, thus calling for reacceleration and greater resistance losses in operating over the remaining portions of the line.

As a result of these tests, the Dubuque Electric Company has purchased meters for all of its cars.

## Cleveland Railway Way Department's New Consolidated Offices

SINCE the completion of the Harvard Avenue maintenance yard of the Cleveland (Ohio) Railway, described and illustrated in the issue of the *ELECTRIC RAILWAY JOURNAL* for Feb. 24, 1917, separate offices of the way department have been maintained at the yard and in the downtown section of the city. The yard office building, as it appears today, was shown on page 339 of the issue referred to.

A decision was reached recently to consolidate all of the engineering work of the department at the yard, and the office building is now being enlarged for the purpose. As a great deal of study has been given to the layout of this building by C. H. Clark, engineer of maintenance of way, and D. W. Morrow, the company's consulting engineer, the dimensions of the principal rooms may be of interest to way engineers of other companies who may be contemplating similar consolidations.

The original building is about 36½ ft. x 33 ft. in outside dimensions, with two floors. On the first floor is a 13½-ft. x 13-ft. entrance hall in one corner, a 16½-ft. x 13-ft. toilet and washroom, and a large room, 30½ ft. x 20 ft., originally intended for lockers and lunch tables but actually used as a general office. Upstairs are three roomy offices of about equal size. The room dimensions given above and below are inside measurement.

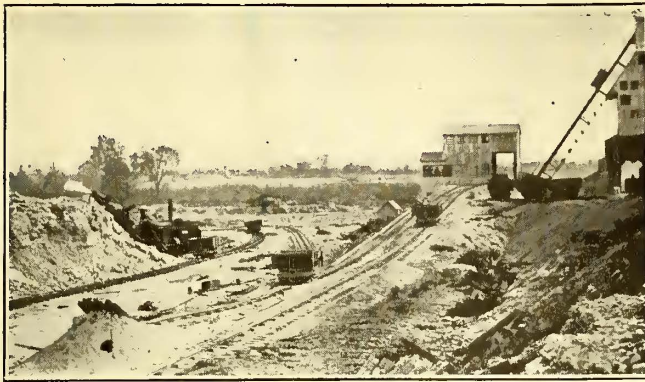
The two-story addition now under construction is 53 ft. x 23 ft. outside. The first floor will contain a general engineering office, occupying all of the area except that needed for a 7½-ft. x 12-ft. instrument room and a 12-ft. x 18-ft. blueprint room. Upstairs will be a large drafting room, 37 ft. x 20 ft., with 50-in. Cooper-Hewitt mercury vapor lamps, and a smaller drafting office similarly illuminated.

The remodeled building will give Mr. Clark and his associates ideal headquarters close to the center of way construction and maintenance activities, and the drafting room will have much better lighting than was possible when the engineering work was done in the *Leader-News* Building.

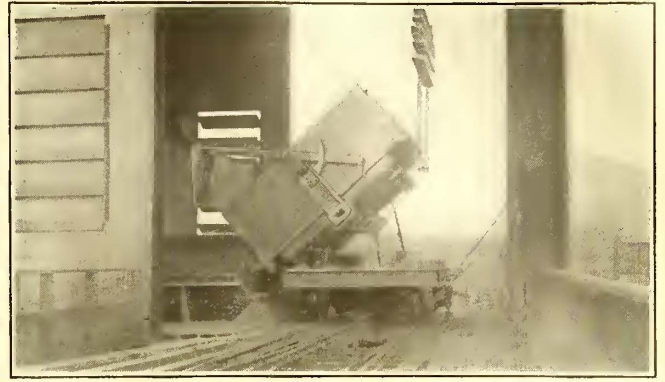
## Women Employees in Great Britain

In April, 1917, the number of women directly replacing men in Great Britain was estimated at 1,256,000, of whom more than three-fourths were found in industrial and commercial occupations and in government employ. In January, 1918, according to the *British Labor Gazette* of June, 1918, this number had increased to 1,442,000. The degree to which women replace men varies widely in different industries. In government establishments, not including controlled establishments engaged in munitions work, they formed 36 per cent of the total employees; in banking and finance, 24.6 per cent; in commercial occupations, 16.9 per cent; in engineering firms, 7.14 per cent; and in all of the metal trades 6 per cent.

These figures refer only to the women directly replacing men. Many others are engaged in work where they replace only partially, or indirectly, men who have been withdrawn.



GENERAL VIEW OF REMOTE CONTROL, ONE-MAN-OPERATED QUARRY TRANSPORTATION SYSTEM



SHOWING THE METHOD OF DUMPING THE MANLESS CAR AT THE CRUSHER HOPPER

## Manless Car Operation in a Stone Quarry

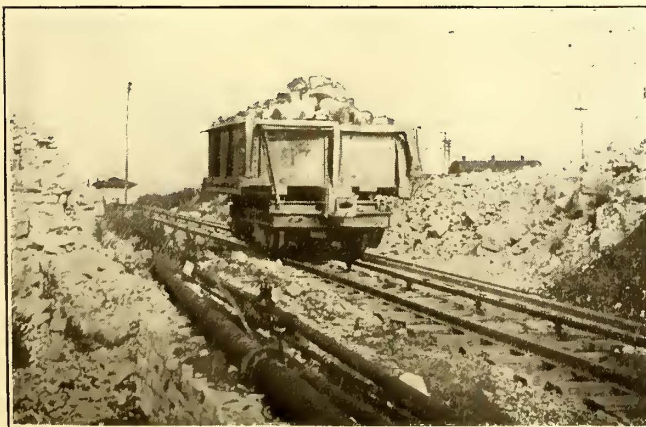
### A Description of a Third-Rail Remote Control System Which Permits the Operation of All Cars from a Central Tower

THE feasibility of electric motive power for industrial transportation systems has long been recognized by electrical engineers, but owing to a variety of causes it has not received the attention given to other lines of the electrical industry. At present small steam locomotives constitute the bulk of the motive power used on such systems. The present dire necessity for effecting economies along the lines of labor and fuel saving, however, is bringing other methods of car haulage to the front. This article is a brief description of the interesting electrical system used on the quarry railway of the Casarbis Stone Company, Kenneth, Ind. The service requirements in this quarry demand that the transportation system deliver to the crusher from 5000 to 6000 tons of rock per ten-hour day. Also it must readily permit of track shifting and extensions and of accurate car spotting. To fulfill the latter requirement the dump cars must be capable of motion in either direction and the system as a whole must permit of their being stopped, started and operated upon any part of the track.

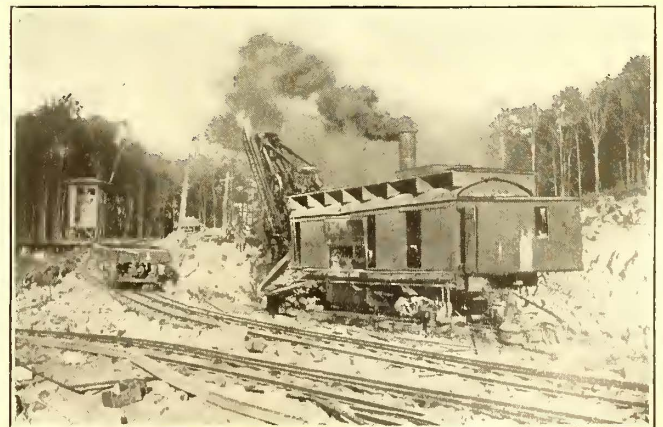
As installed the equipment consists of twenty motor-driven dump cars, which receive their motive and control energy from a third-rail system, at a central con-

trol tower. Except for their motor drive and the modifications in design required to permit the mounting of the motors, there is nothing of special interest in the construction of the dump cars themselves. The third-rail contact system was employed as being best able to meet the requirements relative to track shifting and extension. It is divided into sections, long or short, as the operating conditions may require. Independent feeders connect the sections with the central tower. In this tower are located the controller, illustrated in one of the accompanying photographs, by means of which one man can control the operation of all the cars in the system.

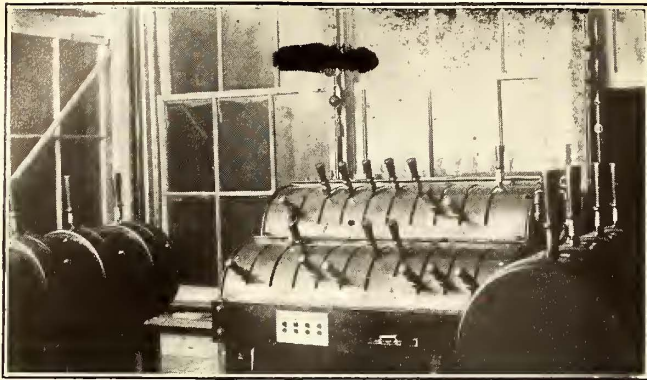
As will be seen from the illustration motor controllers are located in banks at the right and left, while in the center is a bank of distributing switches, one switch being provided for each feeder. This arrangement makes possible the control of the cars on all track sections with a minimum number of motor controllers. These controllers do not make the main circuits directly but, by means of an auxiliary circuit, actuate electromagnetic contactors as in some of the familiar types of electric railway controllers. The motor controllers have three main positions; forward, central or off, and backward. When a lever is pushed forward the rail section, which it is then controlling, is connected through its feeder and a resistor located at the tower to the 250-volt supply. As the lever is pushed farther forward the resistance is cut out. With the lever in the back position the same track section may be energized with from 30 to 100 volts for braking and control purposes.



MANLESS CAR ASCENDING A 6 PER CENT GRADE IN THE STONE QUARRY



SPOTTING A MANLESS CAR IN THE QUARRY READY FOR LOADING



CONTROL EQUIPMENT IN THE OPERATING TOWER

In the installation illustrated, one man operates twenty cars which are served by three steam shovels. Some idea of the saving in labor and cars can be secured from the statement that an equivalent steam locomotive equipment would require about 75 ten-cubic-yard cars, from twelve to sixteen 35-ton locomotives and thirty men.

### Special Light Third-Rail Installed Where Clearance for Standard Construction Was Unobtainable

BY G. H. MCKELWAY

Engineer of Distribution, Brooklyn Rapid Transit System

THE following construction was found necessary on a certain third-rail line in the East in order to carry the third-rail over a short bridge spanning a street. The deck of this bridge was on a level with the top of the running rails which were carried across in grooves in the deck. No provision had been made for the installation of the third-rail at the time the bridge was built and the engineer in charge of the construction would not consider cutting a groove into the deck, as this would seriously damage the water-proofing.

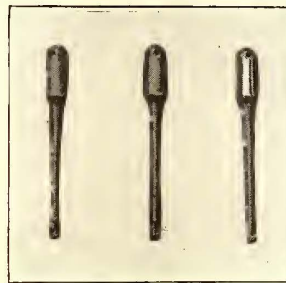
With the usual type of construction employed on this road, the bottom of the third-rail projects a little below the top of the running rail, so that it was impossible to use the standard section of third-rail. A light center-bearing rail, removed from an old surface line, was therefore substituted for the heavy T-rail. This gave

the necessary clearance above the bridge floor, and the smaller cross-section of the center-bearing rail was compensated for by paralleling it with a 500,000-circ. mil jumper. Standard insulators for supporting the rail could not be used on account of the small clearance available, so that the insulators were placed on a "devil strip" between the two third-rails. The caps were placed at right angles to their normal direction so as to support the steel bar, which was so bent as to rest on the caps of both insulators and with the ends under the base of the light third-rail. This steel strap was, of course, alive whenever current was on the third-rail, and to prevent anyone from coming in contact with it a wooden box was made to fit over the insulators and straps, as shown in the accompanying illustration.

### Building Up Worn Spring Posts

SPRING posts in the side bearing trucks still in use on some of the cars of the Portland Railway, Light & Power Company wear both in head and shaft to such an extent that it is necessary to replace them from time to time. It has been found that these worn

posts can be very satisfactorily repaired by the use of an electric welder. In fact, when so repaired they are found to be fully as good as new.



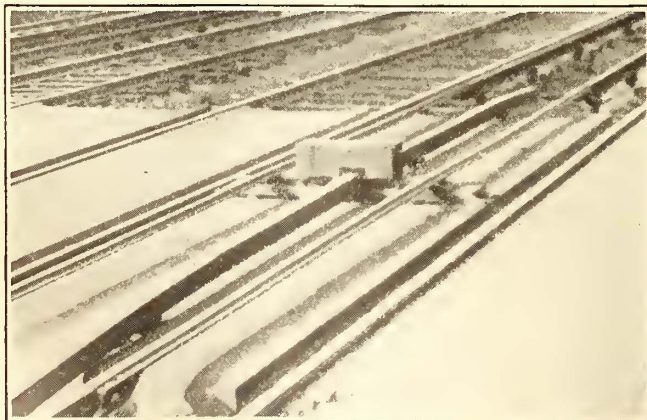
WORN SPRING POSTS REPAIRED BY ELECTRIC WELDER

The metal deposited by the spot-welding process is "spongy" so as to require hammering or rolling before it will satisfactorily withstand wear. In the case of the spring posts the metal is compacted by being cold rolled. The pins are trued up on the lathe to within  $\frac{1}{32}$  in. The illustration shows three stages in the process; the worn pin, the pin after being spot-welded, and a completed pin welded, turned and rolled, ready for further service.

This work has been carried out under the direction of F. P. Maize, master mechanic of the Portland Railway, Light & Power Company.

### Calculating Machines in Engineering Work

THE construction department of the Connecticut Company, New Haven, is using a Monroe calculating machine for a number of special engineering calculations in addition to routine work, such as adding, subtracting, multiplying, dividing and combining these operations. Among the special tasks to which the machine has been applied are: Preparation of monthly statements of mileage of track, based upon track sketches furnished by the engineer of maintenance of way; annual revision of mileage tables, records of track charges; calculation of route mileage by sections; tabulation of data of all kinds, including annual statements, tax bills, etc. The machine was purchased originally for use in valuation work in which some kind of a calculating machine is a virtual necessity.



SPECIAL SUPPORT FOR LIGHT THIRD-RAIL WHERE IT CROSSES A STREET BRIDGE

## Studies in the Wear of Armature Ball Bearings

Results Indicate that Motor Maintenance Is Simplified and Danger of Armature Rubbing on Pole Faces Is Avoided

BY WALTER FINK

Master Mechanic, Austin (Tex.) Street Railway

THE Austin Street Railway operates seven safety cars, the armatures of the GE-258 motors of which are equipped with ball bearings, part Gurney and part S.K.F. These bearings have given no trouble, and require little more attention than squirt-gun lubrication with grease every three months. Service data on the Gurney bearings have not been obtained, the first three cars placed in service here two years ago being equipped with S.K.F. bearings.

So far as ball bearings for armatures are concerned it is obvious that one of their prime advantages is to maintain a constant gap between the armature and the pole pieces, thus preventing the disastrous and costly effect of fast-wearing babbitt bearings. Therefore, we thought it would be interesting to see how long a ball bearing would be sure to protect the user against this kind of service failure, and so made a record of the wear found on the balls and races. The following table shows the results obtained during a period of more than two years:

WEAR OF BALL BEARINGS ON GE-258 MOTORS AFTER APPROXIMATELY 100,000 MILES WEAR FROM APRIL, 1916, TO JUNE, 1918

Car No.	Armature No.	Commutator or Pinion-End	Raceway		Balls	
			A*—Wear, In.	B†—Wear, In.	B†—Wear, In.	0
25	402,856	C. E.	1.370	0.003	0.562	0
		P. E.	1.649	0.014	0.933	0.005
25	402,775	C. E.	1.369	0.001	0.562	0
		P. E.	1.657	0.012	0.936	0.005
26	402,773	C. E.	1.367	0.003	0.562	0
		P. E.	1.658	0.009	0.937	0.001
26	402,772	C. E.	1.368	0.003	0.562	0
		P. E.	1.658	0.008	0.937	0
27	402,768	C. E.	1.367	0.003	0.562	0
		P. E.	1.657	0.012	0.936	0.003
27	402,774	C. E.	1.367	0.003	0.562	0
		P. E.	1.657	0.012	0.936	0.003

\* A is the distance in inches from inside of inner race to outside of outer race, bearing assembled.  
 † B is the diameter of the balls in inches.

In addition to the measurements taken the following conditions were noted: (1) Inner races were all in good condition. (2) Outer races at the commutator end were found to have the outside slightly pitted in some places and faint rings worn from turning in the housing. At the commutator end inside, two small grooves were worn where the balls run. The pinion end outside was slightly pitted in some places and faint rings were worn from turning in the housing and grooves were worn where the balls run. Two ragged holes of  $\frac{1}{16}$ -in. diameter in one of the grooves of armature No. 402,774 appeared to be due to a local defect in the steel. (3) All balls were in excellent condition except one ball of armature No. 402,773, commutator end, which had two pits of about  $\frac{1}{16}$ -in. in diameter. (4) All separators were in good condition. (5) On armature No. 402,856, pinion end, the locking spring on the nut holding ball bearing in place was broken and the nut had unscrewed. Complete mileage data on armature ball bearings are not yet available, but the information given in

the table above might be used as a basis to estimate the life.

The data presented in the table show that the balls of the commutator-end bearing on the six motors tested had not worn at all. The wear of the balls in the pinion end bearing varied from nothing to 0.005 in.

The thickness of the bearing measured from the inside of the inner race to the outside of the outer race, with the bearing assembled represents the amount the armature dropped toward the poles and is one-half the total wear of the bearing. As the table shows, this wear after nearly 100,000 miles of service was found to vary from 0.001 in. to 0.014 in. In the original design the retaining collar which holds the pinion end ball bearing was screwed on and held in place with a locking spring. Breakage of the locking pin spring allowed the collar to unscrew and thus caused the bearing to wear faster. The first remedy was to secure the collar nut with a  $\frac{3}{16}$ -in. cotter key. The second and permanent remedy as applied also by the manufacturer is to discard the nut by shrinking the retaining collar on the shaft.

By referring to the notes under the table it will be seen that the outside of the outer races was found slightly pitted, the scars being rough spots  $\frac{1}{2}$  in. to 2 in. in diameter. Further study of one bearing on car No. 25 indicated that this was due to the passage of current through the bearings. To prevent this we now ground the motor frame to the truck. In any event, the roughening of the outer surfaces does no harm since the balls do not run on them.

From our experience, we feel justified in saying that the use of armature ball bearings greatly simplifies the upkeep of rolling stock, particularly on small properties where frequent, specialized inspection is out of the question.

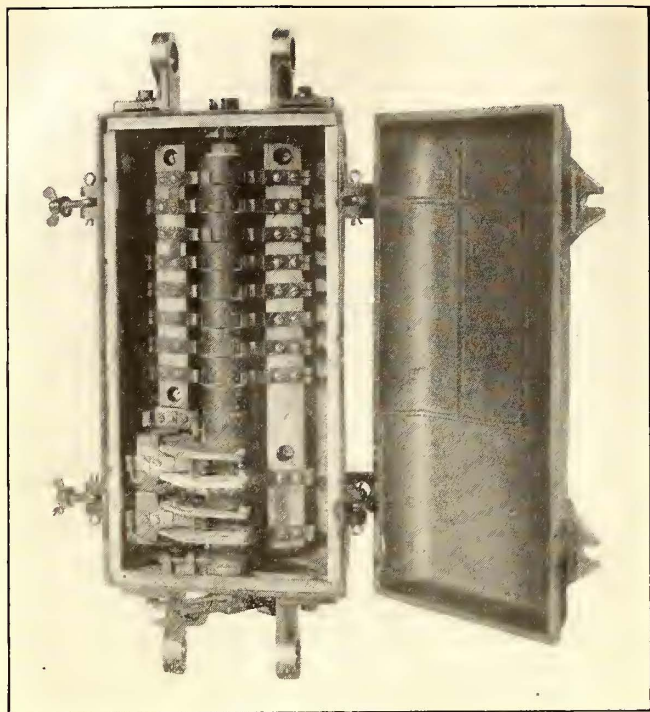
## Train Service for War-Time Rush-Hour Traffic

People's Railway, Dayton, Ohio, Is Handling Large Numbers of Munition and Other War Workers —Details of Couplers Are Given in This Article

The People's Railway, Dayton, Ohio, is having excellent success in using train operation for handling rush-hour traffic. The company, has had the problem of transporting a steadily increasing host of munition workers in addition to the regular rush-hour traffic. The city of Dayton is unique in having its street railway service supplied by six independent operating companies. Of these the People's Railway is one of the oldest and largest, operating some 35 miles of important through routes.

Among the manufacturing establishments located upon its lines may be mentioned the Recording & Computing Machine Company, Ohmer Fare Register Company, Barney & Smith Car Company and the Maxwell Motor Company. All of these have made extensive additions to their plants and operating forces.

To handle this increased traffic the People's Railway has purchased considerable new equipment during the past year and there are now in service forty large double-truck motor cars, fifty-one single-truck motor cars, ten large double-truck trailers (see E. R. J., April 6, 1918, page 669) and fourteen single-truck trailers.



MULTI-POINT DISCONNECTING SWITCH IN ELECTRIC COUPLER CIRCUIT

Special rush-hour service is provided by two and three-car trains consisting of pay-as-you-enter, double-truck, double-end, motor cars with a seating capacity of forty-four, coupled to one or two, double-truck, center-entrance trailers with a seating capacity of fifty-five each. The combined seating arrangement for 154 passengers is no true measure of the total capacity of a three-car train, as large standing room space is provided affording comfortable accommodations for more than 400 passengers. This train service was inaugurated in June, 1917, and has since demonstrated its merits not only in increased transportation efficiency but in the resultant economy as well as the winning of unqualified public approval.

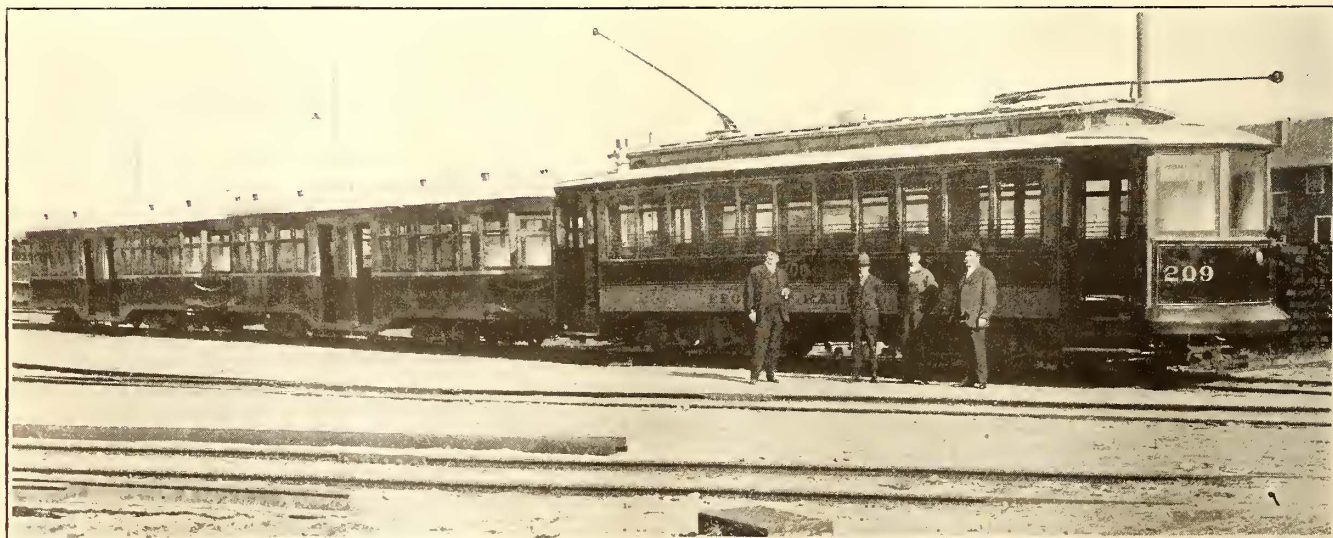
The increased number of loading platforms together with the automatic motorman's signal controlled by the car-door position minimizes the length of stops and

"cleans up" the heavy traffic points effectively. As an extra safety feature long coiled springs, extending between dashes of coupled cars, to provide barriers to prevent pedestrians from walking in between cars. Special vertical metal strips attached to the dashes are used to prevent unsightly chafing of these springs while rounding curves.

For the purpose of saving time in making up trains and insuring safety for trainmen the Tomlinson coupler manufactured by the Ohio Brass Company is used for making mechanical, air and electrical connections between cars. In addition to coupling the cars automatically, this coupler establishes at the same time a connection of the two air-brake pipe lines and the five electrical circuit connections between the cars of the train. The air-pipe couplings are integral parts of the coupler head proper while the electrical couplers are in the form of separable units bolted on the side of the coupler head. Each electric coupler provides contact points for the following purposes: One buzzer signal circuit, two single-stroke bell circuits, one door signal circuit, two spare contact points available for future use, and three circuits connected in parallel for the trolley circuit are used for furnishing heater and light current to the trailers.

An important safety feature of the electric coupler is the multi-point disconnecting switch mounted under the car platform and operated manually by extension handles running to each side of the car near the corner post. These switches are of the inclosed drum type with the air brake cut-out cocks mechanically coupled to the ends of the switch drum in such a manner that air for the brakes on the trailers can be obtained only while these switches are in the closed position. An uncoupled motor car, therefore, cannot be operated with its switches closed (exposed electric coupler contact points alive) due to the fact that the pipes of the air-brake system are open.

An ingenious modification of the standard H. B. life-guard tripping gate permits its ready removal by a forward swing and lifting the engaging hooks from the suspension rod. This is necessary on the coupled end of the motor car to permit lateral swing of the couplers on curves.



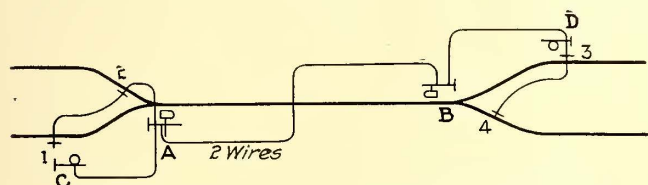
TRAIN WITH CENTER-ENTRANCE TRAILERS, PEOPLE'S RAILWAY, DAYTON, OHIO

## Controlled Permissive Signaling for the Winnipeg Electric Railway

The Number of Cars That May Follow Through a Block in the Same Direction Is Limited by the Revolving Switch of the Signal Relay

IN THE operation of electric railways over single-track sections between successive passing sidings or between double track, it is convenient for several cars going in the same direction to follow through the same block and occupy it at the same time. Single-track permissive signaling is required for such movements. The two signals at the end of the block are interconnected in such a way that when a car has entered the block the signal at the other end of the block indicates "Stop and Stay," while the signal at the entering end indicates "Permissive." In accepting the permissive indication the motorman of a following car is informed thereby that he is entering an occupied block, but that the traffic therein is moving in the same direction. Trolley contactor signals operating in this manner, involving a car counter in the signal relay, have been in use more than fifteen years and have proved of great value.

On street railways having cars running on close headway and free to take a block when the signal is clear or permissive, this very facility of movement is an objection, since by continuous movement in the one direction, at certain spacing, traffic in the opposite direction may be indefinitely held up. To prevent the latter the Nachod Signal Company has developed a "controlled permissive" system in which not more than a predetermined number of cars may follow through the block in the same direction. To accomplish this a peg is set in any desired hole on the revolving switch of the signal relay to control the number of cars that



THREE INDICATIONS CONTROLLED PERMISSIVE SIGNALS FOR WINNIPEG ELECTRIC RAILWAY

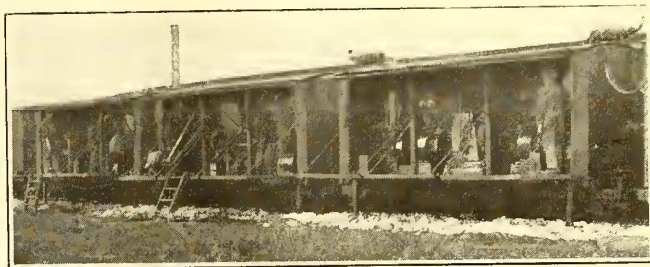
may follow through the block; and the system is such that it may be added to Nachod signal installations already in service.

The diagram shows the layout with type CD signals as supplied to the Winnipeg (Manitoba) Electric Railway. The three-indication signals *A* and *B* are located near the switch points facing the double track, with entering trolley contactors 1 and 3 two spans in advance of the signals, and leaving contactors 2 and 4 near the frog. Two line wires connect signals *A* and *B*, and two line wires connect the contactors at one end of the block with near signal. The arrangement thus far describes the standard permissive signal. The supplementary two-indication light signals *C* and *D* are located on the same poles that support the entering contactors 1 and 3, these signals being normally green, but may be thrown to red. In operation, supposing the relay to be set for three cars, then with two cars in the block running from *A* toward *B*, signal *B* will be

at "Stop," signal *A* at "Permissive," while signals *C* and *D* will be green. The third car may therefore enter the block at contactor 1, but this will cause signal *C* to go to red behind the entering car, and therefore no more cars will attempt to pass under contactor 1. The cars will pass out of the block one at a time, but signal *C* will remain red until the last car goes out, when it will go to green as signals *A* and *B* clear.

## Portable Machine Shop Installation Near the Battle Front

PORTABLE machine shops with such equipment as is usually found in a repair shop are used at the front in France. As shown in the illustration the equipment is mounted in cars each 20 ft. long and 5 ft. 4 in. wide. These are used on the light railways (60 cm. gage). The equipment provided includes drilling and grinding machines, hacksaws, lathes and planing machines operated by power from one of the standard



PORTABLE MACHINE SHOPS IN FRANCE

petrol-electric tractors. The equipment is usually installed in groups with the intention of having four or more cars connected up as a unit. The tractors can haul the other cars constituting the machine shop forward or backward as desired. The shop remains in one location, however, unless it is decided to change the light railway base. The sides of the cars are arranged with hinges at the bottom and open outward, thus forming a platform extension on each side.

Where the nature of the repair work is too heavy or complicated to be handled readily in the field, the rolling stock is shifted to a large central repair plant thoroughly equipped with machine tools, spare parts and appliances of various sorts for rehabilitating engines or cars which suffer from the troubles incidental to light railway operation.

## Increasing Capacity of Railway Motors by Vanes on Rotors

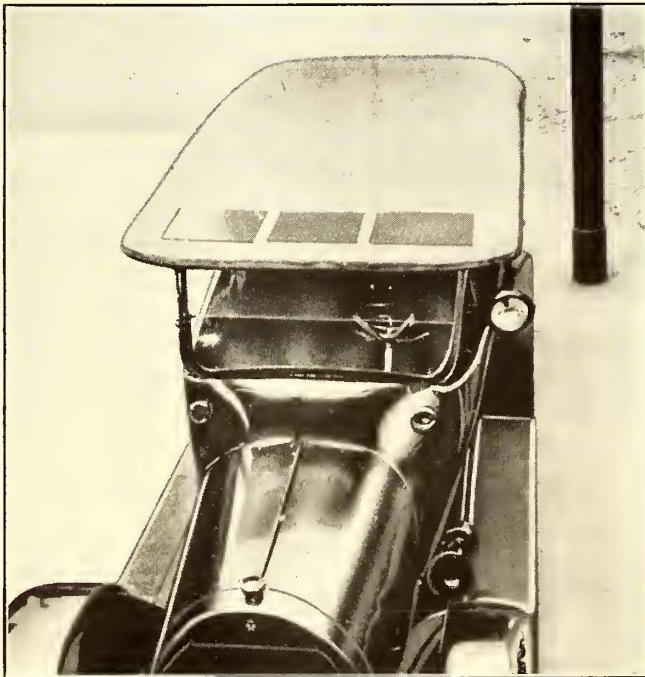
AS DESCRIBED in the *ELECTRIC RAILWAY JOURNAL* of Aug. 12, 1916, the Portland Railway, Light & Power Company, has been installing vanes for ventilating its GE-58 motors. Up to the present time about 100 motors have been equipped in this way. The plan has been so successful that all the motors of this type are to be so equipped as rapidly as opportunity offers.

The vaned back plates are 14 in. in diameter, and are cast with twelve equally spaced projections  $\frac{3}{4}$  in. deep, to which the vanes are riveted with two rivets to each vane. The cost of labor and materials for these new back plates with vanes attached is about \$1.10 each.

## Windows in Automobile Top to Facilitate Inspection

BY HAVING openings cut in the top of the automobile which he uses in overhead inspection, James Scott, superintendent of overhead Cleveland Railway, has made this inspection work a great deal easier. As the accompanying illustration shows, a line of three openings about 10 in. x 12 in. each is made in the top immediately over the driver's seat. These openings are covered with celluloid sewed to the material in the top with a reinforcing of several thicknesses of the same canvas as is used in the top. The work was done by the automobile manufacturer.

This simple arrangement permits the inspection of



A HANDY KINK FOR THE INSPECTOR OF OVERHEAD CONSTRUCTION USED IN CLEVELAND

overhead while driving, and incidentally it is very convenient when the driver wishes to make notes at night. In the latter case he can stop his car under a street lamp and have excellent illumination for any notes he wishes to make on a writing pad.

## Twenty Cars Remodeled to Safety Type

TWELVE single-truck cars and eight double-truck cars on the El Paso (Tex.) Electric Railway have recently been remodeled for safety car operation through the addition of air brakes and the outfits of the Safety Car Devices Company. In both types resemblance to the new cars in operation has been secured by changing from monitor to arch roof, using the same type of trolley base support and completely refinishing both the interior and the exterior. The cluster lighting has been changed to two individual rows of five 23-watt Mazda lamps each.

The single-truck cars which seated thirty-two passengers now seat thirty-six through the use of extra seats on the idle platform. The seating capacity of the



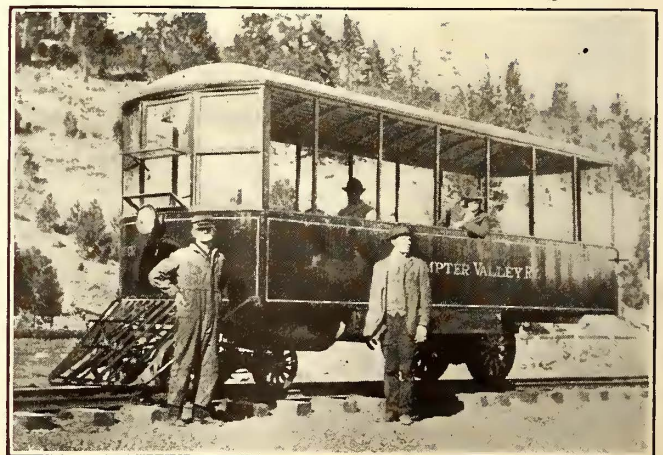
TWO REMODELED CARS IN SERVICE AT SAN JACINTO PLAZA

double-truck cars has been raised from forty-four to forty-eight. While these cars will not be so fast and so light as those of the Birney type, they will cost appreciably less to operate than before, and will permit more frequent service to be given.

The rebuilt cars are going into operation on the lines first equipped with new cars so that the public will already be accustomed to front-entrance operation. The new cars will be transferred to other lines as fast as they can be replaced by cars of the remodeled type.

## Home-Made Gasoline Motor Car for Auxiliary Service

The Sumpter Valley Railway, Baker, Ore., recently built in its shops a gasoline motor car for auxiliary service on its narrow-gage line. A 45-hp. White motor truck engine was used and the body was built to seat twenty-seven passengers. A light four-wheel pilot truck was set under the head end and a single pair of large diameter wheels to which power was transmitted served as the rear truck. The car was designed to make an average speed of 20 m.p.h. and operated over grades up to 4 per cent. Excellent service is reported for the thirty days during which the motor was in use. At the end of that time it was completely demolished in a head-on collision.



GASOLINE MOTOR CAR ON NARROW-GAGE ROAD OF SUMPTER VALLEY RAILWAY



# News of the Electric Railways

TRAFFIC AND TRANSPORTATION

FINANCIAL AND CORPORATE • PERSONAL MENTION • CONSTRUCTION NEWS

## Improved Co-operative Plan Company in Philadelphia Announces Further Liberal Modification of Employees' Co-operative Plan

The Stotesbury management of the Philadelphia (Pa.) Rapid Transit Company on Aug. 19 submitted to all employees of the company an improved co-operative plan. It will do more for the men than the plan which has been in such successful operation during the past seven years, and under which the public and the owners of the property have benefited along with the employees.

### ALL EMPLOYEES INCLUDED

The co-operative plan as now improved will include benefits to all employees, putting the men in the electrical department, shops and buildings, way, and other departments on a proper comparative basis with those operating the cars. Under the plan, there will be established larger sick and pension benefits and greater life insurance. Wages will be based upon the average of wages established by the War Labor Board in the four big cities, Chicago, Cleveland, Detroit and Buffalo.

Sick benefits will be at the rate of \$1.50 a day commencing with the eighth day's illness, and continuing for a period not to exceed 100 days in any year. This is in addition to the amount which the company pays in case of injury under the Workmen's Compensation Act of Pennsylvania. The present sick benefit is only \$1 a day.

A pension of \$40 a month will be paid to any incapacitated member who has reached sixty-five years of age and been in the service of the company continuously for twenty-five years. This compares with \$20 a month now being paid. Special cases will receive special consideration. Every member will receive a life insurance for \$1,000, maintained while he is in the service of the company. This takes the place of the present death benefits of \$650. For all of these benefits and protection to himself and family, the employee will pay only \$1 a month. The company will contribute \$10,000 a month for the same purpose. Any and every employee who has been with the company a year may become a member of this co-operative plan.

### HOW THE PLAN HAS WORKED

Under the co-operative plan which has been in effect some very important accomplishments have resulted. The Stotesbury management took over the property following two serious strikes. The settlement of the last one provided a wage scale of 23 cents in 1911 in-

creasing to 25 cents an hour by July 1914. The co-operative plan was adopted by the Stotesbury management in August, 1911, and accepted by the men in November. It carried a promise that the 22 per cent of passenger receipts would give the car men 28 cents an hour by July, 1916. Actually, they were receiving 31 cents by that time and since then the fund has enabled further increases to 43 cents an hour. In dollars and cents, the result to the men has been that from July 1, 1911, to June 30, 1918, they have received under the co-operative plan \$5,368,153 more than they would have had under the scale fixed in the strike award. Recently, with the approval of the co-operative committee and the management, a further advance of 5 cents an hour was given, making the scale in Philadelphia the same as that established in other cities of the first class by the War Labor Board.

### NEW PLAN A FAMILY MATTER

The improved co-operative plan has been sent personally to every employee of the company that he may have it for study at home, and it is requested that the wives of all men shall join with their husbands in making such study, because it is obvious that the plan is essentially a family proposition and it is desired that the women folk indicate, along with the men, their approval of the plan. A card is inclosed with the statement of the plan with places for the signature of both the employee and his wife.

The present plan of representation by co-operative committeemen will be continued with such enlargement as to numbers as the added membership of the improved co-operative plan makes necessary.

### Increase in Wages for Third Avenue Men

The Third Avenue Railway, New York, N. Y., on Aug. 21 announced an increased scale of wages for its motormen, conductors, and storage battery men. The increase affects a total of 2100 employees, on all the lines operated by the company in Manhattan, the Bronx and Westchester.

By the increase the scale of from 30 to 36 cents an hour which has been in force for all classes of employees is raised to a scale of from 40 to 43 cents. First, second, and third-year motormen and conductors will receive 40 cents, and men of more than three years' service will be paid 43 cents an hour. Storage battery men, regardless of the term of service, will receive a flat rate of 40 cents an hour.

## Hearing on Cincinnati Grant Salaries and Fares Principal Points Discussed at First Public Hearing on New Grant

At the first public hearing on the proposed revision of the street railway franchise at Cincinnati, Ohio, Councilman A. L. Murdock demanded that the Cincinnati Traction Company be required to submit a statement showing the salaries paid its officers. C. W. Culkins, director of street railways, explained that he has no authority under the present franchise to require the company to make such a statement, but he said that figures had been submitted showing that the amount of salaries paid the officers and legal representatives averaged \$6,000 a month, which is less than 0.08 cent per car passenger and has little bearing on the fare question.

### CITIZENS WANT FIVE-CENT FARE

W. J. Schultz, representing the citizens' committee, asked that the rate of fare in the revised ordinance be changed from 6 cents to 5 cents. He declared that if the change was not made, there would not only be a referendum, but an ordinance would be initiated which would take away from the City Council the power to regulate fares. He made a long talk in explanation of the relations existing between the Cincinnati Traction Company, the Cincinnati Street Railway and the Ohio Traction Company.

The ordinance was read for the second time before the City Council on Aug. 16. It is possible that it will be brought up for a third reading and passage on Aug. 21 or 22. Mayor Galvin has assured officers of the Amalgamated Association that he will sign the ordinance as soon as it is passed. Employees have notified the company that some action on an increase in wages must be taken by Aug. 30.

### COUNCIL MEMBERS FAVOR MEASURE

Several other public meetings have been held, but there are indications that a majority of the members of Council favor the measure and will vote for it, in the belief that it is the best arrangement that can be made under present circumstances.

Another hearing was held on Aug. 19. Many suggestions were made, but few were adopted.

The report of the sub-committee on the revision of the franchise was approved by the joint Council and citizens' advisory committee on Aug. 9. The main provisions of the revised draft were reviewed in the ELECTRIC RAILWAY JOURNAL of Aug. 17, page 302.

## Service-at-Cost for Chicago

### Salient Features of New Plan Now Awaiting Public Approval and Passage of Enabling Acts for Unification

A "service-at-cost" plan has again been applied in the solution of a long transportation controversy. The Chicago City Council on Aug. 14, as mentioned in a preliminary note in the *ELECTRIC RAILWAY JOURNAL* of Aug. 17, sanctioned an ordinance to bring about the consolidation of the surface and elevated systems and to provide for the construction of subways by the city. The personnel of a board of trustees named by the companies was approved by the Aldermen and, if the measure finally becomes effective, these nine men will have full charge of the corporation and the carrying out of a construction program involving \$500,000,000.

#### MEASURE MUST GO BEFORE VOTERS

Various steps are still to be taken before the ordinance becomes law, but the overwhelming vote in Council is said to indicate that the measure meets with popular approval. If the franchise is not vetoed by the Mayor, it will be submitted to the voters of the city on a referendum on Nov. 5 next. If it is approved by the public, the State Legislature next January will be asked for new laws, giving the trustees the right to operate the combined system, permitting franchises longer than twenty years, and amending the subway act so as to permit the city to lease bores for longer than twenty-year periods. All these acts must again be submitted to the City Council. Then the various companies will be allowed six months time in which to perfect a consolidation and accept the ordinance. It is believed that the ordinance will become effective about January, 1920.

To review briefly the main points of the ordinance, noted heretofore in this journal, it may be stated that the new ordinance gives the Chicago Local Transportation Company—the new trustee corporation—authority to take over the existing properties without paying a dollar and to construct, maintain and operate the combined system, including subways for surface and rapid transit lines to be paid for out of the city's traction fund. The plan contemplates operation of service at cost with full protection of the capital investment during an indeterminate period.

#### CONTROL BY TRUSTEES

Management of the corporation is to be vested in a board of nine trustees, the members of which up to 1928 are to be named by the present companies subject to approval by the City Council. Three of the members are to hold office until Dec. 31, 1928, three others for another year, and the remaining three until Dec. 31, 1930. The City Council is to designate their successors, and any vacancies are to be filled by the board. The annual salary is to be \$5,000. Three of the nine trustees are

to compose the executive committee and receive extra compensation. The board will have power to elect officers of the company, who may or may not be trustees.

The financial plan is somewhat complicated. The authorized capital account as of June 30, 1916, is \$220,114,428, and of this amount 60 per cent is to be in the form of bonds and the remaining 40 per cent will be stock or debentures. The bonds are entitled to receive present rates of interest. The other securities are to be guaranteed a return of 8 per cent up to 1932, the end of the average franchise life, and 7 per cent thereafter. All new capital will receive a return based on actual cost. Some of the corporations have bonds outstanding in excess of the purchase price and all have more than 60 per cent of their obligations in the form of bonds. These excess securities will have to be exchanged for debentures with no lien on the property but with a higher rate of return.

There is sufficient money in the present city traction fund to build the subways called for under the ordinance. These subways will be rented to the company at 6 per cent after operation begins, while the charge for city money during construction will be 3 per cent.

For maintenance and repairs the company must spend each year 6 per cent of its gross receipts, and the unexpended portion is to be deposited in a special fund. The renewal and depreciation fund will be made up from payments of 8 per cent of the gross receipts every month, and the trustees may increase this percentage when necessary.

#### ACCOUNTING SYSTEM

Commencing five years after the effective date of the ordinance, one-fourth of 1 per cent of the then outstanding capital account is to be paid into an amortization fund from the receipts of the combined system. Each five years thereafter this amount is to be increased until it reaches 1 per cent of the capital account, with the provision that the amount paid in any year is never to be less than in the preceding year. This fund is to be used either for betterments and extensions other than subways or the retirement of outstanding securities.

The accounting system calls for the payment of: (1) all operating expenses; (2) interest on bonds; (3) subway rentals; (4) payments into the amortization fund, and (5) payment of interest due on other securities. If the gross receipts are insufficient in any year to meet these payments, the deficit is to be cumulative. Any surplus is to be deemed surplus receipts and be added to the amortization fund.

Rates of fare are to start with 5 cents for each passenger twelve years of age or over, and 3 cents for each

passenger between seven and twelve years. If, however, any other rate is in force when the ordinance becomes effective, that rate is to continue until altered by the trustees. The latter also have authority to fix a charge of 2 cents for transfers between rapid transit and surface lines. An emergency fund of \$2,000,000 is created to protect the required payments and, if this is diminished below \$1,000,000, the trustees are obligated to put into effect immediately higher transfer charges or rates of fare until the deficit is made up. Moreover, if the surplus receipts at any time are sufficient to justify a reduction in the transfer charge or rates of fare, the trustees are required to make such reduction. The transfer privileges are extremely liberal under the ordinance, as each passenger is to be allowed to transfer wherever two lines connect, intersect or come within 200 ft. of each other.

#### CITY HAS RIGHT OF PURCHASE

The company is permitted to carry express matter and package freight on terms to be approved by the trustees, and it may enter into contracts with connecting roads for through freight business. The company is required to pave, repave and keep in repair the part of the streets occupied by its tracks. There is also a provision that the company clean and sprinkle its right-of-way, but whenever a deficit is created which would require an increase in fares or transfer charges the company may be relieved of these latter obligations until the deficit is made up.

The right is reserved to the city to purchase the property of the company at any time, on giving six months' notice, by paying the then existing capital account. This price as of June 30, 1916, was \$220,114,428 for the combined properties, the elevated valuation being \$70,943,020 of this amount.

There is also a section in the ordinance covering labor, which provides that hours of work and working conditions shall conform to reasonable standards, and that the employees shall receive wages not less than those customarily paid for similar work elsewhere.

#### PROGRAM OF PHYSICAL CONSTRUCTION

The ordinance also includes all details as to the program for physical construction. The various elevated extensions and improvements, as well as the subway routes, are listed, a considerable proportion of the work being placed in the first and second three-year periods. Detailed provisions are also set forth for permits, spacing of tracks, special work, poles and wires, pavement, power houses, cars, etc.

There is no change in the present electrolysis ordinance, except that a board of electrolysis claims is established consisting of three members, one to be named by the city, one by the company. In the event that they are unable to agree on the third member, the latter is to be appointed by the Western Society of Engineers.

### Seattle Wage Contract Signed

The proposed new contract between the Puget Sound Traction, Light & Power Company, Seattle, Wash., and its trainmen has been signed and ratified by both parties, effective as of Aug. 1. The contract provides for an eight-hour day, arbitration of all differences between company and employees, time and a half for overtime, and co-operation in the arrangement of schedules to make as many straight runs as possible. A similar agreement has been drawn up to be signed by the city and the employees of the Municipal Railway.

The contract provides that the company shall not discriminate against union men, and on the other hand, that the union shall not discriminate against such employees as do not desire to join the organization.

The agreement is to continue in force until Aug. 1, 1919, and from year to year thereafter unless either party desires a change, when notice of such desire must be given in writing thirty days before Aug. 1 of each year.

The union of railway employees has asked the city to hasten the examination of the company's books, in order that a settlement may be reached on the question of relief for the company, so that the wage scale may be put into effect. The scale will be retroactive as of Aug. 1, and if no adjustment can be reached by the city and the company, the entire matter will shortly be referred to the National War Labor Board.

The new wage scale increases the present wage of 33 to 40 cents an hour to 50, 55 and 60 cents an hour. Other conditions will remain practically the same as under the old agreement.

### Generator Accident at Norfolk

An accident on July 26 to the 12,000-kw. steam turbine at the Reeves Avenue power house of the Virginia Railway & Power Company, Norfolk, Va., has more or less seriously interfered with street railway service at Norfolk and vicinity. The company has been able to operate about 60 per cent of the normal regular service with the exception of two days during the week ended Aug. 10, when the commercial power load and the intense heat resulted in heating the generators to a point where it was deemed advisable to discontinue the operation of the cars in order to avoid further dynamo trouble. Service was abandoned for the two days referred to from 8 a. m. to 5.30 p. m. and from 7.30 p. m. until midnight. The service that was given enabled the company to assist in taking care of the morning and evening rush.

The president of the Board of Control of War Construction Activities for the locality at Norfolk looked into the situation with a view to cutting off temporarily such commercial power as in his opinion was not absolutely essential. This reduction of power load

has enabled the company to resume the operation of approximately 60 per cent of the regular service throughout the day on the lines in the city.

### Portland Would Run Line

To guide the city in its proposal to establish a municipal railway to Linnton for the relief of industries in that district along the line of the old United Railways, Mayor Baker of Portland, Ore., has asked the city legal department to furnish an opinion setting forth the legal questions involved, and outlining a complete method of procedure to be followed.

The United Railways has presented an inventory to the city giving a valuation of \$232,000 on the line as railroad property, this price not including equipment. City Traffic Examiner E. M. Cousin presented an inventory of the same line, giving a valuation of \$90,000 less. It is estimated that it would cost the city approximately \$150,000 to place the road in operation, this price including cost of constructing 3 miles of tracks which have been torn up. Examiner Cousin states that cars can be bought for \$8,000 each, and that it will cost the city about \$25 a day for power and \$40 a day for labor, figuring on thirty trains daily.

Judge C. H. Carey, representing the United Railway, has advised the Council that his company would not operate the line to Linnton, nor would it reconstruct the line, but that the company was willing to co-operate in any other way with the city in serving the people of Linnton with electric railway facilities.

Commissioner Kellaher proposes to issue public utility certificates bearing 4 per cent interest, and Mayor Baker advises that if the people of Linnton are willing to buy these certificates, he will favor the issuance of them. It has been virtually agreed that if the city is able to reach an agreement with the company as to price, and definite assurance is given that the Linnton people will care for the certificates, the city will purchase the line and begin operation.

### Providence Wage Decision Later

A decision in the case involving the demand of the employees of the Rhode Island Company, Providence, R. I., for an increase in wages, will be delayed by the joint chairmen of the War Labor Board, probably for a month or even longer.

The question of wages for the men in Providence was one of the last to go before the board. The federal trustees in charge of the Providence property under the New Haven dissolution decree refused the demand of the union. Later an agreement was reached to put the matter before the federal board, but only on the understanding that the status of the company, financial and otherwise, would be taken into consideration.

### Short Strike in Ottawa

The strike of the union employees of the Ottawa (Ont.) Electric Railway has been settled. After a tie-up, which practically paralyzed business in Ottawa for two days, the railway resumed operation on Aug. 15 on all the various lines.

The decision to return to work was reached at a meeting of the conductors, motormen and other employees held in the union headquarters at which they passed upon the proposal made by Senator Gideon Robertson to submit an appeal from the award of the conciliation board. The conciliation board awarded the men 33, 35 and 37 cents an hour. The previous wages had been 26, 28 and 30 cents. The men asked for 46 cents for men in the service six months, 48 cents for men in the service twelve months and 50 cents for men above one year's service.

The strike ended without the slightest sign of violence. Police and soldiers were on duty, but the action of the company in deferring the operation of its cars precluded all possible difficulty.

### Labor Board Approves P. R. T. Wages

The National War Labor Board has approved the action of the Philadelphia (Pa.) Rapid Transit Company in voluntarily increasing the wages of its employees and otherwise revising conditions of employment to correspond with the award recently rendered in electric railway controversies by William H. Taft and Frank P. Walsh, joint chairmen of the board.

The company increased the wages of its 7000 employees to correspond with the scale applied by Messrs. Taft and Walsh in other first-class cities of the country. Moreover, it agreed that its employees may belong to any union which they may see fit to join, and offered to reinstate all of the men who participated in the strike, beginning May 29 last, without prejudice, and at the same rate of pay as they would have received had they continued uninterruptedly with the company.

As a result of the company's action, the board dismissed the complaint entered by the Street & Electric Railway Employees' Protective Union. This complaint originated following the strike. It was renewed following the company's adoption of the Taft-Walsh award, on the ground that union workers were still being discriminated against. While dismissing the complaint, the board directed the secretary to assign an examiner to supervise enforcement of the award in Philadelphia as is being done in other cities. The motion adopted by the board follows:

"That inasmuch as the Philadelphia Rapid Transit Company has accepted the award of the National War Labor Board as applied to other cities of like class, the complaint of the Street & Electric Railway Employees' Protective

Union is dismissed, and that the secretary be instructed to appoint an examiner to see that the award is enforced as in other cities."

The new scale of wages for Philadelphia was announced in detail in the *ELECTRIC RAILWAY JOURNAL* of Aug. 10, page 251.

### Vienna Walks

Now and then the stories that are published in regard to the economic conditions within the Central Powers contain references to the matter of city railway transportation. They indicate without exception a very serious condition with respect to service, equipment and personnel. One of the latest of these sporadic articles sent from Zurich, Switzerland, indicates that the local railway situation in Vienna has reached such an acute stage that there is a prospect of total suspension of service during the coming winter. So serious are conditions that the Burgomeister had a recent audience with Emperor Charles, in which he begged him to intercede with the military authorities, from whom must come all materials for repairs and also necessary lubricants. On the other hand Budapest is said to obtain from the military authorities everything it needs for the same purpose.

Since the war the Vienna lines have assumed a service never before contemplated. They carry freight, food-stuffs, wounded, and at night perform the service of funeral cars from the war hospitals to cemeteries. It is estimated that they have transported 1,000,000 wounded. All this has been achieved although about 11,000 employees of the lines have been called to the colors.

### Municipal Railway Extension Plan

The City Council of Seattle, Wash., recently passed an ordinance introduced by Councilman Oliver T. Erickson providing for the issuance of \$1,200,000 of utility bonds for the construction of an extension of the municipal railway from the city limits north of Green Lake to connect with the elevated line and thence to the Lake Burien line, which runs beyond the southern city limits.

The plan contemplates the construction of the line from East Eighty-fifth Avenue to Tenth Avenue northeast, south on the latter street, across the Tenth Avenue's northeast bridge, now under construction, to Fuhrman Avenue, thence to Fairview Avenue, to Virginia Street and Fourth Avenue, and thence south over the tracks of the Seattle & Rainier Valley Railway to First Avenue South and Washington Street, where the extended line will connect with the elevated railway.

It may be necessary to construct a bridge along the east side of Lake Union, where the line will skirt the shore, as the Fairhaven Avenue bridge is not wide nor strong enough to carry cars.

## News Notes

**Capital Traction Men Want Increases.**—An increase to a maximum of 48 cents an hour for motormen and conductors has been asked by men of Capital Traction Company, Washington, D. C.

**Wage Increase for Indiana Union Traction.**—An increase of 4 cents an hour has been given 400 conductors and motormen of the Union Traction Company, Indianapolis, Ind. The wage schedule, which was from 26 cents to 36 cents an hour, will be increased to 30 cents to 40 cents an hour. The increase went into effect on Aug. 15.

**Northern Indiana Increases Wages.**—The Northern Indiana Railway, South Bend, Ind., has increased wages on both interurban and city lines. The interurban scale, formerly from 26 cents to 35 cents an hour, has been increased to 33 cents to 40 cents an hour. The city scale, now from 25 cents to 30 cents an hour has been increased to 28 cents to 33 cents an hour.

**Seattle Report Completed.**—Thomas F. Murphine, superintendent of public utilities of Seattle, Wash., has completed his examination into the books and accounts of the Puget Sound Traction, Light & Power Company, undertaken to determine whether increased fares will be necessary to meet the increase in wages granted trainmen on Aug. 1. The report will be turned over to the City Council in the near future.

**Strike in St. John.**—Members of the street railway and allied unions at St. John, N. B., struck on Aug. 15 and the city is without railway service. A shut-down of the entire plant of the New Brunswick Power Company, which controls the St. John Railway and supplies industrial plants and house electric lighting, is threatened. The gas service has been cut off and newspapers are being set by hand. The men struck on a question of back pay.

**Strike at Marion Settled.**—On Aug. 16 the striking motormen and conductors on the local line of the Columbus, Delaware & Marion Electric Company at Marion, Ohio, and the management of the road reached an agreement without any outside aid. During the period of the war the men are to receive from 33 to 38 cents an hour and the scale will be advanced annually 1 cent an hour for six years of service. The increase amounts to about \$7,000 a year to the company.

**Separate Louisville Organizations.**—Employees of the Louisville (Ky.) Railway who have declined to join the newly organized union recently held a meeting at the offices of the company

and formed an independent organization, with the name of Louisville Street Railway Employees' Association. The new association is composed of the older employees, who declare their loyalty to the company and their intention not to demand an exorbitant increase in wages.

**Arbitrator Protested.**—The appointment of C. U. McElroy, Bowling Green, Ky., by Governor Stanley as the third arbitrator at Lexington, Ky., has been protested by the union and Secretary of Labor William B. Wilson has notified Eugene Southerland, president of the union, that he will send a representative to Lexington. The Kentucky Traction & Terminal Company had selected F. W. Bacon, Philadelphia, as its representative and the union had B. F. Kible, Portsmouth, Ohio. These two were not able to reach an agreement and the Governor was asked to appoint a third man.

**Toledo Commission Files \$9,500 Expense Account.**—A report of the moneys received and expended during its investigation of the street railway muddle and the preparation of the so-called community plan, was filed with Mayor Cornell Schreiber of Toledo, Ohio, on Aug. 16 by the Toledo Street Railway Commission. In all John N. Willys furnished \$9,500, all of which was expended in one way and another. Provision was made in the ordinance reported for the repayment of this money to Mr. Willys. Of this, it seems, Johnson Thurston received \$2,600 for legal and general services. He was one of the members of the commission.

**Employees Organize for Mutual Aid.**—The Eastern Texas Electric Company Employees' Association of Beaumont, Tex., has been organized and charter has been filed in the office of the Secretary of State at Austin. This association has no capital stock and is for the mutual help and protection of the employees of the electric company, which recently consolidated the Stone & Webster properties of Port Arthur and Beaumont. The association will operate along lines similar to the employees' association recently organized in Galveston by the employees of the Galveston Electric Company and the Galveston-Houston Interurban line.

**Wages and Fares Coupled.**—With the announcement on Aug. 15 by officials of the Wilmington & Philadelphia Traction Company, Wilmington, Del., of an increase in wages of 4 to 5 cents to motormen and conductors, based on length of service, the company intimated that a further increase in fares might be asked. The new wage increase is in accordance with the recommendations of the War Labor Board. The employees have been receiving from 37 cents to 40 cents an hour. The company some time ago increased fares to 6 cents and it is expected that it will petition the Public Utilities Commission for the right to charge 7 cents a ride, or sell four tickets for a quarter. The new wage scale went into effect as of Aug. 15.

# Financial and Corporate

## Havana Lines Gained

Higher Costs, However, Reduced the Gain of 16 per Cent in Gross to 1.5 per Cent in Net

For the year ended Dec. 31, 1917, the earnings from operation of the Havana Electric Railway, Light & Power Company, Havana, Cuba, showed substantial gains as compared to those for 1916. The gross earnings from operation were 16.16 per cent greater than in 1916 and, although the extraordinary rise in the prices of all commodities increased the operating expenses 33.8 per cent, the net earnings from operation gained 5.24 per cent. Even after the deduction of both the United States and Cuban taxes, there still remained 1.57 per cent more than in the preceding year. Detailed figures for the last two years are given in Table I. The division of 1917 earnings is shown in Table II.

The total number of passengers in 1917 was 66,418,450, an increase of 6,719,659 or 11.25 per cent. This is the highest percentage increase since 1906, when the present management began. Passenger earnings also gained 11.25 per cent. Track statistics show 2.21 miles of main line built during 1917.

The increase in operating expenses in the railway department, caused by the unusual conditions during the year, was lower in proportion than in the gas and electric light and power departments. In the former case about 31 per cent of the increase was due to coal, 42 per cent to rise in wages of motormen and conductors, 14 per cent to loss from the book values of discarded power plant equipment sold, and 13 per cent to salaries, wages, supplies and miscellaneous charges.

Comparative statistics for the railway department in 1916 and 1917 are shown in Table III.

Out of the net income for 1917, or \$2,615,261, the company set aside as reserve for depreciation and special charges the sum of \$211,843. It also paid out \$1,976,254 in 6 per cent preferred and common dividends, and provided \$117,373 for sinking funds and

TABLE I—COMPARATIVE INCOME STATEMENT OF HAVANA ELECTRIC RAILWAY, LIGHT & POWER COMPANY FOR CALENDAR YEARS 1916 AND 1917

	1917 Amount	Per Cent	1916 Amount	Per Cent
Gross earnings.....	\$6,989,599	100.0	\$6,017,708	100.0
Operating expenses & taxes	3,385,470	48.4	2,443,885	40.6
Net earnings.....	\$3,604,129	51.6	\$3,573,823	59.4
Other income.....	149,755	2.1	144,561	2.4
Gross income	\$3,753,884	53.7	\$3,718,384	61.8
Fixed charges.....	1,138,623	16.3	1,297,093	21.6
Net income.....	\$2,615,261	37.4	\$2,421,291	40.2

\$64,000 for bad and doubtful debts. The balance then carried forward to 1918 totaled \$2,270,290.

## Dividend Complaint Dismissed

After a brief investigation of the complaint filed with the District Attorney in which it was charged that officers and directors of the International Railway, Buffalo, N. Y., violated the law last March by declaring a dividend when there was a deficit in the treasury, the District Attorney dismissed the complaint, holding there was no basis for such a charge. An investigation of the company's books showed there was a surplus at the time the dividend was declared. No inquiry has ever been made regarding the assertion that the company filed false statements with the commission.

## Boston Gross Gains

First Two Weeks with 7-Cent Fare Show Gain of 30 per Cent in Gross

The recent fare increase from 5 cents to 7 cents on the Boston (Mass.) Elevated Railway affords one of the first opportunities for the industry to study the effect of a substantial rate advance upon the earnings of a great city property. In the Boston case the advance was simply a straight 2-cent additional collection on all fares. The free transfer arrangements are not involved in the matter from the financial standpoint. If the number of revenue passengers carried on the road had remained the same after the increase as before it, there would have been a gain of exactly 40 per cent in earnings of the company.

The actual gain in gross, however, as indicated by the first two weeks under the new schedule of fares, has been 30 per cent. This is a remarkable increase, in comparison with the experience of other electric railways in the State. In many other cases where the fare has been raised from 5 to 6 cents or from 6 to 7 cents, the gain in revenue has been barely half or even less than half the theoretical percentage increase; and sometimes, where the rates are complicated through the use of tickets or the modification of zone limits, the gain has been almost negligible.

The Boston Elevated Railway operates in about a dozen cities and towns, which border on the city proper or are immediately adjacent suburbs. There is a competitive suburban steam railroad service in the Boston district which does a large business; jitneys are not at present a real factor in the situation, but the private automobile is a decided "revenue cutter." Long observation of traffic conditions indicates that the greater part of the falling off in revenue resulting from the advance from 5 cents to 7 cents is to be attributed to a curtailment of trips not associated with travel between home and office or shop, and including short-haul travel which would not hesitate at a 5-cent fare but which holds off at 7 cents. The bulk of the daily necessary patronage is continuing, and so far the increased fare is not sufficient to divert any very substantial traffic to the competing steam railroad lines.

The 30 per cent increase in revenue above obtained will, however, have to be further augmented in order to enable the company to meet its increased operating expenses, fixed charges and its specified dividends, according to present indications. It cannot be said at this time whether a further increase in the fare unit will be required, or whether some zone plan will have to be tried, at least with respect to the outer lines. Back of whatever plans for increasing revenue may be adopted stands the tax power of the State as an ultimate guarantee of the actual cost of the service of the company as a public necessity.

TABLE II—SUMMARY OF OPERATIONS BY DEPARTMENTS OF HAVANA ELECTRIC RAILWAY, LIGHT & POWER COMPANY IN CALENDAR YEAR 1917

Department	Gross Earnings from Operation	Operating Expenses and Taxes	Per Cent of Gross Earnings	Net Earnings from Operation	Per Cent of Gross Earnings
Electric railway.....	\$3,499,011	\$1,782,845	50.95	\$1,716,166	49.05
Electric light.....	2,454,312	790,413	32.20	1,663,898	67.80
Gas.....	817,295	562,203	68.78	255,092	31.22
Stage lines.....	173,968	206,804	118.87	*32,835	*18.87
Electric omnibuses.....	22,523	26,625	118.21	*4,102	*18.21
Gasoline omnibuses.....	22,488	16,577	73.71	5,910	26.29
	\$6,989,599	\$3,385,469	48.43	\$3,604,129	51.57

TABLE III—COMPARATIVE RAILWAY STATISTICS FOR 1916 AND 1917

	1916	1917	Increase	Per Cent
Total number of passengers carried.....	59,698,791	66,418,450	6,719,659	11.25
Passenger car-miles.....	12,143,682	13,387,023	1,243,340	10.24
Passenger earnings.....	\$2,984,939	\$3,320,922	\$335,982	11.25
Passenger earnings per car-mile.....	\$0.2458	\$0.2481	\$0.0023	0.93
Total earnings from operation.....	\$3,122,362	\$3,499,011	\$376,648	12.06
Total operating expenses.....	\$1,307,928	\$1,663,917	\$355,988	27.22
Total operating expenses per car-mile.....	\$0.1076	\$0.1243	\$0.0167	15.52
Operating ratio (per cent).....	41.89	47.55	5.66	13.51
Net earnings from operation.....	\$1,814,434	\$1,835,093	\$20,659	1.14

\*Decrease.

## W F. C. Helps Aurora Line

A. E. & C. R. R. Will Have New Note Issue of \$1,219,000, with Direct Federal Aid of \$219,000

As a result of conferences and negotiations with the War Finance Corporation, the Aurora, Elgin & Chicago Railroad, Wheaton, Ill., will create a new issue of \$1,219,000 of three-year 7½ per cent collateral trust notes, dated Sept. 1, 1918, and secured by the company's first and refunding mortgage bonds at 75. All legal matters pertaining to the issue are to be subject to approval of the counsel of the War Finance Corporation.

Of the required amount, the War Finance Corporation will make a direct advance of \$219,000, subject to certain conditions, among which are:

1. That the maturity of the outstand-

shown in the accompanying table, was more than offset by the rise of \$1,267,082 in operating expenses, so that the net earnings decreased \$139,963 or 1.9 per cent. The balance available for renewals, financing and dividends showed a falling off of \$402,056 or 13.6 per cent.

The increase in operating costs arose from the higher expenditures for coal, oil and wages. These were as follows: Coal and oil, \$342,000, and labor, \$292,000. Taxes increased \$189,000.

During 1917 the sum of \$3,950,822 was expended for additions, betterments and extensions in railway, gas, electric, steam and water departments. During the year there was expended or appropriated from earnings for repairs, maintenance and renewals and replacements \$2,156,115, which was \$104,945 in excess of the appropria-

and Porto Rico. The personnel of the regional committees and the state chairmen were published in the ELECTRIC RAILWAY JOURNAL of March 30.

The Investment Bankers' Association of America has offered to join forces with the members of the regional and state committees in presenting the problems of the industry to state and municipal authorities and will assist in any other way that is justified by local conditions. In some states the investment bankers have already organized committees and the National Public Utilities Committee has recommended a whole-hearted acceptance of the offer of the Investment Bankers' Association.

To convince Washington officials that the public utilities have made the greatest possible effort to secure relief from the local authorities, the regional and state committees will ascertain and report to the National Public Utilities Committee what companies are in need of relief, what action has been taken toward securing it, and what the results have been. This information will be presented to the various bureaus, boards, committees and administrations having an interest in the public utility problem. It is the purpose in the future to give complete facts in every case and to avoid generalizations.

COMPARATIVE INCOME STATEMENT OF SUBSIDIARIES OF UNITED GAS & ELECTRIC CORPORATION FOR CALENDAR YEARS 1916 AND 1917

	1917	1916	Increase	Per Cent
Gross earnings...	\$16,287,275	\$15,160,156	\$1,127,119	7.4
Operating expenses (including maintenance)...	8,998,329	7,731,247	1,267,082	16.4
Net earnings...	\$7,288,946	\$7,428,909	*\$139,963	*1.9
Taxes.....	1,156,370	967,100	189,270	19.5
Gross income.....	\$6,132,576	\$6,461,809	*\$329,233	*5.0
Fixed charges.....	3,575,989	3,503,166	72,823	2.1
Net income available for renewals, financing and dividends.....	\$2,556,587	\$2,958,643	*\$402,056	*13.6

\*Decrease.

ing \$1,546,000 of bonds of the Elgin, Aurora & Southern Traction Company be extended to Sept. 1, 1921.

2. That the banks holding the company's unfunded notes—\$237,000 in amount—subscribe for \$200,000 of the new 7½ per cent collateral trust notes at par and accept the company's unsecured notes for the balance.

3. That the holders of the company's \$800,000 of 6 per cent collateral trust notes, maturing Sept. 1, 1918, exchange their notes, par for par, for the new 7½ per cent collateral trust notes.

The company performs vital functions in the transportation, power and lighting fields in the district immediately west of Chicago. The present abnormal costs of labor, fuel and materials have brought about a condition resulting in a material curtailment of its net earnings and thus made it unable to secure funds through regular banking channels.

It is believed that a timely realization of the abnormal conditions confronting the public utility industry as a whole will influence holders of the company's maturing notes and bonds to extend them to Sept. 1, 1921, and thus enable the company to accept the offer of the War Finance Corporation.

## U. G. & E. Subsidiaries Show Lower Net

The gross earnings of the subsidiaries of the United Gas & Electric Corporation, New York, N. Y., increased \$1,127,119 during 1917 as compared to 1916. This gain, however, as

tions for the same purposes in 1916. The balance in the renewals and replacements reserve on Dec. 31, 1917, for all of the subsidiaries was \$2,355,819, after sundry adjustments.

The current surplus earnings of the subsidiary companies, after paying their preferred stock dividends, amounted to \$1,829,526, of which amount \$1,111,973 was paid out in common stock dividends. The balance, or 39.23 per cent of the current surplus earnings, was appropriated to the renewal and replacement reserves or added to existing surplus. The accumulated surplus of the subsidiary companies, after all adjustments for current and previous years, amounted on Dec. 31, 1917, to \$2,123,392.

## National Committee Studying Situation

Country-Wide Organization Is Collecting Data Regarding Utility Needs—Investment Bankers Help

To keep the Washington officials thoroughly posted on what is being done by the public utilities to secure increased rates from the local authorities the National Public Utilities Committee is working diligently through its country-wide organization. This comprises the national committee, P. H. Gadsden, E. K. Hall and H. H. Crowell, and their Washington staff, and 111 representative public utility men, composing the eight regional committees, twenty-eight state committees and the insular committees in the Philippines

## Canadian Lines Hold Their Own

The gross earnings of electric railways in Canada for the year ended June 30, 1917, totaled \$30,237,633 as compared to \$27,416,284 in the preceding year, a gain of \$2,821,379, or 10.2 per cent. The operating expenses amounted to \$20,098,637 in 1917 as compared to \$18,099,905 in 1916, an increase of \$1,998,732, or 11.0 per cent. The operating ratio in 1917 was 66.47 per cent, as compared to 67.24 per cent in the preceding year. The net income remained practically the same. A detailed record for the last two years is given in the accompanying table.

COMPARATIVE STATISTICS OF CANADIAN ELECTRIC RAILWAYS FOR YEARS ENDED JUNE 30, 1916 AND 1917

	1916-1917	1915-1916
Mileage, operating.....	1,743.54	1,730.73
Capital stock.....	\$70,606,520	\$67,738,275
Funded debt.....	90,628,219	87,157,349
Gross earnings.....	\$30,237,633	\$27,416,284
Operating expenses...	20,098,634	18,099,905
Net earnings from operations.....	\$10,139,029	\$9,316,378
Miscellaneous income.....	2,292,200	2,928,573
Corporate income.....	\$12,431,229	\$12,244,952
Taxes, interest, etc....	7,552,368	7,358,283
Net income.....	\$4,878,861	\$4,886,669
Appropriated to reserves.....	1,285,654	1,535,071
Appropriated to dividends.....	2,468,686	2,834,906
Unappropriated net earnings.....	\$1,124,520	\$516,690
Passengers carried.....	629,441,997	580,094,167
Tons of freight hauled...	2,333,539	1,936,647
Car mileage.....	84,073,046	82,516,612
Equipment, all kinds....	4,295	4,442
Employees, all grades...	11,696	10,622
Salaries and wages.....	\$9,451,685	\$8,767,734

### Cleveland Figures Disappointing

The figures of Fielder Sanders, street railway commissioner, for the first five days under the 5-cent fare ordinance at Cleveland, Ohio, indicate that the Cleveland Railway is receiving an increase in revenue of less than 25 per cent, while an increase of 30 per cent will be required to pay the wages of the motormen and conductors and meet the higher costs of operation in other ways. The increase is not meeting Mr. Sanders' expectations. His estimate was \$2,700,000 in five months, but he now believes that more than nine months will be required to accumulate this additional amount unless conditions should change for the better soon.

He attributes the smaller increase to the extremely hot weather, the fact that many persons walk in preference to paying the higher fare and the difficulty in collecting cash fares instead of tickets. He believes, however, that time will remedy these matters. The company will soon have tickets at the rate of five for a quarter and he believes that people will become accustomed to the higher fares and go back to the cars in preference to walking.

The Tayler franchise must be renewed by May 1, 1919, or the city will lose control of the operation of the cars. Mayor Harry L. Davis has indicated an unwillingness to sign a renewal unless the franchise is amended in such a way as to include a penalty against the stockholders of the company when the service is poor or when the rate of fare is increased.

### Results with Increased Fares

Railway service in Tacoma, Wash., has not improved despite the 7-cent fare recently established, according to shipyard workers in that city, and the Ship Laborers, Riggers and Fasteners' Union in that city has ordered that legal action be started to eliminate the 7-cent fare. Union officials state that the

action is taken to prevent possible riots, as a result of agitation among the workers.

According to accountants of the Tacoma Railway & Power Company, 7-cent fares have produced an increase in revenue to the company of approximately \$5,418 a week, or about 24.3 per cent, but have decreased the number of passengers about 8.5 per cent. Outside accountants are figuring the increase in wages paid to the men, and a complete statement will be ready shortly for the committee of twenty-five citizens who recommended the fare increase. It is stated that for the week prior to the raise in fares the company's revenues were \$22,268. The second week after the fare increases became effective the revenues were \$27,687. The total passengers carried decreased from 453,714 to 415,164. Transfers increased from 136,111 to 145,080, or 6.6 per cent. This indicates that the short-haul workers that formerly rode are now walking.

## Financial News Notes

**Stockholders Subscribe for Bonds.**—Montgomery & Company and Henry L. Doherty & Company announce that stockholders of the Cities Service Company have subscribed to \$2,100,000 of the \$6,000,000 of Series B 7 per cent convertible debentures recently offered. The formation of the syndicate was noted in the issue of Aug. 10.

**Discontinued for War Period.**—The San Angelo Water, Light & Power Company, San Angelo, Tex., is not at present operating its electric railway system. The company has about 1

mile of track but no other equipment. The road will probably not be operated again until after the war.

**Would Abandon and Sell Line.**—The Indiana Utilities Company, which operates 3.75 miles of electric railway between Angola and Lake James, has applied to the Indiana Public Utilities Commission to sell the road for junk. In any event the company proposes to abandon its operation.

**Cities Service Earnings for 1917.**—The combined gross earnings of the Cities Service subsidiary companies for 1917 were \$69,634,872, with combined net earnings of \$25,454,032. The balance after all interest charges and preferred stock dividends were deducted was \$15,533,580. The electric railway subsidiaries carried 115,657,669 passengers over 374 miles of track.

**Hearing on Abandonment Petition.**—Chairman Hill of the Public Service Commission for the Second District of New York on Sept. 9 will give a hearing in New York City on the petition of the Westchester Street Railroad for approval of the proposed abandonment of its line from Tarrytown to White Plains and parts of its road in Tarrytown.

**Motion to Dismiss Receivership Suit.**—The United Railways, St. Louis, Mo., through its attorneys, on Aug. 15 in the United States District Court filed a motion to dismiss the amended receivership petition filed by John W. Seaman of New York a month ago. The motion for dismissal set forth that the amended petition did not state sufficient cause for action, was vague and indefinite and did not allege the same liability on the part of all the defendants. It also asserted that Mr. Seaman did not seek an adequate remedy within the United Railways corporation before going into court. A similar motion to dismiss the original receivership suit filed eight months ago was sustained by Judge Dyer.

## Electric Railway Monthly Earnings

### COMMONWEALTH POWER, RAILWAY & LIGHT COMPANY, GRAND RAPIDS, MICH.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '18	\$1,831,428	*\$1,162,616	\$668,812	\$505,784	\$163,028
1m., June, '17	1,550,770	*955,369	595,401	427,519	167,882
12m., June, '18	20,789,999	*13,797,411	7,062,588	5,648,168	1,414,420
12m., June, '17	18,147,509	*10,580,010	7,567,499	5,111,143	2,456,356

### EAST ST. LOUIS & SUBURBAN COMPANY, EAST ST. LOUIS, ILL.

1m., June, '18	\$318,857	*\$243,468	\$75,389	\$67,915	\$7,474
1m., June, '17	296,753	*198,621	98,132	64,598	33,534
12m., June, '18	3,863,918	*2,810,900	1,053,018	801,618	251,400
12m., June, '17	3,362,412	*2,106,159	1,256,253	767,220	489,033

### FEDERAL LIGHT & TRACTION COMPANY, NEW YORK, N. Y.

1m., June, '18	\$271,226	*\$196,786	\$74,440	\$50,699	\$23,741
1m., June, '17	206,827	*165,887	40,940	50,257	19,317
6m., June, '18	1,728,476	*1,154,996	573,480	302,447	271,033
6m., June, '17	1,345,732	*918,910	426,822	293,334	133,488

### GRAND RAPIDS (MICH.) RAILWAY

1m., June, '18	\$103,195	*\$79,973	\$23,222	\$19,328	\$3,894
1m., June, '17	104,828	*72,133	32,695	18,972	13,723
12m., June, '18	1,286,089	*942,379	343,710	226,881	116,829
12m., June, '17	1,303,090	*865,153	437,937	211,141	226,796

### LAKE SHORE ELECTRIC RAILWAY, CLEVELAND, OHIO

1m., June, '18	\$186,672	*\$126,267	\$60,405	\$36,025	\$24,380
1m., June, '17	152,996	*100,011	53,985	34,207	19,778
6m., June, '18	958,841	*711,565	247,276	217,029	30,247
6m., June, '17	813,922	*565,065	248,857	206,043	42,814

### LEWISTON, AUGUSTA & WATERVILLE STREET RAILWAY, LEWISTON, ME.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '18	\$86,482	*\$60,642	\$25,840	\$20,338	\$5,502
1m., June, '17	75,669	*56,652	19,017	15,678	3,339
12m., June, '18	885,908	*736,714	149,194	202,235	†\$5,041
12m., June, '17	846,133	*626,273	219,860	184,686	35,174

### PORTLAND RAILWAY, LIGHT & POWER COMPANY, PORTLAND, ORE.

1m., June, '18	\$632,552	††\$391,558	\$240,994	\$187,746	\$53,248
1m., June, '17	490,652	*275,098	215,554	176,699	38,855
12m., June, '18	6,818,090	††4,181,568	2,636,522	2,155,699	480,823
12m., June, '17	5,664,193	*3,070,129	2,594,064	2,173,776	420,288

### CHATTANOOGA RAILWAY & LIGHT COMPANY, CHATTANOOGA, TENN.

1m., June, '18	\$149,073	*\$120,003	\$29,070	\$31,417	†\$2,343
1m., June, '17	128,805	*81,223	47,582	29,628	17,953
12m., June, '18	1,552,084	*1,354,217	197,867	367,374	†169,507
12m., June, '17	1,301,091	*907,416	393,675	357,675	36,000

### NASHVILLE RAILWAY & LIGHT COMPANY, NASHVILLE, TENN.

1m., June, '18	\$238,570	*\$154,604	\$83,966	\$40,527	\$43,439
1m., June, '17	194,493	*126,143	68,350	40,321	28,029
12m., June, '18	2,566,877	*1,646,003	920,874	489,555	431,319
12m., June, '17	2,431,587	*1,529,333	902,254	496,976	405,278

\* Includes taxes. † Deficit. †† For the month \$18,977; and for twelve months, \$290,512 included for depreciation.

# Traffic and Transportation

## Indianapolis Hearing Begun

Testimony Presented in Connection with Application for Five Cent-Seven Cent Fare

The hearing of the petition of the Indianapolis Traction & Terminal Company, Indianapolis, Ind., for increased fares was commenced on Aug. 19. The original petition filed in November, 1917, called for the elimination of reduced rate ticket fares and the establishment of a flat 5-cent fare, with the usual transfer privileges.

### CASE SLOW IN STARTING

The case has been delayed, owing to the claim of the Public Service Commission that it lacked jurisdiction. The Supreme Court of Indiana, however, on July 30, ruled that the commission has authority to hear the rate increase petition. A supplementary petition was accordingly filed with the commission on Aug. 17, in which the company asks permission to charge a flat 5-cent fare within a central zone of 2½ miles, a 7-cent fare within a zone of 3½ miles, and a 9-cent fare to points beyond the 3½-mile zone, with a charge of 1 cent for all transfers.

It is estimated that only 50 per cent of the theoretical increased revenue from the additional fares will be derived, and that the increase in earnings from the 5-cent fare will be \$225,000, from the 1-cent charge for transfers \$100,000, and from the zones fares \$225,000, a total of \$550,000 a year. The company states that this revenue will be required to meet the increased operating costs and wage increases which the company is now paying, and does not cover a request of the trainmen made a few days ago for an increase in wages to the rate recently established by the War Labor Board for such cities as Chicago, Cleveland, Detroit, etc.

### CITY WOULD APPEAL CASE

At the commencement of the hearing before the Public Service Commission on Aug. 19, Samuel Ashby, corporation counsel for the city of Indianapolis, asked the commission to stop the proceedings and file a petition for rehearing before the Indiana Supreme Court, and appeal the case to the United States Supreme Court. He contended that the Supreme Court of the State had erred in asserting that the city of Indianapolis was not a party to the franchise contract, and that for the commission to assume jurisdiction in the fare case under the emergency clause of the utility commission law was a violation of the contractual rights of the city. After a conference, the commission announced that the furnishing of adequate service to a community by a public utility was a matter of greater import-

ance than the technical points at issue, and that it would proceed with the hearing and defer its opinion on the matter of a retrial of the jurisdictional case.

Captain Webb, of the U. S. Ordnance Department, who has charge of the government work in the various manufacturing plants in Indianapolis, testified as to the need of extensions and increased railway service to these plants, and stated that these had been promised by the company when it secured the necessary funds. He stated that the employees at these plants were in favor of paying increased fares if such increase secured them the service they desired.

Testimony was introduced showing that the valuation of the company's physical property as of Dec. 1, 1917, was \$24,018,040. If \$916,170 were added for franchise value, \$2,000,000 for development costs, \$1,200,000 for discounts and \$500,000 for working capital the grand total would be \$28,634,210.

## Columbus Goes to Five Cents

The rate of fare in Columbus, Ohio, is now 5 cents, with 1 cent for each transfer and no rebate. The Columbus Railway, Power & Light Company served notice to this effect on the evening of Aug. 20, after having tried in vain for months to induce the City Council to grant an increase that would cover the additional operating expenses brought about by war conditions.

At the same time the company declared its intention to surrender its franchises and a little later filed suit in the Federal Court to enjoin interference with the operation of its cars. Posters were placed in the cars stating that the sale of tickets would be discontinued the next morning and giving the new rate of fare that would be charged.

It is said that many people refused to pay the new rate, on the advice of City Attorney Scarlett, but endeavored to purchase tickets instead. They were allowed to ride free when they insisted. It is probable, however, that this practice will cease within a short time.

Mr. Scarlett has asked the Federal District Court if it intends to "entertain jurisdiction" in the case.

The old rate was eight tickets for a quarter. For months the company has labored to show the City Council that it is an impossibility to operate at that rate under present conditions and keep out of a receiver's hands, but that body twice refused its plea for a temporary increase in the rate of fare and since then has been marking time while conditions for the company have grown worse daily.

## Chicago Fare Request

Chicago Surface Lines Asks Fair and Reasonable Rate of Return on Companies' Investment

Confronted with the prospect of financial disaster as a result of the heavy burden imposed by the recent award of the War Labor Board, the Chicago (Ill.) Surface Lines on Aug. 14 asked the City Council to make a recommendation so that a petition may be presented to the State Public Utilities Commission for such an increase in fares as may be necessary to meet existing conditions. The letter of Leonard A. Busby, president of the company, asking the city to join in the petition because of its financial interest in the operation of the road, was introduced at the session of the Council which had just approved an ordinance intended to provide "service at cost." This measure, however, is not expected to become effective for more than a year. The letter was referred to the local transportation committee for consideration.

President Busby points out in the communication that the City Council last May indorsed the application of the union employees for increased wages and that when the matter was later taken up with the War Labor Board the company submitted to its jurisdiction because of such endorsement. The award of the board fixed a wage scale for trainmen ranging from 43 cents to 48 cents an hour and a corresponding increase to other union employees. The amount involved, therefore, will be in excess of \$4,200,000 a year.

The letter also sets forth that gross receipts for the first six months of the current year have decreased more than \$550,000, and material costs have gone up to the extent of at least \$500,000 a year. This means that the added burden will bring about a decrease in net receipts for the year of \$5,700,000 and will fall short of meeting the 5 per cent interest charges on the purchase price by the amount of \$6,250 a day.

Mr. Busby refers to the comments of President Wilson and Messrs. Williams and McAdoo on the situation of public utilities, and he gives a list of railway companies in the larger cities which have already received or are seeking increased fares. He points out that the people of Chicago since Aug. 1 have been receiving service at less than cost.

He says he has been advised by counsel that until the United States Supreme Court decides otherwise the exclusive jurisdiction over the question of rates of fare is now vested in the State Utilities Commission. The company proposes to seek relief from the commission, but before doing so it desires the city authorities to investigate the situation and "determine what increase in the existing rates of fare will be necessary to meet the cost of street railway service in Chicago during the period of the war, including as part of the cost of such service a fair and reasonable rate of return upon the companies' investment."



## Six Cents for Key Route

**In Decision Allowing Raise It is Estimated One-Man Cars Will Save \$55,806 and Skip Stops \$42,377**

The Railroad Commission of California on Aug. 14 fixed a new rate to be charged by the San Francisco-Oakland Terminal Railways on its street cars between Berkeley, Alameda, Oakland, Piedmont, Emeryville and San Leandro, including transfer privileges for trips in the same general direction within those cities, on a basis of 6 cents instead of 5 cents as at present. Additional fares are to be charged on a basis of a 6-cent multiple instead of a 5-cent multiple as now, to points outside the 5-cent zone.

### INADEQUATE REVENUES ALLEGED

The application alleged that the revenues derived from operation were insufficient to meet the increased costs of operation and to care for a proper depreciation allowance, and render a fair and reasonable net return on the value of the property used in the operation of the system.

The "Traction Division" of the San Francisco-Oakland Terminal Railways consists of a consolidation of the Oakland Traction Company, the East Shore & Suburban Railway, and the California Railway. The lines serve the cities of Albany, Alameda, Berkeley, El Cerrito, Emeryville, Hayward, Oakland, Piedmont, Richmond and San Leandro and parts of Eden and Oakland Townships in Alameda County. The total track mileage, consisting of 126 miles of main line and 75 miles of second track, is 201 miles, served by thirty-seven operative lines. The entire property consists of 256 miles of road.

The rate of fare as at present charged by the San Francisco-Oakland Terminal Railways is 5 cents between the city limits of Berkeley, Alameda, Oakland, Piedmont, Emeryville and San Leandro, including transfer privilege for trips in the same general direction within the municipalities mentioned. Additional fares on a basis of a 5-cent multiple are charged to points outside of the 5-cent zone.

### COMMISSION CONVINCED OF NEED

The commission in its opinion finds that the cost of wages, material and supplies have greatly increased and that additional revenue is necessary to provide for such increased costs and for return upon new capital expenditure which must be made immediately if the street car system is to be maintained to the standard of efficiency necessary to furnish adequate service to its patrons and the large number of communities which it serves. The company's original estimate of the amount required to be so expended on the properties was \$2,883,228.

In view of the necessity for economy, due to the war emergency, the commission has carefully investigated the proposed expenditures and has reduced the amount to \$1,181,979, covering the following items:

Track reconstruction and paving.	\$363,955
Construction of second track on present single-track lines . . . .	170,212
New track connections, etc. . . . .	55,000
Lines into districts inadequately served . . . . .	31,600
Equipment:	
25 one-man cars . . . . .	\$162,500
25 new center-entrance cars for main traffic lines . . . . .	275,000
10 trailer cars for main traffic lines . . . . .	55,000
4 dump cars for handling rock, ballast, etc. . . . .	8,712
1 electric locomotive..	15,000
	\$516,212
Miscellaneous new construction (principally for new feeder lines in outlying districts).....	45,000
Total .....	\$1,181,979

### REPRODUCTION VALUE \$9,803,233

The commission finds the reproduction value, less depreciation, of the "Traction Division" to be \$9,803,233, which covers the operative property.

The commission made an independent investigation into the possibility of reducing operating expenses without interfering with the quality of service. Operating economies of \$193,313 a year were suggested and cover the following items:

Adjustment of schedules.....	\$68,783
Skip-stop plan (On basis of 0.143 cent a stop eliminated) . . . . .	42,377
One-man cars . . . . .	55,806
Elimination of unprofitable lines..	26,346
Total .....	\$193,313

The economies as suggested by the commission's service inspector have all been placed in effect, with the exception of the recommendations as to one-man cars, and such will result in the reduction of a portion of operating costs without decreasing the quality of service rendered by the company.

### PRESENT RATES INADEQUATE

The opinion of the commission contains the following conclusion:

"The requirements of the many communities and patrons of the 'Traction Division' of the company necessitates the operative properties being maintained in a proper state of efficiency that adequate and satisfactory service may be rendered, and it is evident that such efficiency and service cannot be maintained, or given, if the return derived from the rates and charges is not sufficient to meet the necessary and increasing expenses of the company. At the various hearings on this application, no person appeared in protest against an increase in fares or a readjustment of rates as requested by the company, and the investigation made by the commission into the matter of possible operating economies was the only testimony other than that introduced by the company in support of its petition.

"After careful consideration of all the evidence in this proceeding and a minute study of the voluminous exhibits filed by the company, we are of the opinion that the rates as at present charged by the company on its 'Trac-

tion Division' are not productive of adequate revenue to enable the property to be maintained and operated at the proper plan of efficiency satisfactorily to serve the public in the communities in and through which it operates."

The new rate is to be effective within twenty days at the discretion of the company.

## Milwaukee Wants More

**Companies There Ask Railroad Commission for Increases Outside the Central Five-Cent Area**

A petition for further revision of fares in Milwaukee city and suburbs was presented to the Railroad Commission of Wisconsin on Aug. 20 by the Milwaukee Railway & Light Company and the Milwaukee Light, Heat & Traction Company.

In this petition, signed by J. D. Mortimer as president of both companies, the companies ask that their revenues be increased not by raising the single fare above a nickel, but by increasing fares outside of a limited central zone, wherein 5-cent fares are compensatory, so that riders beyond that zone shall pay rates "fairly proportionate to the cost and value of the service rendered."

The petition states that 11,000,000 persons, in 238 American cities are now served by electric railways charging a single fare in excess of 5 cents.

It represents that fare revisions ordered by the commission for the city lines on June 1, 1918, and for suburban lines on July 2, 1918, have failed to produce revenue increases expected by the commission.

It sets forth that the wage standard established by the National War Labor Board for numerous other large cities must shortly be met at Milwaukee and that it will increase yearly operating expenses, an amount equal to 50 per cent of the 10-cents-an-hour wage raise granted to the men on May 1, 1918.

It explains that the companies are unable with their present wage scales, in competition with other local industries, to hire men enough to give the public "the transportation service which the physical property otherwise would afford" that the difficulty in getting men is increasing and the number obtainable is becoming more and more inadequate.

It states that the Milwaukee lines afford transportation to thousands of industrial workers engaged in war production, and that the companies' inability to get men to give maximum car service "tends to retard the efficient prosecution of the war."

It cites the large cost of laying and repairing pavement, of sprinkling streets and of supplying free power to move city bridges, and states that "if the car riders are to continue to pay not only the cost of the service they receive, but also the cost of carrying the above-mentioned burdens, substantially larger increases in fare must be provided than would otherwise be required."

## Six Cents for Albany

### New York Commission for the Second District Allows Fare Increase for the Period of the War

Six-cent fares were authorized by the Public Service Commission for the Second District of New York to be put into effect on Aug. 19 in all three zones of the territory covered by the United Traction Company, Albany. The decision was rendered on Aug. 14. The new fare schedules will continue in effect as maximum fares until the signing of a general treaty of peace, unless the commission shall otherwise order. The order of the commission apportions the territory of the company into the Albany and Troy zones and interurban zone, and permitted a new schedule of rates to be filed with the commission at once, the new rates to become effective five days after the filing of the new schedules and a notice by the company to the public. Universal transfers, upon the payment of any cash fare, will be restored by order of the commission.

#### ORIGINAL APPEAL MADE LAST YEAR

The decision in the case was written by Commissioner Frank Irvine. It was rendered on the application of the company, filed with the commission June 25, 1917, and amended May 2, last, by proposing a zone system. The proposed schedules of the company were suspended until Sept. 28, pending an examination of the company's accounts by the commission.

Coincident with the order granting the increased fare, the commission ordered closed the complaint of Mayor John H. McIntyre of Rensselaer against the proposed increase, based on the Barnes law, alleged to limit the rate of fare between points in Albany and Rensselaer to 5 cents.

The settlement of the long pending application was the direct result of action of the cities of Troy and Watervliet in suspending the franchises which limited the rate of fare to 5 cents. Prior action by the commission had been forestalled by the decision of the Court of Appeals in the Rochester case, in which it was held that the Legislature had not authorized the commissions to permit fares in excess of those prescribed in franchise agreements.

#### COMMISSIONER DISCUSSED FOUR QUESTIONS

After describing the properties of the United Traction company and telling of the application of federal officials for special consideration for employees of the Watervliet arsenal, and the subsequent withdrawal of the application, Commissioner Irvine turned to a discussion of the four questions brought up during the hearing of the case. First, the charges of over-capitalization; the Hudson Valley purchase; the charge that the Albany system is in itself profitable, and that Troy patrons alone should care for the securities issued by the individual Troy companies which now underlie the

securities of the entire system. Commissioner Irvine disposed of the over-capitalization charge with the declaration that the corporation is not entitled to sufficient return to pay dividends or interest but to a "fair return on the property used and useful in the public service."

In his conclusion Commissioner Irvine said:

"Having reached the conclusion that the company is entitled to relief in the way of increased revenues, we must ascertain whether the method proposed of effecting the increase is just and reasonable. The Troy zone, while is a group of politically separated municipalities, is compact and might for most purposes except those of government be treated as one community. In fact the industrial and social—using the latter term in its broader as well its narrower sense—interests of those municipalities blend together to a large extent. Indeed, the cities of Troy and Watervliet and the village of Green Island, in adopting the resolutions waiving the fare restrictions in their respective franchises, have insisted that a common rate should be adopted in the group constituting the Troy zone.

#### THE MUNICIPALITY THE UNIT

"What is said of the Troy zone applies also to the cities of Albany and Rensselaer, but perhaps not to the same extent. We must remember, however, that section 181 of the railroad law makes the municipality the unit and we cannot relieve the company from the operation of this section without finding that in the particular municipality affected the income is insufficient to yield an adequate return. The operating expenses have not been segregated by municipalities. The uniform system of accounts has not required that they should be so segregated and a complete segregation, except as many items of expense might be roughly and inexactly apportioned, is impossible. The travel in the Troy zone is so largely from one municipality to the other that it may be safely assumed that the same conditions apply substantially in each. It has not been claimed as to this zone that there is any substantial difference in operating results as between the different municipalities. It must be inferred that the inadequacy of return so far as it is applicable to this zone distributes itself fairly evenly among the municipalities composing it. Certainly there is no ground for any inference that the company operating in any single one of these municipalities could operate at profit at present prices."

The order of the commission follows substantially in full:

"On the facts found and for the reasons stated in the accompanying opinion it is

ORDERED (1) That the United Traction company be and it is hereby authorized to increase its one-way fares for passenger

travel over its lines as hereinafter prescribed in the following described zones, subject to conditions herein provided:

#### Local Zone (a):

From 5 cents to 6 cents. This zone includes all points within the city of Albany, including point known as Garbrance Lane, in the town of Colonie; also all points within the city of Rensselaer. For travel between points in this zone requiring the use of two car lines, free transfers to be given and accepted.

#### Local Zone (b):

From 5 cents to 6 cents. This zone includes all points within the cities of Troy, Cohoes, and Watervliet, also the villages of Green Island and Waterford, including points intermediate between said cities and villages in the towns of Colonie and Waterford. For travel between points in this zone requiring the use of two car lines, free transfers to be given and accepted.

#### Through Zone (c):

This zone includes points intermediate between the Plaza, terminal point in the city of Albany, and Franklin Square, terminal point in the city of Troy, or the through line terminal point in the city of Cohoes. For through travel between said points, the fare is not to exceed 12 cents. Between said terminal point in Albany and point in the town of Colonie known as Schuyler bridge, including points intermediate between said points, the fare is not to exceed 6 cents; and between said terminal point in the city of Troy or in the city of Cohoes and a point in the town of Colonie known as Garbrance Lane, including points intermediate between said points, the fare is not to exceed 6 cents. Free transfers to be given for through travel between points in zone (a) and points in zone (c) intermediate between Albany and Schuyler bridge, also between points in zone (b) and points in zone (c) intermediate between Watervliet and Garbrance Lane when such travel involves the use of a local car line and a through car line. The foregoing transfer regulations in combination will apply to through travel between points in local zone (a) and points in local zone (b) when the travel involves the use of car lines operating in both said local zones and the through car line operating in through zone (c).

The fare schedule prescribed in this order shall continue in effect as maximum fares until the signing of a general treaty of peace unless the commission shall otherwise order.

#### NO DIFFICULTY WITH NEW FARE

The 6-cent fare went into effect on the lines of the company on Aug. 19. The company notified the general public through posters in the cars and advertisements in the local papers, asking their co-operation in assisting the employees of the company to make the collection of the fare with as little delay as possible to the railway service.

Anticipating a large demand for pennies, the company provided 200,000 pennies for the conductors, but the advertising to the public to have a penny ready with the nickel was productive of so much good that 75 per cent of the passengers on Aug. 19 deposited the nickel and penny in the fare box and did not have to ask the conductors for change. Only about \$200 worth of pennies were used on that day for change, while more than this amount in pennies was turned in by the conductors with their fare receipts.

On Aug. 20 practically no pennies were given out by the conductors. The delays to the service on account of the new fare conditions were very few, all car lines being maintained practically on time during the day.

The United Traction Company operates 111 miles of electric railway in Albany, Rensselaer, Troy, Cohoes, Watervliet, Green Island and Waterford.

## Buffalo Vote Unfavorable

Six-Cent Fare for International Railway Lost at the Election on Aug. 20

The resolution adopted by the City Council of Buffalo, N. Y., on June 18, last, waiving certain franchise restrictions and allowing the Public Service Commission for the Second District, to fix an equitable rate of fare to be charged by the International Railway on its city lines, was repealed by the voters of the city at a special referendum election on Aug. 20. The vote on the question was 35,661 for the repeal of the City Council's action and 7,044 to uphold the Council.

The action of the voters means that the International Railway cannot charge a fare higher than 5 cents on its city lines and indicates that the voters of the city intend to hold the company to the terms of its franchise. The defeat of the 6-cent fares also means that the platform men employed by the company will not receive the increase in wages of 6 cents an hour over the present scale recently awarded them by the War Labor Board. This award was made contingent on the fact that the voters uphold the City Council, which as stated previously, agreed to waive certain franchise restrictions and allow the state utilities board to fix a higher rate of fare.

E. G. Connette, president of the railway, says that no statement will be issued by the company until after a meeting of the board of directors which will be held within the next week. Mayor Buck has served notice upon President Connette that if the company's board of directors votes to withdraw the wage increase to the employees and there is danger of a strike, he will appeal to the courts for the appointment of a receiver for the company's city lines.

The repeal of the Council's action is the culmination of litigation involving the legality of the council's right to pass a resolution waiving certain franchise restrictions and also involving the voters' right to hold a referendum on the question. The first decision in favor of the voters came from the Supreme Court of Erie County. This decision was upheld by the Appellate Division of the Supreme Court and by the New York State Court of Appeals. The referendum is the first special election ever held under the new commission charter and it is the first time women have voted in Buffalo under the equal suffrage law. Only 17,781 women registered and a small percentage of them voted at the referendum. The total vote at the referendum was 42,705. The special election cost the city between \$30,000 and \$35,000.

When the results of the election became known, every newspaper except one indirectly criticised the voters for their attitude on the issue involved.

On the day before the referendum election, all of the large banks of the city issued a public statement urging voters to uphold the action of the City

Council and allow the International Railway to charge a higher rate of fare. The banks said the increase in fares was imperative because of higher operating costs, increased wages, etc. Those who opposed the higher fares in a final statement to the voters called attention to the fact that the dividends of the International Railway for the last five years had averaged 8 per cent, "which is equivalent to nearly \$4,000 a day."

## Detroit Case to Supreme Court

Attorneys representing the Detroit (Mich.) United Railway have appealed directly to the United States Supreme Court for an injunction to restrain the city of Detroit from enforcing the ordinance requiring 5-cent fares, six-for-a-quarter tickets and eight-for-a-quarter workingmen's tickets. The attorneys found Chief Justice William Day at Mackinac Island. He issued an order for the hearing of the case on its merits in his home city, Canton, Ohio, on Sept. 10. The city of Detroit has until Aug. 31 to answer the company's bill.

In the meantime the company is enjoined from violating the 5-cent ordinance by an order which was issued by the local circuit court. The company appealed directly to the United States Supreme Court, an unusual procedure, after the local federal court had refused to take any action in the matter.

Although the company is accepting 5-cent fares it is not selling six-for-a-quarter tickets, these tickets not yet having been received from the printers.

The company this week announced that it has stopped work on the new line to the Ford plant where "Eagle" submarine chasers are being built and has also quit work on all other construction jobs. The company explained that it was necessary to halt all such work because the present revenue, under 5-cent fares, did not produce enough money to carry on these jobs.

Several months ago when the "Eagle" line was proposed, company officials stated that the question of financing the new extension would be bothersome. An officer of the Ford Motor Company announced at a meeting of the Common Council committee on public utilities that if necessary his company would finance the project. This week when work on the line was stopped members of the Council criticized the railway, declaring that the company had not taken advantage of the financial assistance offered by the Ford people. The company then produced letter written to the Ford Company last May asking financial assistance in building the line. The Ford Company to date has not replied to these letters and has not made an offer of financial assistance.

Council members have been talking about a variety of reprisal measures against the company but at the meeting on Aug. 20 no new measures were presented.

## Skip Stops for Kansas City

With 20,000 Fewer Stops a Day Local Railway May Save 15,000 Tons of Coal a Year

Kansas City, Mo., claims the distinction of being one of the first cities in the United States to experiment with the "odd and even" system of staggering car stops. Its early experience with the plan was described in the issue of this paper for April 11, 1914, page 850, and in prior issues. In May, 1911, after exhaustive tests, it introduced the alternate stop on the Troost Avenue and Brooklyn Avenue lines. Metal signs marked "odd" and "even" respectively, were placed on the front end of cars, indicating that the cars stopped at odd and even-numbered city streets respectively.

As at that time there were no exorbitant prices or shortage of coal no special attempt was made to extend the "odd and even" operation to other lines of the company. During the winter of 1917-1918, however, a very acute shortage of coal made the further introduction of skip-stops a highly desirable step. At an informal conference in March, 1918, the Public Service Commission of Missouri indicated its approval of any skip-stop plan that might be agreed upon by the company and the city. Shortly thereafter a report on the subject was submitted to the City Council by Robert P. Woods, city member of the Board of Control. This indicated that the average distance between stops on some thirty lines of the company could be increased from 422 ft. to 598 ft.

### ORDINANCE PASSED ON AUG. 12

The report was referred to a joint committee of both houses and several public hearings were held, little protest being lodged against the plan when it was properly understood. Both State and National Fuel Administrators as well as Mayor Cowgill, favored the plan, and an ordinance permitting its use was passed on Aug. 12.

At all car stops the steel posts supporting the overhead are being marked with 3-ft. white bands bearing the words "Car Stop" in black letters arranged vertically. Where no stops are made 1 ft. 6. in. black bands with the words "No Stop" are being displayed. Where a safety stop and either a "Car Stop" or "No Stop" come at the same point an 8-in white band is being painted on the post 4 in. above other sign.

The skip-stop plan is being applied to practically all lines of the Kansas City Railways. Explanatory advertisements have been inserted in the daily papers and a large sheet measuring 25 in. x 28 in., showing by lines every stop which will be made and indicating by "NS" and "FS" whether it is near side or far side, has been displayed in prominent places. It is estimated that 20,000 stops a day are being eliminated with a resulting saving of approximately 15,000 tons of coal a year to the company.

## Jersey Case Before Supreme Court

A suit has been filed in the Supreme Court of New Jersey by Charles F. X. O'Brien, Jersey City, to review the order of the Board of Public Utility Commissioners by which the Public Service Railway was authorized to charge 1 cent for an initial transfer to its patrons from Aug. 1. Marshall van Winkle, who opposed the granting the new rate for the New Jersey League of Municipalities, is counsel for O'Brien, whose suit is that of an individual. Under the appeal filed all the important legal points urged by the league against the granting of any increase by the commission are taken up for review.

It is set up that there was no evidence before the commission to support the order whereby the company is now charging 1 cent for initial transfers; that the board had no jurisdiction in the case to allow the increase; that there was no determination of the value of the Public Service Railway by the commission for rate-making purposes; that the commission did not determine what is a fair rate of return upon the value of the company's property, and that the order of the commission abrogates a number of franchise contracts between the Public Service Railway and Jersey City, providing that the company give service for a fare not to exceed 5 cents, and with free transfers.

The scope of the appeal involves the question of whether the Public Utility Commission in applications from utility companies for emergency relief has power to increase rates without a complete rate-fixing valuation of the property of the petitioning utility. It also goes into the more important question as to whether the commission has the power to abrogate franchise obligations of utilities with municipalities to render service at maximum rates of fare in consideration for franchise privileges.

## Skip Stops for All Cities Over 25,000 Population

All cities in the United States of 25,000 population and above will soon be putting into effect skip-stop plans worked out in conjunction with the Fuel Administration, according to advices from the Washington correspondent of *ELECTRIC RAILWAY JOURNAL*. It is estimated that a coal saving at the rate of 2,000,000 tons a year will be effected.

The skip-stop will go into effect in Chicago on Aug. 25; and in Kansas City the new system is just being started, under an ordinance passed Aug. 12. The Fuel Administration now has the subject up actively with all other large cities, and the Administration is asking that the railway companies of the country do all they can to assist.

In this connection, the Fuel Administration is encouraging the use of power-saving devices.

Britton I. Budd, head of the Chicago Elevated Railways, has written a letter to officials of the Fuel Administration, in which he says that for the six months of the present year the power saving device in use on this system led to a saving in coal of 11.98 per cent, or 16,867 tons. At \$3.17 per ton, this amounted to a saving of \$53,468.

## Transportation News Notes

**Voters Reject Six-Cent Fare.**—The voters of Birmingham, Ala., at the recent election defeated the 6-cent fare provision for the Birmingham Railway Light & Power Company.

**Lawrence Would Increase Fares.**—Officials of the Kansas Electric Utilities Company, operating 10 miles of electric railway in Lawrence, Kan., recently announced that they would apply to the City Commissioners there for permission to increase fares to 7-cents.

**Six-Cent Fare for Jersey Road.**—As an emergency war surcharge the 5-mile beach electric railway, which serves Wildwood, N. J., and adjacent territory, has been authorized by the Board of Public Utility Commissioners to put into effect a 6-cent fare. The rate has been 5 cents.

**Chattanooga Wants Six Cents.**—Application for a change in the present franchise held by the Chattanooga Railway & Light Company, Chattanooga, Tenn., so that the company may be permitted to charge a 6-cent fare instead of 5 cents was proposed to be made on Aug. 6.

**Six Cents for Macon.**—The City Council of Macon, Ga., on July 31 passed an ordinance allowing the Macon Railway & Light Company to charge 6 cents for fare until one year after the war, when the fare will automatically return to 5 cents. The action of the Council was unanimous.

**Fare Petition Withdrawn.**—The Little Rock Railway Electric Company, Little Rock, Ark., has withdrawn its petition asking the City Council to grant a franchise amendment permitting a fare increase from 5 cents, to 6 cents. Mayor Charles E. Taylor announced that he would veto the amendment if it passed.

**Kankakee Road Asks Six Cents.**—The Kankakee (Ill.) Electric Railway has filed a petition with the Public Utilities Commission of Illinois asking for an increase in fares from 5 cents to 6 cents. It is expected that the North Kankakee Electric Light & Railway Company will file a similar petition.

**Reading Wants Another Increase.**—The Reading Transit & Light Company, Reading, Pa., on Aug. 6 gave

notice that it was preparing to ask for another increase in fares from 6 cents to 7 cents in Reading and Lebanon. The fares on the remainder of the system have been increased to 8 cents.

**Shore Line on Steam Road Basis.**—The Shore Line Electric Railway, Norwich, Conn., on Aug. 21 was granted authority by the Interstate Commerce Commission to increase passenger fares between points on its line in Massachusetts and Rhode Island, provided the fares do not exceed those charged on railroads under federal control.

**I. C. C. Approves Rhode Island Fares.**—The Interstate Commerce Commission has authorized the Rhode Island Company, Providence, R. I., to adopt zone fares between Providence and Massachusetts points which were recommended by a special committee's report to the Rhode Island General Assembly in March last.

**City Commission to Have Authority.**—The legal department of the city of Forth Worth, Tex., has drafted an ordinance which will be enacted immediately giving the City Commission authority to compel public utility corporations operating under municipal franchise to make extensions and betterments of service as ordered by the commission.

**Joint Rates Suspended.**—The Public Service Commission of Oregon, recently issued an order suspending a 25 per cent joint rate increase of the Portland Railway, Light & Power Company, Portland, Ore., and the Willamette Valley Southern Railway, Oregon City, Ore. The suspension is for ninety days or pending a hearing to ascertain if the rate is justified.

**Fare Increase for DeKalb-Sycamore Road.**—An increase of fares has been allowed the DeKalb, Sycamore & Interurban Traction Company, DeKalb, Ill. The order of the Public Utilities Commission of Illinois abolishes all round-trip tickets and increases the sale price of coupon books from \$3.75 to \$4.25. The fare of 15 cents from DeKalb to Sycamore will remain as heretofore.

**Butte Wants Ten-Cent Fare.**—The Butte (Mont.) Electric Railway has filed with the State Utilities Commission a schedule of the increased rates it desires to have placed in effect. It asks for a 10-cent fare with transfer privileges within the city limits, or a fare of 6¼ cents when tickets are purchased in blocks of four. It states these new rates are to cover all traffic heretofore subjected to a 5-cent fare.

**Skip Stops in San Francisco.**—Both the United Railroads and the Municipal Railway, San Francisco, Cal., on Aug. 20 put into effect the skip-stop plan in the Sunset and Park-Presidio residence districts of San Francisco. Yellow bands have been painted on poles to mark the corner at which stops will be made. For the present the skip-stop plan will be applied only to the short blocks in the western part of the city.

**Chautauqua Traction Hearing Soon.**—The Public Service Commission for the Second District of New York has referred to Commissioner Fennell for investigation the complaints by patrons against the proposed increased rates of the Chautauqua Traction Company and the Jamestown, Westfield & Northwestern Railroad, and it is expected that a date for a hearing in Chautauqua County will soon be announced.

**More Dallas Lines Skip-Stops.**—Announcement is made by Richard Meriwether, general manager of the Dallas (Tex.) Railway, that the skip-stop system will be extended to five more lines at once. Signs have been placed along the lines indicating stops, and formal announcement of the inauguration of the service was made by the distribution of cards by conductors to every person who rode on these cars on the two days before the new plan went into effect.

**New Denver & Interurban Fare.**—The Denver & Interurban Railroad, Denver, Col., had its application for fare increases allowed by the Public Utilities Commission of Colorado on Aug. 7. The one-way fare will now be 3 cents a mile with a round-trip rate of 10 per cent less than twice the one-way fare. Commutation rates have been increased 10 per cent and an excess fare charge of 5 cents has been granted for fares paid on trains at stations where agents are provided. The previous rate of fare on the interurban line was 2½ cents per mile.

**Scranton Wants Eight Cents.**—The Scranton (Pa.) Railway on Aug. 16 filed a new tariff with the Public Service Commission of Pennsylvania providing for an increase in fares in all zones from 6 cents to 8 cents. W. E. Boileau, general manager of the company, stated that the 8-cent fare is necessary to keep the cars going. The increase in wages granted recently by the War Labor Board will add \$320,000 more expense to the company and wages on the new basis cannot be paid on less than an 8-cent fare.

**Action on Binghamton Appeal Put Over.**—A large delegation of employees from the Binghamton (N. Y.) Street Railway was present at the Council meeting on Aug. 12 expecting that some action would be taken on the petition of the company, asking for a suspension of the franchise rights of the taxpayers relative to a 5-cent car fare rate during the period of the war, and as long thereafter as the Public Service Commission deems necessary, but no action was taken except that the committee to which the petition was referred asked for an extension of time to consider the matter further and render a report at the next meeting of the Council.

**City Inquiry Into Tacoma Fare.**—In an investigation of the 7-cent railway fare in Tacoma, Wash., Fred Shuemaker, commissioner of finance, presented to the Tacoma Railway & Power Company, a questionnaire for the company to fill out. Among other ques-

tions, Commissioner Shuemaker asks why the company has spent three times as much money advertising its traction interests in Tacoma as has been spent in Seattle and Bellingham; why the company continues to pay 8 per cent interest on a \$4,000,000 open account with the Puget Sound Electric Company, of which it is but a branch, and why this debt is not bonded at 5 per cent.

**Fare Increases on Doherty Properties.**—Henry L. Doherty & Company, New York, N. Y., in a bulletin dated Aug. 5 reviewed rate increases on properties under their management. On electric railway properties they list the following changes: Cumberland & Westernport Electric Railway, Cumberland, Md., has been granted an increase amounting to 20 per cent. Meridian Light & Railway Company, Meridian, Miss., has increased its fare from 5 cents to 7 cents, with a charge of 25 cents for four tickets instead of six as formerly. Bartlesville (Okla.) Interurban Railway has been authorized to charge 7 cents in the former 5-cent zone and 14 cents in the former 10-cent zone. Toledo & Western Railway, Toledo, Ohio, has been granted permission to charge 2½ cents a mile instead of 2 cents. Toledo Railway & Light Company, Toledo, Ohio, now charges a straight 5-cent fare instead of 6 tickets for 25 cents and also charges 1 cent each for each transfer.

**Twin City Fare Appeal Made.**—The City Council of Minneapolis, Minn., has voted to interpose no objection if the Twin City Lines wishes to present its request for a 7-cent fare to the National War Labor Board to adjust. Action was held up one week by motion to reconsider. Agreement on a 7-cent fare was not reached at a joint meeting of representatives of both St. Paul and Minneapolis Councils attended by Horace Lowry, president of the railway, who explained the necessity for a wage increase and the critical position of the company if quick action is not taken. The St. Paul men said any change in the franchise in that city requiring a 5-cent fare must be presented to the people. Several Aldermen insisted at the meeting that a valuation of the railway property was a starting point. Although it was voted to appoint a committee from each Council to consider the whole matter, the Mayor of Minneapolis is the only one to name such a committee. Joint action under the circumstances seems unlikely.

**Fonda-Johnstown Would Increase Fares.**—The Public Service Commission for the Second District of New York announced that on July 30 it would give a hearing upon a tariff of the Fonda, Johnstown & Gloversville Railroad proposing to put into effect a 3-cent-a-mile passenger fare. The hearing was announced after the filing of a petition by the company in which it was stated that additional revenue must be received. The petition was also accompanied by proofs of pro-

posed new tariffs showing that the proposed passenger fares are to be practically the same as those charged by the company during the period that it was under federal control. These tariffs it proposes to put into effect as to intrastate traffic on Aug. 1, and interstate traffic on Aug. 30. The petition states that no increase in volume of business is anticipated and that the only way by which revenues can be increased is by maintaining the increase in freight rates and by allowing an increase in passenger fares over those now in force, including city fares.

**Passenger Decrease Follows Fare Increase.**—The quarterly statement of the Indianapolis & Cincinnati Traction Company, Indianapolis, Ind., filed on Aug. 13 with the Public Service Commission of Indiana as required by the commission when an increase in passenger rates was granted the company last January, shows that decreased rather than increased revenues have resulted for the period of April, May and June. The total passenger revenue for this quarter in 1918 was \$106,288 as compared with \$107,256 for the same period in 1917. The percentage of decrease is 0.9 per cent. Total operating expenses show an increase of 11.31 per cent for the quarter ending June 30, 1918, as compared with the same period of 1917. Total gross earnings show an increase of 4.53 per cent. Total gross income, less operating expenses, shows \$31,713 as compared with \$35,061 for the corresponding quarter in 1917. The losses in passengers riding are: 19 per cent in April, 20 per cent in May, and 23 per cent in June. The freight business for the same months showed an increase respectively of 51, 57 and 65 per cent.

**New Rates Allowed Lake Erie Line.**—In the fare case of the Buffalo & Lake Erie Traction Company, Buffalo, N. Y., the Public Service Commission of Pennsylvania has handed down a decision in which it is held that an interurban electric railway may increase its rates beyond the 5-cent fare limit specified in a franchise ordinance when necessary to obtain sufficient revenue for operating expenses and to return to the stockholders a reasonable profit on their investment. Complaints were filed with the commission by the authorities of North East Borough, Harbor Creek and North East Townships in Erie County, which are connected by the line in question, against proposed increases in rates. The commission made a physical examination of the company's properties in Pennsylvania and the decision handed down is based on the valuations. The commission fails to find the discrimination alleged and decides that since rates on adjacent lines radiating from the city of Erie have been increased proportionately, the Buffalo & Lake Erie Traction Company has been unable under the present tariffs to set aside any funds for depreciation and earnings have been greatly reduced, the increase asked is justified.

## Personal Mention

A. J. Bray has been appointed auditor of the Michigan Railway, Jackson, Mich., to succeed H. G. Kessler.

Miss Mary T. West has been chosen active secretary of the Board of Public Utility Commissioners of New Jersey to succeed Alfred N. Barber, who is seriously ill.

J. H. Stott, formerly engineer of cable equipment of the United Railroads, San Francisco, Cal., is now in charge of the North Beach Station of the Sierra & San Francisco Power Company, San Francisco, Cal.

George H. Smith has resigned as chief engineer of the Rockford & Interurban Railway, Rockford, Ill., to become connected with the Bay State Street Railway, Boston, Mass., as assistant to W. S. Hubbard, superintendent of roadways and buildings of the company.

Edward A. Higgins, a member of E. F. Higgins & Company, electrical contractors, has been selected by Mayor John W. Lawson for appointment as a member of the Board of Public Utility Commissioners of Wilmington, Del., representing the Fourth Representative District to fill the vacancy caused by the resignation of Frank Mock.

Paul P. Haynes of the Public Service Commission of Indiana, has been appointed a member of the special war committee of the National Association of Railway & Utilities Commissioners, with headquarters in New York City. Mr. Haynes succeeds Max Thelen, chairman of the Railroad Commission of California, who has resigned to become surveyor of contracts in the War Department.

W. M. Holtz, chief of the medical bureau of the Pittsburgh (Pa.) Railways, has recently entered the medical reserve corps and is now a captain stationed at Camp Greenleaf, Ga. Dr. Holtz described in the *ELECTRIC RAILWAY JOURNAL* for May 5, 1917, how the Pittsburgh Railways and affiliated companies have built up cordial relations with local physicians and how the companies care for injured employees and the methods they use to promote their welfare.

Charles A. Stanley, for the last five years in charge of the department of commercial engineering of the Kansas Gas & Electric Company, has been appointed general superintendent of the Arkansas Valley Interurban Railway, Wichita, Kan. Mr. Stanley is a graduate of the General Electric expert course, and spent ten years in the General Electric shop in charge of railway testing and design. Since that time he has served as a railway appraisal engineer and has been connected with several companies operating electric light properties.

### Mr. Casey in Washington New Superintendent of Transportation Has Grasp of Washington Problems Through the Beeler Traffic Studies

William M. Casey, whose appointment as superintendent of transportation of the Washington Railway & Electric Company, Washington, D. C., was noted briefly in the *ELECTRIC RAILWAY JOURNAL*, of Aug. 10, page 264, was formerly superintendent of transportation of the Denver (Col.) Tramway. At the time of his leaving Denver, at the end of 1916, and until his new appointment, Mr. Casey was on the staff of John A. Beeler, consulting engineer, who is advising the Public Utilities Commission of the District of Columbia on traffic problems in the capital. Mr. Casey was born in



W. M. CASEY

Ireland in 1870. At an early age his parents brought him to America, settling in Lawrence, Mass., where Mr. Casey was educated in the public schools. In 1888 he went West and enlisted in the United States Army, the chief occupation of which at that time was the stamping out of insurrections of the various hostile tribes of western Indians. As a sergeant Mr. Casey participated in the defense of the Blue Ridge Agency in December, 1890, in which Sitting Bull was one of the principal actors on the other side. Mr. Casey qualified as a sharpshooter and had the reputation of being one of the best of the famous Seventh Regiment of the United States Infantry. He also had the distinction of being pronounced by General Merriam, under whom he served, as one of the best drill masters in the service. After securing an honorable discharge from the army Mr. Casey sought employment with the Denver City Cable Company, and in 1892 worked as motorman and conductor on the old Larimer Street Line. In

1893 he was promoted to carhouse foreman. In 1902 he was advanced to the position of division superintendent of the Denver Tramway Company. In 1909 the company further advanced him to the position of trainmaster in charge of traffic and discipline and later to the position of general superintendent of transportation. Mr. Casey is recognized as one of the best qualified transportation men engaged in electric railway work. His keen insight into human nature and his early army training have been of great value to him in training others and in maintaining discipline.

J. Kappeyne, formerly chief engineer of the Public Utilities Commission of the District of Columbia, has recently been appointed transportation engineer to the United States Fuel Administration for the State of Illinois, with headquarters in Chicago. Means for promoting the conservation of fuel by the various electric railways of the State will be worked out by Mr. Kappeyne.

### Increase for New Bedford & Onset Road

The Public Service Commission of Massachusetts has issued a finding approving a general fare increase on the New Bedford & Onset Street Railway, subject to modification with respect to the use of tickets. The cash fare on lines was formerly 5 cents, with a ticket rate of 4 1/6 cents. In 1915 the commission allowed the fare to be increased to 6 cents and the ticket rate to 5 cents, and since Sept. 3, 1917, the fares have been on a straight 6-cent basis. The company now claims that its income is still insufficient and the latest schedule filed calls for a cash fare of 7 cents, with a ticket rate of 6 cents upon certain designated portions of the system.

The board's investigation indicates that the company is entitled to an increase of at least \$25,000 in gross revenue, even if no allowance be made for depreciation or for a return upon the floating debt, which has never received the indorsement of the commission.

Under the company's schedule single tickets for 6 cents each are available in the aggregate on 13 1/2 miles of the company's total trackage of about 37 miles. The distances for which they may be used are in all cases less than a regular fare zone; they are used between all points where there is an appreciable amount of daily riding; and the density of traffic is greater than on other portions of the system. The propriety of permitting a different rate of fare under such conditions has been generally recognized in previous rate cases and cannot be regarded as discriminatory, the finding states.

In addition to these single 6-cent tickets, the company proposes to issue a through round-trip ticket for 60 cents, representing a 6-cent rate for each fare zone, between the Narrows Bridge, Wareham and the Fairhaven-Mattapoisett line, where connection is made with the Union Street Railway, New Bedford.

# Construction News

Construction News Notes are classified under each heading alphabetically by States. An asterisk (\*) indicates a project not previously reported.

## Franchises

**Mobile, Ala.**—The Mobile Light & Railway Company will ask the City Council of Mobile for a franchise to build an extension to the government shipyard now in course of construction at Frascati.

**San Pedro, Cal.**—The Pacific Electric Railway has accepted a franchise for the construction of connecting tracks linking the old Los Angeles Traction Company line to San Pedro with the Pacific Electric Railway tracks on Vermont Avenue between 116th and 117th Streets. The proposed tracks will make it possible for the Pacific Electric Railway to resume traffic to the harbor from the southwest section of the city.

**Toledo, Ohio.**—The Toledo Railways & Light Company has asked the City Council for a franchise to construct an extension on certain streets adjacent to the proposed site of a new nitrate plant in Toledo. The proposed extension will be in the nature of a loop service that will provide transportation of materials and supplies to the plant, as well as furnish residents of that portion of Toledo with street car connection with the city proper.

**Norfolk, Va.**—The Board of Aldermen of Norfolk has granted five new permits to the Virginia Railway & Power Company for the construction of extensions of its lines in Norfolk.

## Track and Roadway

**Edmonton (Alta.) Municipal Railway.**—The City Council of Edmonton has authorized the placing of new crossings on Jasper Avenue from 102d to 108th Streets at a cost of \$1,150, and some track repairs on Saskatchewan Avenue, at a cost of \$800.

**Northern Electric Railway, Chico, Cal.**—The City Commission of Sacramento has refused to grant the petition of the Northern Electric Railway to abandon its service to McKinley Park.

**Pacific Electric Railway, Los Angeles, Cal.**—A decision has been rendered by the Public Utilities Commission of California ordering the Pacific Electric Railway to construct, maintain and operate a branch railroad track about 350 ft. west of the west switch of its present passing track west of Onawa Station, Elliottsville, southwest of the quarry of the Superior Dark Granite

Company, of sufficient capacity to accommodate not less than three freight cars, the entire cost thereof to be borne by the Superior Dark Granite Company.

**Savannah (Ga.) Electric Company.**—Improvements on a few city lines will be begun by the Savannah Electric Company following the completion of the extension to Port Wentworth.

**Rock Island Southern Railroad, Monmouth, Ill.**—The Rock Island Southern Railroad is again operating with only partial loss of schedule following the burning of its power-house which supplied power for its lines between Galesburg and Monmouth. A report that the company would substitute steam for electricity is without foundation. The entire equipment of the power house, as well as the building, was destroyed. Power to operate cars between Monmouth and Galesburg is being purchased from the Galesburg Railway, Lighting & Power Company.

**Jefferson County Traction Company, Beaumont, Tex.**—Amendments to the charter of the Jefferson County Traction Company have been filed in the office of Secretary of State at Austin by C. R. Wharton, attorney for Stone & Webster. The amendments authorize a change of name of the corporation to the Eastern Texas Electric Company and permit the new corporation to acquire all the property and franchises of the Beaumont Traction Company, Beaumont Electric Light & Power Company, Jefferson County Traction Company, Port Arthur Traction Company and the Port Arthur Light & Power Company. The changes to be made in the organization of the company were noted in the *ELECTRIC RAILWAY JOURNAL* for Aug. 17, page 304.

**Northwest Traction Company, Seattle, Wash.**—The Board of Public Works at Seattle, Wash., has agreed to ask the interurban railways operating out of Seattle to Tacoma and Everett to vacate Fifth Avenue, between Pike and Pine Streets, and Occidental Avenue, between Yesler Way and Washington Street, as terminals, and seek new locations. This move was taken as a result of the recommendation of Charles R. Case, superintendent of streets, who states that the use of the streets by the Northwest Traction Company was without authority and results in serious congestion of traffic. The board will require the company to vacate within ninety days.

**Seattle (Wash.) Municipal Railway.**—The City Council of Seattle has passed an ordinance providing for the issuance of \$1,200,000 of utility bonds for the construction of an extension of the Seattle Municipal Railway from the city limits north of Green Lake to connect with the elevated line and thence

to the Lake Burien line which runs beyond the southern city limits. The plan contemplates the construction of the line from East Eighty-fifth Avenue to Tenth Avenue Northeast, south on the latter street, across the Tenth Avenue northeast bridge, now under construction, to Fuhrman Avenue, and thence south over the tracks of the Seattle & Rainier Valley Railway to First Avenue South and Washington Street, where the extended line will connect with the elevated railway. It may be necessary to construct a bridge along the east side of Lake Union where the line will skirt the shore, as the Fairview Avenue bridge is not wide nor strong enough to carry cars.

**Municipal Railway, Tacoma, Wash.**—One of the causes of delay on the Municipal Railway through Ballard will be eliminated by double-tracking of about ten blocks of the line, beginning at the end of the present double track at Twentieth Avenue and Leary Street. The city is also building a side track at Thirty-Second Avenue, N. W., and West Eighty-Fifth Street, which will later be extended to make a loop at the end of the Ballard line.

## Shops and Buildings

**Pacific Electric Railway, Los Angeles, Cal.**—A contract has been awarded by the Pacific Electric Railway to Kling Company, Los Angeles, for the construction of a reinforced concrete freight and passenger station, 36 ft. x 92 ft., at Fullerton, to cost about \$6,400. Plans are now being prepared by the company for the construction of a new passenger and freight station at San Pedro. The structure will be 80 ft. x 100 ft., part one story and part two story, of brick or hollow tile.

**Kansas City, Mo.**—The Interurban Central Station Company, Kansas City, Mo., has taken the deeds to the property necessary for the building of a union interurban passenger terminal to be used by all interurban railways entering Kansas City. The proposed location bounded by Ninth, Tenth, McGee and Oak Streets is adjacent to the heart of the business district.

## Power Houses and Substations

**Turners Falls Power & Electric Company, Turners Falls, Mass.**—The Turners Falls Power & Electric Company, which supplies energy to the Springfield Street Railway, has awarded a contract to Fred T. Ley & Company, Springfield, for improvements to its plant.

**Springfield Gas & Electric Company, Springfield, Mo.**—Plans are being prepared by Sanderson & Porter, engineers, New York, for the construction of a new power plant for the Springfield Gas & Electric Company.

# Manufactures and the Markets

D. SCUSSIONS OF MARKET AND TRADE CONDITIONS

FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES • MARKET QUOTATIONS • BUSINESS ANNOUNCEMENTS

## Welding Outfits in Great Demand

**Necessity for Conserving Old Material Has Thrown Increased Duties on Welding Equipment**

Manufacturers report that the demand for welding apparatus is increasing steadily. This is most noticeable in equipment for shop use and for use in repairing tracks and lines. The demand for bonding equipment has remained steady, although there is very little new construction of tracks, lines or equipment taking place, outside of roads which are used by the government. The inability of roads to get the necessary rails for renewals has led to the rebonding of old sections of track and to the filling in of cupped rails so that they may be continued in service. In addition to the shortage of rails, roads have been hindered in their maintenance by the shortage of men to carry on the work and welding outfits have helped to relieve this condition somewhat.

The inability of roads to get the necessary repair and renewal parts to maintain their equipment and the impossibility of obtaining iron and steel in sufficient quantities to enable them to make new parts, together with the remarkable results that were accomplished in the welding repairs to the enemy merchant ships taken over by our government has brought welding into prominence. The chief hope that railways will be able to keep the cost of repairs within reasonable limits and maintain the equipment in satisfactory operating condition lies in the extended use of labor-saving machinery and machines for facilitating repairs to damaged or excessively worn construction and equipment.

Manufacturers of welding outfits are expecting great developments and a future demand for their equipment for use in connection with the ship-building program. Up to the present time the equipment supplied has been for the usual line of welding work done in this connection and for experimental and research work which is being conducted. Indications point to a vastly broader field of usefulness for welding outfits in ship construction as soon as the safety and durability of the new methods of construction have been properly tested and the various types of apparatus necessary have been developed. The rivetless ship is one of the developments eagerly looked forward to.

During the past three years, very few new types or sizes of welding apparatus have been developed, but the general

tendency seems to lean toward greater simplicity, reliability and economy in arrangement and toward a lighter construction.

Priority certificates for iron and steel have had some effect on the supply of material used for welding, but up to the present most manufacturers have had sufficient reserve stock so that this influence has been felt but slightly. The increased attention being given by government officials to the urgent need of electric railway properties, it is believed, will result in making it easier for roads to obtain material for repairs and renewals.

Prices of complete welding equipments have advanced from 15 to 40 per cent, and prices of welding material from 50 to 100 per cent. Manufacturers report that most of the advance in the price for equipment is due to the increased cost of labor and the increase in freight rates, as up to the present time their reserve stock of material and of spare parts has not been exhausted, so they have not had to pay the increased cost for material and added expense for transportation of raw material. One manufacturer reports welding steel as having advanced from 6 to 11 cents, in the past three years and carbons from 7 to 12 cents.

Most manufacturers of welding equipment report that deliveries can be made in a very short time after the receipt of order, where the apparatus used is standard. The longest deliveries are four months for the larger sizes of complete equipment, and most manufacturers give deliveries of less than one month for the smaller sizes. Welding material is being shipped 48 hours after the receipt of orders.

## Mica Insulation Made in Sweden

It is reported that a factory for the manufacture of electric insulating material from mica has just been started in Gothenburg (Sweden) by a concern that has its own mines and is sure of a large supply of raw material. In Sweden it is hoped that the production of mica can be increased at home until there is enough native product to supply the entire needs of the country.

While it is stated that in all probability many of the new industries which have been started there as a result of the war will disappear when peace comes, some will continue, and it is thought the period of reconstruction following the war will create a great demand for all products used in the electrical field and result in a large increase in trade if factories are established to handle it.

## Fuel Administration Issues Warning

**Rigid Economy Is Necessary to Aid in Conservation and to Help Avert Shortage**

In a recent bulletin the Fuel Administration states that the demand for fuel on the part of the war-making branches of the Government and the war industries is growing tremendously. Every increase in the war-making efficiency of the Nation is forcing a corresponding increase in the fuel demand. Estimates of the coal consumption for the year, which were judged high in April, are now proving inadequate.

It becomes increasingly apparent that despite the phenomenal increase in the rate of production at the mines the strictest fuel economy must be enforced if the country is to escape a serious coal shortage next winter. Every means of coal conservation must be observed, and every wasteful and unnecessary use of coal must be eliminated.

### NEEDS OF NEW PLANTS

Almost daily applications are coming to the United States Fuel Administration from war industries for allotments of coal in addition to those made at the beginning of the coal year. Some are from new plants authorized by the War Industries Board, not known to the Fuel Administration at the beginning of the year. The requirements for these plants are in addition to the original allotments. Other demands are from plants already on the preferred list of war industries, for increased allowances because of enlargements and extensions to original plants made since the Fuel Administration compiled its estimates of consumption.

The increased demand for coal for the Navy reached almost 100 per cent in July. Whereas 3,500,000 tons was allotted to the Navy in April, the requirements by the middle of July had reached a basis of 6,000,000 tons. By the end of the calendar year 1919 it is estimated that approximately 8,000,000 tons will be required to cover these demands.

### SHIPPING BOARD INCREASE

With the launching of new ships, the requirements of the Shipping Board have likewise grown beyond all expectation. When the annual allotment was made, April 1, 10,000,000 tons was assigned for the purposes of the Shipping Board. The actual requirements as demonstrated by experience, and as a consequence of the phenomenal re-



sults being achieved by the Shipping Board, now place the figure at 13,000,000 tons.

So also coal for bunkering purposes, at first estimated at 13,500,000, has grown in demand until present calculations call for 21,000,000 tons.

New industries not in operation at the beginning of the coal year are now running full tilt or are about to start. From these come demands for coal of consequential proportions.

#### OLD PLANTS INCREASE DEMANDS

Aside from the increased requirements here shown, originating from new or enlarged plants, many old plants, rated at the beginning of the coal year for marked increases of allowance over the consumption of 1917, are now demanding still more coal. Practically all the steel plants and furnaces are running twenty-four hours per day. There are no suspensions of operations save for repairs and overhauling of plants. In some instances the yearly coal requirements were underestimated. In many others enlarged production, under increased efficiency, has created a demand for additional coal. Invariably, increased steel production calls for increased coal production, demanding about five tons of coal for each ton of steel produced.

In a report on coal production dated Aug. 17, the United States Geological Survey states that the production of bituminous coal during the week of Aug. 10 decreased 278,000 net tons or 2.2 per cent, and recorded the fourth successive week of decreased output. The decrease in production during this period was equivalent to 1,000,000 net tons or 7.6 per cent below the record week of July 13, when production reached 13,286,000 net tons, and makes necessary an output of 14,500,000 net tons during the balance of the summer months to make up the deficit for the coal year to date.

The output during the week of Aug. 10 (including lignite and coal coked) is estimated at 12,274,000 net tons as against 12,552,000 net tons during the week of Aug. 3 and 10,636,000 net tons during the current week of 1917. The average production per working day during the week of Aug. 10 is estimated at 2,046,000 net tons as compared with 2,092,000 net tons during the week preceding and 1,773,000 net tons during the week of Aug. 10, 1917. The daily average during the current week fell 54,000 net tons or 2.6 per cent behind the daily summer requirements established by the U. S. Fuel Administration.

#### GENERAL DECREASE IN SHIPMENTS

Shipments during the past week decreased from all districts with exception of southwest Virginia, Alabama and the district including Illinois, Indiana and western Kentucky. The increase from Southwest Virginia amounted to 24.3 per cent, from Alabama 11.4 per cent and from Illinois, Indiana and western Kentucky 2.2 per cent.

## Carbon Brush Market Remains Active

Deliveries Are Prompt and the Advance in Prices Has Been Relatively Small

The carbon brush market is always active, as when motors and generators are once installed it is necessary to provide brushes or else stop operation. Manufacturers report that in the traction field the demand is about the same as it was a year ago. Outside of this field the demand has increased considerably.

No difficulty has been experienced so far in obtaining sufficient raw material to enable the manufacturers to anticipate their requirements and also to keep an ample stock of standard sizes.

Advances in prices have been governed to a large extent by the reserve stock which manufacturers had previous to the present stringent conditions. Prices of brushes are also commonly made on a quantity basis, so that the number ordered by any road affects the prices quoted. One manufacturer reports that an advance of 10 per cent was made a year ago and no further increase has since been necessary. Another reports an advance of 25 per cent for last November with no further advance. Still another reports that a small advance was made last January, another increase of 10 per cent was made last July and still another 10 per cent increase will be necessary next month.

Deliveries are being made very promptly, orders for most standard sizes being filled from stock as soon as the order is received. Where sizes can be cut from those in stock these are shipped in about ten days, and when it is necessary to have the brushes made up these take from three to four weeks.

#### Catalogs Wanted

W. R. Wood, acting assistant general superintendent of shops and rolling stock, officininos da Cia Light and Power, Boulevard de Sao Christavao 91, Rio de Janeiro, Brazil, wishes to receive catalogs and literature pertaining to material for a street railway and a light and power company.

#### Seattle Car Prospects

Mayor Ole Hanson, Seattle, has approved the ordinance passed by the Council appropriating \$217,000 out of the city railway fund for the purchase of street cars in Minneapolis. Mayor Hanson has also made application to A. Merritt Taylor, director of the government transportation and housing division, for sufficient funds to enable the city to purchase necessary equipment for the municipal street railway. His telegram is as follows:

"I find on my return to Seattle that the city can secure twenty-five first-class street cars from St. Paul and six more from St. Louis, price \$270,000 f.o.b. Seattle. Terminals for elevated

will cost about \$80,000 more. Our only way of obtaining money is for City Council to vote utility bonds which have to be sold at 6 per cent and at par. We might not be able to do this at once. In any event it would delay matters too long. The city of Seattle needs transportation more than ever. Could you arrange to loan the city railway fund \$300,000 on our bonds, payable in five equal installments after the war? Security will be ample, as the bonds will be first lien on our elevated and on those cars."

#### Rolling Stock

Puget Sound Traction, Light & Power Company, Seattle, Wash., some months ago purchased twenty-five one-man cars for the Seattle division, built six and has fifteen more under order, making a total of forty-six of this type of car. They are now being put into supplemental service on various lines, and this service will be added to as rapidly as operators can be secured and trained. On Capitol Hill line one large car has been taken off and five of the safety cars put on, increasing service on that route 89 per cent.

San Francisco-Oakland Terminal Railways, Oakland, Cal., has been authorized by the Railroad Commission of California, in connection with a fare decision noted elsewhere in this issue, to spend \$1,181,979 for improvements. This is a reduction from the amount asked for by the company, but it includes provision for twenty-five one-man cars to cost \$162,500, twenty-five new center-entrance cars for main traffic lines to cost \$275,000, ten trail cars for main traffic lines to cost \$55,000, four dump cars to cost \$8,712 and one electric locomotive to cost \$15,000, the total of rolling stock expenditures being \$516,212.

#### Trade Notes

Arthur Power-Saving Recorder Company, New Haven, Conn., announces that it has received orders within the past few days for more than 500 recorders. The complete equipment of several new properties is included in the above.

The New Process Specialty Company, Milwaukee, Wis., has moved from the Enterprise Building to its new factory at 230-232 Hanover Street. This move was necessitated to provide greatly increased facilities for the manufacture of high-grade jigs, dies, gages, tools and special machinery.

Holland Trolley Supply Company, Cleveland, Ohio, announced the appointment of Arthur C. Sullivan as sales manager. Mr. Sullivan formerly was connected with the sales department of the Hensley Trolley & Manufacturing Company, and was more recently with

the Chicago office of the Hegeman-Castle Corporation.

**Automatic Reclosing Circuit Breaker Company, Columbus, Ohio,** announces the appointment of C. M. Hickie as sales manager of the company. For the past two years Mr. Hickie has been connected with the Pittsburg sales office of Cutler-Hammer Manufacturing Company. Previous to that time he was engaged in practical and technical work, which has given him excellent preparation for his new duties in promoting the use of automatic protective devices for d.c. equipment of railway substations.

**Chicago (Ill.) Pneumatic Tool Company** announces that the contract has been let and work started on the erection of an up-to-date addition to its Cleveland plant, which is planned to double the present output. It is expected that work will be completed on the building itself about Nov. 1. The necessary equipment has been ordered and it is believed will be delivered and ready for installation by the time the building is completed, so that shortly thereafter the additional production contemplated will be available.

C. A. Bird has been placed in charge of the new Pittsburgh office of the General Devices & Fittings Company, Chicago. This office is at 1303 Arrott Building. Mr. Bird has done much research work in the line of high-tension phenomena and has prepared many papers on conductor calculations and allied engineering subjects. He was formerly one of the district engineers of this company's Cleveland office, and

while there had charge of Pittsburgh district work. Increasing demand for engineering service made it necessary to station Mr. Bird in Pittsburgh with a suitable staff of assistants.

E. P. Dillon, manager of the power division, New York office of the Westinghouse Electric & Manufacturing Company, has resigned to become general manager of the Research Corporation of New York. Mr. Dillon joined the Westinghouse Company in 1909, having been previously connected with various mining and electrical companies in Colorado. In 1917 he was transferred to the New York office as manager of the railway and power division. For several years he was assistant to manager of the railway and lighting department at East Pittsburgh, being in charge of power house and apparatus work. He was transferred to the New York office as manager of the railway and power divisions in 1917.

**New Advertising Literature**

**W. N. Matthews & Brother, St. Louis, Mo.:** Additions to catalog-handbook No. 9 are now available.

**Ross Heater & Manufacturing Company, Buffalo, N. Y.:** A circular describing and illustrating expansion joints.

**Walter A. Zelnicker Supply Company, St. Louis, Mo.:** Bulletin No. 246, devoted largely to tanks, both with and without towers.

**Ross Heater & Manufacturing Company, Inc., Buffalo, N. Y.:** Circular describing and illustrating surface condensers, multi-head water heaters and expansion joints, etc.

**Electric Hoist Manufacturers' Association:** Folder on electric hoist controllers designed to explain in non-technical language the functions of a controller on an electric hoist.

**Crouse-Hinds Company, Syracuse, N. Y.:** A reprint of a paper entitled "Headlights for Electric Traction Service," read by K. W. Mackall before the Central Electric Railway Association.

**Cutler-Hammer Manufacturing Company, Milwaukee, Wis.:** Booklet A on brakes for use with elevators and hoists where the supply is alternating current, together with dimensions of equipment.

**General Electric Company, Schenectady, N. Y.:** Bulletin on Type-H circular coil form transformers, oil-insulated, self-cooled or water-cooled. Covers transformers of medium size and moderate voltages.

**John F. Godfrey, Elkhart, Ind.:** Circular describing standard installations of the Godfrey coal conveyor. Emphasis is laid on the fact that power plants can greatly facilitate continuous operation by storing their coal now.

**M. L. Oberdorfer Brau Company, Syracuse, N. Y.:** Circular illustrating and describing bronze geared pumps. Their adaptability, construction, testing, sizes carried in stock, capacity, table in dimensions and ratings are shown in this bulletin.

**NEW YORK METAL MARKET PRICES**

	Aug. 14	Aug. 21
Copper, ingots, cents per lb.	26	26
Copper wire base, cents per lb.	29.25	29.25
Lead, cents per lb.	8.05	8.05
Nickel, cents per lb.	40	40
Spelter, cents per lb.	8.90 to 9.00	9.12½
Tin, Chinese*, cents per lb.	90 to 90.5	90 to 90.5
Aluminum, 98 to 99 per cent., cents per lb.	†33.00	†33.00

\* No Straits offering. † Government price in 50-ton lots or more, f. o. b. plant.

**OLD METAL PRICES—NEW YORK**

	Aug. 14	Aug. 21
Heavy copper, cents per lb.	23.50 to 24.50	24.00
Light copper, cents per lb.	20 to 21.50	20.50
Red brass, cents per lb.	21 to 22	21 to 22
Yellow brass, cents per lb.	15 to 15.50	13½ to 14½
Lead, heavy, cents per lb.	7.12½ to 7.50	7.00
Zinc, cents per lb.	5½ to 5½	6.00
Steel car axles, Chicago, per net ton	\$41.52	\$41.52
Old carwheels, Chicago, per gross ton	\$29.00	\$29.00
Steel rails (scrap), Chicago, per gross ton	\$34.00	\$34.00
Steel rails (relaying), Chicago, gross ton	\$60.00	\$60.00
Machine shop turnings, Chicago, net ton	\$16.25	\$16.25

**ELECTRIC RAILWAY MATERIAL PRICES**

	Aug. 14	Aug. 21
Rubber-covered wire base, New York, cents per lb.	30 to 37	30 to 37
Weatherproof wire (100 lb. lots), cents per lb., New York	32.40	32.40
Weatherproof wire (100 lb. lots), cents per lb., Chicago	35.00 to 37.72	35.00 to 37.72
T rails (A. S. C. E. standard), per gross ton	\$70.00 to \$80.00	\$70.00 to \$80.00
T rails (A. S. C. E. standard), 100 to 500 ton lots, per gross ton	\$67.50	\$67.50
T rails (A. S. C. E. standard), 500 ton lots, per gross ton	\$62.50	\$62.50
T rail, high (Shanghai), cents per lb.	4½	4½
Rails, rdger (grooved), cents per lb.	4½	4½
Wire nails, Pittsburgh, cents per lb.	3½	3½
Railroad spikes, drive, Pittsburgh base, cents per lb.	4½	4½
Railroad spikes, screw, Pittsburgh base, cents per lb.	8	8
Tie plates (flat type), cents per lb.	*3½	*3½
Tie plates (brace type), cents per lb.	*3½	*3½
Tie rods, Pittsburgh base, cents per lb.	7	7
Fish plates, cents per lb.	*3½	*3½
Angle plates, cents per lb.	*3½	*3½
Angle bars, cents per lb.	*3½	*3½
Rail bolts and nuts, Pittsburgh base, cents per lb.	4.90	4.90
Steel bars, Pittsburgh, cents per lb.	5	5
Sheet iron, black (24 gage), Pittsburgh, cents per lb.	4.90	4.90
Sheet iron, galvanized (24 gage), Pittsburgh, cents per lb.	5.80	5.80
Galvanized barbed wire, Pittsburgh, cent per lb.	4.35	4.35

	Aug. 14	Aug. 21
Galvanized wire, ordinary, Pittsburgh, cents per lb.	3.95	3.95
Car window glass (single strength), first three brackets, A quality, New York, discount†	80%	80%
Car window glass (single strength, first three brackets, B quality), New York, discount	80%	80%
Car window glass (double strength, all sizes AA quality), New York discount	82 & 3%	82 & 3%
Waste, wool (according to grade), cents per lb.	11½ to 22	11½ to 22
Waste cotton (100 lb. bale), cents per lb.	13 to 13½	13 to 13½
Asphalt, hot (150 tons minimum), per ton delivered	\$38.50	\$38.50
Asphalt, cold (150 tons minimum, pkgs. weighed in, F. O. B. plant, Maurer, N. J.), per ton	\$42.50	\$42.50
Asphalt filler, per ton	\$45.00	\$45.00
Cement (carload lots), New York, per bbl.	\$3.20	\$3.20
Cement (carload lots), Chicago, per bbl.	\$3.34	\$3.34
Cement (carload lots), Seattle, per bbl.	\$3.68	\$3.68
Linseed oil (raw, 5 bbl. lots), New York, per gal.	\$1.86	\$1.86
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	\$1.88	\$1.88
White lead (100 lb. keg), New York, cents per lb.	10½	10½
Turpentine (bbl. lots), New York, cents per gal.	63	63

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