

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

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Number 17

Congratulations, War Board, On Universal Car!

YOU have made good the trust that Uncle Sam expressed in you when he asked on Aug. 19 through his Bureau of Industrial Housing and Transportation for a car that could be operated one-man, two-man, all-around-the-town, on 'most any city track. You wasted mighty little time in discussing the most esthetic location of rivets or the relative advantages of Prussian blue and Bulgarian yellow. You just tore off your coats, smashed through all the old-time barb wire of association procedure and came over the top with two complete cars in less time than it used to take to standardize a thumb tack! This at least is one benefit brought about by the war.

How Shall Our Engineers Be Trained?

SATISFACTORY construction and successful service of electric railways as well as other utilities depend to an increasing extent upon the engineer. He has to do primarily with the design, installation and maintenance of track and other structure, rolling stock, power generating and distributing system, signals, etc. But he also finds an opportunity, if he is a real, all-round engineer, to assist in solving operating and other administrative problems. The electric railway manager is therefore interested in anything that tends to improve the qualities of the engineers whom he employs; hence he will not want to overlook the report on engineering education which has just been completed for the Carnegie Institution on the Advancement of Teaching and is reviewed briefly elsewhere in this issue.

Every employer of young engineers has experienced some difficulty in fitting them into his organization. This he has blamed upon the technical schools, undoubtedly with some reason. At the same time he appreciates in part the handicaps under which the educators labor. He may not perhaps have realized the extent to which his dissatisfaction, or the reverse, is affected by those personal qualities with which technical education has not greatly concerned itself in the past, nor which in all cases it can greatly affect. The schools must admit, however, that in future more attention should be given to the training of faculties upon which depend success in the handling of men and materials. Possibly there will be less time for the academic variety of training.

The railway manager has little to do with the educational side of this subject, but he can hold a sympathetic attitude with respect to it. He may possibly have a son who wishes to become an engineer. He certainly must depend largely upon engineers for results.

Why Has the Administration Forsaken the Electric Railways?

WHY does the federal government persist in leaving electric railways to the far from tender mercies of local authorities? Mere querulousness does not prompt this inquiry. We sincerely desire to know, in the nation's interest, why electric carriers must suffer from the withholding of that direct relief which has been bounteously bestowed upon other industries little, if any, more essential to public welfare.

The details of government intervention in production and price-fixing in many lines are too well known to require enumeration here. Take simply one example—that of the steam railroads. Starved for years by one set of government agencies until, as Mr. McAdoo recently said, there existed “adverse conditions [which], coupled with the extreme difficulty of borrowing money, would probably have resulted in the failure of some of the most important railroads in the country to meet their obligations under private management,” the steam railroads had to be placed under the control of a new government agency. Under the exigencies of war, the result has been an economic rather than a political treatment of such carriers. With almost startling rapidity the Federal Railroad Administration has adopted the common business practice of increasing rates to cover higher costs of operation.

Direct federal operation was necessary for the adoption of this economic principle in the case of the steam lines, in view of the co-existent object of securing unified operation with a minimum of competition. The electric railways, however, must simply be saved from destruction. Direct federal operation is not needed. The means for adequate public control already exist, although functioning too often along the wrong line. Hence to insure obedience to a sound economic principle the federal government needs only to exercise the same supervision over electric railway rates as it has been prompt to assert over electric railway wages. Why does not the administration recognize its responsibility in this regard?

It has been hinted that electric railway situations are political “hot potatoes,” and that the federal government is reluctant to handle them in any way. Wherever such cases exist, they are almost invariably due to the fact that politicians refuse to let die campaign issues upon which they can appeal to the public on the basis of misrepresentation and passion instead of justice. Since the administration demands that politics be adjourned during these trying days, however, this ascribed reason cannot be the controlling one in government circles.

Rather does it seem that the federal government places implicit trust in state and local authorities to

treat electric railways as the national interests demand. But regulation of the steam railroads had to be improved on its rate-making side; that of the electric lines needs similar treatment. The war has done much to broaden the American mind, but it has not removed the demagogue, or local prejudice, or the secret selfishness of the public in dealing with that inanimate object, the corporation. A situation that makes possible the Buffalo fiasco is hardly conducive to perfect confidence in a speedy and fair settlement of traction difficulties at the hands of the localities concerned.

Some publics, some cities, some commissions will perform their full duty to the nation; others will not. The probable percentage of delinquents nobody knows. But why should the government think it safe to gamble with the future on this point at the expense of part of a vitally essential industry?

Navy Publicity Tour Shows Practicability of Long-Haul Electric Freight

THIS journal has consistently advocated an intensive development of freight handling by interurban electric lines. The need for such development has been accentuated by war conditions. There are reasons why some lines have not found it possible or advisable to develop this class of business, but we feel sure that it will be of interest to all to note, from an article on the recent navy publicity trip through the Central West, with what facility through carload freight could be handled between Chicago and Detroit, Mich., Columbus and Dayton, Ohio, Louisville, Ky., and many other points, entirely by electric railway. In this case the freight was composed of replicas of a submarine, a destroyer and a submarine chaser, accompanied by a party of fifty sailors from the Great Lakes Naval Training Station. The trip was, of course, far from being intended to demonstrate the possibilities of interchange of through freight. Its purpose was the education of the public concerning the work of the various branches of Uncle Sam's fighting forces and a patriotic support of the government's request for money and of the various institutions working to make life more pleasant for our boys "over there." Nevertheless the success of the experiment goes to show on how extensive a scale freight could be handled on our interurban lines with a sufficient amount of equipment available.

The cars used on this trip were equipped with standard M.C.B. wheels, which have a deeper flange and wider tread than most interurban and city car wheels. For this reason a little trouble was experienced in paved streets, but the difficulties were readily overcome. It must be borne in mind also that in this case the cars were purposely hauled into the heart of the cities, while in handling freight such sections of road would be carefully avoided.

A point of further interest in connection with the navy publicity train is the patriotic service which was rendered by the electric railway of the Central States, which carried the train over their lines free of charge, interrupting traffic to permit its transport to the heart of the city, advertising the event in advance, etc. We believe that any other electric lines would feel honored in rendering similar service, although few have a chance

to give such conspicuous assistance, or even to serve shipbuilding, munitions or other immediate war industries. If, however, each property renders the best service possible under existing conditions, with the smallest consistent consumption of energy, coal and man power, does all in its power to obtain a rate which will permit such a quality of service to be given and conscientiously backs the government in its demands and requests, it is doing much to help win the war, although it may not be decorated with the Cross of Honor.

Auto versus Car in Checking Devices

A HIGH-CLASS automobile costs say \$5,000. Its annual run may average 15,000 miles. Frequently, the owner of the car is the operator. Naturally, he has a personal interest in operating his car as economically as possible. For all that he does not trust his own good intentions but installs the following checking instruments on his automobile:

A mileage register to give the number of miles operated; a speedometer to indicate the various speeds while operating; a gasoline gage to tell the amount of fuel in the tank; an oil gage to show if proper circulation of lubricant is being obtained; a volt-ammeter to measure the current and voltage of the batteries; a temperature indicator to indicate danger should the supply of cooling water fail, and a clock on the dasher so that the driver can learn the time without fumbling for his watch.

It is true that the automobile could be run without these devices, but they are used because the owner wants to know what service he can get from his tires and other vital parts, when fuel should be added and when more lubricant is required to avoid damage to the mechanism.

Now let us contrast this practice with that in vogue on more than 90 per cent of the electric railway cars of America!

An electric railway car costs from \$4,500 to \$30,000 or more, and prices are still soaring. It may average 45,000 miles per annum or three times that of the pleasure automobile. It is always run by an employee, who seldom has any definite incentive to run the car as economically as possible. If this car were to be provided with the corresponding checking instruments, the line-up would be as follows:

A watt-hour meter to show the energy consumed; a coasting recorder to check coasting time; a power-on recorder to check power-on time; a device to check the unnecessary use of the brake; a temperature indicator to warn the motorman when motors, bearings or other running parts are nearing a high temperature; gages to show brake cylinder as well as main reservoir pressures; a speedometer to enable him to know whether he is maintaining his schedule speeds; ammeters in the operating circuit to show the motorman what peaks he is obtaining so that he can operate to avoid them; a clock with the second hand interlocked with the operation of the car in order to record the duration of the stops, and a distance counter to integrate the mileage made by the car during its full moving time and also during the shorter power-on time. We do not say that all of the foregoing devices

should or could be installed forthwith. Nevertheless, this parallel of checking devices on private automobile and electric railway car warrants the repetition of that fine old admonition: "Think it over."

Rate-Making Viewed in The Light of Common-Sense

A STINGING rebuke has been given by Justice Swayze of the New Jersey Supreme Court to the municipal advocates who during the last year have been fighting not with facts but with wind the plea of the Public Service Railway for financial relief. The case arose through the efforts of the League of Municipalities to prevent the recently approved 7-cent fare from being put into effect.

The chief point which city counsel tried to make, as noted elsewhere in this issue, was that the New Jersey Board of Public Utility Commissioners had no power to increase the fare because it was without evidence of the value of the property. Justice Swayze, however, shows little sympathy with this argument. As he tersely puts it, the determination of a just and reasonable rate is a business question, depending for its answer upon many factors besides physical property. With the old 5-cent rate long accepted as standard, and with no proof of its unreasonableness presented by the cities, the addition of an amount to cover the wage awards of the War Labor Board surely does not result in an unjust and unreasonable rate. Justice Swayze is repressive, but his inability to see how the New Jersey commission could have drawn any other conclusion renders further characterization of the cities' argument unnecessary.

As for the suggestions that the railway seek relief in curtailment of service or in receivership, the court seems reluctant to take the municipal counsel seriously. The plea, too, that franchise rates are immutable in New Jersey is met with the reminder that this court and the highest court of the State, the Court of Errors and Appeals, have in the Collingswood and Atlantic Coast Electric Railway cases ruled in favor of State paramountcy in rate-making.

Justice Swayze has done a thorough job in showing up the lightness of the arguments presented by the city counsel. They may learn; time will tell. Already they are talking of securing appeals *ad infinitum* and of revoking all franchises because the 5-cent fare clause has been disregarded by the State. On this latter point let us add a jolt. The theory of controlling decisions in this regard is that franchises are binding as between the contracting parties, the cities and the companies, but that such instruments cannot operate to prevent the State from exercising its sovereign rate-making power when it so wills. An intelligent man, therefore, should hardly expect the courts to permit the wholesale abrogation of franchises simply because the municipalities are not allowed to exercise a power which is not theirs.

The Proposed Chicago Franchise Possesses Many Signal Advantages

ASSAILANTS of the pending Chicago traction ordinance have been using two favorite arguments in their contention that it should not be approved at the coming referendum. They say that it will pave the way for increased fares and that it should not be submitted to a plebiscite while so many of the male voters of the city are fighting for their country in the lands across the sea.

It is true that the proposed franchise would give the trustees authority to change the basis of fare to meet costs of service whether the new fare be higher or lower than the existing rate. This provision, however, merely substitutes a local board (the trustees) for the State commission which already has such authority. The Chicago Elevated system has now been heard on an application for a 7-cent fare, and the Surface Lines management has announced its intention to seek more revenue through the Utilities Commission. The chances are that both systems will be able to satisfy the State authorities that a higher fare is necessary to meet increased costs of operation that are unavoidable in this present critical period.

If the new unification ordinance were now in effect, the combined system could undoubtedly furnish transportation at a lower cost than the competing companies can. Reduced overhead charges due to the combination of facilities and the less operating cost of carrying passengers on an enlarged elevated system will make this possible. It is, therefore, clear to any unprejudiced mind that the prospects of a high rate of fare would be less on the proposed unified system than under a continuation of present conditions.

As to the other argument, the best answer is given by those who point to the fact that the ordinance if approved will call for the expenditure of \$100,000,000 within six years and will give employment to thousands of men, including those who will be seeking work after their return from France. This will meet one of the most serious conditions that must be faced on the conclusion of the war—namely, the readjustment of the economic balance. War industries gradually must subside, and the men thus thrown out of work must look to other occupations for their subsistence. The public utilities, representing the industry of both war and peace, will be a considerable factor in helping to stabilize conditions.

If the men and women at home who have the chance of voting during war times overlook an opportunity like the Chicago situation to provide work for the returning soldiers and sailors, it would appear that they have not at heart the best interests of these absent men. The more opportunities of this kind that are offered, the quicker will the general economic readjustment take place and the less likelihood will there be of a serious financial disturbance to complicate the problems of reconstruction.

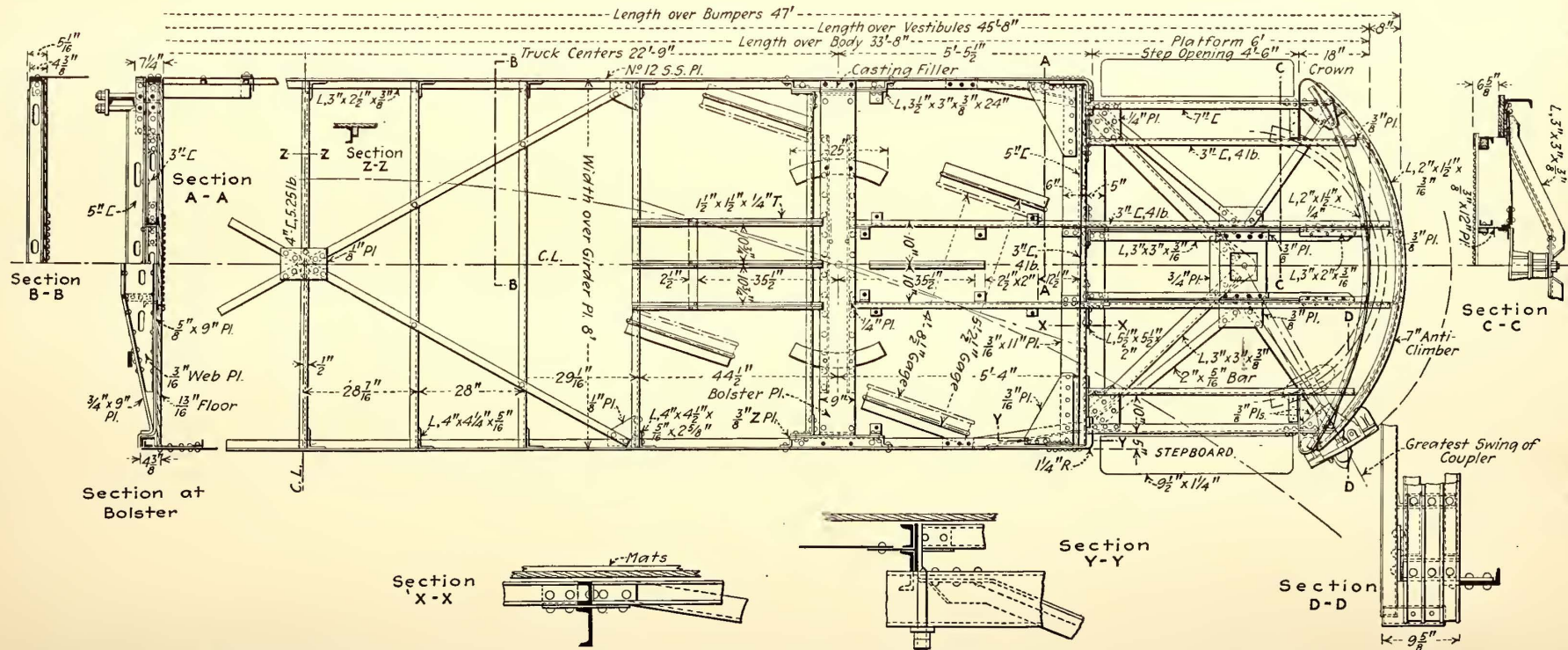
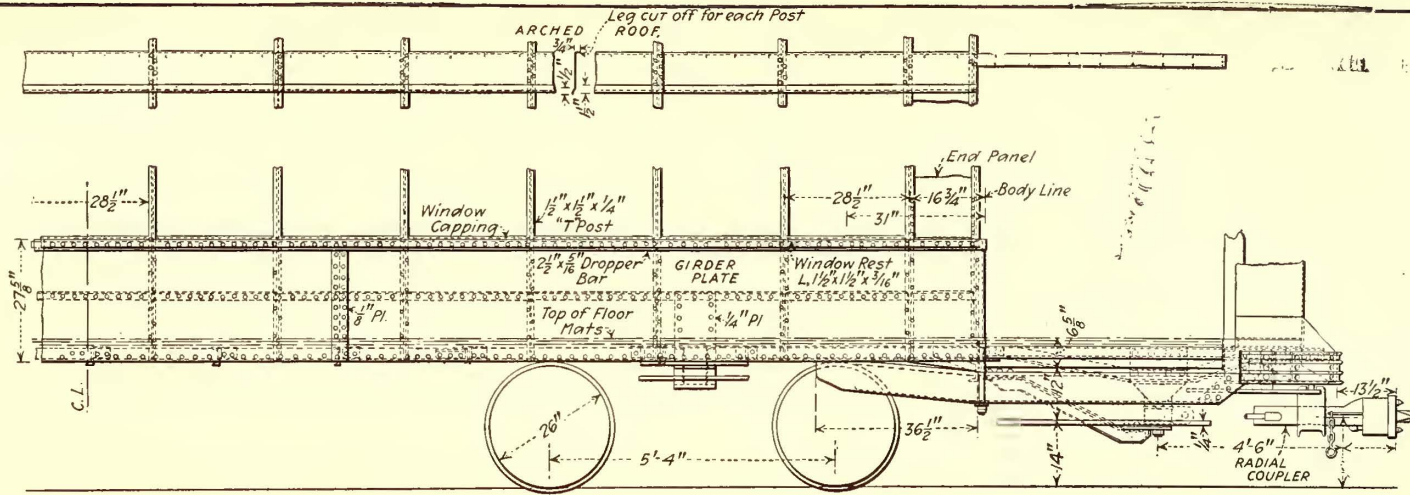
Don't Forget the Conference

[See Page 749 for Program]

Place—29 WEST THIRTY-NINTH STREET, NEW YORK

Date—NOVEMBER 1, 1918

Time—ALL DAY, BEGINNING AT 9.30 A. M.



Underframe and Side Frame Details of Type A Car Submitted by A. E. R. A. War Board

The First Universal Car

AS NOTED in the **ELECTRIC RAILWAY JOURNAL** for Oct. 19 the War Board of the American Electric Railway Association on Oct. 17 suggested two types of cars for use by the United States Bureau of Industrial Housing and Transportation, following a request for designs and specifications from Otto M. Eidlitz, director of the bureau.

Both designs, which are known respectively as designs A and B, were prepared by C. O. Birney in cooperation with several car builders and other manufacturers of electric railway equipment. Both cars are arranged for either single or train service, for operation by either one or two persons, and for either prepayment or pay-as-you-leave operation, single-end or double-end control. Type A is the one selected. With type B it is shown on the accompanying supplement.

DIMENSIONS, OPENINGS AND STEPS—NO DROP PLATFORMS OR RAMPS

Type A is 47 ft. 9 in. long over all and 8 ft. 2 in. wide overall. It is expected that these limiting dimensions will take care of any clearances in the cities where this car is likely to be used. The end platforms are 4 ft. 6 in. over the dashers with a clear entrance of 30 in. The side door has a clear opening of 48 in. The platform floors are on the same plane as the body floors, thus calling for three entrance steps as follows when a 26-in. wheel is used: From ground to first step, 14 in.; from first step to second step, 12 in., and from second step to floor, 6½ in.

The exit steps at the side are as follows: From the floor to first step, 8½ in.; from the first step to the second, 10 in., and from the second step to street, 14 in. These latter steps are fixed and within the car.

As it was the intent of the bureau to get a car for average rather than for exceptionally congested conditions, a comparatively short platform is used. From a constructional standpoint, this would mean a reduction in weight and maintenance; nor is the shorter length an operating disadvantage because, after all, the throat of the platform at the fare box and the seating arrangement are more important than the width of the steps. Weight and cost are also saved by the use of flush platform floors.

Further to save weight and reduce accidents, all ramps and wells have been avoided. The passenger who uses the side door steps directly from the car-floor level to the exit steps on the side of the car.

HIGH SEATING CAPACITY—PNEUMATIC DOOR AND STEP CONTROL

Since the car is arranged for double-end operation, the seating plan necessarily is symmetrical although the car may be used on both the pay-as-you-enter and pay-

Preliminary Details of the One-Man, Two-Man, Prepayment and Postpayment Car Submitted by War Board to Housing Bureau—Provides Latest Labor-Saving and Time-Saving Devices and Is Suitable for Either Single or Two-Car Operation under Great Variety of Conditions—Cars Have No Drop Platforms and Are Unusually Light

as-you-leave plans. The seats adjacent to the platforms, both end and side, are longitudinal while the rest are transverse. Folding seats are provided in staggered relation at the side doors, one for three passengers and one alongside for two. Other

folding seats, including those of the motorman, are available according to the direction of running.

As a single-end, one-man car, the seating capacity would be sixty-one since three permanent seats could be added to the rear platform; as a double end, one-man car, the seating capacity is fifty-eight; as a single-end, two-person car, the seating capacity is fifty-six and as a double-end, two-person car, is fifty-three.

Because of the public's preference, transverse seats have been applied wherever they could be used without interfering with the flow of traffic. While the seats themselves are 32 in. over all, their actual seating space is 35 in. because the seats are set 3 in. from the wall of the car. Through special construction, comfortable knee-room is established with a centering of but 28½ in. Should the cars be used in a climate demanding no heat insulation, the aisle width between the cross-seats would be 26 in.; otherwise, 24½ in. The seats will be made of wood, steel and rattan.

All doors will be of the folding type, air operated, hung on ball-bearing type hinges. The end doors will be of the single folding type with two leaves and the center doors of the double folding type with four leaves. All doors will have rubber cushions and lower panels glazed in wireglass. As the cars are of the open-bulkhead type, no other doors are used. Among the reasons for operating the doors by air are the elimination of manual labor, the quicker action of the doors, the increased efficiency of fare collection and the decreased likelihood that cars will ignore would-be passengers

ANY CHARACTER OF FARE COLLECTION POSSIBLE

The foregoing arrangement of steps, doors and seats is adapted to any kind of fare collection desired. For example, if the car is used for heavy terminal loading at a prepayment area, passengers are at liberty to enter through one front and two center passageways, totaling 6 ft. 6 in. If used as a pay-as-you-leave car, passengers would enter via the front platform and pay as they passed the conductor stationed just forward of the center door. The arrangement differs from the usual pay-as-you-pass type only in permitting transverse seats in both sections because the car is double-ended. In this character of operation, the rear platform is locked. In emergencies, however, every door on the car or two-car train, could be unlocked. Inasmuch as these cars are likely to be distributed among different companies, no attempt has been made to specify the mechanical details of fare collection.

The total weight of Type A, completely equipped, is estimated at 34,700 lb. using four 40-hp. motors, multiple-unit control, couplers and other train-operating apparatus; or 30,700 lb. if equipped with four 25-hp. motors and arranged for single car operation only. In view of the decreased weight of these cars compared with preceding types of like capacity, their schedule speed with motors of the capacity mentioned will tend to run about 10 per cent higher. The air brakes will include safety control equipments whereby control, brakes, doors, steps and sanders will be interlocked as on the standard one-man safety car. Electric heating and thermostatic control are specified, the number of heaters to vary with climatic conditions, but usually ranging from eighteen to twenty-four. Ventilation will be provided through sixteen exhaust ventilators of approved type. The lighting circuit will comprise five circuits of 23-watt mazda lamps, with two circuits so ranged that either headlight can be turned on or off from either end of the car. Push-button buzzer signals will be available for the passengers.

Buttons will also be provided in all control stands for signaling between the motorman and the conductor or conductors. All wiring will be placed in a flexible, featherweight conduit.

CONSTRUCTIONAL FEATURES

The car will have straight sides, round vestibules, arch roof, all floors on one plane, folding doors and steps on right-hand side of each platform, folding doors and stationary steps on each side of center of car, open bulkheads and two sashes per window opening with top sash stationary and the lower sash arranged to raise. The general construction of the body is steel of commercial shapes with wood finish. Side posts and carlines will be formed as continuous pieces from sill to sill. The roof boards will serve as the ceiling.

The underframe will consist of standard commercial shapes. Two center sills will extend from the body bolster to the bumper. Because of this through construction, a sectional end sill reinforced underneath with a channel iron will be used, all being tied together with a gusset plate. Diagonal braces will extend from the gusset plates to the ends of the vestibule. Diagonal braces will also be used between the drawbar fulcrum and side sills of the car. If drop platforms were used, the center sills would have to be bent down under the end sills, entailing much additional weight. The ends of the car will be fitted with anti-climbers.

The reinforcement at the side openings consists of the usual cross-sill plus a channel iron which forms an arch from side sill to side sill. The pier panels at the side doors are reinforced inside with an extra plate. The letterboard is made of steel reinforced at the top with angle irons to give the necessary strength. The side girders are of No. 12 sheet steel, riveted to the side sills, seat rest and window rest angles and to the T-posts. At splices there is a plate on each side. The dropper bar is riveted through the window rest angles. The inside of the car will include a truss plank extending from the floor to the seat-rest angles, and a composition board will be placed between posts extending from the seat-rest angle to the window-rest angle. An air space is provided between the truss plank, the com-

position board lining and the outside steel girder. As the cars must be adapted to the greatest variety of overhead clearances, it was thought advisable to keep the roof low. Hence the proper height of trolley base, where necessary, is to be obtained by using the elevated stand of angle iron now so familiar through its common use on the safety car. The use of the stand also tends to reduce the noise of the trolley and saves the roof ventilators from being damaged by trolley poles.

Single-thickness car flooring of yellow pine will be used, with $\frac{3}{4}$ -in. maple floor strips on the platforms and in the aisles. Besides their use on all steps, safety treads will also be set in flush in the flooring at all door openings.

The trucks will be of the swing bolster type, having an interposed spiral spring above the plate spring and provided with a bolster guide. The wheelbase will be 5 ft. 4 in. and the wheels 26 in. Type A cars will have truck centers of 24 ft. 5 in. and type B, 22 ft. 9 in.

It may be interesting to note that practically all of the constructional features are based upon the experiences of Stone & Webster on a large number of properties in cities varying in population from 20,000 to 400,000. In fact, many cars built according to these principles have already been in use for nine years, which period has been ample to prove their merit from the standpoint of economical maintenance.

TYPE B, NON-SIDE-DOOR CAR

Type B, the alternate design submitted to the Bureau of Industrial Housing and Transportation, does not differ materially in construction and equipment from type A, but is intended for conditions where it might be more desirable to operate with doors on both sides of the platforms instead of using the end and side-door combination of type A. This car, as shown in the accompanying plans, is 47 ft. long, but has 6-ft. platforms with 4-ft. opening in the clear. This type is also intended for either one-man or two-man operation. The seating plan is a combination of longitudinal seats at the openings and cross-seats elsewhere. As a single-end, one-man car, it would seat fifty-nine; as a double-end, one-man car, fifty-two; as a single-end, two-man car operated near-side, fifty-seven; and as a double-end, two-man car, fifty-two, inasmuch as the conductor would be on the rear platform. The weight of this car completely equipped for train operation with 40-hp. motors would be 33,700 lb. and for single-car operation with 25-hp. motors and no drawbars, 29,700 lb.

Energy Consumption on British Tramways

At the recent annual conference of the Municipal Tramways Association of Great Britain J. M. McElroy, general manager Corporation Tramways, Manchester, said that the tramways of the United Kingdom use 620,000,000 kw.-hr. of energy annually, or about one-fourth of the total output of the country. Of this 79 per cent is used by municipal and 21 per cent by company undertakings. Of the total number of 176 British tramways thirty-eight have their own power stations and 138 purchase their energy. With regard to total consumption, however, 50 per cent of the electrical energy generated is used by tramways which produce their own power and 50 per cent is purchased from central stations.

Engineering Education Should Increase Production

MORE than three years ago the Carnegie Foundation for the Advancement of Teaching selected Prof. C. R. Mann, then connected with the University of Chicago, to make an exhaustive study of technical education in the United States. The results have now appeared in the form of a report which is being published.* In this work Dr. Mann has had the co-operation of the national engineering and other societies and of the technical schools generally. His purpose has been, first, to determine the present status of engineering education with respect to the needs of industry, and, second, to suggest principles and practices which would appear to be needed to improve this status. A very brief review of the report is presented here, not as a summary but rather to indicate its general plan and scope.

In collecting data for this report, among other plans used, circular letters were sent to engineers throughout the country, asking them what they considered the most important factors in determining probable success or failure in engineering. In the replies received personal qualities were mentioned seven times as frequently as knowledge of engineering science and the technique of practice. Of six groups of qualities headed respectively character, judgment, efficiency, understanding of men, knowledge and technique, the summarized votes of more than 7000 engineers placed character at the head of the list by 94.5 per cent and technique at the bottom by an equally decisive majority. This condition must, of course, be kept in mind by educators in planning their curricula and methods of conducting courses.

The plan of co-operative education, first introduced by the University of Cincinnati and later adapted elsewhere in principle if not in form, impressed Dr. Mann as containing the fundamentals of the ideal technical education. The plan was described in an original article in the issue of this paper for April 15, 1916, page 724, in its application to electric railway work, by a member of the faculty. About 100 of the industries of Cincinnati and vicinity are now co-operating with the university. The companies represent every important phase of engineering, so that the university is able to arrange the work schedules in such a way that each student progresses regularly through every phase of his specialty, from the crude and rough work to the more difficult and responsible positions.

Financially, this co-operative plan is very economical both for the university and for the students. The university has access without expense to shops and shop equipment that are worth millions of dollars and are never allowed to deteriorate or become antiquated. The total cost to the university per student per year is about \$130, compared with \$250 to \$600 at schools of equal grade. The money earned during shop periods makes possible an engineering education to many a boy who could not otherwise afford it.

In addition to the financial advantage, however, Dr. Mann points out many educational advantages. The work, he says, has three marked points of superiority over that done in college shops: (1) It is real com-

mercial production that must succeed or fail on its merits; (2) the variety is much greater than is possible in any college shop, and (3) the student is thrown in personal touch with workmen.

Of the ideas which Dr. Mann offers as necessary ingredients of a new method of training engineers, one of the most important is the adoption of testing and grading methods which will not only eliminate from admission to the schools those not qualified to pursue engineering studies, but will reveal throughout the course the progress of the student—progress not with reference to purely academic ideals, but to the equipment he will need in active professional life. Such objective testing and grading methods, he contends, will not only eliminate the unfit at the start, and insure progress having a relation to the needs of engineering practice but will furnish a sound test of abilities of teachers and spur them on to creative teaching work.

The method Dr. Mann proposes for the actual formulation of the courses is to have in each school a standing committee which shall decide what he calls the "common core" of all engineering education, no matter what the specialty. This "core" being defined with reference to the needs of the engineer, the committee would determine the time necessary to cover it adequately and would shape the courses accordingly, instead of arbitrarily parceling off to the different departments the time predetermined as available and letting each department crowd as much as possible into its allotted time. The common core would have studies under four main heads: (1) Participation in real industrial work; (2) engineering laboratory work, including drawing and descriptive geometry; (3) mathematics and science and (4) humanistic studies. Participation in industrial work would best be interwoven with the three classroom and laboratory divisions of the student's work. At the beginning of the course and while giving the common-core studies, the testing and grading methods already referred to would be applied.

In addition to the standing committee to take care of the "common core" studies, there should be additional committees, one for each of the semi-specialties offered at the school, such as civil, electrical and chemical engineering. Here the same method would apply: that is, the committee, having a clear-cut conception of the demands of present-day engineering, would determine first the equipment needed by young graduates and then the time required to obtain that equipment, and would develop the courses accordingly. This semi-specialized work would follow the "common core" studies, and again grading and testing methods would be used which would indicate the relationship between academic attainments and the qualities needed for success in engineering work.

As soon as it is possible, says Dr. Mann, to measure the results of teaching by impersonal means, successful teaching will be as easy to recognize as profitable research. Objective records of achievement have been found in industry to be one of the best incentives to creative work. Hence the line of progress in education does not lie in the direction of making arbitrary distinctions between research and teaching, but rather in the direction of removing the limitations placed upon the spirit of inquiry, so as to encourage its expansion to include education and human relations generally.

*Carnegie Foundation for the Advancement of Teaching, 576 Fifth Avenue, New York City, "A Study of Engineering Education."

Peccavimus

[We have sinned]



Harsh days and Heavy have fallen upon us.

In our Careless Youth we covenanted with the Devil of Flat Fares to sell Our Soul forever and ever for Five Cents.

Then carefree we went our Heedless Way until Intake was met and overcome by Outgo.

Now like unto Hagar in the desert we wail aloud for Help.

And naught but the Mocking Echoes answer.

Many may Hear, but few Listen.

Even those who Listen dare not help because of the Swamp of Prejudice that lieth between.

Ah, had we but drained this Swamp in years agone with the dredges of Courtesy, Salesmanship, Frankness!

Yet, if there be solace in the thought, not we alone have committed Grievous Errors.

Yea, verily, every industry worth while hath Done the Same.

Before this Armageddon, what American banker believed that the People would buy Baby Bonds by Billions?

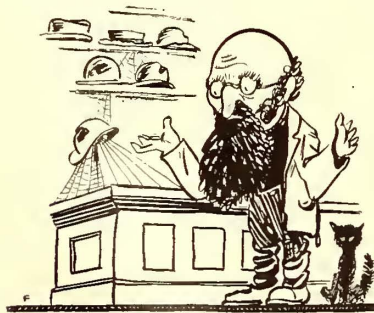
Who careth that we have sunk great sums in Unwise Policies or in Improvements long since Forgot?

Doth the Public plop Tears over the plight of the Hop-Grower, the Brewer and the Distiller?

If we be fit for this day and age, we must Prove it by Good Works: not by Cries for Succour.

Through our Own Neglect in days of Old to set aside enough from Earnings to replace track and plant as they Wore Out, and cars as they became Obsolete, we now lack the wherewithal to give good Service through the lean days of War.

So to the burden of higher wages, higher material cost and higher fuel cost, must be added the Loss of Travel from operating with Misfit Equipment.



The hat merchant and the 1898 head covering

Who would patronize a merchant whose latest Head Covering was of the vintage of eighteen ninety-eight?

Therefore, is it meet that we should expect the People to rush to the aid of the Electric Railway which operates dingy, unkempt chariots that are but a Laughing and a Scorn alongside the Jitney glorying in Sheen and Speed?

Honest, sincere publicity hath its Merits, but New Cars are of greater worth than a fulsome flock of Publicity Patterers with their camouflaging bunk, as it hath been rightly called.

But, brethren, even bright, quick-acting comfortable cars must not be expected to do all the Selling of Transportation. Though a Good Cigar may sell itself, yet doth the Cigar-Store Conductor rich in wisdom say "Thank You."



Ships are standardized, why not cars?

Never let us forget, and never must our Man-servants or Maid-servants forget, that the Electric Railway hath Competition both a-wheel and a-foot.

If the Electric Railway, perchance, is no more of these days than is the Camel, then is there no Law mighty enough to bring Salvation from the Jitney or the Bus.

Happily, it is not the Electric Railway but the Nineteenth Century point of view that is not of this Time.

Is it just that we ask the People to shoulder in the Future such burdens as these:

Prodigal prices for girder rails because nearly Every Company wanteth its own particular Section rolled to its Individual Specification?

Failure to drive forth fuel-wasting powerhouse equipment, duplicate pole lines and needless copper because we will not cooperate with our brother Central Station?

Deliver up a \$10,000 car unto a Motor-man who draweth without stint on a Million Dollar Power House because a power-saving device costeth a few Shekels and involveth the Care and Trouble of checking?

But, verily, that which is Worst of All, is never to adopt a car already used elsewhere; and seldom, if ever, to duplicate one's own car.

Who hath said that this is but as the Babble of Dreams?

So mocked the Old Shipbuilders at the thought of the Standardized Ship. Yet see what the Shipping Board hath made to come to pass with the Standardized Ship!

Whilst we keep on making electric cars Different with each order, we do but dissipate our Substance.

Yea, even the Safety Car is but the first step toward the Promised Land, for its cost per seat is twofold that of the Humble Ford that cluttereth the Highway.

Were we but as Wise as the Builders of the Automobile, the cost of our cars would not have risen One hundred to One Hundred and Fifty Per Cent compared with a Ten to Fifteen Per Cent in autos.

And yet it is Automobile steel, rubber and the like—not Cast Iron—for which our Government doth cry most loudly.

Brethren, blame not the Builder of Cars for this waste.

We, the customers, who always desired something somewhat different, are the Sinners.

Standardized street cars should be turned out ready to run at one-third their cost of To-day.

They who have so hardened their hearts as to keep to their own way in cars, in rails or other things should Pay the Price.

Let us judge a car as the Artificer judgeth a Machine Tool, namely, by its Work.

The Work of a car is to produce Revenue Miles. Let the standard car, then, have the Wherewithal to put forth such miles—be it air brakes, air doors, motor-driven fare boxes, recording fare registers or any other device that Saveth the Second.

If this new car be good for Five Hundred Thousand Miles, let us extract its Worth in Ten years or less instead of Twenty.

While running this car, let us Set Aside from its Earnings enough to buy a new car after it hath run its course.

Thus if a car cost Fifty-five Hundred Dollars new, putting by but one cent a mile and Five Hundred Dollars Salvage value of the first car will pay for it.

But in the meantime we will save far more than this in lower Operating Cost alone.

One car for all our Land?

Verily, no, but for at least Half the Mileage one car will do, and the other half can be provided for by two or three other standards.

The Confessions of an Electric Railway Operator

By JOHN A. BEELER

For the first half, the One-Man Safety Car equipped with all the latest Life, Labor and Time-saving Devices is the answer.

It saveth the Hire.

It saveth the Man.

It saveth the Accident.

It saveth Power which meaneth Coal.

It saveth the Maintenance of the Way.

Its speed and short headway overcome the Jitney, entice him who otherwise would walk to pay fare, and even cause the Rich to cease a large part of their riding in automobiles.

And, to-day, he who preferreth this car unto the auto showeth forth true love of country for he Conserveth Gas.

Who are they that object to a car that maketh the Lemon even as the Melon?

The Platform Men, the People?



" 'Tis easier to lead a horse to water —"

Not a Tithe as much as We with our prejudices and Groundless Fears!

Good money will not be thrown after bad by Bondholders and Stockholders, but there is always a way to get Money when we are going to Make Good.

Hearken not to the Tempter who saith it is easier to get a Five, a Six or a Seven-Cent Flat Fare.

Brethren, as it is easier to lead a Horse to Water than to make him Drink, so it is easier to Charge a higher fare than to make the public Pay the same.

Hundreds of railways have Obtained the higher flat fare.

How many are Satisfied with a plan that driveth off him who rideth but a Brief Span and retaineth him who exacteth the uttermost service?

For most cities, the increased flat fare with no improvement in service is but as membership in the Suicide Club.

The increased flat fare giveth away apace to thoughts of the Zone Fare.

Why should we not, like the Wise Merchant, sell according to Quantity and Quality?

Let us base our fares on distance, density, time of day and other matters that govern cost.

Let us not think in terms of High Fares for hauls of Great Length but let us think in terms of Low Fares and Short Hauls.

Then it will come to pass that we Attract customers; not Repel them.

When sales in the large package lag, the wide-awake merchant provideth a smaller one that turneth the trick.

Applied to our business the moral is that we need the Zone System, where everyone payeth for what he Getteth in the quantity that he desireth.

Let not the fear of fare collection complications stand in the way of Zone Fares. Hath the gathering of the flat six or seven-cent fare proven simple?

Cannot the Electric Railway afford to give up the Toe-hold of perpetual franchises if the Municipality will let go the Stranglehold of the flat Five-cent fare, good to carry the passenger to the uttermost parts of Creation, reduce taxation, abolish unjust Paving Burdens and regulate the Impious Jitney?

When we commune with ourselves and ask whither the Electric Railway goeth, let us conceive how we would plan Transportation for any given city, regardless of Existing Conditions.

Would it be by autos, buses or cars?

Autos verily no, because of the high ratio of man power to passengers, of extravagant and dangerous use of streets and of inability to Serve Satisfactorily in every kind of weather.

Buses, perhaps, to a limited extent on broad, well-paved streets where the People are willing to pay the Higher Fares necessary.

Cars everywhere else, but frequently, with very Different Routing.

We would include new Traffic Rules to fit the change from the horse carriage and horse car to the automobile and electric car.

In all these matters let us work With our Public Service Commission instead of Against it.

Because it beareth most of the People most of the time, the street car deserveth Precedence and Preference.

Let us try likewise for the Staggered Hour plan for business. It will do Much for us as

well as for the People. For us it meaneth two or three trips per car during the Rush Hour instead of one, fewer extras and lesser



This car doth leave no room for the jitney

carrying charges on trippers. For the People it will go far toward the ideal of a seat for every passenger every time.

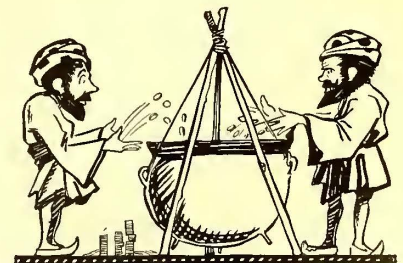
Where communities cannot or do not co-operate let us urge the justice of an Extra Rate of Fare during the rush hour to keep people on non-essential business away. Surely, in these days the Worker doth receive enough to pay any Just increase.

But these changes and readjustments can come Only when we are willing to throw into the Pot all that has gone before.

Make us to realize there is no fabulous Pot of Gold at the foot of the Traction Rainbow.

Let us then seek Forgiveness for coveting in olden days the flesh-pots of Egypt when we feasted on Short Hauls and Low Wages.

And covenanted in Perpetuity for the Five-cent fare, whereby the present shrunken and attenuated nickel must be Accepted for a ride from Dan to Beersheba.



Throw old ideas into the melting pot

Let us seek protection from the Pitfalls of Higher Flat Fares that sink us in Deeper Misery than before.

Help us to help ourselves and enable us in a spirit of due Humility to become satisfactory Public Servants.

Let each of us become an Efficient Laborer that is worthy of his Hire.

Yea, though we have Sinned, good works will open the Gates of Salvation.

How Public Service Railway Is Helping Build Ships in Newark Vicinity

A Two-Mile Extension, Connecting Track, Prepayment Terminals, Carhouse and New Cars Help Haul the War Workers — The New Facilities Cost More Than \$800,000

THE marshy meadowlands bordering on Newark Bay, east of Newark, N. J., and included in the tongue of land between the Passaic and Hackensack Rivers, have changed almost overnight from the breeding place of the famous Jersey mosquitoes to shipyards, army quartermasters' and engineers' depots and other works devoted wholly to war-time activities. This change has thrown a considerable burden upon the local electric railway system, the Public Service Railway. In some instances the problem of providing

local transportation was particularly difficult because of the distance of the new and rapidly-growing industries from the old railway lines. The railway company has been further handicapped by the difficulty of securing operating crews because of the high wage rates prevailing in the war-industry plants. Of the shipbuilding plants the largest is that of the Submarine Boat Corporation. This plant, which is controlled by the Emergency Fleet Corporation, is next in size to the great Hog Island shipyard. It has ways for twenty-eight ships and employs about 12,000 men. Its location is indicated in the lower

right-hand corner of the accompanying map as the terminus of a new extension to the existing lines of the Public Service Railway. Two other important shipyards are those of the Foundation Company and the Federal Shipbuilding Corporation, both located on the narrow tongue of land between the Passaic and Hackensack Rivers at the head of Newark Bay. These plants are near the Lincoln Highway over which the railway company's double-track line to Jersey City passes. More than two-thirds of the employees of the Submarine Boat Corporation live either in New York or at some other place east of the Hudson River. The same is true of about 85 per cent of the employees of the other two shipbuilding companies. The employees of these companies are carried eastward over the Lincoln Highway and are delivered either to the nearest terminals of the Hudson & Manhattan Railroad or to the ferries from which they are distributed to various points in Manhattan

and the other boroughs of the City of New York. As was noted before, no direct means of local transportation was at first available to the employees of the Submarine Boat Corporation, and until recently their transportation either directly to their homes or to the Newark terminal of the Hudson & Manhattan Railroad, has been dependent upon workmen's trains operated over an extension of the Central Railroad of New Jersey, buses operated by the Public Service Railway, private jitneys and a ferry operated in the morning and evening

between the shipyard docks and New York. While the other two shipyards are located near an existing street railway line, the loading of the 4500 employees of the Foundation Company and the 7500 employees of the Federal Shipbuilding Corporation in the open street was, as might be expected, a difficult problem involving much confusion and delay to the regular traffic. The problem of furnishing transportation to these shipyards has been further complicated by the large number of other manufacturing plants engaged in war industries, whose peak loads have to be handled simultaneously

with those due to the shipyards. Among these plants may be mentioned the International Arms & Fuse Company employing 9020 workers and located in northern Newark, the Singer Sewing Machine Company, employing 6500 workers, and the twenty-two companies of the Waverly Manufacturing Association, an association of manufacturers including such widely diversified interests as the Weston Electrical Instrument Company and companies engaged in the manufacture of leather goods.

The problem of providing sufficient crews for operating the extra cars required at the shipyards during the rush hours was solved, as in a number of other instances noted in recent issues of the *ELECTRIC RAILWAY JOURNAL*, by the shipyards furnishing men who had had previous railway training. At present the Foundation Company is furnishing five crews and the Federal Shipbuilding Corporation sixteen crews. As at other shipyards furnishing similar service, the railway pays for the platform time of these men at the

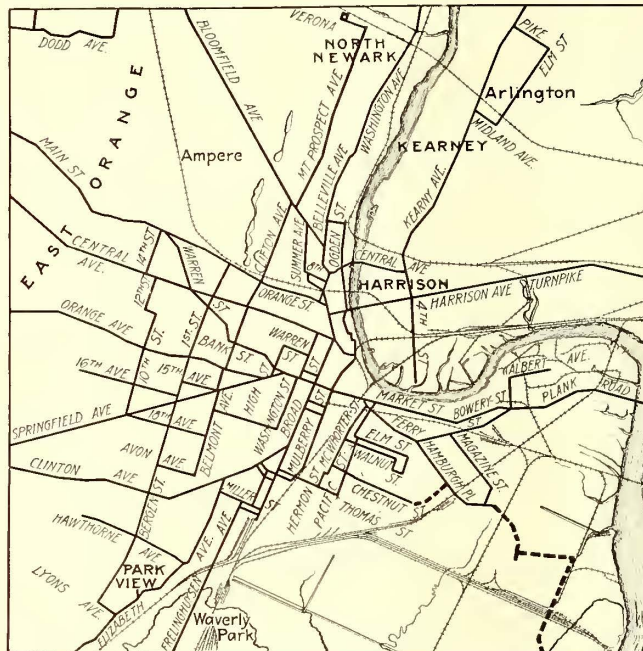


FIG. 1—MAP OF NEWARK AND VICINITY

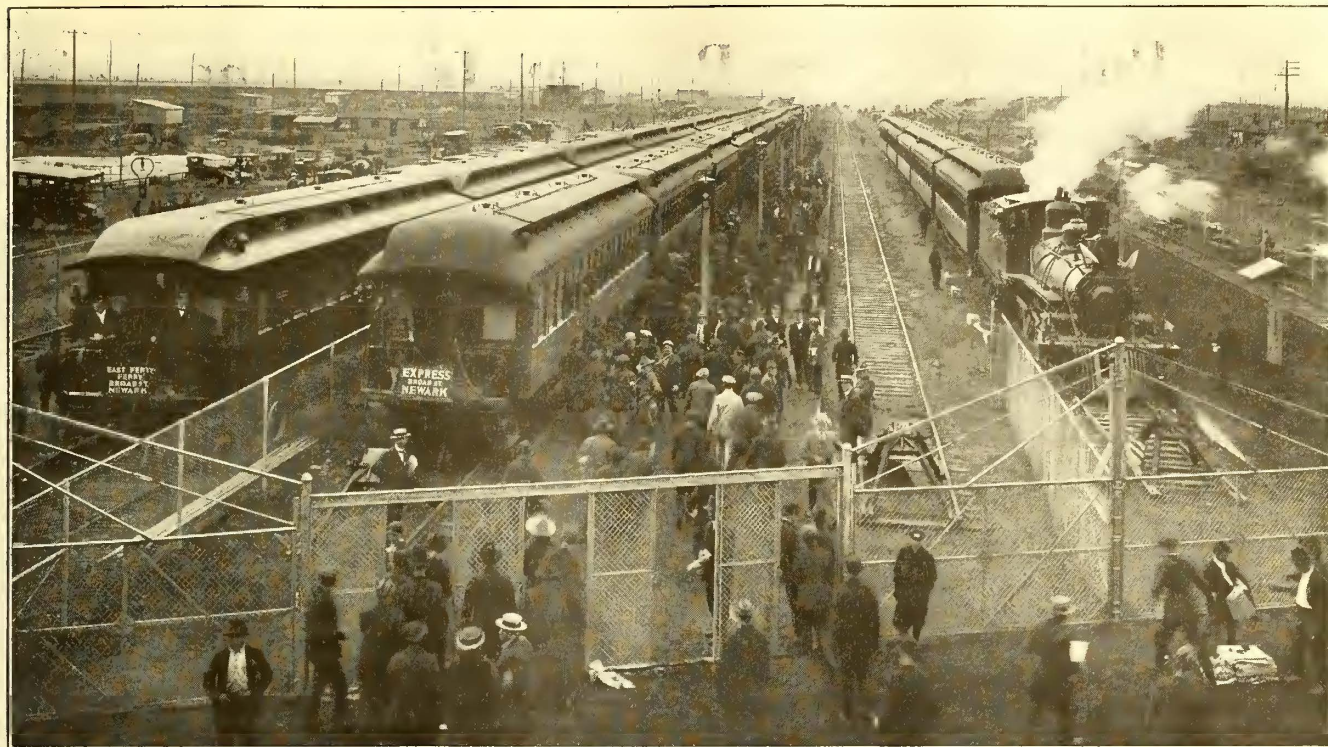


FIG. 2—CONDITIONS WHICH MADE THE NEW LINE NECESSARY

minimum rate paid platform men, the difference between this rate and that prevailing at the shipyards being paid by the Emergency Fleet Corporation.

NEW FACILITIES WILL COST NEARLY \$1,000,000

To insure adequate transportation for the shipyard workers, the Public Service Railway Company, in cooperation with the Emergency Fleet Corporation which is financing the new work, has either completed, or has in process of construction the following: An extension from its present line at Wilson Avenue (until recently Hamburgh Place) and Avenue L to the Submarine Boat Corporation shipyard at Avenue R and Port Street on Newark Bay; a connecting line on Gotthardt Street connecting the existing tracks on Chestnut Street with those on Wilson Avenue; a prepayment loading terminal at the plant of the Federal Shipbuilding Corporation, and a new car shop. The available rolling stock is also being increased by the purchase of eighteen new cars. As was noted in the *ELECTRIC RAILWAY JOURNAL* for Aug. 3, 1918, page 188, these additions

to the physical equipment of the railway will cost in excess of \$800,000.

With these added facilities in full operation the workers at the shipyard of the Submarine Boat Corporation will have direct and convenient trolley transportation to the Newark terminal of the Hudson & Manhattan Railroad as well as to all parts of Newark vicinity. The present difficulties in fare collection and traffic congestion at the plant of the Federal Shipbuilding Corporation will also be eliminated.

HEAVY CONSTRUCTION IS A FEATURE OF THE NEW EXTENSION

Of the new additions, by far the most important is the double-track extension to the Submarine Boat Corporation's shipyard. This extension is being built over land which, while within the corporate limits of Newark, is part farm land and part marsh. The illustrations in Figs. 3 and 4, taken while the construction work was in process, give some idea as to the nature of the terrain. While the extension is only about 2



FIGS. 3 AND 4—TERRAIN OVER WHICH NEW LINE WAS BUILT



FIG. 5—THE FILL AT THE SOUTH APPROACH OF THE OAK ISLAND VIADUCT

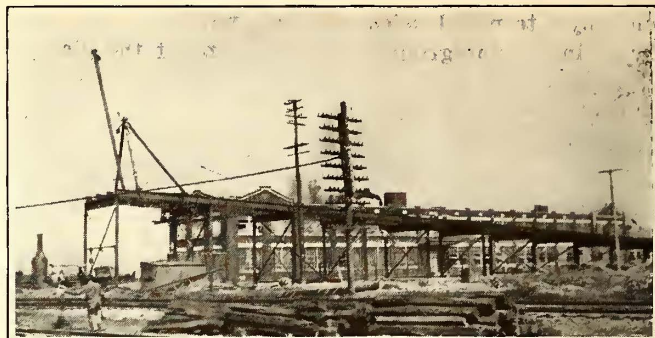


FIG. 6—ERECTING THE STEEL ON ONE OF THE VIADUCTS

miles long, it is of interest from an engineering standpoint because of the amount of heavy construction work necessary and the uses made of available material, new material being difficult to obtain notwithstanding the necessary character of the work.

The route of this extension is indicated by dash lines on the map in Fig. 1. Starting from the intersection of Wilson Avenue and Avenue L, where the company already had in place a two-track stub, the extension runs along Wilson Avenue to a point a few hundred feet beyond Doremus Avenue, and thence on private right-of-way to the intersection of Doremus Avenue and Avenue R. From this point it follows Avenue R to the shipyard. As beyond Doremus Avenue, Wilson Avenue was only a country lane, the city authorities had to condemn land to make the street wide enough for the car tracks and driveway. For about two-thirds of the distance the private right-of-way runs over a salt marsh, and to bring this to grade necessitated a fill of about 25,000 cu.yd. This fill was made of cinders, the grade being such that at high tide the tracks are about 1 ft. above the water level.

Another construction difficulty was encountered due to the fact that the great Passaic Valley sewer with a bore of 12 ft. 6 in., runs down the center of Wilson Avenue. When the back fill was placed over this sewer, a corduroy of planks and scrap timber was placed over the top to afford a foundation for the roadway. As will be noted in Fig. 3, some excavation was necessary to the preparation of the subgrade on this avenue.

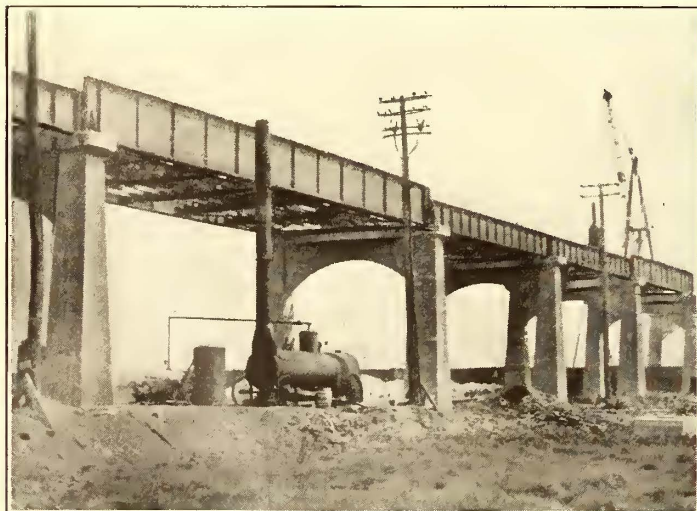
The corduroy greatly increased the difficulty of making this excavation, although it was made with a steam excavator. The material removed was used to fill the lower part of the approaches to the viaduct over the Central Railroad of New Jersey.

Three steam railway crossings are encountered on the route of the extension; the Central Railroad of New Jersey, the Oak Island yard of the Pennsylvania Railroad and the Lehigh Valley Railroad, and the shipyard tracks of the Pennsylvania Railroad. As none of these is a grade crossing, an exceptional amount of heavy viaduct construction has been necessary.

ONE VIADUCT REQUIRED 140 TONS OF STEEL

The viaduct crossing the eight tracks of the Central Railroad of New Jersey is of steel. The clearance over the steam road tracks is 22 ft. 6 in. and the approaches are each about 600 ft. long and are on a 5 per cent grade. The beginning of each approach consists of an earth fill held in place by a monolithic concrete retaining wall. The steel work included in the viaduct and in approaches is 1000 ft. long and includes one 110-ft. through truss span and one 50-ft. through girder span. In all 140 tons of steel was required for this structure. A view of the last approach in process of erection is shown in Fig. 6.

One of the interesting features in connection with this construction was the fact that the eighty-wire line of the Western Union Telegraph Company had to be cabled to clear the steel work. One of the Telegraph



FIGS. 7 AND 8—CONSTRUCTION VIEWS OF THE OAK ISLAND VIADUCT

company's terminal poles, together with the cable, are shown in the foreground. The columns of the viaduct approaches are of 8-in. H-sections. Built-up columns support the trusses and girders. The floor beams are of 24-in. Bethlehem I-sections, while the track stringers are of similar cross-section but 20 in. in height. The bents on the approaches are spaced 25 ft. apart. As part of the footings for the columns came over the sewer mentioned above, special care had to be taken in their design so as not to exceed the safe load which could be imposed upon the sewer. For these footings the loading is 1000 lb. per square foot. The approach retaining walls required 300 cu.yd. of concrete and 600 cu.yd. was used in the footings for the viaduct columns. This viaduct carries only the electric railway tracks and was built by the Public Service Railway.

THE AVENUE R VIADUCT CROSSES A RAILROAD YARD

Avenue R is a new street being opened along Newark Bay by the City of Newark. As this avenue crosses the large Oak Island classification yard belonging to the Pennsylvania and Lehigh Valley Railroads, a long vi-

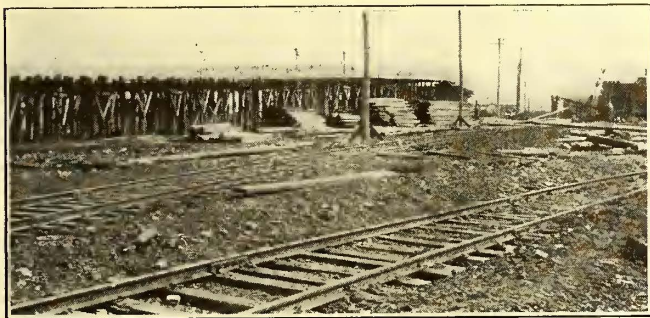


FIG. 9—PILE TRESTLE AT THE SHIPYARD

duct involving some heavy construction work has been necessary. The avenue is designed for vehicle as well as street railway traffic, and the subgrade work has been done by the municipal authorities. The viaduct construction has been done jointly by the two railroads, the Lehigh Valley being responsible for two-thirds of the construction and the Pennsylvania for the remainder. The material for the fill at the north end of the viaduct was secured from the great heaps of rubbish dumped on the meadows years ago by the City of New York. This material was loaded into wagons by means of steam shovels and hauled to the site of the dump. The south approach, a view of which is given in Fig. 5, was built for the city by the Pennsylvania Railroad. The sand used for this approach was brought from Perth Amboy in scows to the shipyard docks, where it was loaded into dump cars which were then hauled to the site of the fill. Owing to the marshy nature of the subsoil, considerable difficulty has been experienced because of the subsoil flowing out from under the fill. About 500,000 cu.yd. of material was required for the two approaches.

Views of this viaduct taken while it was under construction are shown in Figs. 7 and 8. As will be seen from these illustrations, the steel work, which consists of through girders, rests on concrete piers. Owing to the difficulty of getting steel work delivered in time for the purpose, the girders used are of a miscellaneous lot gathered up by the railroads from elsewhere on

their lines. The source of supply accounts for the variety in girder designs. The piers themselves are supported on concrete-capped pile foundations. They are spaced, depending on the arrangement of the yard tracks, from 40 to 90 ft. The viaduct carries both the double-track way of the electric railway and the highway. The tracks are placed on one side of the viaduct floor. The floor itself is of plank spiked to wooden stringers which in turn are supported by the steel floor system.

Both the railway tracks and the highway are carried into the terminal of the Submarine Boat Corporation over a wooden-pile trestle. This trestle also affords a crossing over the shipyard tracks of the Pennsylvania Railroad. The trestle approach starts part way up on the fill made to the Oak Island viaduct. Some idea of the magnitude of the trestle work can be gained from the statement that it consists of seventy-nine bents, in the construction of which about 1000 piles were used. The trestle approaches are on a $3\frac{1}{2}$ per cent grade.

The tracks are laid with so-called Russian rail. This rail derives its name from the fact that it is a part

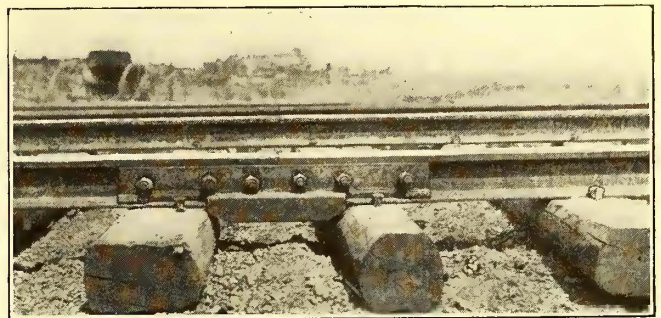


FIG. 10—DETAILS OF THE RUSSIAN RAIL JOINT

of the large order which was rolled for the now defunct imperial government of Russia and as it could not be delivered it was taken over by our government. It weighs $67\frac{1}{2}$ lb. per yard, is T-section, but has a lighter head than our standard T-rails of approximately the same height. The angle bars which were manufactured to go along with this rail are of peculiar construction. A view of one of the joints is illustrated in Fig. 10. It will be noted that the bar has a projection downward over the foot of the rail. Two similar shorter projections located on the ends of the angle bar, as shown in the view, have been burned off with an oxy-acetylene cutting tool so as to permit the placing of the ties. The rails are laid to the standard gage, 4 ft. $8\frac{1}{2}$ in., with a devil strip 5 ft. in width. The ties are of chestnut, 6 in. x 8 in. x 8 ft., and are spaced 18 in. apart on cinder ballast.

The connecting link on Gotthardt Street is 2000 ft. in length and is also double-track line. It is laid with 116-lb. Public Service standard grooved rails on chestnut ties, which in turn are carried on rock from the company's own quarries at Fairview, N. J. The paving is of stone block with the voids filled with grout. The street was already paved and the new construction involved the removal of practically all of the old paving. The concrete foundation of the old paving was unusually thick and strong and could not be broken up with a steam shovel. It was broken into pieces small enough to handle by the use of drills, sledges and levers.

To facilitate the loading of the passengers and to insure fare collection, a prepayment loading terminal has been constructed on the premises of the Submarine Boat Corporation. This, as is shown in Fig. 11, is a stub-end terminal projecting well back into the shipyard. The platforms are long enough to provide ample storage space for the cars while they are loading, and

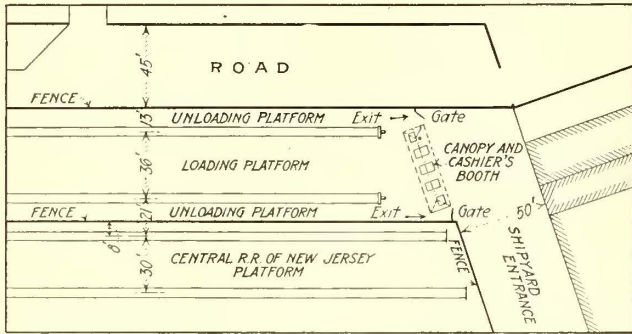


FIG. 11—PLAN OF THE PREPAYMENT TERMINAL AT THE SHIPYARD

crossovers permit the transfer of cars from the incoming track to the outgoing track. The arrangement of the turnstiles is shown in greater detail in Fig. 12.

OVERHEAD LINE CONSTRUCTION

With the exception of that on the steel viaduct over the Central Railroad of New Jersey, all of the overhead work, including that on Gotthardt Street, is of the usual span-wire construction. Most of the overhead line hardware and fixtures, such as trolley frogs, pull-offs, cross-arm chairs, etc., were either made in the company's own shops or after designs furnished by the company. On the major part of the private right-of-way, the poles had to be set in the marsh, where the ground, while firm enough to permit digging, was so low that the holes filled with water as soon as they were dug. To keep the poles in position they were concreted in at the top and bottom of the holes and set with a rake of 18 in. All of the iron poles were set in concrete.

The method used for supporting the poles on the steel viaduct is illustrated in Fig. 13. A stirrup made of steel plate is riveted to the floor beam and braced to the upper chord of the viaduct with an angle iron.

which is located near the Passaic River well up in Newark and nearly 2 miles from the nearest end of the extension. From the substation, two 1,000,000-circ.mil paper-insulated, lead-covered cables are carried underground to McWhorter Street. Here they are connected through 1200-amp. switches inclosed in wooden switch boxes to two 1,000,000-circ.mil triple-braid weatherproof aerial cables, which are carried to the new extension. Some details of the use of aerial cables by Public Service were given in the issues of this paper for June 22, 1918, page 1182, and June 29, 1918, page 1229.

One of these feeders stops at the beginning of the extension, while the other is carried to the Newark end of the Oak Island viaduct. From this point a 500,000-circ.mil cable is carried to the shipyard terminal.

The feeders are tapped into the trolley wire every 500 ft., and at each second tap a Westinghouse MP lightning arrester is located. There is a similar arrester at the point where the cables change from underground to overhead construction. The taps to the trolley are made by using a copper span wire insulated from the poles by strain insulators and connected at one end to

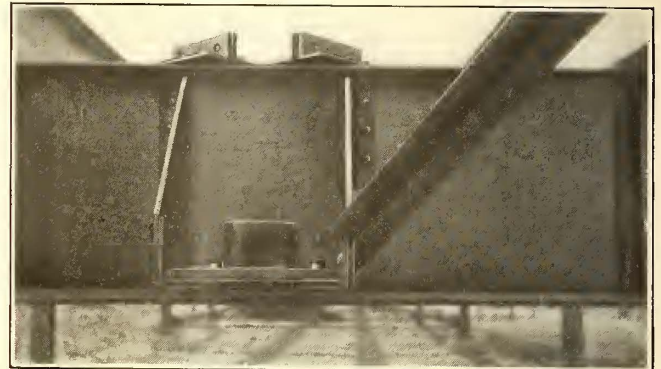


FIG. 13—SUPPORTING THE POLES ON THE STEEL VIADUCT

the feeder and along the span to the trolley wires by means of feed yokes.

A better idea of the amount of copper required can be gained from the statement that for the extension alone 3200 ft. of 1,000,000-circ.mil paper-insulated, lead-covered cable, 24,000 ft. of 1,000,000-circ.mil triple-braid weatherproof cable and 4000 ft. of 500,000-circ.mil triple-braid weatherproof cable was required. To supply the Gotthardt Street connecting link, a 300,000-circ.mil aerial cable is carried along the track. This is connected into the existing feeder system, which has been reinforced by a 500,000-circ.mil cable running back to Newark substation. The feeders are supported on glass cable insulators mounted on locust N.E.L.A. standard pins, except at the curves where composition insulators and iron pins are used.

The rails are depended upon for the return circuit and are bonded with 8-in. No. 0000 gas weld bonds. Cross bonds are placed every 1000 ft. To render the bonds less conspicuous they were given a coat of dark paint.

The eighteen new cars purchased to augment the rolling stock of the company are similar to those described in the ELECTRIC RAILWAY JOURNAL for Jan. 15, 1916, page 115. They are 50 ft. 2 in. over vestibules and are equipped with longitudinal seats with a seating

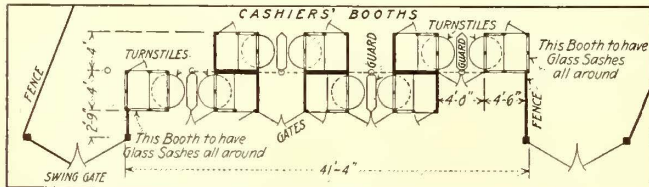


FIG. 12—ARRANGEMENT OF THE TURNSTILES AT THE SHIPYARD TERMINAL

A circular casting over which the bottom of pole fits is bolted to the bottom of the stirrup, and at the top of the floor beam the pole is held in place by a band which in turn is fastened to the double angle-iron bracket shown in the illustration. Figs. 14 and 15 illustrate the pole fastening employed on the Oak Island viaduct, the circular castings there being anchored to the concrete piers.

The power supply comes from Newark substation

capacity of fifty persons. They are of the prepayment type, with rear-end loading and rear and front-end unloading. The folding doors and steps are operated manually by a mechanical device, developed on the Public Service Railway, which is so designed as to insure the steps being in the lowest possible position before the doors are opened wide enough to permit a passenger to pass. The electrical equipment of the cars consists of H-L-D control and four Westinghouse 514 motors mounted on the Standard Motor Truck Company's 0-50 trucks.

SUPPLYING ADDITIONAL SHOP FACILITIES

The greatly increased traffic and the additions to the rolling stock have necessitated an increase in the shopping facilities. This is being secured by constructing a new maintenance shop along the Lake Street side of the Bloomfield Avenue and Lake Street car storage yard. The new building is of brick, and is one story in height and 50 ft. wide by 162 ft. long. The shed roof is supported by steel roof trusses. The roof itself consists of wooden sheathing which supports a Barrett specification, five-ply paper-and-slag roof covering.

As will be seen from the general floor layout indicated in Fig. 16, provisions are made for three tracks, the center one being equipped with a wheel-changing jack and the other two with car hoists. Except for a short distance from the front along the walls the main floor consists of a 6-in. reinforced-concrete slab supported above the pit floor on concrete pillars. The front door openings are 16 ft. in height and are provided with double, hinged doors. At the back end of the shop a range of small rooms are taken up by the heating plant boiler, the oil storage, the storeroom and washroom. The machine shop is conveniently located in the space between the ends of the pit tracks and this range of smaller rooms.

In addition to the large windows in the side walls six skylights, arranged in two symmetrical rows, provide daylight illumination. The shop is heated by an indirect steam system, air being drawn by a blower through the heating coils over the boiler and forced through for main distributing duct. Two of these are under the floor platform between the tracks and the other two are carried along near the side of the building on the lower chords of the roof trusses.

The new construction at the plant of the Federal Shipbuilding Corporation consists of a two-way connection to the existing tracks of the Public Service Railway on the Lincoln Highway and a prepayment terminal loop on the shipyard property. As the shipyard abuts on the highway, the connecting tracks are short. However, to reach the highway they must cross Morris Canal. As this canal is still in use, a hydraulic lift bridge will be constructed over it. The terminal is so

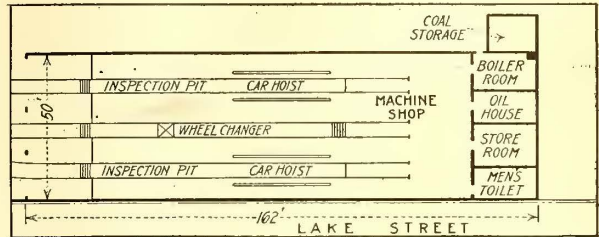
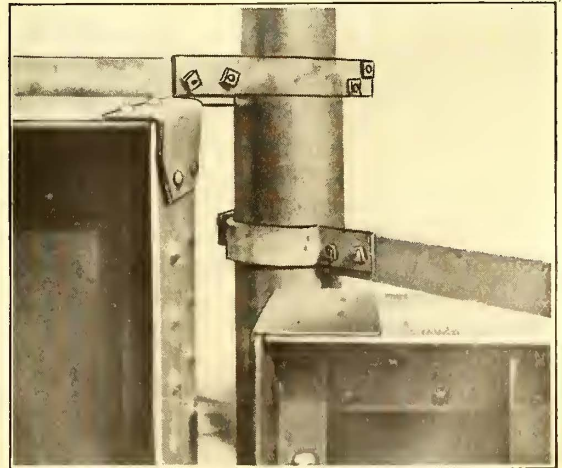
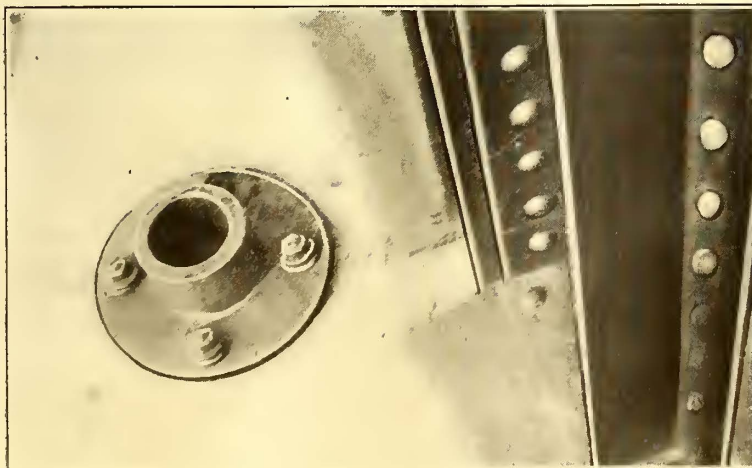


FIG. 16—GENERAL LAYOUT OF THE NEW CAR SHOP

arranged that the unloading platform is directly in front of the entrances to the shipyard, while the loading platforms are located on the other side of the loop. Access to the latter platforms can be gained only by passing through the prepayment turnstile-equipped gates. Of this new work, that in the highway is being done by the Public Service Railway, and that in the bridge and the work within the yard by the shipbuilding company, after plans which were furnished by the railway company.

This terminal was requested by the Emergency Fleet Corporation and is being installed under the inspection of the transportation division of that corporation, of which A. Merritt Taylor is director. The work on the Port Newark extension had been started before the organization of the transportation division of the Emergency Fleet Corporation and the federal supervision is in the hands of Admiral Francis T. Bowles of the United States Shipping Board.

The overhead work in all of the new additions has been done by the regular line gangs of the railway company's distribution department. The railway has been responsible for the construction of all of the track work on Gotthardt Street and the new extension to Port Newark, with the exception of that within the shipyards.



FIGS. 14 AND 15—HOLDING POLES ON A VIADUCT WHEN THE GIRDERS ARE UNEQUAL IN HEIGHT

Wages Up Faster Than Living Costs

Data Presented by the Kansas City Railways to the War Labor Board Show 81 Per Cent Rise in the Cost of Living Since 1900 but 146 Per Cent Advance in Wages

EVIDENCE presented to the National War Labor Board by the Kansas City (Mo.) Railways indicates that the wages paid since 1899 have certainly increased at least step by step with the rise in the cost of living. In other words, they allow a standard of living equal to that enjoyed by electric railway employees in Kansas City for the last twenty years.

The general conclusions advanced by the company at the recent hearing before the board were stated in the *ELECTRIC RAILWAY JOURNAL* of Oct. 5, page 629. In the belief, however, that the supporting data will be of value to other companies now dealing with such matters, this paper is presenting herewith some of the material. All of the data cannot be published here, but sufficient matter is printed to indicate the detailed character of the company's very relevant evidence.

TRUE TEST MUST BE OVER A LONG PERIOD

In the opinion of the Kansas City Railways, it is impossible to arrive at any true relation between wages and the advance in living costs by taking a short period as the basis of comparison. Especially is this true of the years during which abnormal war conditions have caused abrupt transitions. The true test is to show over a long period of time the standard of living or the margin between the advance in the cost of living and the advance in wages which any industry has afforded.

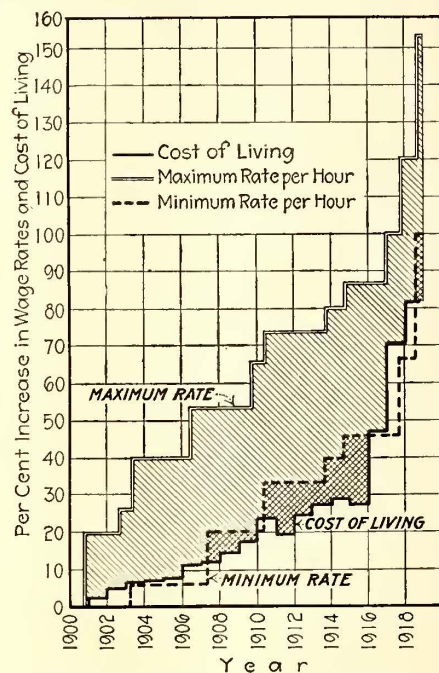
The company began its case, therefore, with the presentation of tables showing the increase in the cost of living during certain periods from 1900 to 1918. The year 1915 was used as one division point because the investigation of the Railroad Wage Commission began at this time. The publications of the United States Bureau of Labor Statistics, the report of the Railroad Wage Commission and an inquiry in the Kansas City situation supplied the data upon which the tables were based. The results check very closely, not only with one another but with the increase estimated by Messrs. Mahon and Vahey in the brief for the Amalgamated Association of Street & Electric Railway Employees in the Cleveland and Detroit cases before the War Labor Board.

Table I is a comprehensive review of the increase of 27.94 per cent in the cost of living from 1900 through 1915. The data upon which this computation was based are given in the footnotes. The table was weighed in accordance with the recommendations of Mr. Mahon in arbitration cases.

The increase in the cost of living since 1915 was determined from the report of the Railroad Wage Commission with such corrections, as for rent, as applied to Kansas City. The report, it is said, is recent and authoritative, and has been used both by various railways and the Amalgamated Association in the hearings before the War Labor Board. Table II, taken

from this report, gives the commission's method of weighing, which varies slightly from that used by Mr. Mahon. This table indicates the advance in prices for the principal items of expenditure for the Eastern, Southern and Western I. C. C. classification groups and for the entire United States, from December, 1915, to January, 1918.

It will be noted that the increase in the cost of living for the Western territory for this period is 34.72 per cent, as compared to 39.4 per cent for the Eastern territory and 38.12 per cent for the entire United States.



Relative Percentage Increases in Cost of Living and in Maximum and Minimum Wage Rates of Kansas City Railways from 1900 to July, 1918.

gives a 33.5 per cent increase for the period as compared to 34.72 per cent for the Railroad Wage Commission investigation. Applying this increase to the result obtained in Table I brings the increase in the cost of living for Jan. 1, 1918, over 1900, to 70.88 per cent.

To bring the data down to date the company exhibited Table IV, which is a combination of Table I and Table III. It shows the per cent increase in July over Jan. 1, 1918, to be 6.34 per cent; over Jan. 1, 1916, 41.9 per cent, and over 1900, 81.63 per cent. The increase of 41.9 per cent in July, 1918, over Jan. 1, 1916, checks very closely an analogous finding of 41 per cent by the Railroad Wage Commission. Moreover, in the Cleveland and Detroit cases Messrs. Mahon and Vahey estimated an increase of 42 per cent for a similar period. Since the Kansas City district is on an average 4.7 per cent under the Eastern territory, the union's estimate reduced by this amount would give 37.3 per cent.

The company then took up the question of the rela-

This shows that the increase in the cost of living for Kansas City is 3.4 per cent less than for the entire United States, and 4.7 per cent under that of the Eastern territory. Table III shows the increase in the cost of living for Kansas City for the same period—January, 1916, to January, 1918—with these differences. The weights are those proposed by Mr. Mahon, and no increase is allowed for rents. This method

TABLE I—INCREASE IN THE COST OF LIVING IN KANSAS CITY FROM 1900 TO 1915, INCLUSIVE

Year	Food		Clothes and Clothing		Rent *Weight *21	Fuel (Coal)		Cooking and Lighting (Gas) Weight *2.6	Sundries Weight *10.5	Weighted Per Cent Increase								
	Index Number 1915 Base	Per Cent In- crease Since 1900	Index Number 1915 Base	Per Cent In- crease Since 1900		Index Number 1915 Base	Per Cent In- crease Since 1900			Index Number 1915 Base	Per Cent In- crease Since 1900	Food Per Cent In- crease Since 1900	Clothes and Clothing Per Cent In- crease Since 1900	Rent Per Cent In- crease Since 1900	Fuel (Coal) Per Cent In- crease Since 1900	Cooking (Gas) Per Cent In- crease Since 1900	Sundries Per Cent In- crease Since 1900	Per Cent In- crease in cost of Living
1900	64	0	89	0		91	0	0	0	0	0	0	0	0	0	0		
1901	69	8	82	-8		91	0	0	1	372	-116	0	0	0	10	2.66		
1902	72	12	84	-5		95	4	0	2	558	-72	0	20	0	21	5.27		
1903	72	12	89	0		111	22	0	3	558	0	0	108	0	31	6.97		
1904	73	14	89	0		102	12	0	4	651	0	0	59	0	42	7.52		
1905	73	14	92	3		96	5	0	5	651	43	0	25	0	52	7.71		
1906	76	19	98	10		95	4	0	6	883	145	0	20	0	63	11.11		
1907	79	23	104	16		99	9	-75	7	1,069	232	0	44	-195	73	12.23		
1908	84	31	95	7		99	9	-75	8	1,441	101	0	44	-195	84	14.75		
1909	87	36	99	11		97	7	-75	9	1,674	159	0	34	-195	94	17.66		
1910	92	44	100	12		99	9	-75	10	2,046	174	0	44	-195	105	23.74		
1911	90	40	96	8		100	10	-75	11	1,860	116	0	49	-195	115	19.45		
1912	96	50	99	11		100	10	-73	12	2,325	159	0	49	-190	126	24.69		
1913	99	54	100	12		104	14	-73	13	2,511	174	0	69	-190	136	27.00		
1914	102	59	99	11		102	12	-73	14	2,743	159	0	59	-190	147	29.18		
1915	100	56	100	12		100	10	-73	15	2,604	174	0	49	-190	157	27.94		

Food Prices: Changes in food prices are based on tables of relative retail prices of food for the North Central district, weighted according to the average consumption of food in workingman's families. (United States Bureau of Labor Statistics—Bulletin 156, page 382, and Bulletin 197, page 22.)

Clothing Prices: Changes in retail prices of clothing are based on tables of wholesale prices of cloths and clothing furnished by United States Bureau of Labor Statistics (Bulletin 200, page 12). These changes in wholesale prices correspond practically with changes in retail prices as shown by comparison of index numbers of wholesale and retail prices, except that wholesale prices fluctuate in greater degree and respond more quickly to change-producing influences.

Rent Prices: No advance in rentals is shown, in accordance with the following quotation from a letter from Ward C. Gifford, executive secretary of the Real Estate Board of Kansas City, in reply to a request for information: "It is my opinion, based on information from real estate men, members of our board, who have been in the rental business for the past twenty years, that there has been no appreciable advance in rentals for detached houses in Kansas City during the period from 1900 to 1918. This situation is not true, however, as I understand it, in other cities."

Fuel Prices: Changes in retail prices of fuel are based on retail prices of bituminous coal for the North Central district, furnished by the United States Bureau of Labor Statistics (Bulletin 197, page 29). Changes prior to 1907 are based on changes in wholesale prices of bituminous coal furnished by the United States Bureau of Labor Statistics (Bulletin 200, page 217). Wholesale prices correspond in a general way with the retail prices for corresponding years, though the percentage of fluctuation is greater. Changes in price from 1911 to 1915 were

checked against actual prices in Kansas City secured from dealers and are correct.

Lighting and Cooking (Gas): Changes in retail prices of gas used for cooking and lighting are based on data furnished by the Kansas City Gas Company.

Sundries: According to the Railroad Wage Commission, this item includes the following, weighted as indicated: Insurance, 14; Organization dues, 10; religion and charity, 6; house furnishing, 13; hooks and papers, 4; amusements and vacations, 10; liquors and tobacco, 15; sickness and death, 11; all other items, 17; total, 100. The items vary with the standard of living and with one or two exceptions increased little if any during the period from 1900 to 1915—prior to the war. As indicated by wholesale price lists of the United States Bureau of Labor Statistics, household furnishings decreased over 8 per cent (Bulletin 200, page 13); tobacco increased approximately 14 per cent (Bulletin 200, page 266), and costs of illness (gaged by the price of drugs) increased 16 per cent. There is little or nothing to show any increase in the cost of other items in the period prior to the war. In fact, many of them, such as amusements and papers, decreased. Based on the foregoing an arbitrarily estimated increase of 15 per cent was allowed in the cost of sundries. This is not intended to cover any advance in the standard of living.

*Weights used (recommended by W. D. Mahon, international president Amalgamated Association of Street & Electric Railway Employees), correspond practically with weights established by the Railroad Wage Commission's investigation of 265 family budgets for families with incomes up to \$1,000, both in 1915 and 1917, for the Western District. The Mahon weighting will tend to show a greater increase in the cost of living on account of the heavier weight given "food," which item shows the greatest advance.

tive increases in the cost of living and in wages. The comparison naturally fell into two divisions, from 1900 to 1917, and from 1917 to the present time. The reason for this is that in 1917 collective bargaining and negotiations with the men established a base for comparison.

The fact that living costs were covered by wages in 1900 and thereafter, the company averred, is shown by several indications. During this period, for example, it at all times was able to maintain a sufficient force

for its operations. There was a steady stream of applications at the employment office, showing that the wages paid were continuously sufficient to attract men from other occupations. Of the employees in train service who had been with the company longer than one year, 70 per cent had been in the service for more than five years.

From 1910 to 1915 the average number of resignations per month fell from seventy-seven to twenty-six.

TABLE II—RELATIVE INCREASES IN PER CENT, IN SPECIFIED ITEMS OF EXPENDITURE AS DETERMINED BY THE RAILROAD WAGE COMMISSION

	December, 1915, to January, 1918			
	Eastern	Southern	Western	United States
Food	52	56	47	52
Rent	15	5	7	10
Clothing	43	50	41	44
Fuel and light	37	25	27	31
Sundries	35	35	35	35
Cost of living increase weighted for incomes from \$600 to \$1,000	39.4	39.22	34.72	38.12
Cost of living increase weighted for incomes from \$1,000 to \$2,000	38.35	38.15	34.08	37.15

TABLE III—INCREASE IN KANSAS CITY COST OF LIVING FROM JAN. 1, 1916, TO JAN. 1, 1918

Item	Weight (Mahon)	Per Cent Increase	Weighted Per Cent Increase
Food	46.5	47	21.87
Rent	21.0		
Clothing	14.5	41	5.94
Fuel and light	7.5	27	2.02
Sundries	10.5	35	3.67
Per cent increase in cost of living over Jan. 1, 1916			33.50
Per cent increase in cost of living over 1900			70.88

TABLE IV—INCREASE IN KANSAS CITY COST OF LIVING FROM JANUARY, 1918, TO JULY, 1918

	Weight (Mahon)	Per Cent Increase	Weighted Per Cent Increase
Food	46.5	None	None
Rent	21.0	None	None
Clothing	14.5	20	290
Fuel and light	7.5	25	187
Sundries	10.5	15	157
Per cent increase in cost of living over Jan. 1, 1918			6.34
Per cent increase in cost of living over Jan. 1, 1916			41.9
Per cent increase in cost of living over 1900			81.63

Food: Comparison of food prices from January, 1918, to June, 1918, shows that the peak of high prices in the United States was reached in February, 1918, and after that prices fell off slightly. The last official figures published (May 15, 1918) showed prices still below those of January. Official Kansas City prices for May 15, 1918, were approximately 1 per cent lower than in January.

Rents: Detached houses showed no increase in rent.

Clothing: An estimated increase of 20 per cent in clothing is allowed from January to July, 1918, based on a 15 per cent increase from the spring price of trainmen's uniforms (\$26.50) to the fall price (\$30.00). This is thought to be liberal, as it is based on the price of woolen clothes. Shoes are said by a representative clothing firm to have advanced approximately 15 per cent in the same period.

Fuel and Lights: Cherokee lump coal, one of the most commonly used bituminous coals in Kansas City, advanced from \$6.55 for 1917-18 to \$6.85 in July, an increase of 5 per cent. Gas, which may be used to make approximately 20 per cent of the fuel and light budget, advanced 100 per cent. Fuel and light advanced approximately 25 per cent.

Sundries: A 12 per cent advance in the price of sundries is allowed, bringing the total advance in sundries since the beginning of the war up to 50 per cent. This estimate is corroborated by other investigations.

Owing to the draft and war conditions, these resignations increased in the early part of 1917 to 115 per month, but since the wage increase of July 16, 1917, they have fallen to an average of eighty-five per month. The number of applications has risen from an average of 325 for the six months preceding July, 1918, to an average of 612. In other words, the recent wage increase was sufficient to attract an increase of almost 100 per cent in applications in spite of labor conditions caused by the war.

As further evidence that living wages were paid in 1900 and thereafter, the company showed that more than 42 per cent of its employees either own outright or have an equity and are paying on real estate, and 33 per cent of them live in their own homes. Had the wages paid in the past been inadequate, such a condition would have been an impossibility.

The general record of the Kansas City wage and cost-of-living situation was presented in the form shown in Table V. This indicates that in the period from 1900 to July, 1918, wages were increased 146 per cent as compared to a corresponding rise of 81.63 per cent in the cost of living. Information of a similar sort, but showing the record for maximum and minimum wage rates, is presented in the chart on page 740.

Taking the increase of 41.9 per cent for the Kansas City district from January, 1916, to July, 1918, the

TABLE V—COMPARISON BETWEEN INCREASE IN LIVING COST SINCE 1900 AND INCREASE IN KANSAS CITY RAILWAYS WAGES

Year	Per Cent Increase in Cost of Living Over 1900	Per Cent Increase in Wages Over 1900	Year	Per Cent Increase in Cost of Living Over 1900	Per Cent Increase in Wages Over 1900
1900	0	0	1909	17.66	49
1901	2.66	16	1910	23.74	60
1902	5.27	20.6	1911	19.45	60
1903	6.97	33½	1912	24.69	60
1904	7.52	33½	1913	27.00	67.3
1905	7.71	33½	1914	29.18	74
1906	11.11	41	1915	27.94	74
1907	12.23	43	December, 1917	70.88	112.6
1908	14.75	43	July, 1918	81.63	146

TABLE VI—RESULT OF CENSUS AMONG KANSAS CITY RAILWAYS EMPLOYEES IN AUGUST, 1918

	All Employees	Trainmen
Number reporting	2,782	1,342
Number single	745	294
Per cent single	26	21
Number married	2,037	1,048
Per cent married	74	79
Average number of children per family	2	2.6
Average number of children at home per family	1.4	1.6
Average size of family at home	3.4	3.6
Average number of children attending school per family	0.8	0.7
Number families reporting children employed	387	172
Number children employed	694	291
Average earnings of children employed per month	\$44	\$50
Average monthly complementary earnings per family with children employed	\$79	\$86
Average length of service (years)	6	6.9
Number owning homes	405	180
Per cent of total	14	13
Number paying for homes	521	255
Per cent of total	19	19
Average monthly payments	\$18.35	\$19.06
Number owning other real estate	271	184
Per cent of total	9	14
Number owning or paying for real estate	1,197	619
Per cent of total	42	46
Number renting	1,668	868
Per cent of total	60	64
Average monthly rent	\$15.16	\$15.60

TABLE VII—PREVIOUS OCCUPATIONS OF 1,000 TRAINMEN OF KANSAS CITY RAILWAYS

Farming	512	Draymen	16	Electricians	8
Clerks	102	Packing house	16	Dairymen	9
Railroad work	73	Firemen	16	Bakers	9
Laborers	63	Paper hangers and paperers	13	Barbers	7
Teamsters	25	Waiters	11	Miners	7
Chauffeurs	20	Blacksmiths	10	Butchers	7
Carpenters	18	Police	10	Mail service	4
Mechanics	18	Millers	9		
Soldiers	17			Total	1,000

company applied this advance to the wage scale in effect in January, 1916, and obtained results approximately the same as the present wage scale. In fact, the average calculated result was 37.03 cents an hour as compared the present actual average of 36.9 cents an hour. It was pointed out, too, that the increase of 41.9 per cent in the cost of living, while checking with the 42 per cent estimate of Messrs. Mahon and Vahey for Detroit and Cleveland, was too high on the basis of the geographic differential reported upon by the Railroad Wage Commission.

In connection with its case the company presented the results of a questionnaire which its 2782 employees filled out in August. Some of the matter, showing vital statistics and previous employments of trainmen, is published herewith in Table VI and Table VII.

War-Time Changes in Living Costs

Taking into consideration all the factors of the problem, the National Industrial Conference Board, 15 Beacon Street., Boston, Mass.—a co-operative body composed of representatives of national industrial associations—concludes that for the great majority of American communities the average increase in the cost of living between July, 1914, and June, 1918, lies between 50 per cent and 55 per cent. This conclusion is supported by a detailed eighty-two page study, published in *Research Report No. 9* (price, \$1).

In amplifying its conclusion the report states that clothing showed the most marked advance among the major items in the budget, the rise being 77 per cent. Quantitatively, however, this was less important than the 62 per cent increase in the cost of food, since food represents about 42 per cent of the average expenditure while clothing represents only 13 per cent.

In certain localities, particularly where there have been unusual advances in rent, the increase in the budget as a whole was somewhat greater than above noted. Since rent requires about 18 per cent of the ordinary family expenditure, each further increase of 5 per cent means an addition of 1 per cent to the budget. Thus the board's estimate can be adjusted to fit communities with unusually large rent increases. Similar adjustments to allow for local conditions affecting the cost of fuel, it is said, would not result in an important modification of the general average.

War Record of the Liverpool, England, Tramways

The Liverpool (England) Corporation Tramways had 2700 employees when the war broke out in 1914, and of that number 2200 have already left to join His Majesty's forces. Vacancies thus created have been filled as far as possible either by men incapable of military service or by women. Viewing the problem as a whole, the company feels that the new employees, especially the women, have rendered useful service to the community by coming forward at a time of great national stress and undertaking duties which, prior to this emergency, were considered to be unfit for them. Had this new class of employees acted otherwise, the tramway facilities throughout the country would undoubtedly have had to be materially restricted.

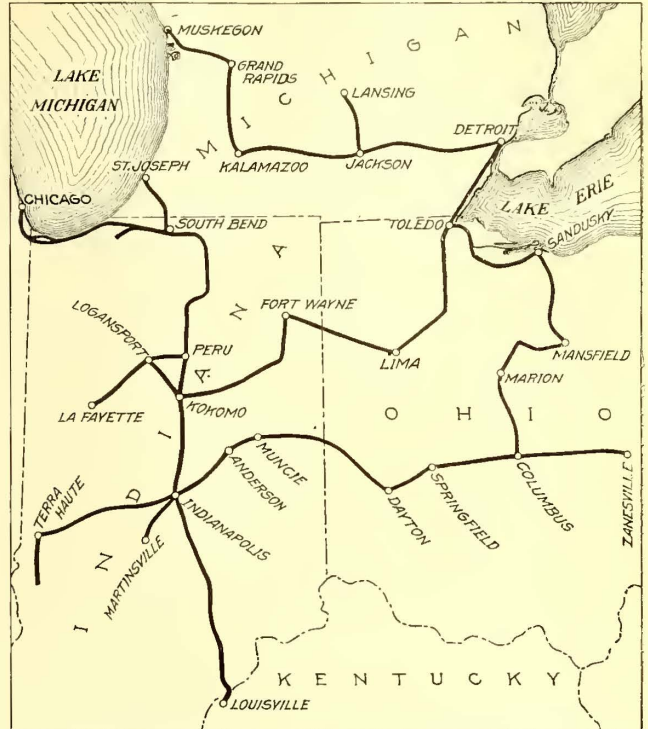
Co-operation Between Middle West Railways and U. S. Navy

Naval Train Travels 2500 Miles Over Thirty-Eight Electric Lines on a Tour of Patriotism and Propaganda

AN ILLUSTRATION of the desire of electric railways to co-operate with the government in every possible way is furnished by the tour, recently completed, of a special train fitted up at the Great Lakes Naval Training Station. The train consisted of three flat cars, loaned by the Chicago, North Shore & Milwaukee Electric Railway, Highwood, Ill., and fitted up at the station in replica with a submarine, a destroyer and a submarine chaser respectively. The train was originally built for use on a recruiting tour, for which purpose it proved very helpful. The later tour was undertaken as a patriotic publicity venture and in a period of six weeks 400 cities and towns, ranging in population from 300 to 500,000, were visited. The total distance covered was 2500 miles and the train was drawn over the lines of thirty-eight electric railways. The party accompanying the train was in charge of Lieut. H. B. Childs from the Chicago Naval Recruiting Station and consisted of a medical officer and a crew of fifty men from the Great Lakes Naval Training Station, including a band of twenty-six pieces, a drill squad and maintenance crew of twenty men, two speakers, a chief petty officer and a hospital clerk. Chief Yeoman L. R. Brown acted as advance agent, preceding the party by two or three days and making all arrangements with the railway companies, hotels, city authorities and newspapers. The public manifested great interest in the venture and thronged to hear the speakers and musicians.

On each electric line the company furnished a coach in which the party could ride and in general the train was drawn by a regular interurban motor car.

Although the three float cars were equipped with standard steam railroad wheels, comparatively few difficulties in operation were encountered. The most serious one was due to the fact that the deep flange of the wheels often caused the car to ride on the groove of the rails or on the paving, producing occasional derailment at switches, particularly at those of the spring

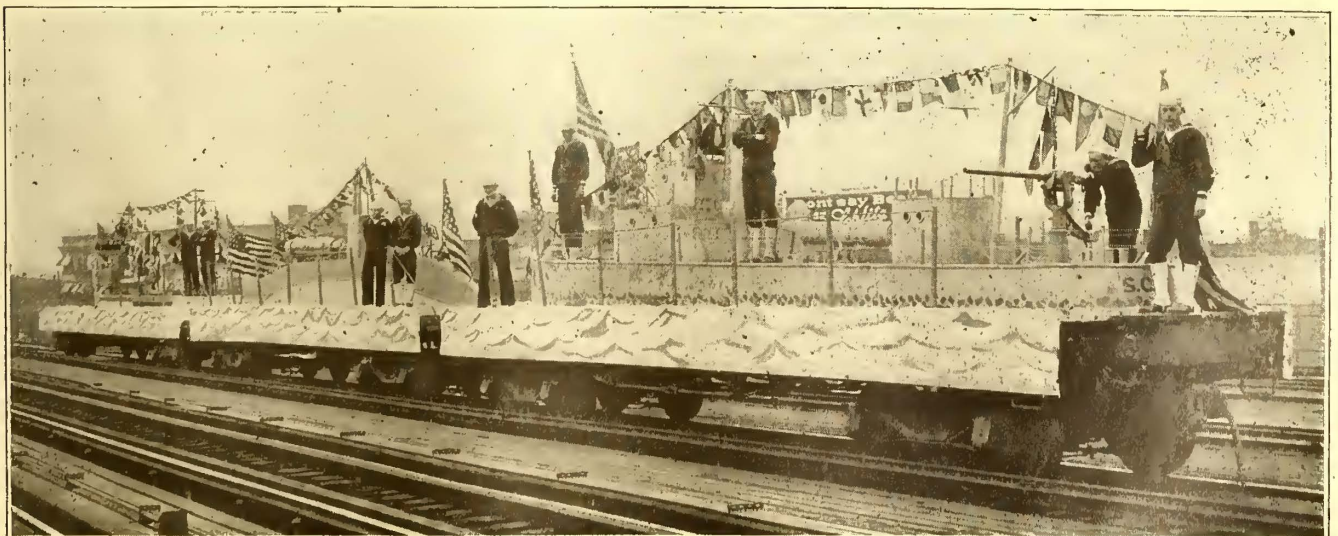


OUTLINE MAP SHOWING ROUTE OF THE NAVY PUBLICITY TOUR

type. In a few cases a sharp city curve gave a little trouble, but after a short time the members of the party learned how to extricate themselves from difficulty without much help from the railways.

Comfortable Shelter at Pensacola

A neat shelter of brick, wood and tile was erected last year by the Pensacola (Fla.) Electric Company at Palafox and Gregory Streets, the passing point of several of its lines. It is furnished with comfortable park benches so that the prospective customer is not only shielded against sun and rain but can also wait for a car with more patience than if he had to stand. The shelter is in full harmony with the parked streets characteristic of this attractive Florida city.



NAVY PUBLICITY TRAIN OF DESTROYER, SUBMARINE AND SUBMARINE CHASER

Some Crying Needs of the Safety Movement*

The Author Visualizes a Wide Field in Humanity Conservation and Tells What is Being Done on His Home Property

BY R. N. HEMMING

Superintendent of transportation Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind.

THE paramount question of the hour, to us as individuals and also as representatives of public service utilities and as a nation, is the conservation of humanity. Our government is spending \$550 every second in the world war to make the United States and the rest of the world a safe place in which to live, and to teach all people everywhere the spirit of unselfishness. This same spirit should be that of every man, every public service industry, every political and civic organization, who should be working to promote safety first and the preservation of mankind. True, some progress has been made, but as a matter of fact we have only scratched the surface of this matter. The general attitude is indicated by the fact that 82 per cent of the value of combustible property is insured against fire, but only 7 per cent of the economic value of human life is covered by insurance.

Before safety first can be made a success there must be closer co-operation between transportation companies and industries of every character, the public and its official representatives. The public conscience must be awakened by the use of every known means of advertising, through which knowledge of the staggering aggregate of accidents can be spread.

ADVERTISING SAFETY MORE WIDELY

The article by Gerald Stanley Lee in the *Saturday Evening Post* of Aug. 10 has application in the safety field. Mr. Lee advocated winning the war three years sooner by the use of a national billboard. Imagine what could be accomplished in accident reduction through such a scheme. I want to suggest that we make a nation's safety-first billboard out of every theater curtain, program and billboard throughout the country. Every business card could carry a line or two on the subject, and every newspaper and periodical published could bring before its readers such material as is published by the National Safety Council.

We need volunteers who will gratuitously devote pages to safety, by means of reading matter and through illustrated cartoon bulletins, etc. Too much stress cannot be laid upon keeping the subject before the entire population of the country. Think of the millions of dollars being spent for advertising merchandise compared with the paltry sum being spent in accident prevention.

I think that safety museums should be established in all large cities, say in cities of 25,000 and more. Traveling museums on our railroads might also be effective. We also need a universal car stop sign which would be just as well known and symbolic as the Western Union or Bell Telephone sign. We need a standardization of traffic rules and regulations. We need in each community a local safety council consisting of members of

various organizations, such as the chamber of commerce, the police department, the fire department, the automobile clubs, the electric railways, etc. Through the medium of an organization of this kind many local problems can be worked out. Such an organization should work in conjunction with the National Safety Council. We need some "ten-minute men" to preach the gospel of safety first; men in each community to visit factories, schools, churches, theaters, etc.

I believe that much can be accomplished in every community by a traffic survey of its accident problems, by classification of the various kinds of accidents and careful study of the data. Such records will be effective in dealing with the traffic departments of cities.

SAFETY ON THE FORT WAYNE & NORTHERN INDIANA

We have organized in the transportation department of the Fort Wayne & Northern Indiana Traction Company an organization for the purpose of furthering the movement in that department. We have appointed team captains on each of our city lines, and the interurban lines are divided up into sections with a team captain in charge of each. These captains have been appointed for six months, but later the trainmen will elect their own captains. Each team captain is to wear on his sleeve a diamond-shaped insignia with the letter "C" and it is his duty to watch for infraction of rules and safe practices. Periodical meetings are held with these team captains, and I find it very effective to mail periodically to their residences suggestions on safety first typewritten on Western Union Telegraph blanks. A sample "telegram" follows:

CAPT. RICHARD ROE:

The best safety device known is a careful man. Carelessness does more harm than the want of knowledge. Caution all of your men to make their foundation out of safety-first concrete, properly mixed with an abundance of common sense. Help us reduce accidents by getting your trainmen imbued with the spirit of safety-first and precaution.

Each line is competing against the other lines for a pennant to be awarded to the line having the fewest accidents. The pennant will be carried for thirty days until awarded for the next succeeding thirty days.

I have in mind staging in various theaters a living object lesson in safety first by securing the services of boys and girls who have lost arms, legs or eyes, or who have suffered other marks and visible disabilities through accidents, regardless of how they occurred. Each is to have a letter pinned in front, the whole spelling out "Safety First." Each will recite a stanza of appropriate character beginning with the letter which he carries.

"Knocking Down" Fares in Germany

According to the newspapers, great indignation has been aroused in Berlin by the decision of the Grosse Berliner Strassenbahn to install its own detective force for the purpose of catching passengers who endeavor to evade fare payments. The sleuths are to have the power to exact a fine on the spot for each offense. A German paper is quoted as follows: "The tramway monopoly only wants to enrich its already bulging treasury. It talks about the increased upkeep of rolling stock. We have to ride now in ramshackle old rattletraps called cars."

*Abstract of paper presented before the Seventh Annual Safety Congress, St. Louis, Mo., Sept. 19, 1918.

Non-Essential Jitneys Must Go

Jitneys Are Declining but Nearly 6000 Still Steal Railway Business—Highways Transport Committee Disapproves of Wasteful Competition and Favors Fullest Use of Electric Lines for Passengers and Freight

TWO important developments have come to pass in the last few weeks—developments that have a most direct bearing upon the complete utilization of electric railway resources in the nation's interests. In the first place, the highways transport committee of the Council of National Defense has expressed its desire to co-operate closely with electric railways and other means in order to secure the most efficient, prompt and economical transportation. In the second place, there are evidences that this committee and various government agencies are beginning to realize the non-essential character of the jitney and to see that, although these are declining in number, no time should be wasted in suppressing entirely all useless competition with existing electric railways.

CO-OPERATION IS THE WATCHWORD

A short time ago the highways transport committee issued an organization plan which included as one of the statements of purpose the following:

It is the aim of our committee to co-operate closely with railroad, electric railway and waterway transportation, and it is to be clearly understood that in no way is the committee encouraging competition between the various forms of transportation, but rather the carrying of any type of freight by the particular means which can do it the most efficiently, quickly and economically.

The Electric Railway War Board, in commenting upon this statement in a letter to Roy D. Chapin, chairman highways transport committee, said in part:

Such a policy will meet with the approval of the Electric Railway War Board and is in line with what Mr. Willard was pleased to call "co-ordination of transportation." Before he left the advisory committee of the Council of National Defense, he outlined a plan whereby the electric railways could be utilized for relief of freight congestion.

He also made reference to the ability of the motor truck to assist the electric railways by serving as a collector and feeder and jointly to perform a valuable service to the country in the relief of the steam roads and thereby facilitate transportation.

We believe that the nation's transportation needs will be met only through the most effective co-ordination and functioning of all forms of transportation up to the limit of their capacity, and this board shall be pleased to co-operate in any movement aimed to bring this about.

As a result of this letter E. C. Faber, manager of the War Board, was invited to address the regional and state chairmen of the countrywide organization of the highways transport committee at their convention in Washington a few weeks ago. The following statement from the Oct. 12 bulletin of the committee illustrates the progress made since then:

Our committee has been making a special effort to co-operate with electric railways. The Illinois State committee, for instance, has worked out a plan of co-operation with electric lines running out of Chicago. A regular service with motor trucks has been started to make deliveries until late at night to electric lines, which in turn make early morning deliveries in other towns.

The War Board has been endeavoring for the last few months to eliminate jitney competition with electric railways through some governmental action on the

grounds that these competitors are non-essential to the winning of the war and are performing a service that is wasteful of man power and materials. With this in view the board appealed to the Provost Marshal General to have them placed under the "work or fight" order; it submitted data to the Fuel Administration showing that jitneys are wasting man power, gasoline and other essential materials, and it took up the question with the War Industries Board, the Housing Commission, the Shipping Board, the Motor Transport Committee, the Railroad Administration and the Secretary of Labor.

In accordance with a request for exact information, the War Board sent out a questionnaire, the results of which are being communicated to the various government agencies. The table on page 746 shows in detail the present status of jitney competition. The situation was well summarized in a letter sent by W. V. Hill, assistant manager Electric Railway War Board, on Oct. 21 to W. Champlain Robinson, director of oil conservation, United States Fuel Administration.

ALMOST 6000 NON-ESSENTIAL JITNEYS

The data received, according to Mr. Hill, show that there are in 153 cities 5879 jitneys performing non-essential duplicate service. These jitneys employ 8200 persons and consume approximately 21,093,330 gallons of gasoline annually. The amount of lubricating oil used by them is not estimated, but their gross earnings are estimated at \$13,720,300. Jitneys numbering 855 are performing a needful service. Replies from 321 electric railways were received. Of these 115 reported jitney operation in their territory, and 206 reported a complete suspension of this class of utility.

At one time there were approximately 20,000 jitneys operating in competition with electric railways. The reasons for the decrease are the increased demand for labor which has enabled the jitney driver to obtain a wage in excess of what he could earn in the jitney business; the requirements of the draft; the increased cost of operation, and the various regulatory enactments by states and cities in some sections of the country.

The electric railways serving the territory where jitneys now operate have indicated that they are equipped to handle the additional traffic now going to the jitneys without appreciably increasing their service. This would result in releasing all those engaged in jitney operations for more essential pursuits and result in the conservation of gasoline, materials, etc.

Hence, Mr. Hill concludes, the jitneys are not essential to the public and should be discontinued entirely where they are performing duplicate service. The fact that they have been entirely eliminated in many cities justifies the contention that they are not considered essential to the public and that their continued operation in other sections of the country is unnecessary.

While the foregoing data were being compiled, the highways transport committee through its secretary,

R. C. Hargreaves, sent to the state and regional chairmen a letter reading in part as follows:

It seems that when we are called upon by the Labor Department to assist in classifying essential labor, the matter of jitneys should receive careful investigation.

It is, of course, the aim to avoid any duplication of transportation where there are already facilities that can handle such transportation. We can see no reason why our organization should declare essential jitneys which are operating on lines paralleling electric railways, where such railways could handle the passenger traffic.

We realize, however, that there are many jitney lines which are of great benefit to the public because the transportation is the only form of transportation that can be had. In that event these jitneys are performing a very necessary service. Moreover, there are jitney lines which parallel the electric railways for only a short distance and serve a territory which is not served by the electric lines. Where these conditions exist they would not, of course, be considered in the same light.

While our committee is called on to strengthen transportation resources, we must also help conserve the gasoline supply, so that some investigation should be made of this situation in your territory, with the view of bringing out a policy which is in harmony with not only the essential labor program but the conservation of gasoline.

No one in the highways transport organization, it is now said, has been found who is not willing to cooperate with the War Board and do everything possible

to assist it. Some of the replies received from the state and regional chairmen indicate that the jitney is not a local factor. Jitneys have been eliminated, it is asserted, entirely in Nebraska, Utah and Wyoming, and nearly so in Ohio. In Oregon there are few lines that could be deemed in competition with established steam or electric carriers, and no encouragement is given to competition where railway service is satisfactory.

In Oklahoma jitneys are regularly operated in only two cities, and then by the city governments as necessities. In California jitneys are reported to be in a process of elimination, but the State highways transport committee is looking fully into the matter. The conditions in Texas are similarly under investigation. In Wisconsin the situation is not so bad as formerly, although it is admitted that jitneys in Milwaukee are probably adversely affecting electric railway revenues. The matter may come before the Legislature in January.

In Colorado the electric railways, it is averred, are in a better situation in respect to the jitneys than in any other state. So far as can be ascertained, not a single jitney is operating in Colorado in competition with electric railways in purely intra-urban traffic.

JITNEYS OPERATING IN UNITED STATES IN OCTOBER, 1918

State	Number Operating on Routes Where Electric Cars Run	Estimated Number of Men Employed	Estimated Annual Earnings	Number Operating Where Electric Cars Do Not Run	State	Number Operating on Routes Where Electric Cars Run	Estimated Number of Men Employed	Estimated Annual Earnings	Number Operating Where Electric Cars Do Not Run	State	Number Operating on Routes Where Electric Cars Run	Estimated Number of Men Employed	Estimated Annual Earnings	Number Operating Where Electric Cars Do Not Run
Arizona:					Lynn	29	29	\$84,000	None	Rhode Island:				
Douglas	50	55	\$250,000	None	Salem	29	29	112,000	None	Providence	143	175	\$300,000	None
California:					Gloucester	1	1	1,400	None	Pawtucket	90	110	125,000	None
Southern Cities	166	350	650,000	88	Lowell	19	19	32,000	None	Woonsocket	40	50	100,000	None
Oakland	30	32	75,000	None	Lawrence	247	259	185,000	Note	Central Falls	2	3	4,000	None
San Francisco*	250	300	500,000	None	Haverhill	6	6	4,800	None	West Warwick	10	12	20,000	None
Connecticut:					Brockton	168	176	108,000	None	South Carolina:				
Norwich	69	70	90,000	None	Quincy	60	60	49,000	None	Charleston	p 20	25	.....	None
Waterbury	5	5	20,000	None	Hyde Park	2	2	7,000	None	Tennessee:				
New Haven	579	700	1,856,000	a 49	Fall River	94	100	37,000	None	Jackson	12	20	20,000	None
Bridgeport and vicinity								Newport	11	11	2,200	None	Chattanooga	100	125	182,500	None
Colorado:					Woonsocket	3	3	6,000	None	Nashville	50	75	175,000	None
Durango	..	..	.....	b 25	Attleboro	10	10	20,000	None	Texas:				
Florida:					Worcester	10	10	15,000	None	Paris	1	1	2,000	None
Miami	15	25	16,000	None	Michigan:					Port Arthur	40	40	18,000	None
Georgia:					Saginaw	7	10	20,000	None	Austin	50	50	70,000	None
Columbus	20	30	72,000	None	Lansing	7	7	26,000	None	Wichita Falls	20	35	18,000	None
Savannah	c 40	50	30,000	None	Battle Creek	50	50	80,000	None	El Paso	80	175	204,400	28
Augusta	..	..	.....	d 50	Mississippi:					Temple	25	30	22,000	None
Indiana:					Hattiesburg	..	..	.....	i 50	Houston	q 375	500	504,000	None
South Bend	e 27	50	112,000	None	Missouri:					San Antonio	*150	160	275,000	None
Evansville	2	2	4,000	None	Kansas City	200	250	1,000,000	None	Virginia:				
Kokomo	30	50	78,000	None	St. Joseph	50	75	250,000	None	Charlottesville	4	4	8,000	None
New Albany	31	31	56,500	None	Excelsior Spgs.	30	45	135,000	None	Tasewell	3	3	6,000	None
Indianapolis	35	50	50,000	None	Joplin	150	170	450,000	None	Washington:				
Terre Haute and vicinity	80	100	110,000	None	Springfield	7	14	25,000	None	Seattle	125	200	600,000	None
Anderson	38	39	..	..	New Jersey:					Everett	21	25	125,000	16
Marion	25	27	..	..	Asbury Park	3	1	2,000	j 1	Grays Harbor	5	5	5,000	None
Muncie	12	13	105,000	None	Penns Grove	57	100	48,000	None	Centralia	r 4	4	10,000	None
Elwood	4	4	..	..	Atlantic City	100	100	200,000	k None	Spokane	3	3	8,700	None
Fort Harrison	10	11	..	..	Newark and vicinity	507	1500	1,750,000	22	West Virginia:				
Gary	76	100	130,000	None	Morristown	15	15	30,000	5	Charleston	4	4	10,000	None
Illinois:					Keyport	20	22	37,000	30	Washington:				
Rockford	40	60	200,000	f 360	New York:					Milwaukee	80	85	200,000	None
Springfield	g 25	40	75,000	None	Watertown	..	..	.....	15	Racine	10	15	25,000	15
Chicago Hgts.	6	9	3,000	None	Schuykill	2	2	4,000	None	Green Bay	3	5	7,000	None
Iowa:					Ossining	10	15	15,000	None	Eau Claire	9	12	27,000	None
Sioux City	12	12	40,000	None	Albany	l 4	6	10,000	None	Waupaca	3	4	9,000	None
Kansas:					Buffalo	m 10	12	5,000	None	Total	5,879	8,200	\$13,720,300	855
Lawrence	1	1	2,000	None	Huntington	4	5	14,000	3	(a) These forty-nine jitneys operate a short distance on routes where cars run.				
Wichita	8	15	86,400	None	Syracuse	..	..	.....	2	(b) Compete during fairs, etc.				
Kentucky:					Peekskill	20	20	30,000	None	(c) Operate mostly mornings and evenings.				
Somerset	14	30	30,000	None	North Carolina:					(d) Operate to Camp Hancock.				
Louisiana:					Burlington	75	100	100,000	None	(e) Operate directly ahead of cars.				
Algiers	3	3	3,600	None	Raleigh	2	4	7,000	None	(f) Serve Camp Grant, which electric cars do not reach.				
Maine:					Durham	n 40	45	45,000	None	(g) Three hundred operate during State Fair week.				
Kennebunk	12	12	18,000	None	Asheville	10	12	30,000	None	(h) Owned by electric railway.				
Showegan	..	..	.....	6	Ohio:					(i) Operate to Camp Shelby.				
Portland	3	4	9,000	2	Tiffin	2	2	2,000	None	(j) Eight in summer season.				
Bangor	..	..	.....	3	Alliance	3	5	9,000	2	(k) Operate on parallel streets with electric railway cars.				
Maryland:					Cleveland	a 2	2	6,500	None	(l) Parallel cars part of route.				
Cumberland	..	..	.....	6	Ashtabula	4	7	11,600	None	(m) Operate on Sunday only.				
Baltimore—	..	..	.....	6	Lancaster	1	1	2,000	None	(n) Charge 25 cents fare.				
Camp Meade	15	20	27,000	None	Springfield	5	5	20,000	None	(o) Report of small road.				
Kensington	3	3	5,000	None	Columbus	50	60	75,000	None	(p) Operate to Navy Yard.				
Baltimore	k 34	50	63,000	None	Pennsylvania:					(q) Two hundred and fifty cars operate to Camp Logan and aviation camp, both being served by electric lines.				
Massachusetts:					Milton	10	12	3,000	None	(r) Operate between Centralia and Chehalis.				
Springfield	120	200	110,000	10	Punxsutawney	2	2	4,000	8	* Estimated.				
New Bedford	161	200	500,000	None	Danville	..	..	.....	4					
Plymouth	3	4	9,000	None	Williamsport	1	1	1,200	None					
Weymouth	10	16	5,000	None	Wilkes-Barre	15	25	35,000	None					
					Harrisburg	69	75	75,000	None					
					Seranton	2	2	8,500	None					
					McKeesport	..	..	.....	30					

Changing for Prepayment Operation 198 of the World's Best-Known Cars

IT IS perfectly safe to assert that the cars of the Los Angeles Railway are the best-known in the world, for who, from Africa to Greenland, has not seen them "butt" into many a movie tragedy or comedy?

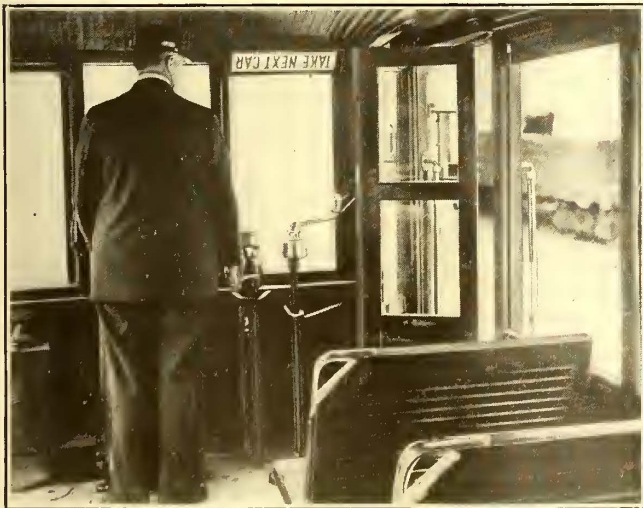
Most of the cars of this company are end-entrance California type—namely, open cross-seat compartment forward for smokers, closed longitudinal seat compartment center and open cross-seat compartment rear. Some 582 cars of this type are arranged for prepayment and are fitted with gates. About three or four years ago, also, the company added 183 center-entrance cars.

Of these cars 198 are now being altered by the addition of doors and side sheathing. These are of the three-compartment type but hitherto have not been operated with prepayment facilities.

In detail, the changes begun in August, 1917, are as follows:

A two-leaf folding door is installed at both ends of the car and on both sides. In operation, the devilstrip-doors are closed all the time; the rear doors next to the conductor are open all the time for ingress and egress and the front doors to the right of the motorman are opened by him only to permit passengers to leave. Therefore, the only one door operating handle is in possession of the motorman. This handle is simply locked onto the squared top of the round rod which connects with the door levers. This rod is set in a frame directly behind the motorman's valve handle. The conductor now stands back of a rail in a place made by the removal of the last outside cross-seat. The double folding doors are of spruce instead of mahogany, the latter wood being now unobtainable.

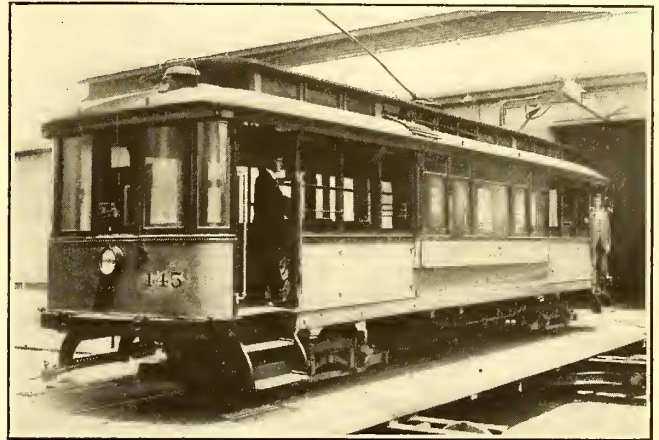
The usual metal lattice or grill which formed the sides of the rear outside compartments is being replaced by



TWO-LEAF FOLDING DOOR ADDED AT FRONT END TO PREVENT ENTRANCE

$\frac{1}{16}$ -in. metal sheathing carried up to arm-rest height and stiffened by 2-in. x 2-in. square wooden diagonals. This change will considerably increase the comfort of the rider in cool weather. Up to the present it has been customary to draw the Pantasote curtains down to floor level, but this was not very convenient. Besides, the curtains received a good deal of kicking, salivation and other abuse. Despite constant use and abuse since 1904

the upper parts of the curtains are in such good condition, that they have easily been salvaged to give perfectly good service on the same cars. The present master mechanic, attributes this longevity partly to the quality of the material and partly to the oiling it received regularly whenever the cars came into the shop for painting. As a curtain drawn only to arm-rest



COMPLETE THREE-SECTION CAR WITH NEW SIDE SHEATHING

height it will receive less abuse and be serviceable for many years more.

The foregoing changes in car construction, using doors ready-made from the company's own millroom, average ninety-six hours of labor per car.

The company is also removing the lattice work from forty-seven prepayment cars built originally in 1896 and converted during 1906 and 1908 when Pantasote floor curtains were installed. These curtains are also being salvaged.

Within the past two years, the Los Angeles Railway has painted some fifty cars with the modern enamel process, using both Sherwin-Williams and Pratt & Lambert materials. The saving over varnish is about \$8.50 per car in material and seventeen hours in labor time.

Tank Sells Bonds in Allentown

THE greatest single factor in the successful prosecution of the Lehigh County campaign for the Fourth Liberty Loan has been the co-operation of the Lehigh Valley Transit Company, according to Chairman Reuben J. Butz, of the Executive Committee, Allentown. This co-operation assumed the form of supplying the Liberty Loan organization with a "Liberty Tank" and the services of a crew to operate the tank. Meetings were held every afternoon and evening in different sections of the county, and the tank invariably proved a magnet to attract a large crowd of people. Talks were made from the monitor decks of the tank.

The tank was built on a railway flat car, and painted a battleship gray. It was 41 ft. long, 8 ft. wide and 11 ft. high. It was equipped at either end with a powerful searchlight, and in the evening was ablaze with 300 25-watt lights. Cannon projected from the turrets on either side as well as in front. All in all, the tank made a formidable appearance, while the finishing touch was given by the likeness of a spunky cat on top, spitting out, "Treat 'Em Ruff." A large bell announced the approach of the Liberty tank.

Electric Road Helps Relieve Freight Congestion

BY JAMES W. BROWN

Superintendent of Shops, Wilkes-Barre & Hazleton Railway

THE Wilkes-Barre & Hazleton Railway handles quite an extensive freight business in carload lots. It has a connection with the Lehigh Valley Railroad at the Wilkes-Barre and Hazleton junction about 4 miles from Hazleton and also with the Central Railroad of New Jersey at Ashley Junction in Wilkes-Barre. Local freight is also handled at the Wilkes-Barre and Hazleton terminals.

This freight is of a miscellaneous character such as is usually handled by the steam roads and is carried by the electric road in the night time. A 60-ton electric locomotive shown in an accompanying illustration



LOCOMOTIVE AND HOMEMADE CABOOSE USED BY THE WILKES-BARRE & HAZLETON RAILWAY FOR FREIGHT SERVICE

coupled to a caboose is used for this service. This locomotive was built by the General Electric Company and the American Locomotive Company and is geared to handle heavy trains at low speed. It has a steel cab mounted on two articulated trucks. The equipment consist of four GE-69-C, box-frame, 600-volt motors and is of sufficient capacity to start a 350-ton train on a 3-per cent grade. General Electric type-M multiple-unit control is provided.

The four-wheel caboose used in this freight service was built in the shops of the Wilkes-Barre & Hazleton Railway. It is 21 ft. 9 in. from center to center of knuckle pins. It has a 9-ft. wheelbase and uses 33-in. cast-iron wheels mounted on M.C.B. 3 $\frac{3}{4}$ -in. x 7-in. axles.

New Form of Gear Drive for Heavy-Duty Gasoline Trucks

A DOUBLE-REDUCTION gear drive for heavy-duty trucks has been put upon the market by the White Company, Cleveland, Ohio, as a substitute for the chain-and-sprocket drive formerly used. In this there is a first reduction through the bevel gear and drive pinion in the center of the rear axle, from which the power is carried by a live axle of the floating type through the center of the housing to a gear at the rear end of the live axle. This gear meshes with a second gear (carried on the housing of the live axle, but inside the hub case of the rear wheel), and this second gear, in turn, meshes with a ring gear attached to the wheel inside the hub case.

In this manner of applying power to the wheel a second reduction occurs between the three gears and the hub case very similar to the reduction which takes place between the sprocket wheels of the chain drive.

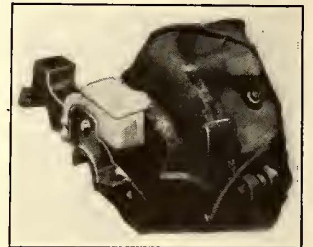
The double-reduction principle has been used with success in the lighter White truck, but a considerable engineering problem was imposed in applying it to shaft-driven heavy-duty trucks without using a large axle housing, without requiring an auxiliary axle, without increasing unsprung weight and without sacrificing simplicity.

Cast-Iron Oil Box Prevents Hot Bearings

BY JOHN B. BLAIKLOCK

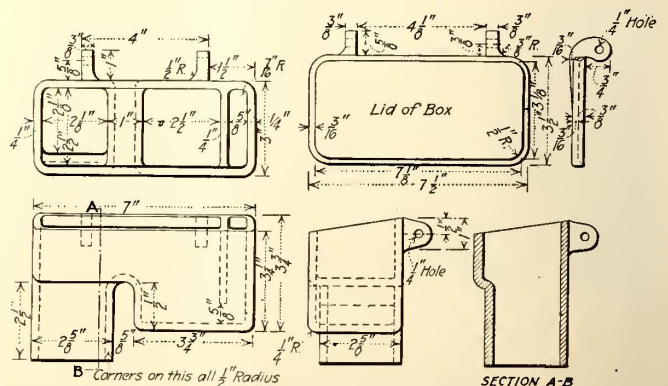
Master Mechanic Lincoln (Neb.) Traction Company

THE Lincoln Traction Company has adopted a cast-iron oil box for use with the armature bearings of its GE-52 and GE-54 motors. The company has 168 motors of these types in service, and previous to the adoption of this type of bearing considerable trouble was experienced with hot armature bearings due to the inefficient oiling device of these motors. About sixty of these boxes are now in service and so far we have experienced absolutely no bearing trouble. Some of these motors have been in service with the new type of oil boxes for ten months.



OIL BOXES IN PLACE ON GE52 AND GE54 MOTORS

The idea of the box is not new, but its use with the GE-52 and GE-54 motors embodies some new features. The old oil holes in the bearings and bearing housings were $\frac{3}{4}$ in. x 3 in. These were enlarged to 2 $\frac{1}{2}$ in. x 3 $\frac{1}{2}$ in. The bearing shells were cut in a milling machine and the housings were cut out with an oxy-acetylene cutting torch. The box was made to fit snugly into the housing and is bolted thereto with two $\frac{3}{8}$ -in. machine bolts, and further braced and strengthened by a wrought-iron strap 1 in. x $\frac{1}{2}$ in. in size, which is bolted to the side of the case. Accompanying illustrations



DETAILS OF OIL BOX FOR GE52 AND GE54 MOTORS USED AT LINCOLN, NEB.

show the construction of the box and its application to the motors. The box is packed with waste in the usual way and is able constantly to carry about 1 $\frac{1}{2}$ in. of oil in the oil chamber. The boxes cost 70 cents each, and the machinery and mounting cost \$1.50 per motor.

American Association News

Program for New York Conference

The program for the conference of the American Electric Railway Association at New York, Nov. 1, has now been completed. It follows:

MORNING SESSION

Address by President John J. Stanley
Report of Electric Railway War Board

Topical Discussion

"The Needs of the Interurban Electric Railway," by Arthur W. Brady, president Union Traction Company of Indiana

AFTERNOON SESSION

Topical Discussions

"Light-Weight Cars," by H. G. Bradlee, president Stone & Webster Management Corporation

"The Zone System," by Thomas Conway, Jr., Ph. D., Professor of Finance, University of Pennsylvania

"The Higher Unit Fare," by L. S. Storrs, president Connecticut Company

"Public Subsidies," by Homer Loring, banker, Boston, Mass

"Public Ownership," by Richard McCulloch, president United Railways of St. Louis

"Meralco" Section Discusses Jitneys

AT THE MEETING of the company section held in Manila on Aug. 6 a paper on "Manila Jitneys" was read by J. M. Bury, assistant superintendent of transportation, M. E. R. & L. Co. The paper followed somewhat along the lines taken up by C. Nesbitt Duffy, vice-president of the company, in the interview published in the issue of the ELECTRIC RAILWAY JOURNAL for Jan. 20, 1917, page 114.

There are, said Mr. Bury, in Manila and suburbs approximately 4000 carromatas and carretelas (commonly called "street rigs"). These are run in competition with the electric railway and at least 3000 are in regular operation. These vehicles are shown in the accompanying illustrations. The rates by the hour are prescribed by city ordinance. but the drivers do

not like this schedule. They are allowed to charge 10 cents for a haul of less than fifteen minutes' duration and are apt to leave their passengers if held too long. They have no regular routes or schedules, but are always to be found where the traffic is most dense. The carromata receipts are from \$1.75 to \$2.25 a day, and the carretela receipts from \$2.25 to \$2.75 a day. This totals for the city \$6,750 per day, of which at least one-half is derived from traffic which could be conveniently handled by the electric railway. The expenses including driver are about 85 cents per day.

In the discussion of Mr. Bury's paper L. C. Bewsey, carhouse foreman, said that depreciation of horses and vehicles should be added to the cost estimates given, which would reduce the profit to \$1.32 per day. His idea of the cause of competition of the sort described is that some people cannot bear to see a corporation making a reasonable income on the money invested. Where the jitneys have been compelled to bear their share of the expense which they cause, and to furnish a reasonable indemnifying bond, they have in many cases been obliged to retire from the field.

F. P. Santiago, assistant claim agent, expressed the hope that the carromata would continue in business, but that in its operation justice would be done to the street railway. The railway might go into the carromata business in competition with the present owners, but the wisdom of this would be questionable; a better way is to obtain co-operation with the city authorities for the regulation of carromata service. The local railway is not operating under any privilege gratuitously obtained from the city of Manila, and is paying a percentage of its gross receipts to the government in addition to several kinds of taxes. It is paving the whole track area for the benefit of the entire population, particularly of automobile and carromata owners. All that the carromata owner does is to pay an internal revenue tax, borrow new harness until it has passed the inspection of the internal revenue agent (using the old harness afterward) and pay a driver's personal tax of \$1 a year.

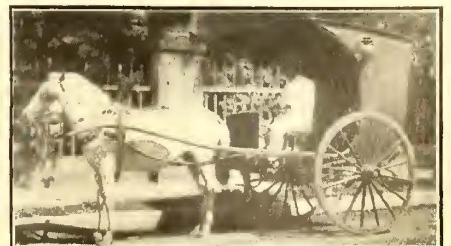
Mr. Bewsey suggested the following requirements as reasonable for carromata owners: (1) Drivers to be not less than eighteen years of age. (2) Drivers to pass mental examination by police authorities and physical examination by a health officer. (3) Strict adherence to traffic rules. (4) Carromatas to be kept in reasonably clean and safe condition. (5) Carromatas to be repainted within reasonable length of time. (6) Carromatas for hire not to be allowed on the most congested streets during morning and evening rush



Buffalo Cart



Carromata



Carretela

hours. (7) At least one-fifth of 1 per cent of the gross receipts of the carromatas to be collected by the city and used for paving the street area now being paved by the railway.

Mr. Bewsey said there is no competition from the carromata on long hauls. The competition on short hauls can be met by furnishing more frequent car service, which can be done in the following ways: By the use of additional cars. By the use of "special" or "emergency-type cars." By increasing the average car speed. In addition better service would result from: Reduction in number of stopping points. Insistence upon observation of traffic rules by automobile and carromata drivers. Reduction in liberality of trainmen toward passengers who cause unnecessary delay to cars. Promptness by the conductors in giving of starting signals to the motormen.

Keeping Clinkers Off the Boiler Furnace Walls

OWING to the high temperature of the ash in modern boiler furnaces there is apt to be trouble with clinking, particularly where the ash has a low fusion temperature. Clinker tends to adhere to the furnace walls, and when it does so operating efficiency is reduced and deterioration of the walls is made more rapid.

A plan which has been devised to prevent adhesion of clinker to the walls consists in causing air to emerge from the wall surfaces at the points where clinker tends to form. Where forced draft is used the air for this purpose can be diverted from the regular supply; where natural draft is used the air can be furnished from a fan of moderate size. Suitable passages are provided in the walls, connected with a "wind box" supplied from the air duct. The air, of course, keeps the side walls comparatively cool and thus prevents adhesion of the clinker.

In laying up the furnace wall a thin air chamber is built in back of the first row of bricks facing the fire, and air passages are provided through the brick walls directly into the fuel bed, preferably by proper spacing of the bricks in front of the chamber facing the fuel bed. The openings can be of graduated size so as to deliver the proper relative amounts of air. No openings are allowed above the fuel bed, and only small ones at or near the surface.

In addition to keeping the bricks cool this construction serves the purpose of supplying the fire with some pre-heated air at a point where such seems to be needed. A damper is usually installed at the intake to the chamber permitting a regulation of the flow of air through the openings. Just enough air is admitted to prevent clinker from sticking to the wall.

The plan described is known as the Bernitz method for which the following economies are claimed: (1) Fuel saving by eliminating the burning down of the fire before cleaning and the building it up after cleaning, by shortening the time spent on cleaning walls and dumping fires, by enabling the operator to burn the coke off the clinkers before dumping, by getting more complete combustion from the coal along the side walls on account of the greater cleanliness of grates, by reducing side-wall radiation and by reducing manual labor so that the work attracts a higher class of operators.

(2) Increase in boiler capacity by permitting the furnace to be operated more efficiently. (3) Lengthening of period of active operation of boiler. (4) Reduction in strain upon the stoker by the elimination of obstructing clinker.

War-Utility Problems Discussed

THE conduct of utility business under war conditions was the topic of a one-day informal discussion by thirty delegates to the annual convention of the Kansas Public Service Association at Hutchinson, Kansas, Oct. 4. At the meeting it was decided to discontinue the holding of regular meetings throughout the coming year. Since the association will remain in this semi-dormant state it was thought best to continue the present offices in power.

The program included provisions for discussions of fuel costs, other operating expenses, rates and temporary increases, education of the public and new business. There was also considerable discussion on classification of accounts following a report on this subject presented by a committee appointed by the Kansas Public Utilities Commission. It was expected that a proposed classification will be submitted to the commission not later than Nov. 1.

It was reported that the utilities commissioners had expressed recently as the opinion of the commission that utilities in general should be permitted to increase their rates, but that the commission is not inclined to disturb present rates, preferring to add as a war measure certain percentages of increase to the present rates, planning to discontinue these increases six months after peace is declared. It appeared that a number of Kansas utilities will ask for increases on this basis.

On fuel costs it was the consensus of opinion that energy production costs in Kansas ran from 48 per cent to 61 per cent higher than in pre-war days. Taxes have increased an average of 30 per cent, and wages an average of 60 per cent. There was considerable discussion as to the effect of the taking by government employment agents of the labor necessary to the operation of utilities, and a committee was appointed to investigate this matter.

L. O. Ripley, vice-president Kansas Gas & Electric Company, spoke on the subject of public policy, stating that at this time there is an unusual opportunity to educate the public by explaining to the local clientele the conditions under which each utility operates. This, said he, is the time to combat socialistic tendencies by bulletins, talks and advertisements.

The officers who will continue in power for the ensuing year are: President, J. D. Nicholson, Newton, Kan.; secretary-treasurer, W. W. Austin, Cottonwood Falls; executive committee, A. M. Patten, Topeka; L. O. Ripley, Wichita; C. L. Brown, Abilene; H. W. Magruder, Liberal; L. S. Small, Concordia; Walter S. Grundy, Hutchinson.

At the Wolf Street (Syracuse) shops of the New York State Railways the mercury vapor lamps previously used for illumination have been replaced with 250-watt nitrogen-filled Mazda incandescent lamps. These are 150-volt lamps connected four in series on the trolley circuit.

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Rhode Island Wage Accepted

Brief Review of the Conditions Fixed by the War Labor Board in Recent Decision

Immediately following the decision in the Rhode Island fare case referred to elsewhere in this issue, the Rhode Island Company, Providence, notified its employees that a new wage scale fixed by the War Labor Board would become effective at once and that the new pay would be found by the employees in the next pay envelope. The men voted unanimously to accept these conditions and show their satisfaction by courteous and unanimous service.

The award of the War Labor Board in this case, of which brief mention was made in the *ELECTRIC RAILWAY JOURNAL* of Oct. 12, in its general tenor was similar to the previous awards made by this body in the electric railway field. The board saw in the adjustment a matter of national necessity and repeated its previous statement to the effect that "overcapitalization, corrupt methods, exorbitant dividends in the past are not relevant to the question of policy in the present exigency." It also recommended a reconsideration by the proper authorities of the fare which the company is allowed by law to collect from its passengers. The award as it affects the terms of service of the employees follows:

"The arbitrators are fixing these wages for the period of the war only, and therefore substitute for extended graduation of rates by years a shorter period for the increases.

FORTY-EIGHT CENT MAXIMUM

"The wage schedule to be paid all motormen and conductors shall be:

"For the first three months of service, 43 cents an hour; for the next nine months of service, 46 cents an hour; thereafter, 48 cents an hour.

"Wages of Other Employees—The wages of employees other than motormen and conductors, which are before the arbitrators for fixation, shall be increased by the same percentage that the maximum of the wage scale paid to motormen and conductors is increased by this award; provided, however, that if this percentage does not bring the wage of any adult male employee up to a minimum of 42½ cents an hour, he shall be paid said minimum of 42½ cents an hour, and provided further that where women are employed in the same classification as men they shall be paid equal pay for equal work.

"For the purpose of securing a proper interpretation of this award, the secretary of the National War Labor Board shall appoint an examiner, who

shall hear any difference arising in respect to this award between the parties and promptly render his decision, from which an appeal may be taken by either party to the arbitrators making this award. Pending a final adjudication upon the appeal the decision of the examiner shall be binding.

AWARD RETROACTIVE

"This award is to take effect as of July 19, 1918, and shall continue for the duration of the war, except that either party may reopen the case before the arbitrators at intervals of six months, beginning April 1, 1919, for such adjustments as changed conditions may render necessary.

"The company shall be allowed until Dec. 1, 1918, to make the payments to its employees of the back pay due them under this award."

Strike on Ohio Electric Railway

Charles Bendheim, representative of the United States Department of Labor, arrived in Springfield, Ohio, on Oct. 18 to investigate the strike of motormen and conductors of the Ohio Electric Railway. It is the desire of some of those interested that the matter be placed before the War Labor Board, but this cannot be done while the men are on a strike.

All meetings of the men in the various towns touched by the road have been prevented by the health authorities, except at Lima, where they gathered on one occasion to discuss their troubles.

The men demand an increase in wages, improvement in working conditions and recognition of the union. Officers of the company who have received a committee from the strikers claim that recognition of the union has been made a necessary preliminary to the discussion of the other two complaints. They cannot see their way clear to yielding this point. A statement made by the company says:

"The company has not objected to any or all of its employees being members of any order, union or other society, but the company does not feel that the recognition of the Amalgamated Association is a necessary preliminary to fair dealing with its employees as committees or as individuals, or to an equitable adjustment of wages or other questions."

On Oct. 20 the company and its employees reached an agreement to submit the question of increased wages and better working conditions to the Federal War Labor Board for adjustment. The increase in wages which is asked amounts to about 15 per cent. Service was promptly restored in full.

Seattle Details Dragging

Progress Toward Municipal Ownership Slow, but No Insurmountable Barriers Appear So Far

As the last step in closing the deal for the purchase of the railway lines of the Puget Sound Traction, Light & Power Company in Seattle, Wash., the City Council is attempting to segregate the real estate of the company. When the city of Seattle offered to buy the lines for \$15,000,000 the company accepted the offer for the railway operating property.

The company contends that certain real estate which city officials say should be included in the deed is not operating property. The disputed property includes the Massachusetts Street freight terminals, Madison Park property, property in Rainier Valley purchased for a right-of-way to build a line to compete with the Seattle & Rainier Valley Railway, but which was never used for that purpose, property on Beacon Hill obtained in the purchase of other railways, and a gravel pit of several acres at Green Lake.

SUITS MUST BE SETTLED

According to Walter F. Meier, corporation counsel, three important suits must be disposed of before the deal for the transfer of the company's property to the city can be made. Two mandamus suits to compel the company to pave between its tracks on certain streets were won by the city and appealed by the company to the Supreme Court. In the Fremont bridge case the city obtained a judgment against the company for \$66,414 and an appeal is now pending in the Supreme Court. The third case is an action brought by the company to collect damages from the city on account of an ordinance providing for the sale of tickets on cars. The court decided against the company and an appeal is now pending in the United States Supreme Court.

Representatives of the local railway employees are telling city officials that unless some immediate assurance is given that the city will take over the property in a reasonable time and guarantee the union scale, it will be impossible to hold the men on the cars. The company agreed to pay the new scale from Aug. 1 to Oct. 15, by which time, it was believed, the city would have taken the property over. This agreement expired on Oct. 15 and the wages automatically dropped back from 50 cents and 60 cents an hour to 33 cents and 40 cents. Preparations have been made for an appeal of the wage question to the War Labor Board.

Cleveland's Terminal Problem

City Considers Broad Reorganization of Its Railroad and Interurban Transportation Facilities

The submission of a new railroad freight and passenger terminal plan to the people of Cleveland, Ohio, to accommodate all roads, including interurban electrics whose traffic would thereby be removed from the public streets to private rights-of-way, has brought the city face to face with the question of abandoning the long expected Union Depot along the Lake front at the foot of the Mall or Civic Center.

STATION ON PUBLIC SQUARE

The site of the new passenger station as proposed is next to and facing on the Public Square, while the old site contemplated a monumental passenger terminal building on the slightly bluff above the lake, this building completing the architectural plan of the Mall as originally designed by Messrs. Burnham, Carrere and Brunner and later partially carried out by the Cleveland Group Plan Commission by the erection of several monumental city and county buildings and the preservation of sites for others conforming to the original Mall plan.

The new plan contemplates not only union passenger facilities but also freight houses at the high level of the business district and the co-ordination of railroad entrances under one terminal organization. Cleveland already has voted in favor of the old site. It is now contemplated to place before the voters an initiated ordinance covering the new plan.

The questions involved are so conflicting that numerous civic organizations are studying the two plans and to this end the Chamber of Commerce recently retained Bion J. Arnold, Chicago, to report upon the important features of the controversy, covering an analysis of the comparative advantages and disadvantages of the two plans, the probable result in traffic congestion on the Public Square resulting from the concentration of seven or more stations into one union station, and the practicability of largely organizing the passenger and freight carrying roads and terminal facilities in Cleveland. The most important question propounded to Mr. Arnold for solution is as follows:

THE QUESTION PUT

"Is it practicable to adjust freight and passenger terminals in this city to the future requirements of a city growing at the rate at which Cleveland is growing and still keep the union passenger station on the Mall site?"

As both the city electric railway and steam passenger traffic are growing so fast as to double in about eight years or less the problem of meeting Cleveland's rapid growth is an important one. The Cleveland district is now estimated to hold nearly 1,000,000 persons and the great industrial expansion

is already developing grave problems in housing. New freight facilities are already fully absorbed; their capacity is to be more than doubled, and it is contemplated in the new plan to direct all passenger traffic through Cleveland from the lake front tracks to a new interior right-of-way which is intended to be used also by the various interurbans entering Cleveland. These electric roads handle fully one-half as many passengers as the steam roads.

The city is also studying rapid transit and subway development, new viaducts across the valley of the Cuyahoga and the straightening of this crooked stream to facilitate much-needed harbor development.

The field survey and development studies of the Arnold investigation are already in progress, in charge of J. R. Bibbins, Chicago, and a preliminary report will be shortly made public at a conference in Cleveland at which city and railroad officials and others prominently identified with this railroad question will be present.

SURVEY ALONG FAMILIAR LINES

The survey conducted by Mr. Bibbins follows identical lines of similar investigations made in connection with reports of Mr. Arnold on terminal development problems in Chicago, Baltimore, Syracuse, New Orleans and Jersey City. In these studies, the fullest co-operation and unification of railroad facilities have been urged, not only for passengers but also for freight. It remains to be seen whether such a policy as recommended by Mr. Arnold can now be adapted to the special conditions brought about by Cleveland's topography and extraordinary growth.

Praises Washington Belt Line

Washington opinion about the proposed belt line referred to in the *ELECTRIC RAILWAY JOURNAL* for Oct. 19, page 713, is reflected in the following comment from the *Times* of that city:

"The *Times* felicitates the War and Navy Departments on their joint decision to accept what the city of Washington knows as the 'Beeler Belt Line.'

"The *Times* also felicitates John A. Beeler for his ability to institute a common-sense plan to eliminate the terrific street car congestion in Washington.

"For the first time in the history of the national capital a nationally known street car and traffic expert has been engaged for traffic purposes only. Mr. Beeler's achievements here will be an ever-present practical proof of the theory that street car companies should employ traffic experts for traffic problems.

"The 'Beeler Belt Line' will allow 40,000 government employees to get to their offices without passing through the much congested gateway at Fifteenth Street and New York Avenue.

It is answer to the traffic problem here. This newspaper is proud of the fact that it has consistently fought for and supported the 'Beeler Belt Line' idea from its inception."

Buffalo Strike Settled

A Six-Cent Fare Will Go Into Effect Pending a Decision by the Public Service Commission

The strike of the employees of the International Railway was ended on Oct. 24 when the Council adopted the plan of Justice Marcus for a settlement. The plan provides for a 6-cent fare pending the determination of the rate question by the Public Service Commission. Rebate slips will be issued to passengers entitling the holders to a return of 1 cent if the 5-cent fare is upheld. The new rate to be fixed is to continue in force only until May, 1920. The platform men are paid the wage award of the War Labor Board immediately and are to receive back-wages based on this scale amounting to \$300,000, if the 6-cent fare is upheld. The action of the Council is subject to another referendum. The city will name eight members of the board of directors of the International Railway and the stockholders of the company will name eight. These sixteen men are then to agree upon a seventeenth member.

Justice Marcus of the Supreme Court of Erie County had asked the Council and the company officials to agree upon a plan suggested by him. The court's plan had the approval of the railway, and has since been formally accepted by the company. Its provisions have just been recited in connection with the terms of the settlement.

Another plan under consideration which had the tentative approval of the railway and of three members of the City Council provided that the Council pass a resolution allowing the Public Service Commission to determine what was a reasonable fare and permit the company to charge 5 cents for thirty days. Other features of this plan included that the company should be operated by an executive committee of three—one man to be named by four-fifths vote of the City Council, one by a majority vote of the Public Service Commission and one selected by the company's board of directors. The fare decided upon under this plan would also have continued until May 1, 1920.

In a signed statement to the Council, President Connette had put the strike question directly up to the Mayor. He told the Mayor that the company was willing to take all chances with litigation and would abide by the decision of the Public Service Commission as to rates of fare for Buffalo if the Council would pass an emergency ordinance.

Henry W. Killeen of counsel for the company, in a public statement said: "It would be impossible for the com-

pany, no matter who owned or controlled it, to give efficient service for many weeks to come even if the present difficulties were settled immediately. More than half of the operators of cars have secured other jobs. If the Council had been willing to accept terms of settlement early in the strike before strikers got other jobs at higher wages, that might have been averted."

William A. Morgan, Buffalo, had secured an option on the properties of the railway because of the strike. Certain restrictions were attached to the option. He agreed to operate cars for a period of thirty days on a 5-cent basis with an automatic increase of 1 cent at the expiration of the thirty days with a 1-cent rebate slip to be given every passenger pending the decision of the Public Service Commission as to what would be a just fare. Mr. Morgan was said to be prompted solely by the desire to see local Buffalo interests in control of the company.

Cleveland Women Appeal

Rose Moriority, a National Figure, in Charge of Cleveland's Car Women's Interests

The women conductors of the Cleveland (Ohio) Railway working for a reversal of the decision of the Federal Department of Labor which would deprive them of their jobs on Nov. 1 have sent to Secretary of Labor Wilson a petition 446 ft. long, bearing 35,000 signatures and asking that their case be reopened. The women held their conferences, first at one car-house and then another, to talk and plan for the overthrow of a conclusion which they believe is unjust to them and to the patrons of the road.

These women have never asked for the places occupied by men. They have sought only the vacant positions—the operation of the cars that were standing idle in the yards because there were no men to run them. The question they want answered is: Why do the men, members of the union, object to their employment in places long vacant; why do they object to women helping to win the war by filling up the gaps and operating the cars that are so badly needed by the public, and especially by the people who are working in the shops making munitions and war materials? They fail to see either justice or patriotism in such a stand.

The organization formed by the women has been christened "The Association of Women Street Railway Employees." Miss Rose Moriority, who has been conducting the fight for the women, has advised that all make application for membership in the Amalgamated Association. If this is refused, she said that a women's union will be formed. Miss Moriority was known for years as the "petticoat mayor" of Elyria, Ohio, as she held the office of assistant city clerk and took part in politics. Later she went to Cleveland where she was made assistant secretary and treasurer of the Champion Stove Company.

Boston Elevated Makes Another Statement

Public Trustees Now Find Themselves Confronted With Engineering and Labor Problems

In a public statement made by Mayor Peters of Boston on Oct. 18 the Mayor lay stress upon the serious situation confronting those responsible for the affairs of the Boston Elevated Railway and pointed out the direct interest of every taxpayer of the community in the solution of the problem before the company. It will be recalled that in passing the bill under which the company now operates the Legislature of last year very definitely provided what charges should be included in the operating expenses of the railway, and stipulated that any deficit in the revenue should be made up by taxation of the different towns served by the company. The duties of the trustees in charge of the property are of course now fixed by law.

WANTS CONSULTATION ARRANGED

In this connection Stanley R. Miller, secretary of the board of trustees for the public operation of the railway, has made a statement for the trustees. His memorandum follows substantially in full:

"It has been their aim from the outset to devise means of furnishing such reasonably good service as could be provided from the road's revenue without requiring a contribution from taxpayers in accordance with the law. War conditions may this year prevent the success of such plans. A committee made up of the kind of men which the Mayor of Boston can appoint might render invaluable assistance to the company in many ways and such help will be welcomed by the board of trustees.

"Nevertheless, one must constantly remember war conditions prevail, and have placed a heavy burden upon the company. The war's effect cannot from day to day be foreseen. Dr. Woodward, the Health Commissioner of Boston, is mistaken when he says, 'The remedy for congestion of the Boston Elevated system has been and always is in the company's own hands.' In order to increase the company's service, more power, more cars and more men are needed. No reasonable provision has been omitted by the company to secure all of them.

NEW POWER EQUIPMENT NEEDED

"The company's motive power is sufficient to operate only the surface cars now available for service. An accident last year to the company's 35,000-kw. turbine at the South Boston power station has not yet been repaired. The General Electric Company expects that it will be in operation shortly after Jan. 1, 1919, but not before because government war work has had to take precedence. A new 25,000-kw. turbine ordered from the Westinghouse Electric & Manufacturing Company for delivery in September or October, 1918, will not be installed until Feb. 1, 1919,

notwithstanding the fact that the War Industries Board issued priority orders to facilitate to the utmost early delivery. Power will therefore for several months be lacking to operate additional cars and also any new cars unless they are used to replace some of the cars now in the company's service.

CAR DELIVERY DELAYED

"Nor are the new cars immediately available. The 200 new surface motor cars ordered by the trustees at their first meeting in July for delivery beginning between Oct. 15 and Nov. 15, 1918, have been delayed on account of government war work and will probably not be in service before early spring of next year. The fifty new trail cars have likewise been delayed by government war work so that they will not be in operation before next January. The remainder of the new Cambridge subway cars ordered in October, 1917, have been indefinitely delayed by government work so that there is no prospect of their delivery during the present calendar year. The same delay has occurred in much of the equipment which is needed for outfitting these same new cars upon delivery.

"The only way to facilitate the completion of turbines and equipment in less time would be for the government to consent to give the company priority over war work, which, of course, no one would want to occur.

LABOR A VITAL PROBLEM

"Labor is still a vital problem for this company. It was expected that the 28 per cent advance in wages awarded the blue uniformed employees of the company by the War Labor Board would attract a sufficient number of new employees to handle the present equipment of the company. That, however, has not proved to be the case. In spite of the widespread publicity which the company has given the attractive wage scale now paid by it under the award of Oct. 2, the net increase to date in the number of blue uniformed employees has been only sixty-eight.

"The company has always stood ready to employ women as conductors in order that it might give the greatest possible service, but the local carmen's union has requested that the employment be postponed until the results of the increased wage scale were apparent. The trustees understand that, though the union has been loath to admit women to its membership, it now stands ready when the necessity exists to agree to the employment of women whenever they can be employed to release men for other positions. A conference at which the details incident to such an arrangement were discussed was held at the company's office on Oct. 19."

Proposed Chicago Extensions

Map Shows Scope of Work Intended to Be Done Under New Chicago Franchise

The map reproduced herewith was recently published by the citizens committee of the Chicago Association of Commerce, and placed in the mail boxes of Chicago residents. This association was one of the first of the many bodies to indorse the Chicago traction ordinance which has been discussed at length in the pages of the *ELECTRIC RAILWAY JOURNAL* and which comes to a public vote on Nov. 5. Since that indorsement the association has been conducting an educational publicity campaign to gain for the ordinance the support of the public.

The map shows all of the present elevated car lines, the proposed extensions during both the first six-year period and thereafter, and the proposed rapid transit and surface line subways to be built both in the first six-year period and thereafter. To simplify the

map the present surface car lines have been omitted. It is stated that with the extensions indicated on this map rapid transit facilities will be furnished to 65 per cent of the people of Chicago instead of to 20 per cent as at present, and that the increase in facilities will give five rapid transit cars for each two now running.

Asks \$4,825,380 from City

A claim for \$4,825,380 was presented to the city of San Francisco, Cal., on Oct. 1 by officers representing the United Railroads.

Alleged injury received by the United Railroads through the construction of the Municipal Railways and the operation of cars of the San Francisco Municipal Railway on the outer tracks on Market Street, is the basis of the claim.

In the three months when the outer tracks were being laid on Market Street by the city, the operation of the United Railroads cars was obstructed, it is alleged, by the excavations for the municipal line. Since the operation of the

city cars on the outer tracks, the business of the United Railroads has been injured, it is claimed.

Before building its line the city did not make any offer to buy out the United Railroads, it is claimed. The private property of the claimant has been taken and damaged by the city without just compensation. The tracks laid on Market Street, it is pointed out, are there in violation of the charter.

By reason of the methods pursued by the city the claimant has had operating expenses increased \$1,320 a month. Since July 1 the United Railroads, it is claimed, has lost \$4,620. It is specified in the claim of the railroad that the demand for \$4,820,380 in no respect waives any right asserted in the lawsuit against the city, which was begun on June 12, 1916, in the District Court of the United States by the United Railroads, and now on an appeal to the United States Supreme Court.

A Progressive Agreement

Employees at Kansas City Make Wage Adjustment Subject to Financial Condition of Company

A feature of the wage case of the employees of the Kansas City (Mo.) Railways now before the War Labor Board for settlement is the attitude of the men toward the matter. As stated briefly in the *ELECTRIC RAILWAY JOURNAL* for Oct. 5, page 629, the agreement for arbitration stipulated that any advance in wages granted should be limited by the financial ability of the company. Thus the articles of agreement clearly define the limits within which the War Labor Board can decide the case. In this connection *The Railwayman*, published by the company, said in part:

"Attorneys for the company took the position that the War Labor Board had the power in ordering a wage increase to at the same time order such a rate of fare as would insure sufficient revenue to pay the wages awarded. Both joint chairmen (Taft and Walsh) pointed out to the representatives of the company and the men who were present that as arbitrators they could scarcely be expected to make a decision which would go beyond the stipulated terms of submission assented to by the company and the union."

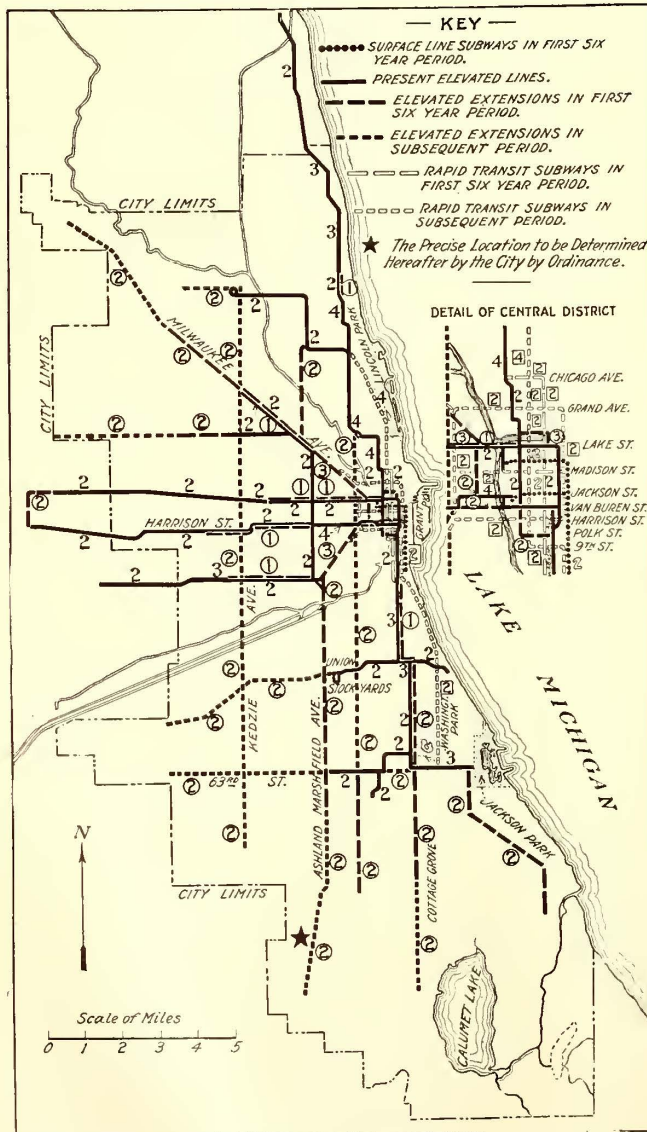
The articles of submission are in part as follows:

"Whereas, the company claims its financial inability to meet this wage request or readjust its schedules under its present revenues and has, pursuant to a fare increase of 1 cent allowed by the Missouri Public Service Commission, granted an increase of 5 cents an hour to all employees on an hourly basis, and from 10 to 25 per cent to all employees on a monthly basis receiving \$2,400 a year and under, effective in Missouri on July 16, 1918;

"Now, therefore, it is agreed by and between Division No. 764 of the Amalgamated Association and the Kansas City Railways that the matter of wages and schedules shall be placed before the National War Labor Board for adjustment subject to the general financial condition of said company and its financial ability under present revenues or any future increases allowed pursuant to action or recommendation of the War Labor Board or otherwise to pay any wage increase which may be granted."

In commenting on the agreement *The Railwayman* said:

"In signing the articles of submission in the above form, the representatives of the union whose names appear above have taken a position in advance of that taken by any other local of the Amalgamated in the United States. They have shown that they do not expect a wage increase which is not justified by the financial condition of the company, nor do they request an impossibility, which would be the result had they demanded increased wages regardless of the company's income."



PROPOSED RAPID TRANSIT SYSTEM IN CHICAGO

Figures show numbers of tracks as follows: Plain black, present elevated lines; black in circle, elevated extensions; black in rectangle, rapid transit subways; outline figures, surface line subways.

Staggered Hours in Denver

The Board of Health of Denver, Col., has adopted rules for opening and closing business houses in that city and fixing limits to the number of passengers to be allowed to ride at one time on a car of the Denver Tramway. These rules follow:

1. All retail stores in the business district open at 9 a. m.; close at 6 to 6.15 p. m.
2. All offices open at 8 to 8.30 a. m. or earlier; close at 4.30 to 5 p. m.
3. Only sixty-five passengers are allowed on a car at one time.

Increased Wages for Winnipeg

The report of the Board of Conciliation appointed to investigate the dispute between the Winnipeg (Man.) Electric Railway and its motormen and conductors was handed out at Ottawa on Oct. 15 by the Minister of Labor. It recommends an increase of 9 cents an hour in the wages paid during the first and second six months of employment, an increase of 11 cents an hour in the wages paid during the second year, and an increase of 12 cents an hour in the third year. The latter increase, which brings the rate up to 47 cents an hour, it is proposed to apply to the fourth and subsequent years of employment. The new scale, which is recommended by the board to go into effect from the first day of the present month, is as follows:

For the first six months, 39 cents an hour; for the second six months, 41 cents an hour; for the second year, 44 cents an hour; for the third and succeeding years of continuous service in the employ of the company, 47 cents an hour.

The board also recommends that the request of the men that they shall receive time and a half for overtime be granted. The decision was unanimous.

In order that the increased wages recommended may be paid, it is necessary, states the report, that the company should obtain an increased revenue. In this connection the board says:

"It appears by the evidence before us that the company has paid no dividend to its shareholder since December, 1915, and at the present time, notwithstanding the elimination of the jitney competition, the operating expenses and fixed charges of the railway exceed by several thousand dollars per month the railway's actual earnings, and that there is no source of revenue from which increased wages can be paid. The Winnipeg Electric Railway's financial situation is not different from that of a great many other railways in the United States and Canada, and in justice to the company the public should pay an adequate war compensation for a service which cannot be rendered except for war prices."

It was reported from Winnipeg on Oct. 22 that the railway had notified the Dominion Government that it could not meet the wage award unless the city officials permit the company to increase its fare to 6 cents.



Wage Increase in Springfield, Ill.—Trainmen of the Springfield (Ill.) Consolidated Railway have received an increase in wages. Men entering the service of the company will receive 32 cents, while others will receive 33 cents and 36 cents an hour. The increase amounts to a 3-cent flat raise and is the third increase granted by the company this year.

Patriotism Rewarded With Bonds.—The platform men in the employ of the Trenton, Bristol & Philadelphia Traction Company, Philadelphia, Pa., were called together recently at a dinner by the corporation and \$1,600 in Liberty Bonds were distributed. The men obligated themselves a year ago to pay for the bonds, and as a mark of gratitude the railway duplicated as many bonds as the men had paid for.

Bad Faith Charged.—The Public Service Commission for the First District of New York has directed its counsel to begin mandamus proceedings against the Brooklyn Rapid Transit Company to compel it to obey the former orders of the commission to put on about 100 more cars. In a long opinion, upon which the action of the commission was based, Commissioner Travis H. Whitney accuses the company of bad faith in the dilatory tactics to obey the order to put on more cars.

Franchise Negotiations in Vancouver.—The British Columbia Electric Railway has presented to the City Council of Vancouver, B. C., proposals regarding the renewal of its franchise. The company demands a continuance of the 6-cent fare, with half fares for children, and promises an announcement of a reduction in lighting rates to be made coincident with the citizens voting on the new franchise by-law. The City Council and the officials of the company will shortly start joint negotiations.

\$300,000 for Engineering Research.—Ambrose Swasey, Cleveland, Ohio, has just given the Engineering Foundation an additional \$100,000 for endowment of engineering research. In 1915 he gave \$200,000 for this purpose, so that his total gifts are now \$300,000. Mr. Swasey's original gift made possible the establishment of the Engineering Foundation, representing the American Society of Civil Engineers, American Institute of Mining Engineers; American Society of Mechanical Engineers and American Institute of Electrical Engineers.

Mr. Duffy Leaves Manila Company.—C. Nesbitt Duffy has resigned as vice-president of the Manila Electric Rail-

road & Light Company, Manila, P. I., to accept the position of vice-president of the Visayan Refining Company, Manila, P. I. one of the largest cocoanut oil companies in the Philippine Islands. Mr. Duffy is to take over his new duties on Nov. 1. J. C. Rockwell, the present general manager of the Manila Electric Railroad & Light Company, is being placed in full charge of the affairs of that company in Manila by The J. G. White Management Corporation, New York, N. Y., the operating managers of the property.

San Diego Increases Wages.—The San Diego (Cal.) Electric Railway Company, through Vice-President and Managing Director William Clayton, announced on Oct. 7 that the new scale of wages for platform men would go into effect immediately, with back pay from Sept. 1. This new scale means 40 cents an hour for the first-year men and 45 cents an hour for the second-year platform men and older employees. Increases also will be given employees of the mechanical departments. This action was taken by the company in what it regards as its own best interests although the appeal of the company to the Railroad Commission for increased rates has not yet been passed upon.

Survey Parties Needed by Army.—The construction division of the army is without doubt the most colossal organization of its kind in the history of the world. The approximate value of construction projects so far undertaken by this branch of the government is \$1,000,000,000. Its present urgent needs include fifty chiefs of survey party at \$2,700 to \$3,000 a year; fifty transitmen at \$2,400 a year; twenty-five levelmen at \$2,100 a year; 125 rodmen at \$1,800 a year; 150 chainmen at \$1,800 a year, and fifty topographic draftsmen at \$2,100 a year. These positions are in the civil, not the military, service. Persons interested should apply to the United States Civil Service Commission, Washington, or to the secretary of the local board of civil service examiners in many of the large cities.

Wage Increase in Indianapolis.—The Indianapolis Traction & Terminal Company, Indianapolis, Ind., has increased the wages of conductors and motormen following the order of the Public Service Commission that a straight 5-cent fare be granted on condition that wages of the employees be advanced at least 50 per cent over the scale paid prior to the general increase of about July 1, 1918. Conductors and motormen who have been in the service of the company one year or less will receive 34 cents an hour; more than two years and less than three years, 36 cents an hour; more than three years and less than four years, 37 cents an hour; more than four years and less than five years, 38 cents an hour; five years and over in service, 39 cents an hour. The scale since July has been from 25 cents to 33 cents an hour. Before July 1 new men received 22 cents an hour.

Financial and Corporate

B. R. T. Net Drops

Owing to Higher Operating Costs, Taxes and Interest, Net Income Declines 20 Per Cent

The net operating revenue of the Brooklyn (N. Y.) Rapid Transit Company for the year ended June 30, 1918, showed a decrease of \$367,909 or 2.88 per cent. As in almost all similar cases, this falling off was due to the burden of operating expenses. Although the gross operating revenues gained \$1,002,478 or 3.40 per cent, the operating expenses advanced further to the extent of \$1,370,387 or 8.19 per cent.

POWER PLANT COSTS UP TO 30.67 PER CENT

The largest item of increased expense, both in amount and in percentage, was power-plant operation. The expenditures for this increased \$626,192 or 30.67 per cent. Other increases were as follows: Maintenance of equipment, \$136,534 or 5.47 per cent; operation of cars—trainmen's wages, \$174,574 or 3.11 per cent; operation of cars—other expenses, \$286,351 or 14.48 per cent; and damages, \$159,176 or 22.30 per cent. Maintenance of way and structures showed a decrease of \$24,849 or 0.99 per cent.

Owing to a decline of \$20,085 or 4.69 per cent in other income and a rise of \$92,548 or 3.94 per cent in taxes and of \$602,640 or 10.68 per cent in interest and rentals, the net income for the last year fell off \$1,083,184 or 20.85 per cent. After appropriations of \$935,761 for supercession and depreciation, as compared to \$289,022 in 1916-1917, and of \$2,233,659 for dividends as compared to \$4,467,318, and other adjustments, there remained on

June 30, 1918, a surplus of \$12,812,581, an increase of \$845,308 over that of a year before.

According to the company's report, the results of operation of rapid transit lines under contract with the city continue to be satisfactory, considering that only a portion of the Broadway subway has been completed. For the fiscal year the passenger revenue from the rapid transit lines increased \$1,584,970; operating expenses, maintenance, depreciation, taxes and rentals increased \$1,284,124, and net revenue (applicable to interest on new investment) increased \$401,999.

Since the beginning of the pooling arrangement with the city on Aug. 4, 1913, the operating company has earned in full its first preferential of \$3,500,000 per annum, and \$2,104,296 toward its second preferential, leaving \$1,443,028 to be made up out of future earnings. The interest to date paid by the city on its cost of construction of property placed in operation plus a sinking fund at the rate of 1 per cent per annum totals \$4,985,850, making the total deficit \$6,428,882. The deficit in the company's preferentials is to be made good from future net income before payment of the city's interest and sinking fund charges. The deficit in the city charges during temporary operation is to be added to the cost of construction of city owned lines, but after "initial" operation it is chargeable to the tax budget.

SURFACE EARNINGS FALL OFF

The passenger earnings on the surface lines fell off \$565,851 or 3.3 per cent during the year. While part of this increase may be attributed to the competition of new rapid transit lines, it is said that any influence in this di-

rection should have been overcome by the normal increase in traffic. The principal cause of diminishing revenue was the inability, on account of the shortage of men, to operate the full complement of cars.

The net capital expenditures for additions and improvements aggregated for the fiscal year \$8,669,393, of which \$8,518,566 was expended by the New York Municipal Railway Corporation on rapid transit lines pursuant to the provisions of its contract with the city. The total of such expenditures to June 30, 1918, is \$58,499,877, divided, subject to redistribution as to certain classifications, as follows: On account of contribution to city owned lines, \$11,160,501; on account of equipment of city owned lines, \$11,245,213, and on account of additions, extensions and improvements of existing railways, \$36,094,162. Less than half of this expenditure represented property in operation during the year.

RESERVE ACCOUNTS INCREASED

The reserve accounts were increased during the year as follows: Fire insurance, \$62,581; amortization of capital, etc., \$786,293, and employer's liability, \$55,952—total \$904,827. As against these increases the following charges were made: Retired property adjustments, etc., \$120,549, and payments on account of employer's liability, \$16,320 for the year, leaving a net increase in reserves of \$767,956 for the year.

Miscellaneous operating statistics for the last two years follow:

	1918	1917
Passenger earnings.....	\$29,492,279	\$28,485,861
Increase (per cent).....	3.53	5.26
Passengers carried.....	771,044,274	760,519,397
Revenue mileage.....	97,333,571	98,593,632
Decrease (per cent).....	1.28	0.16
Earnings per revenue-mile (cents).....	30.3	28.8
Units per passenger (cents):		
Passenger earnings.....	3.82	3.74
Miscellaneous earnings.....	0.19	0.19
Total earnings.....	4.01	3.93
Operating expenses.....	2.35	2.20
Taxes.....	0.32	0.31
Interest and rentals.....	0.81	0.74
Total.....	3.48	3.25
Surplus.....	0.53	0.68

COMPARATIVE INCOME STATEMENT OF BROOKLYN RAPID TRANSIT COMPANY FOR YEARS ENDED JUNE 30, 1917 AND 1918

	1918		1917	
	Amount	Per Cent	Amount	Per Cent
Transportation revenue.....	\$29,879,309	97.94	\$28,992,111	98.27
Miscellaneous revenue.....	627,188	2.06	511,908	1.73
Total operating revenues.....	\$30,506,497	100.00	\$29,504,019	100.00
Maintenance of way and structure.....	\$2,480,439	8.13	\$2,505,288	8.50
Maintenance of equipment.....	2,632,885	8.63	2,496,349	8.46
Operation of power plant.....	2,667,809	8.74	2,041,617	6.92
Operation of cars—trainmen's wages.....	5,780,108	18.95	5,605,533	19.00
Operation of cars—other expenses.....	2,264,439	7.42	1,978,089	6.70
Damages.....	872,945	2.86	713,768	2.42
Legal expenses in connection with damages.....	258,111	0.85	269,523	0.91
General law expenses.....	63,658	0.21	57,394	0.20
Other general expenses.....	811,023	2.66	768,991	2.60
Freight expenses.....	280,099	0.92	304,666	1.03
American Railway Traffic Company—expenses.....	288	0.00	199	0.00
Total expenses.....	\$18,111,805	59.37	\$16,741,417	56.74
Net revenue from operation.....	\$12,394,692	40.63	\$12,762,602	43.26
Income from other sources.....	407,729	1.34	427,814	1.45
Gross income.....	\$12,802,421	41.97	\$13,190,416	44.71
Taxes.....	\$2,443,652	8.01	\$2,351,104	7.97
Interest and rentals (net).....	6,246,715	20.48	\$5,644,074	19.13
Total deductions.....	\$8,690,367	28.49	\$7,995,178	27.10
Net income.....	\$4,112,054	13.48	\$5,195,238	17.61

International Railway Deposits Asked

Holdings of a large amount of the International Traction Company's 4 per cent bonds on Oct. 18 appointed the following committee to act for the protection of all the holders of these bonds: T. De Witt Cuyler, Philadelphia; Elliott C. McDougal, president of the Bank of Buffalo, Buffalo, and T. E. Mitten, president of the Philadelphia Rapid Transit Company.

This action, a statement by the committee said, was due to difficulties that resulted in a suspension of operation and threatened default in the payment of interest due on Nov. 1, together with the imminence of a receivership. The protective agreement is being prepared which will call for deposits of the bonds under the terms that will be set forth in the agreement.

Capital Traction Prospers

Abnormal Conditions in Washington Lead to 21 Per Cent Gain in Receipts from all Sources

The operating revenues and the non-operating income of the Capital Traction Company, Washington, D. C., increased \$501,621 or 21.4 per cent during 1917. This sum was absorbed as follows: Additional expenses for labor and materials, \$191,964; increase in depreciation allowance, \$102,954; tax increase, \$43,469, and extra dividends to stockholders, \$150,000. In addition \$46,531 was carried forward to surplus as the result of the year's operation.

INCOME STATEMENT OF CAPITAL TRACTION COMPANY FOR CALENDAR YEAR 1917

Operating revenue.....	\$2,783,538
Operating expenses.....	1,533,329
Net operating revenue.....	\$1,250,209
Taxes	186,283
Operating income.....	\$1,063,926
Non-operating income.....	16,262
Gross income.....	\$1,080,188
Deductions	283,658
Net income	\$796,530
Dividends	750,000
Surplus for year.....	\$46,530

The increase in earnings was due to the abnormal conditions in Washington. While the greatly augmented receipts enabled the company to meet the increases noted above, conditions give no assurance, it is said, that the company will be able to make such a satisfactory showing in the future. On some of the lines the ultimate capacity has been reached, and any considerable growth in revenue would have to be accompanied by further capital expenditures and correspondingly increased fixed charges. Moreover, the larger part of the 1917 net earnings was accumulated during the early part of the year, before the full effect of rising operating costs was felt.

TAXES UP 30.4 PER CENT

The taxes for 1917 were larger by \$43,469 or 30.4 per cent than those in the preceding year. The major part of the increase was caused by the federal income tax and the capital stock tax.

In 1917 the appropriation for depreciation was materially increased to \$225,833, based on actual values of the property and rates of depreciation recommended by the Public Utilities Commission. Expenditures from the depreciation fund during the year, chiefly for track renewals, amounted to \$84,093, leaving the balance on Dec. 31, 1917, \$328,941. Of this amount \$180,000 has been invested in Liberty Bonds.

The number of revenue passengers carried in 1917 was 64,285,993 as compared to 53,482,546 in 1916, while the transfer passengers totaled 19,412,983 and 16,487,820 respectively. The car-

miles increased from 7,769,389 in 1916 to 7,871,530 in 1917. The net capital expenditures for 1917 were \$127,511.

The following table gives car-mile and passenger financial statistics for the last two years:

	Cents Per Car Mile		Cents Per Passenger	
	1917	1916	1917	1916
Passenger revenue.....	35.15	29.26	3.30	3.24
Other revenue.....	0.42	0.32	0.04	0.04
Gross revenue.....	35.57	29.58	3.34	3.28
Operating expenses.....	19.48	15.93	1.83	1.77
Taxes	2.37	1.84	0.22	0.20
Interest	3.60	3.63	0.34	0.40
Net income.....	10.12	8.18	0.95	0.91

City Intervenes in Receivership

Judge Charles P. Orr in the United States District Court at Pittsburgh on Oct. 19 handed down an opinion and order granting the petition of the city of Pittsburgh to intervene as a party plaintiff in the receivership proceedings against the Pittsburgh Railways, placed in the hands of receivers several months ago. The petition of the city was presented by Special City Solicitor C. K. Robinson on July 20 and a supplemental petition was filed on Sept. 27. In his order Judge Orr granted permission to the city to intervene in its own behalf and in the behalf of the surrounding boroughs, cities and townships through which the Pittsburgh Railways now operates. The court said in part:

"Without now passing upon the merits of any of the matters presented in the petition except upon the question of intervention, this court has reached the conclusion that the petition of the city, in so far as it prays to intervene in its own behalf and in behalf of others, should be granted.

"Intervention is not allowed because the petitioner is a creditor or because it claims to be guardian of public interests or because it will be afforded better opportunities to assert the duty of the receivers to comply with its demands. The rights of the creditors are protected in the distribution of funds. The general public interests are well guarded by the courts and the controversies between municipalities and the receivers can be separately adjusted.

"The municipality is in the nature of one who has a substantial interest in property used by a street railway. One who has a substantial interest in property placed in the hands of receivers appointed in litigation is almost invariably permitted to intervene for the protection of the property. There is no reason why the city of Pittsburgh, on its own behalf and as representing the class, should not be permitted to intervene in the like manner.

"The intervention by the city of Pittsburgh will not tend to increase the labors of the receivers or lead to confusion, but will rather simplify some of the perplexities which are bound to arise in this receivership. Being a party to the proceedings, the city of Pittsburgh subjects itself to the jurisdiction and to the proper orders of this court."

Would Abandon Service

Spokane Company Saw in This the One Quick Way Out of Its Difficulties

Early in October the City Council of Spokane, Wash., ordered the Washington Water Power Company to resume railway service on certain of its lines which the company had abandoned on the plea that operation did not pay. In its letter ordering service resumed, the city contends that the giving of service on these lines is a franchise obligation and can be set aside only by agreement between the city and the company. The city was not consulted when the service was discontinued by the company.

Without stating what would eventually be done in regard to the city's mandate, the company asked to be allowed to continue not to operate the lines until the hearing on Oct. 23 before the State Public Service Commission when other railway matters are to be considered, and lay the situation before that body. This request is being considered by the counsel for the city, and it seems likely that the matter will remain in status quo until after the public hearing.

The city authorities assert that the Public Service Commission has no jurisdiction over franchise provisions, and that the requirement to maintain service over certain lines is entirely within the jurisdiction of the municipality. They say that the company can be compelled to maintain service on all lines covered by the franchise unless the city authorities see fit to release the company from its franchise obligations.

D. L. Huntington, president of the company, said recently:

"Unless we are allowed to cut down expenses, we will be forced to ask the Legislature to amend the statute limiting the fare. The situation for the railway is critical. On one side is the statutory limit of the 5-cent fare. On the other side is increased taxation, increased wages for employees and increased costs for everything that goes into the railway. We have to get more money through increased fares or cut expenses through curtailed service."

Salt Lake Traffic Still Dwindling

In the ELECTRIC RAILWAY JOURNAL for Sept. 21, page 523, facts taken from company sources were reproduced showing the falling off in passenger traffic on the lines of the Utah Light & Traction Company, Salt Lake City, Utah. According to *Kar-Fax* for Oct. 12, issued by the company, traffic continues to dwindle. In the issue just mentioned that paper says:

"There were just 455,300 fewer passengers on the Salt Lake street cars during September this year than during the same month last year.

"Now, even though approximately 40 per cent of the patrons paid 6-cent fares, as compared with a 5-cent fare last year, you can see that the loss to the company was an enormous sum.

"This loss in traffic has been going on so long that measures have had to be adopted to offset the loss in revenue caused by it. The skip stop, though not primarily adopted for that reason, will help some, and a reduction in service on some lines during the slack hours is to be tried as a further remedy."

Fixed Charges Ordered Paid

Following the filing of a petition by J. D. Callery and H. S. A. Stewart, two of the three receivers of the Pittsburgh (Pa.) Railways, setting forth a statement of the indebtedness of the Pittsburgh Railways falling due during the month of October and aggregating \$530,128, Judge Charles P. Orr, in the United State District Court, on Oct. 17 ordered the receivers to pay out moneys in the way of interest and fixed charges aggregating \$100,152.

The same day Judge Orr also handed down three additional orders directing the receivers to pay to the Fidelity Title & Trust Company \$87,500 for interest due on mortgages to the Pittsburgh, Allegheny & Manchester Traction Company, the Federal Street & Pleasant Valley Passenger Railways Company and its subsidiary companies, and to the Pittsburgh Traction Company. These orders were made subject to the terms and limitations of the court's opinion of Sept. 7, disposing of the petition of the Consolidated Traction Company.

In the petition of the railways company filed on Oct. 17 Receiver Charles A. Fagan's name did not appear. Recently Mr. Fagan filed a supplemental petition in the United States District Court in which he set forth his objections to the payment of fixed charges in view of the recent increase in the employees' wage scale and the uncertainty of the 7-cent fare. Mr. Fagan's dissent was noted at length in the ELECTRIC RAILWAY JOURNAL for Oct. 19, page 714.

Financial News Notes

New Pacific Gas & Electric Director.—Nion R. Tucker has been elected a director of the Pacific Gas & Electric Company, San Francisco, Cal., to take the place of Capt. Norman B. Livermore, resigned.

Montreal Dividend Passed.—The Montreal (Que.) Tramways, which deferred its dividends of 2 per cent for the quarter ended June 30 last, has further deferred it for the quarter ended Sept. 30.

Deferred Interest Paid.—The Aurora, Elgin & Chicago Railroad, Wheaton, Ill., announced on Oct. 15 that the interest coupon on the first and refunding mortgage 5 per cent forty year gold bonds which was due and payable on July 1, would be paid on and after Oct. 15, together with compound interest from July 1 to Oct. 15.

Object to Removal of Line.—The people of Medford and Jacksonville plan to fight the proposal of S. S. Bullis, president Southern Oregon Traction Company, to dismantle the line and dispose of the rails to the government. Injunction proceedings are being planned. Protest resolutions of the two City Councils recite that both cities contributed substantially to the building of the road, and that its removal now would be a serious blow.

Colorado Springs Protective Committee.—In view of default of the coupon maturing on Oct. 1 last, holders of first consolidated 5 per cent bonds of the Colorado Springs & Cripple Creek District Railway, Colorado Springs, Col., due in 1942, are requested to communi-

cate with a committee designated to act for the protection of the bondholders' interests. The committee is composed of Mortimer N. Buckner, president of the New York Trust Company, New York, and Frederick J. Lisman, F. J. Lisman & Company, New York.

New Indianapolis Directors.—Alfred C. Potts has been appointed a public director of the Indianapolis Traction & Terminal Company, Indianapolis, Ind., by Governor James P. Goodrich of Indiana. B. A. Worthington has been appointed to a similar position with the company by the Chamber of Commerce of Indianapolis. A third appointment will be made by the Mayor of the city of Indianapolis. These appointments are in keeping with an order of the Indiana Public Service Commission in the fare case, to which the Indianapolis Traction & Terminal Company agreed, that three public directors be appointed who shall serve to Jan. 1, 1919. Thereafter public directors are to serve for a term of one year. The order directs that the board shall report to the commission within sixty days and thereafter every ninety days. The duty of the public directors, in the language of the order is "to serve faithfully the interests they represent, but always with absolute fairness and equity to the company, and to strive to attain better service and secure and maintain hereafter, so far as possible, a frank, honest and open policy on the part of the company toward the city of Indianapolis and the people thereof." W. Kesley Schoepf, Cincinnati, Ohio, has resigned as a director of the company. This resignation will leave four directors, J. W. Willy, John J. Appel, Ferdinand Winter and Robert I. Todd, who with the two appointees named above and one more to be nominated, will make up the directorate. The number of directors has been increased from five to seven.

Electric Railway Monthly Earnings

BANGOR RAILWAY & ELECTRIC COMPANY, BANGOR, ME.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '18	\$82,666	*\$49,054	\$33,612	\$20,354	\$13,258
1m., Aug., '17	78,486	*43,521	34,965	19,227	15,738
12m., Aug., '18	921,663	*552,537	369,126	236,220	132,906
12m., Aug., '17	865,266	*492,238	373,028	223,977	149,051

CHATTANOOGA RAILWAY & LIGHT COMPANY, CHATTANOOGA, TENN.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '18	\$164,063	*\$121,136	\$42,927	\$32,079	\$10,848
1m., Aug., '17	142,801	*101,878	40,923	29,871	11,052
12m., Aug., '18	1,577,686	*1,399,288	178,398	371,764	†193,366
12m., Aug., '17	1,379,817	*966,918	412,899	357,054	55,845

COLUMBUS RAILWAY, POWER & LIGHT COMPANY, COLUMBUS, OHIO

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '18	\$343,770	*\$255,323	\$88,447	\$59,245	\$29,202
1m., Aug., '17	333,849	*233,627	100,222	50,761	49,461
12m., Aug., '18	4,240,145	*3,085,212	1,154,933	632,821	522,112
12m., Aug., '17	3,824,984	*2,598,042	1,226,942	543,857	683,085

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

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '18	\$1,862,921	*\$1,273,246	\$589,675	\$506,306	\$83,369
1m., Aug., '17	1,585,919	*1,022,683	563,236	437,829	125,407
12m., Aug., '18	21,269,646	*14,233,848	7,035,798	5,778,119	1,257,679
12m., Aug., '17	18,582,072	*11,031,354	7,550,718	5,156,724	2,393,994

* Includes taxes. † Deficit. †† For the month \$20,132, and for twelve months, \$330,425, included for depreciation.

‡ Includes non-operating income.

§ Includes accruals under rapid transit contracts with city payable from future earnings.

EAST ST. LOUIS & SUBURBAN SYSTEM, EAST ST. LOUIS, ILL.

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '18	\$372,462	*\$303,987	\$68,475	\$67,380	\$1,095
1m., Aug., '17	317,838	*214,640	103,198	65,175	38,023
12m., Aug., '18	3,981,837	*2,952,176	1,029,661	806,511	223,150
12m., Aug., '17	3,484,103	*2,237,784	1,246,319	771,280	475,039

INTERBOROUGH RAPID TRANSIT COMPANY, NEW YORK, N. Y.

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '18	\$3,289,610	*\$1,958,897	\$1,330,713	\$1,190,608	†\$377,022
1m., June, '17	3,257,237	*1,683,460	1,573,777	1,041,775	†\$633,203
12m., June, '18	40,497,728	*22,871,920	17,625,808	13,556,649	†\$7,171,267
12m., June, '17	39,866,146	*19,454,678	20,411,468	12,085,186	†\$9,102,654

INTERBOROUGH RAPID TRANSIT COMPANY, NEW YORK, N. Y.

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July, '18	\$3,227,989	*\$2,080,511	\$1,147,478	\$1,361,774	†\$288,031
1m., July, '17	2,911,301	*1,693,134	1,218,167	1,064,983	†\$451,788

CUMBERLAND COUNTY POWER & LIGHT COMPANY, PORTLAND, ME.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '18	\$336,524	*\$205,004	\$131,520	\$71,423	\$60,097
1m., Aug., '17	324,901	*181,164	143,737	70,302	73,435
12m., Aug., '18	3,158,011	*2,193,621	964,390	852,272	112,118
12m., Aug., '17	3,038,213	*1,997,428	1,040,785	813,884	226,901

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

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '18	\$671,067	††\$452,586	\$218,481	\$190,284	\$28,197
1m., Aug., '17	505,552	*303,922	201,630	178,505	23,125
12m., Aug., '18	7,131,359	††4,466,857	2,664,502	2,180,793	483,709
12m., Aug., '17	5,785,649	*3,142,497	2,643,152	2,166,386	476,766

Traffic and Transportation

39,000,000 More Passengers

Year Ended June 30 Shows This Increase on the Rapid Transit Lines in New York City

According to reports just tabulated and made public by the Public Service Commission for the First District of New York, the rapid transit lines of the city of New York (underground and elevated roads) carried a total of 1,024,615,280 passengers for the year ended June 30, 1918. This is an increase of about 39,000,000 over the preceding year. Divided among the different systems, the ticket sales were as follows:

DIVISION OF TICKET SALES

On city subways operated by the Interborough Rapid Transit Company, 418,337,666.

On the company-owned elevated lines operated by the Interborough Rapid Transit Company, 352,660,669.

On the city subways operated by the New York Consolidated Railroad Company (Brooklyn Rapid Transit System) 104,669,567.

On company-owned elevated lines operated by the New York Consolidated Railroad 150,388,060.

The increase for the year was below normal and was due mainly to the new subway lines of each system. For instance, the old subway, operated by the Interborough Rapid Transit Company, showed a decrease of 11,226,476 passengers, while the new subways (Queens Borough subway, White Plains road, Seventh Avenue and Lexington Avenue lines), showed an increase of 15,002,257, making the net increase for the year 4,143,674.

ELEVATED TRAFFIC INCREASES

The traffic on the elevated railroads in Manhattan and the Bronx operated by the Interborough Rapid Transit Company showed a net increase for the year of 3,200,576, which is comparatively small, and was due to a falling off in ticket sales at some stations on all lines. The Third Avenue line as a whole showed a decrease of more than 2,500,000 for the year, while the Second Avenue showed an increase of more than 5,000,000. The Sixth and Ninth Avenue lines showed increases of about 135,000 and 585,000 respectively.

On the New York Consolidated system the company-owned lines showed an increase of 6,724,300, while the city-owned lines scored an increase of 24,856,772.

Among the largest ticket sales by stations on the subway lines operated by the Interborough are the Grand Central Station, with a total of 26,160,215; Atlantic Avenue, Brooklyn,

with 21,516,847; Brooklyn Bridge station, with 21,222,947; Fulton Street station, with 18,279,325, and Fourteenth Street station, with 16,108,367.

On the elevated lines operated by the Interborough Rapid Transit Company some of the heaviest stations were: City Hall on the Third Avenue line, with 9,342,520 ticket sales; 106th Street, Third Avenue line, with 7,027,269; Thirty-third Street on the Sixth Avenue line, with 7,375,132.

POINTS OF HEAVY TRAFFIC

On the New York Consolidated system some of the heaviest stations were Chambers Street on the Broadway-Fourth Avenue subway, with 23,239,201 ticket sales which, by the way, was a decrease of more than 4,600,000 from the preceding year; Brooklyn Bridge (Park Row), on the elevated lines, with 18,157,610, which is also a decrease of nearly 1,000,000.

Citizens Favor Increase

Citizens of Shawnee, Okla., are preparing a petition to be presented to the Corporation Commission of Oklahoma asking that body to issue an order permitting the Shawnee-Tecumseh Traction Company to increase its fares from 5 cents to 7 cents. This action was initiated by the members of the Rotary and the Lions Clubs and has been indorsed by the members of the Shawnee City Council and by civic and commercial organizations. R. D. Long, general manager of the Shawnee-Tecumseh Traction Company, is said not to have known what was being done until announcement of the plans was made at a banquet arranged recently by the Rotary and the Lions Clubs "for a discussion of traction problems," and at which Mr. Long was guest of honor.

In speaking of this banquet, Mr. Long said:

"As an electric railway manager, I was prepared to listen to protests and complaints, and I went to Shawnee expecting to be told that somebody had fault to find with the manner in which the company was being operated. As a matter of fact, the company had lost \$130,000 in the last ten years through the Shawnee property. So when I was asked to talk about the company at the conclusion of the luncheon, I told of the handicaps under which we were operating, but did not hint at any increase in the rate of fare.

"Then the clubs went on record as favoring a schedule that would provide for a 7-cent fare or for the sale of sixteen tickets for \$1. The petition is being prepared by these clubs and by other citizens of Shawnee. I have taken no part in the movement to bring about the increase."

New Rhode Island Fares

Modification of Former Zone System Went Into Effect on Oct. 23—Permanent Solution Demanded

Increased fare schedules on the system of the Rhode Island Company, Providence, R. I., went into effect on Oct. 23 in accordance with a decision of the Public Utilities Commission handed down on Oct. 19.

The new schedules are calculated by the company to produce an increase in the annual revenue amounting to \$1,900,000, and the company believes that it will be able to meet its operating expenses, wage increases, and rentals, under the new order. It did not ask for fare increases sufficient to pay depreciation charges or any dividend upon its stock.

The new fare schedule is based upon the 5-cent unit fare, on a zone system. Starting from the center of Providence, on the suburban lines, and on lines running beyond the first zone limit, the passenger pays an initial fare of 5 cents which takes him generally 2 miles. He can then ride 1½ miles for another nickel, and after that pays 5 cents for every 1½ miles. One cent is charged for every transfer issued, at any place on the entire system.

In granting permission to put the schedule into effect, the commission ordered slight modification in the zone terminals, to remove local unfairness. It notified the company that the new fares would hold for four months, and that each month a detailed report must be filed showing the exact result of the company's receipts and expenses.

As soon as the fare increase was made authoritative the company notified its employees that the new wage scale would become effective immediately.

On the evening of Oct. 19 the carmen's union held a meeting, received the formal notice of the wage increase being granted, and voted unanimously to accept conditions.

The substantial interests in the State are already preparing to go before the General Assembly when it meets in January and seek legislation providing a permanent solution of the electric railway problem.

Columbus Retains Expert

The Columbus Railway, Power & Light Company, Columbus, Ohio, has engaged the services of W. J. Bieneman, president of the State Public Service Utility Audit Company, Charleston, W. Va., to look after its interest in the application for increased fares now pending before the City Council of Columbus, Ohio. Mr. Bieneman has for several years past made rate cases for public utilities a specialty and has been very successful in representing public utilities before state and federal commissions. It is acknowledged by several state commissions that a feature of Mr. Bieneman's exhibits is the clearness and fairness with which these are prepared.

P. S. Seven-Cent Fare Approved

League of Municipalities Loses First Legal Step to Block Justice to New Jersey Lines

The recent action of the Board of Public Utility Commissioners of New Jersey in authorizing a 7-cent fare for the Public Service Railway in addition to a 1-cent transfer charge was affirmed by Supreme Court Justice Swayze on Oct. 18 in *certiorari* proceedings. Under a joint stipulation previously filed the decision of Justice Swayze is accepted as the judgment of the court, and the case will now go on appeal before the November term of the Court of Errors and Appeals, the highest court in the State.

ARGUMENT OF OPPOSITION

According to Justice Swayze the chief point made by counsel for the League of Municipalities, which has been trying to block fare relief for the company, is that the commission had no jurisdiction to grant the increase since it was without evidence of property value. In refusing agreement on this point, the justice pointed out that under one section of the regulatory law the commission must approve a company-initiated increase when it is satisfied that the increase is just and reasonable.

According to the evidence, the increase approved was only enough to enable the company to meet the increased expenses forced upon it by the awards of the War Labor Board. The complainants did not venture to introduce evidence or to contradict the railway evidence, but simply assumed that the justice and reasonableness of a rate can be determined only by first ascertaining the property value.

REASONABLENESS OF RATE A BUSINESS MATTER

In Justice Swayze's opinion, however, the reasonableness of a rate is a business question, depending upon many factors. It is the result of "a composition of forces." In amplifying this point the justice said:

There can be no better evidence of the reasonableness of a rate than its general adoption by the municipalities of this and other states in ordinances granting consent to the location of street railways, over a long succession of years, with acquiescence by the public without question, and, as far as we know, without complaint either by the public or by Boards of Public Utility Commissioners.

Five cents was certainly not on its face unreasonably high, since it was a standard rate, and there was an entire absence of proof on the part of the prosecutor. It follows with the certainty of a geometrical axiom that the addition of just enough to meet the increased wages forced on the railway by the War Labor Board could not make unreasonably high what was not so before.

The failure to allow any return on capital investment would, if this had been a case of the board fixing a rate, instead of its approving a rate fixed by the railway, have been a violation of the principle of the gas rate case that a just and reasonable rate must be sufficient to induce the investment of capital in the business and its continuance therein.

From the uncontradicted evidence put in by the company, Justice Swayze said, he was unable to see how the commission could have drawn any other con-

clusion than the one which it reached. If any doubt existed, he believed it would be removed by the suggestion of city counsel as to the method by which the railway might meet the increased expense for wages.

One counsel suggested that the difficulty might be overcome by decreasing the service rendered, while another "with seeming seriousness and indifference to results" suggested that relief could be found in the appointment of a receiver. Justice Swayze disposed of the former suggestion with the observation that the commission as a matter of business policy had preferred to keep up the service even at the cost of increasing the rate and that no one except city counsel now suggests that a reduction of efficiency would be tolerable or tolerated.

POWER TO REGULATE, NOT TO DESTROY

As for a receivership the justice stated:

I do not say that if a reasonable rate drove the operating companies into insolvency, that rate could not be established against the underlying companies. I only say that the present proceeding is not adapted for that purpose. The act contemplates a regulation of still existing public utilities for the benefit of the public, not their destruction. It was decided more than thirty years ago that the constitutional power was a power to regulate, not a power to destroy.

The municipal counsel had again raised the question of the power of the New Jersey commission to set aside the fare limits set in municipal franchises, but Justice Swayze succinctly disposed of this point with the observation that the matter, as far as the Supreme Court is concerned, was disposed of by the decisions in the Collingswood Sewerage Company and the Atlantic Coast Electric Railway cases. These were digested in the *ELECTRIC RAILWAY JOURNAL* of March 30, page 623, and June 22, page 1208. The latter decision, by the Court of Errors and Appeals, upheld State paramountcy in rate-making in reversing a former decision of the Supreme Court. In the meantime, the Supreme Court by its decision in the Collingswood case had already reversed its Atlantic Coast reasoning.

Trenton Six-Cent Fare O. K.

On Oct. 18 Justice Swayze of the New Jersey Supreme Court approved the recent grant of a 6-cent fare to the Trenton & Mercer County Traction Corporation by the Board of Public Utility Commissioners. Most of the points raised by complainants were covered by the contemporaneous decision of Justice Swayze in the Public Service Railway case of which an abstract is published above.

The only argument calling for further remarks in the Trenton case, the justice said, is that the railway lost \$86,000 a year by its operation

of suburban lines, and that this loss cannot be made up by profits on the operation of lines in the city of Trenton. In the court's opinion, whether the railway shall run some parts of its line at a loss—perhaps with a view to future development on future gain, or perhaps with a view to greater public service—is a business question to be determined by the railway subject to the control of the commission. It is settled that the correct legal test is the effect on the railway's entire line and not upon that part which was formerly a part of one of the consolidating roads. (*St. L. & San Francisco Railway vs. Gill*, 156 U. S. 649, 665.) The test has recently been applied in the case of an electric railway. (*Puget Sound Traction Company vs. Reynolds*, 244 U. S. 574.)

In commenting further Justice Swayze said: "A rule which would deprive suburban communities of electric railway service might be much to the advantage of great cities like Trenton but work harm to rural communities, and perhaps be to the disadvantage of the State as a whole. There is a general public interest in having thinly populated and relatively poor sections helped by the more densely populated and richer communities. Public roads are a good illustration. We can readily picture to ourselves the state of our roads if every mile depended for its upkeep upon the revenues traceable to that mile. The law as to railways is settled adversely to prosecutor's contention."

Kansas City Goes to Court

A suit had been filed in the Supreme Court of Kansas in the name of S. M. Brewster, attorney general, asking on behalf of Kansas City, Kan., that the court stop the collection of 1 cent from passengers on Kansas City Railways cars at the State line, and asking that the court oust the company from Kansas. A receiver is also suggested, to administer the property, and an injunction asked, preventing the company from withdrawing any of its cars from service.

This ouster and injunction suit is the second proceeding now pending over the fare situation in Greater Kansas City. It will be remembered that the Public Service Commission of Missouri granted the Kansas City Railways the right to charge a 6-cent fare. The company, however, serves on both sides of the Kansas-Missouri State line. The Public Utilities Commission of Kansas has so far been prevented from holding a hearing on the fare question with reference to an increase in fare on the Kansas side.

Pending decision by the commission, the railway is charging only 5 cents on the Kansas side, and collecting another cent at the State line from passengers who ride across the line into Missouri.

The Public Utilities Commission will hold a hearing on the fare question on Oct. 30.

I. C. C. Allows Increase

W. R. Power, general manager of the Ohio Valley Electric Railway, Huntington, W. Va., recently announced that he had received word from Washington that the company's request for permission to raise the fare had been granted by the Interstate Commerce Commission.

At present the railway has three fare zones: the first, Huntington to Kellogg; the second, Kellogg to Catlettsburg, and the third from Catlettsburg to Ashland. Under the new ruling there will be four zones: first, from Huntington to Kellogg; second, from Kellogg to the Norfolk & Western depot in Kenova; third, from the Norfolk & Western depot to Catlettsburg, and fourth, from Catlettsburg to Ashland.

The fare remains unchanged in the first zone. Ten cents will be charged between Huntington and all points within the second zone. The third and fourth zones carry 15 and 20-cent fares respectively for persons commuting out of Huntington. The local fare within Huntington is unaffected.

A Real Emergency Here

The Public Service Commission of Pennsylvania in an extended opinion by Commissioner James Alcorn on Oct. 18 dismissed complaints against increased fares, including an advance to 6 cents, put into effect last June by the Indiana County Street Railway, but in so doing said that as "the increased cost of operation due to the abnormal conditions now existing is the ground for supporting an increase in the rates of fare it would be only proper that when these conditions cease the old rate should be restored or the company be required to show that it is still entitled to the additional revenue."

The rates are approved until Jan. 1, 1920. The opinion also commends to the notice of the company statements by witnesses that cars are operated irregularly and directs that service be improved.

Grand Rapids Wants Seven Cents

The Grand Rapids (Mich.) Railway has opened its books and bared its financial condition to the City Commission in support of its request for the right to charge increased fares. That statement shows if the company continues to operate on a 5-cent fare basis through 1919, it will lose \$173,310, including \$100,000 dividends to preferred stockholders.

Benjamin S. Hanchett, president of the company, told the City Commission on Oct. 12 that the company cannot borrow a dollar and that the only financial relief in sight is in increased earning power. In support of that statement, he showed that on the basis of a 6-cent fare, with no decrease in the number of passengers carried, the company would lose about \$5,310.

The company has requested that the City Commission deal with the increased fare question directly, and not refer it

to the people. Forms of an amended ordinance by resolution have been submitted to City Attorney Taggart for approval, with the request that some commissioner introduce it. That ordinance, as drawn, provides for a 7-cent fare.

The business interests favor the increase. At the hearing on Oct. 12 Lee H. Bierce, secretary of the Association of Commerce, in discussing the request of the railway for the right to charge increased fares urged that the advance be granted, stating that every other public utility in the city had been permitted to advance rates. He said that the railway company must be permitted to earn enough to pay its way.

Transportation News Notes

Springfield (Ohio) Company Wants Increase.—The Springfield (Ohio) Railway has applied to the City Commission for an increase in fare. No specific amount is designated in the request.

El Paso Wants More.—The El Paso (Tex.) Electric Railway has applied to the City Council for permission to increase fares from 5 cents to 6 cents, with an increase in half fares from 2½ cents to 3 cents. The Council has announced public hearings.

Straight Five-Cent Fare for Terre Haute.—An order has been issued by the Public Service Commission of Indiana granting the Terre Haute, Indianapolis & Eastern Traction Company the right to charge a straight 5-cent fare on cars in the city of Terre Haute.

Injunction Against Interference With Fares.—The Murphysboro & Southern Illinois Railway, Murphysboro, Ill., filed on Oct. 16, in the Federal Court at Danville, a bill for an injunction restraining the State officials from interfering with the company charging in excess of 2 cents per mile on its inter-urban line.

Increased Rates for Boulder.—The Western Light & Power Company, Boulder, Col., of which D. A. Hegarty is vice-president, has been authorized to increase rates for electric light, power, steam and gas and to abolish all commutation tickets on the electric railway, by the Public Utilities Commissions of Colorado and Wyoming.

Seven Cents for Ashland.—The Railroad Commission of Wisconsin has issued an order granting a 7-cent fare to the Ashland Light, Power & Street Railway Company, Ashland, Wis. The order provides that cash fares shall be 7 cents with six tickets for 40 cents, while school children's tickets are increased from 2½ to 3½ cents.

Wants More in Benton Harbor and St. Joe.—C. K. Minary, president of the Benton Harbor-St. Joe Railway & Light Company, Benton Harbor, Mich., has addressed a letter to the City Council asking for a conference to discuss the matter of an advance in rates of fare. A similar communication has been sent to the City Council of St. Joe.

North Coast Wants Advance.—The North Coast Power Company, Vancouver, Wash., which owns and operates the railway in that city, and as far out as Sifton, has filed with the Public Service Commission a new schedule of fares between Vancouver and Sifton, advancing the rates about 50 per cent. The price of commutation tickets has also been increased.

Plans to Retaliate.—The City Commission of Sacramento, Cal., has warned the Pacific Gas & Electric Company that if it persists in its application before the State Railroad Commission to raise fares in Sacramento to 6 cents the City Commission will revoke the ordinance which practically put the jitneys out of business in Sacramento.

Seven Cents in Ishpeming.—The Michigan Gas & Electric Company, Ishpeming, Mich., has found it necessary to increase the fare on the line between Ishpeming and Negaunee. The fare has been raised 2 cents on each 5 cents paid. From Lake Angeline to Ishpeming or from Ishpeming or Negaunee to the Union Park the fare is 7 cents and from Ishpeming to Negaunee the fare is 14 cents.

Increase for Syracuse Line.—Increased passenger fares on the Syracuse & Suburban Railroad, Syracuse, N. Y., have been granted by the Public Service Commission for the Second District, in accordance with the petition of the company. The new rates include a 6-cent fare within the city. The other new rates are: 3 cents per mile for cash fares; 2½ cents per mile for ticket fares; 2 cents per mile for mileage book fares; 1½ cents per mile for commutation fares. The road was formerly divided into zones.

Peak Loading Reduced in New York.—At a hearing before the Public Service Commission for the First District of New York on Oct. 17 in reference to the service provided on the lines of the New York Railways, Frank Hedley, vice-president and general manager of the company, stated that the change in business hours ordered by the Health Commissioner had resulted in a material improvement in the service which it is possible for the company to give. The rush hour is now substantially without a "peak," he declared, and hence the conditions are better for the riding public.

Six Cents for Muskegon.—Resolutions were adopted by the City Council of Muskegon, Mich., on Oct. 9, permitting the Muskegon Traction & Light Company to increase its cash fares to 6 cents and its tickets to 5 cents, the

increase to become effective only after the company has agreed to provisions for certain improvements in its service, to be completed within six months after the close of the war.

Fare Case Remanded.—The corporation Commission of North Carolina made an order on Oct. 15 certifying to the Mecklenburg Superior Court the record in the case of the Southern Public Utilities Company, Charlotte, in which the commission allowed some weeks ago a petition for the increase of fares to 7 cents, the purpose of the Charlotte authorities being to appeal to the Superior Court from the order of the commission.

Stools for Dallas Conductors.—An order has been issued by the Dallas (Tex.) Railways permitting conductors to use stools and remain seated in operating cars through the residence districts. Heretofore motormen have been permitted to remain seated, but conductors have been forced to stand. All cars in Dallas are of the pay-as-you-enter type, and the use of stools does not interfere with the performance of duty by the conductors.

Tri-City Fare Inquiry.—The Public Utilities Commission of Illinois will send its engineers to investigate and report whether the Tri-City Railway, Davenport, Ia., and the Moline-East Moline & Watertown Traction Company are in need of additional revenues. Both companies have filed petitions for an increase in fares from 5 cents to 7 cents. Later they asked for permission to sell tickets entitling holders to four rides for a quarter.

Tuscaloosa Residents Approve Increase.—The public of Tuscaloosa, Ala., in mass meeting have approved increases in rates for gas, electricity and transportation by the Tuscaloosa Railway & Utilities Company. Fares will be advanced from 5 cents to 6 cents. The people themselves thus have approved the recommendation of a committee named from among them about three months ago to inquire into the matter of an advance in rates and report back. The rate increase was first taken to the City Commission. That body called a public meeting and put the matter up to the residents. The committee employed experts to examine the company's records.

Interurban Increase Restrained.—On an appeal by City Attorney J. C. Lehr of Monroe, Mich., acting on instructions from the City Commission, Judge Jesse H. Root has granted a temporary injunction restraining the Detroit, Monroe & Toledo Short Line Railway from charging in excess of 50 cents as the fare between Detroit and Monroe. Since Oct. 1 the road has been charging 70 cents. The appeal of the city attorney makes the claim that the Monroe franchise limits the fare to 50 cents, and that as only intrastate business is affected, any order by the Interstate Commerce Commission fixing fares at 2 cents a mile, if such an order has been issued, could not apply to the Detroit-Monroe fare.

Personal Mention

Arthur S. Huey has been elected president of the Arkansas Valley Railway, Light & Power Company, Pueblo, Col., to succeed George H. Harries.

Frank M. McShane has been appointed chief engineer of the Jersey Central Traction Company, Keyport, N. J., to succeed W. H. Siebenheller.

Albert E. Ford has been appointed chief clerk of the freight department of the Detroit (Mich.) United Railway to succeed Oliver D. Davis, resigned.

F. C. Rice has been appointed chief engineer of power station of the Vicksburg Light & Traction Company, Vicksburg, Miss., to succeed C. A. Barnes.

E. S. Center, Jr., has resigned as purchasing agent of the Alabama Power Company, Birmingham, Ala. He will be succeeded by Robert Klein.

P. A. Engelhardt has been appointed master mechanic of the Gulfport & Mississippi Coast Traction Company, Gulfport, Miss., to succeed E. J. Scott.

D. Mabie has been appointed chief engineer of power station of the Aurora, Elgin & Chicago Railroad, Aurora, Ill., to succeed W. H. Lovett.

M. N. Baker has been reappointed supervisor of public utilities by the City Commission of Dallas, Tex., on nomination of Mayor Lawther.

Howard Walker has been appointed master mechanic of the Pascagoula Street Railway & Power Company, Pascagoula, Miss., to succeed J. W. Powell.

M. C. R. Rosenthal has been appointed secretary and treasurer of the Bristol & Norfolk Street Railway, Randolph, Mass., to succeed R. Leslie Ryder.

C. H. Nottage has been appointed master mechanic of the Portsmouth, Dover & York Street Railway, Portsmouth, N. H., to succeed L. W. Cotton.

R. T. Langlan has been appointed master mechanic of the Lewiston, Augusta & Waterville Street Railway, Lewiston, Me., to succeed C. R. Nottage.

M. L. Evans has been appointed purchasing agent of the Columbus Railway, Power & Light Company, Columbus, Ohio, to succeed W. V. C. Bulkeley.

E. V. Henderson, auditor of the Kansas City-Western Railway, Kansas City, Mo., has also been appointed secretary of the company to succeed S. D. Hutchings.

M. Gildea has been appointed purchasing agent of the Trenton & Mercer County Traction Corporation, Trenton, N. J., to succeed Peter D. Hurley, deceased.

William Blake has been appointed superintendent of track of the Lewiston, Augusta & Waterville Street Railway, Lewiston, Me., to succeed G. C. Welsh.

Wilfred Bellmere has been appointed master mechanic of the Menominee & Marinette Light & Traction Company, Menominee, Mich., to succeed Joseph Rocque.

R. S. Worden has been appointed assistant superintendent of the Concord, Maynard & Hudson Street Railway, Greenfield, Mass., to succeed C. A. Jefts, resigned.

A. W. Spencer has been appointed chief engineer of power station of the Oskaloosa Traction & Light Company, Oskaloosa, Iowa, to succeed C. M. Stryker.

G. H. Goldberg has been appointed chief engineer of power station of the Norfolk & Bristol Street Railway, South Walpole, Mass., to succeed Brigham Hewitt.

Charles Chase has been appointed master mechanic of the Northern Massachusetts Street Railway, with headquarters at Orange, Mass., to succeed J. M. Mellor.

E. M. Sherman, formerly vice-president of the Charles City Western Railway, Charles City, Iowa, has been elected president of the company to succeed C. W. Hart.

E. Van Arsdel has been elected vice-president of the Interstate Public Service Company, Indianapolis, Ind., to succeed Harry Reid, who is now president of the company.

H. Creasey has been appointed master mechanic of the Fort Wayne & Northern Indiana Traction Company with headquarters at La Fayette, Ind., to succeed W. H. Walker.

W. F. McCoy, formerly master mechanic of the Connecticut Company at Bridgeport, Conn., is now superintendent of the reclamation shop of the company at New Haven.

Henry Beckman, treasurer of the North Kankakee Electric Light & Railway Company, Kankakee, Ill., has also been elected president of the company to succeed W. W. Bird.

Harry T. Edgar, formerly vice-president of the Paducah Traction & Light Company, Paducah, Ky., has been elected president of the company to succeed Frederick P. Royce.

F. W. Gates has been elected vice-president of the Charles City Western Railway, with headquarters at Marble Rock, Iowa, to succeed E. M. Sherman, now president of the company.

R. E. Skow has been appointed engineer of power station of the Fort

Dodge, Des Moines & Southern Railroad, with headquarters at Fraser, Iowa, to succeed B. H. Bryson.

W. K. Morley has been elected president of the Grand Rapids, Grand Haven & Muskegon Railway, Grand Rapids, Mich., to succeed R. Schaddelee, resigned.

James T. Clark has been appointed chief engineer of power station of the New York & North Shore Traction Company, Roslyn, N. Y., to succeed David Craft.

C. F. Bloom has been appointed chief engineer of power station of the Cincinnati, Milford & Loveland Traction Company, Cincinnati, Ohio, to succeed Charles W. Carson.

J. O. Bradfield, general freight agent of the Scioto Valley Traction Company, Columbus, Ohio, has also been appointed general passenger agent of the company to succeed N. E. Rees.

John H. Clark has been appointed claim agent of the City Railway, the Oakwood Street Railway and the People's Railway, all of Dayton, Ohio, to succeed Alvin Coffman.

Joseph Turner has been appointed chief engineer of power station of the Portsmouth Street Railroad & Light Company, Portsmouth, Ohio, to succeed F. Moulten.

Justice Wilson, formerly vice-president of the Tiffin, Fostoria & Eastern Electric Railway, Tiffin, Ohio, has been elected secretary of the company to succeed S. B. Sneath, Jr.

E. M. Monsell has been appointed treasurer of the Sand Springs Railway, Tulsa, Okla., to succeed Charles Page, who retains his position as president of the company.

F. M. Ames has been appointed superintendent of railways of the Northwestern Ohio Railway & Power Company, with office at Genoa, Ohio, vice. P. R. McComas, resigned.

Raymond Hunt, formerly assistant general manager of the Tidewater Power Company, Wilmington, N. C., has been appointed general manager of the company to succeed A. B. Skelding.

George Sprague, Jr., has been appointed assistant secretary and assistant treasurer of the Northern Ohio Traction & Light Company, Akron, Ohio, to succeed G. H. Bourne.

R. D. Sneath has been elected vice-president of the Tiffin, Fostoria & Eastern Electric Railway, Tiffin, Ohio, to succeed Justice Wilson, who has been appointed secretary of the company.

D. T. Gaston has been named as general manager of the Columbus Railway, Light & Power Company, Columbus, Miss., to succeed Charles Hays, who recently resigned to enter government service.

C. F. M. Niles has been elected treasurer of the Tiffin, Fostoria & Eastern Electric Railway, Tiffin, Ohio, to succeed L. S. Sneath, who still retains his position as president of the company.

C. F. Greenburg, purchasing agent for the Lincoln (Neb.) Traction Company, severed his connection with the company effective on Oct. 3. His successor will be appointed and announcement made at an early date.

F. M. Olyphant has been appointed secretary of the Plattsburgh (N. Y.) Traction Company to succeed W. H. Elder, who resigned to become connected with a firm of public accountants in New York City.

J. C. Duke has been elected vice-president of the Dallas (Tex.) Railway to fill the vacancy caused by the death of Herbert M. Hughes, who succumbed recently to pneumonia following an attack of Spanish influenza.

H. L. Barber, formerly assistant treasurer and general manager of the Plattsburgh (N. Y.) Traction Company has been appointed treasurer of the company to succeed H. F. Atherton. Mr. Barber will retain the position of general manager.

J. P. Peurrung, former vice-president and general manager of the Cincinnati, Milford & Loveland Traction Company, Cincinnati, Ohio, who severed his connection with the road several years ago, has returned to the management of the line, succeeding Charles C. Harris, resigned.

Frank Wade has been appointed master mechanic of the Empire State Railroad Corporation, Syracuse, N. Y., to succeed A. B. Metcalfe, who, as noted in the *ELECTRIC RAILWAY JOURNAL* for June 29, resigned to enter the machinery and supply business under the firm name of the Reliable Supply Company, at Syracuse, N. Y.

John S. Simpson has been appointed auditor of the Washington Water Power Company, Spokane, Wash., to succeed Parkinson Hayward, resigned. Mr. Simpson was formerly auditor of the State Public Service Commission. He was at one time with the General Electric Company and practiced as a certified public accountant in New York.

William D. Ray, formerly vice-president and general manager of the Pennsylvania Utility Company, Easton, Pa., has been commissioned as a major in the Quartermaster Corps, Construction Division, War Department. Major Ray's work will be that of utility officer at one of the cantonments, where he will have charge of the lighting and other utility services.

Dr. Robert F. Hyland, chief surgeon of the United Railways, St. Louis, Mo., who volunteered his services to the government for military duty several months ago, has been accepted and will soon be serving in the Medical Corps, U. S. A. A handsome wrist watch was presented to Dr. Hyland recently by Richard McCulloch, Thomas E. Francis, Edwin D. Smith and Bruce Cameron, all connected with the railway. Dr. Hyland will depart soon for Fort Oglethorpe, Ga., for preliminary service before going abroad.

Obituary

Allan C. Choate, purchasing agent of the Eastern Pennsylvania Railways, died of pneumonia on Oct. 13, in Pottsville, Pa. He was a son of Joseph K. Choate, vice-president of The J. G. White Management Corporation, New York, N. Y.

Andrew Jackson Hutchinson, aged eighty-five years, died on Oct. 13 at Babylon, Long Island. He had been ill with pneumonia for only two days. He was in the railroad contracting business and built city railway lines in New York City and at Jacksonville.

D. D. Schenck, president of the Toledo & Indiana Railroad, died at his home in Toledo, Ohio, on Oct. 12 from the effects of influenza. Besides his connection with the railroad, Mr. Schenck was president of the S. C. Schenck Coal Company, director of the First National Bank and the Union Savings Bank and a stockholder of the S. C. Schenck Coal Company, Chicago.

Herbert M. Hughes, vice-president and a member of the board of directors of the Dallas (Tex.) Railways, died at his home in Dallas recently following an attack of Spanish influenza which developed into pneumonia. Mr. Hughes was thirty-five years of age. In addition to his traction interests, he was head of one of the largest wholesale grocery businesses in Texas. He was also president of the Texas Wholesale Grocers' Association.

Carl H. G. Johnson, engineer in the railway and traction department of the General Electric Company, Schenectady, N. Y., died of pneumonia on Sept. 26. He had but recently taken up special government work in connection with the Division of Transportation and Housing of the Emergency Fleet Corporation. Mr. Johnson was born in Sweden but came to this country at an early age. He had been in the employ of the General Electric Company for seventeen years.

Leonard S. Cairns, general manager of the Eastern Pennsylvania Railways, died of pneumonia on Oct. 10 at Pottsville, Pa. He was thirty-six years of age. Interment was made at Minneapolis, Minn., his former home. For a number of years Mr. Cairns was general superintendent of the Twin City Rapid Transit Company of Minneapolis and St. Paul, Minn. In 1912 he resigned from the operating organization of that company to join the staff of The J. G. White Management Corporation, New York, N. Y., and was assigned to the position of assistant general manager of the Manila Electric Railroad & Light Company, Manila, P. I. He was promoted by the management corporation in 1917 to the office of general manager of the Eastern Pennsylvania Railways, Pottsville, Pa.

Manufactures and the Markets

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

ROLLING STOCK PURCHASES

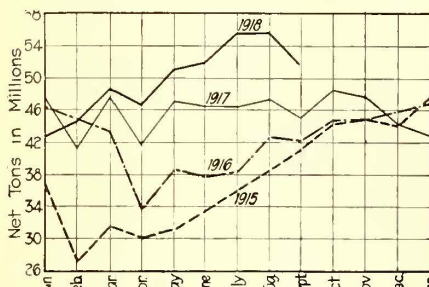
BUSINESS ANNOUNCEMENTS

Output of Coal Is Still Falling Off

Production for First Nine Months of
Current Year Estimated at
447,905,672 Net Tons

The production of bituminous coal during the week ended Oct. 12 is estimated at 12,321,000 net tons, a decrease compared with the week preceding of 273,000 net tons or 2.2 per cent, but an increase over the corresponding week of last year of 1,317,000 net tons or 12 per cent, according to the weekly report of the Geological Survey. The average production per working day during the current week is estimated at 2,053,000 net tons as compared with 2,099,000 net tons during the week of Oct. 5, and 1,834,000 net tons during the week of Oct. 12, 1917.

Bituminous coal production during the month of September, 1918, is estimated at 51,687,031 net tons, and ex-



PRODUCTION OF BITUMINOUS COAL
1915-1918 INCLUSIVE

ceeds production during the same month of 1917 by 6,579,073 net tons or 14.6 per cent. September production, limited, first, by loss of time on Labor Day; second, loss of time on Registration Day, and third, by the short month, was approximately 4,000,000 net tons less than production during either July or August, and fell slightly below the production of June but exceeded all records prior to June, 1918.

For the first six months of the coal year 1918, production of bituminous coal is estimated at 312,282,414 net tons as against 274,537,172 net tons during the same period of 1917 or an increase of 37,745,242 net tons or 13.7 per cent. The requirements during these first six months of coal year 1918, however, exceeded the production during these months of last year by 49,448,828 net tons, so that even with the large increase, production during the first half year fell 11,703,586 net tons or 3.7 per cent behind the estimated requirements.

Production for the first nine months of the calendar year of 1918 is estimated at 447,905,672 net tons, an increase over the same nine months of 36,179,783 net tons or 8.7 per cent. This tremendous increase over last year was really brought about during the months of July, August and September, the increase during this period amounting to 24,234,681 net tons or 17.4 per cent, and more than doubled the improvement that occurred during the first six months of the calendar year, the increase during this period over last year amounting to but 11,945,102 net tons, or 4.4 per cent.

ANTHRACITE OUTPUT DECREASES 4.7 PER CENT

For the week ended Oct. 12, 1918, production of anthracite is estimated at 1,955,000 net tons, a decrease of 4.7 per cent, compared with the week of Oct. 5.

The daily average during the current week of 326,000 net tons was lower than the daily average for the coal year to date during either 1918 or 1917. Total production for the coal year to date now amounts to 55,658,000 net tons compared with 54,683,000 net tons for 1917, an increase of 1.8 per cent..

Production of Carmen's Badges Cut

War Industries Board Curtails Output
to 75 Per Cent of Six Months
Production of 1917

The manufacturers of badges worn by conductors, motormen, inspectors, etc., have for some time past reported a considerable shortage of supplies on hand. The recent ruling of the War Industries Board curtailing the manufacture of metal tags or badges for industrial purposes to 75 per cent of six months production of 1917 will tend toward making this shortage more acute.

Owing to the difficulty of obtaining metal, shipments are from six weeks to two months behind and prices in the past year have risen about 50 per cent. As far as can be learned there has been no attempt on the part of the manufacturers to use a substitute in place of metal.

Shortage in Railroad Picks

The government is now in the market for about 600,000 railroad picks, which will most likely, with what government orders are already on hand, tie up the market in this field for quite a few months.

Much Activity in Fare Box Market

Replacements and New Collection
Methods Because of Higher Fares
Account for Most of the Orders

Due to the gradual awakening to the necessity for increased fares and the subsequent granting of same, there has developed a need for much revision in the methods of fare collection. This has opened up the whole fare-box situation and the manufacturers have been active in working out the needs of the industry and in supplying equipment to meet the changed conditions. As a joint result of increased fares and the foresight of the manufacturers, there is at present much activity in the fare-box market.

The statement is made by one manufacturer that the demand during July, August and September last equaled 75 per cent of the demand for any preceding entire year.

ENORMOUS INCREASE IN NUMBER OF PENNIES HANDLED

As a natural result of the changes from a 5-cent fare to either a 6-cent fare or a zone system that have occurred, the number of pennies handled has increased enormously. The old method of locking up the pennies in counting type fare boxes has in these increased fare cases become inadvisable, if not impossible. The manufacturers state that too much emphasis cannot be placed on the value of metal tickets in the elimination of pennies, and in the consequent speeding up of loading and unloading.

Fare-box orders for the most part are either for replacement of other methods of collection or for the changing of equipment formerly designed to handle only the 5-cent fares. New rolling stock being built to serve war industries such as shipbuilding, coal, munitions, etc., furnishes some demand for boxes, to be sure, but it is said that this is only a small percentage of the total.

No supply is being carried in stock by the manufacturer chiefly because it is impossible to keep up with the demand. Some trouble is being experienced in obtaining sufficient quantities of steel and bronze and this gives rise to further delay so that about ninety days is necessary in which to fill orders for any considerable quantity of boxes.

Prices on some boxes advanced several months ago and those of another manufacturer were advanced \$5 per box about ten days ago.

Industrial Preparations for Peace

Many Problems Relating to Labor, Return of Output to Peace Products, Foreign and Domestic Market Conditions and Possibilities Should Receive Consideration Quickly

The recent plea of Germany and Austria for an armistice should impress upon manufacturers in this country the necessity for preparation for peace. President Wilson's replies to Germany's notes mean that the peace which is to come will not be "Made in Germany." Nevertheless, it may hasten the time of the arrival of the real peace, and while the doughboys' wish of "Hoboken, home, Heaven" may not be realized by Christmas, the German collapse cannot be far off. Already this event is being presaged in the stock market by lower quotations on munitions stocks and higher prices for the railroads and public utilities.

The peace problems which confront our industrial establishments after the war are many. Among them are the following:

What will be done with all of the workmen now engaged in the industries connected directly with the war, such as munitions and arms, and the supply of raw material for these manufacturers, as well as with those indirectly connected with the war, such as the building of ships.

To what uses will the manufacturers put the immense manufacturing establishments which have been created and equipped with tools solely to manufacture war materials?

What arrangements will be made to absorb into industry the large number of men gathered for war purposes, including some 1,800,000 in France and others in this country?

Will the employment of women in industrial establishments undertaken as a war expedient become permanent?

As a nation we have been slow in taking up this matter. Our Allies and even Germany have had committees considering the matter for some time. That Congress has at last awakened to the necessity of some action is shown by the fact that there is now a joint resolution covering the matter, before both branches of Congress, introduced by Senator Weeks and Congressman Madden, as well as a bill before the Senate introduced by Senator Overman. The purpose of this legislation is for the government to make a thorough study of after-the-war trade, though the proposal in one case is that the study should be conducted by a congressional committee while in the other case the investigating body proposed is a commission to be appointed by the President. This proposed government action, however, does not relieve any manufacturer from considering the matter so far as his own property is concerned. Indeed, it is not improbable that before any of the committees mentioned can be appointed and conclude its deliberations, peace will be here.

There are, of course, but two logical

ways for each manufacturer to approach the question. The first is the extent to which he can find a domestic market for his peace-time products, the second, the extent to which he can command a foreign market for his goods.

There is no doubt that there will be great need for materials of nearly all kinds when the war is over. Not only have many necessary improvements been postponed because of inability to secure material, but for the same reason many industries, the electric railway companies for example, have gone without material really necessary to maintain their properties because it could not be had. Finally, the stockrooms and stock shelves of a great many retailers as well as users have been swept bare, and artificial means have been taken by the government to reduce production, such as standardization along many lines. Some of this standardization will probably be retained after the war, but in some cases the different patterns represented real needs, and while the suppression of so many varieties was a legitimate war measure, their production undoubtedly will be renewed after the war.

UNCERTAINTY OF FOREIGN MARKETS

Foreign countries present a very similar condition to that described as characterizing America. In addition, many of those farthest distant have suffered under the handicap of greatly reduced shipping facilities so that in some respects their need for manufactured articles is greater than our own. These will have to be supplied and the devastated regions of Europe rehabilitated. All this calls, or would seem to call, for an output comparable, almost, with that at the present time.

On the opposite side we have, as regards foreign trade, probably greatly reduced shipping facilities. In spite of the tremendous activity of our shipping yards, the toll of the U-boat has not been small. Besides, this country will have in Europe at the close of the war, a great many men who will have to be returned to this country, and for some time at least many bottoms will be required for this task. Our European Allies, as well as the neutral countries, and as far as possible the Central powers will endeavor to have their share of any foreign business, so that there will be competition.

The domestic market is subject to considerable uncertainties also, mainly because of the labor situation. We can hardly expect to do very much export business if labor receives the same rates of pay as at present, but will it accept less?

One solution for the problem, and it

may prove to be the correct one, is greatly to enlarge the use of manufactured articles in this country so as to utilize the manufacturing space in our factories, created for the war, but available now for peace production.

For instance, take the railway situation. It is a well-known fact that owing to the lack of incentive to capital, practically no new electric railway mileage has been built during the past ten years. During this time the population of the country has increased probably 25 per cent and in purchasing power still more, so that with improved conditions in the electric railway field as regards incentive to capital, much could be done.

Again, the same conditions practically prevail as regards steam railroad electrification. The few installations which have been made have shown that electric equipment can pay for itself in a very few years under many circumstances, owing to its ability to utilize the track more intensively than can steam locomotives. This means that on mountain divisions and on congested sections of steam railroads in the large cities where additional track construction would be expensive, there will be a demand for electric equipment. In fact, in many of these situations it would have been introduced long ago but for the financial inability of the steam railroads to finance the installation. No one knows what the future of the steam railroads is to be after the war, but it is safe to say that they will not be permitted to return to the unfortunate financial condition in which they existed before the war owing to the shortsightedness of the Interstate Commerce Commission. Whether they return to private ownership or remain under government ownership, public opinion will require them to be rehabilitated so that they can render the transportation service which the country demands.

Finally, there is no doubt that among the municipal improvements which will be inaugurated after the close of the war, rapid transit will occupy first place in many communities. New York, indeed, was fortunate in concluding its rapid transit agreements and almost completing construction work before 1914. In other cities, the rapid transit program was interrupted and nothing was done in the way of active work, but Philadelphia, Cleveland, Detroit, Chicago, and Los Angeles have all prepared rapid transit plans, and they will undoubtedly be revived in many of these places when the opportunity returns for municipalities to raise funds at reasonable rates.

We have recited the prospects for industrial activity with particular reference to electric railway industry, because we are more familiar with that industry than with any other. But other lines are destitute of material as well, and there seems to be no reason why the termination of the war should not see a great activity in industrial lines. Each manufacturer should be prepared to take advantage of it.

Franchises

Johnstown, Pa.—The Johnstown Traction Company has asked the City Council of Johnstown for an extension of time on its franchise granted last year for the completion of projected extensions in Moxham and to Constable Hollow Park. The company was asked by the government to discontinue work on the Horner Street extension and not to start work on the Moxham tracks because of labor shortage and other conditions brought about by the war.

Pittsburgh, Pa.—The Pittsburgh Railways has received a ten-year franchise from the City Council of Pittsburgh for the construction of a cross-town car line loop, the cars to run up Sixth Avenue, turn on Ross Street and go down Fifth Avenue to the Northside.

Track and Roadway

Calgary (Alta) Municipal Railway.—The question of a new route for the Ogden car line is being considered by the City Council of Calgary. Work will be begun as soon as the matter is settled. An extension will be built by the municipality which will cross the city limits at Fiftieth Avenue, W., and will cross the prairie in an almost direct line to the new hospital site.

San Diego (Cal.) Electric Railway.—A report from the San Diego Electric Railway states that it expects to construct a 1-mile extension of its Logan Heights line to the Pacific Marine Construction Company's shipbuilding plant.

Washington, D. C.—A favorable decision has been reached by the War and Navy Departments for the establishment of a belt line at Washington, D. C., to relieve electric railway congestion in the center of the city and to accommodate government workers in West Potomac Park. The line will be used by both the Capital Traction Company and the Washington Railway & Electric Company. The plan involves the laying of new tracks over a portion of the route. The government will either construct them or guarantee the cost. The District Commissioners have turned the matter over to the Bureau of Industrial Housing. Otto M. Eldritz is director of the bureau, and has full power to build any railway necessary to accommodate war workers.

Springfield (Ill.) Consolidated Railway.—Announcement has been made by A. D. Mackie, general manager of the Springfield Consolidated Railway, that plans are under way for important additions to the company's system after the war. A study is being made of the present lines and the facilities they offer for development.

United Railways & Electric Company, Baltimore, Md.—An extension will be built by the United Railways & Electric Company of its Sparrows Point line to the yards of the Bethlehem Shipbuilding Corporation.

United Railways of St. Louis, St. Louis, Mo.—Cars are now being operated on the new City Limits line of the United Railways of St. Louis. The new line extends along the city limits from Maplewood to Wellston and forms a link connecting all the downtown lines from Manchester to Easton Avenue.

Trenton & Mercer County Traction Corporation, Trenton, N. J.—A contract has been awarded by the Trenton & Mercer County Traction Corporation to J. J. Barrett Company for the replacing of old ties with new ones on its Pennington and Hope-well divisions.

London & Lake Erie Railway, London, Ont.—It was recently announced by the London & Lake Erie Railway that operation would be discontinued on the line and the work of scrapping the road would be begun immediately. The city of London is considering the purchase of 8 miles of the road extending between Lambeth and London.

Duquesne Street Railway, Pittsburgh, Pa.—Arrangements have been completed by the Duquesne Street Railway for the construction of a line on Fifth Avenue, Ross Street and Sixth Avenue.

Pittsburgh (Pa.) Railways.—Application has been made by the Pittsburgh Railways to the city for permission to construct and reconstruct tracks with paving on the following streets, at a total cost of about

\$626,400: Chartiers Avenue, East Ohio Street, Butler Street, West Carson Street, Fifth Avenue, Liberty Avenue, Federal Street, West Ohio Street, Preble Avenue and other streets.

Dallas, Tex.—The City Commission of Dallas, on petition of E. P. Turner and associates, owners of the Dallas Northwestern Traction Company, and the Dallas Southwestern Traction Company, has granted extensions of all franchises for the duration of the war and for a period of one year thereafter. In asking this extension, Mr. Turner stated that, because of the war, his company had been unable to secure building material and had also been unable to get labor to carry forward construction work. The Dallas Northwestern Traction Company proposes to build an interurban line from Dallas northwestward to Denton and Slidell, and the Dallas Southwestern Traction Company plans to build a line from Dallas southwestward to Cleburne and Glen Cove. In the conditions of the extension, the two companies gave up franchises over all city streets with the exception of two blocks over which their lines will enter the city. Mr. Turner represented to the commission that during the eleven years that his companies had held these franchises they had paid \$5,500 in taxes to the city and had received no direct benefit therefrom. The City Commission agreed to fix a bonus tax of \$100 a year on the franchises as extended in lieu of other taxation during the period of the war. [Nov. 24, '17—May 4, '18.]

Northern Texas Traction Company, Fort Worth, Tex.—A contract has been awarded by the Northern Texas Traction Company to the Union Switch & Signal Company for the necessary material to be used in connection with the extension of the automatic block signaling on its line between Fort Worth and Dallas. The extension will include six blocks operating under the Traffic Direction Block system, one block for complete curve protection on single track and four blocks for double-track signaling for rear and curve protection. The installation will be made by the railway company's forces.

Lewisburg & Ronceverte Electric Railway, Lewisburg, W. Va.—This company reports that it is building an extension to Main Street and Lewisburg Avenue.

Power Houses, Shops and Buildings

New York Central Railroad, New York, N. Y.—A contract has been awarded by the New York Central Railroad to Ruggles-Robinson & Company, New York, for the erection of a bridge on Forty-second Street, connecting Grand Central Station with Fourth Avenue, to cost about \$50,000.

Choctaw Power & Light Company, McAlester, Okla.—Plans are being made by the Choctaw Power & Light Company, which supplies energy to the Pittsburgh County Railway, for the construction of an electric plant and distribution system in Hartshorne.

Pacific Power & Light Company, Portland, Ore.—A number of water power sites have been purchased by the Pacific Power & Light Company on Hood River for possible development after the war ends. A survey has been made for a pipe line from a dam site near Wynans to Ruthon and right-of-way for such line has been secured.

Portland Railway, Light & Power Company, Portland, Ore.—The Portland Railway, Light & Power Company recently completed a transmission line, carrying 11,000 volts, from Portland, Ore., across the Columbia River to Vancouver, Wash. This makes three of its lines which cross that stream and connect substations in the two cities.

Charleston Consolidated Railway & Light Company, Charleston, S. C.—A contract has been awarded by the Charleston Consolidated Railway & Light Company to J. A. P. Crisfield Contracting Company, Philadelphia, Pa., for improvements to its plant to cost \$750,000.

Seattle, Wash.—An ordinance is before the City Council authorizing an issue of \$1,750,000 for extensions and permanent improvements to the municipal lighting department. It is proposed to take up the light department warrants, issued to pay for permanent improvements, build the Spokane and Ballard Street substations, pay for the proposed connection of the municipal and the Puget Sound Traction, Light & Power Company's power plants, and to provide a fund to cover extensions for the next three years.

Rolling Stock

Cameguay (Cuba) Electric Company, as noted in the ELECTRIC RAILWAY JOURNAL of Oct. 19, has purchased from the J. G. Brill Company, Philadelphia, six open passenger cars.

Savannah (Ga.) Electric Company has asked for prices on twenty safety one-man cars. As far as could be learned orders have not been placed.

Jacksonville (Fla.) Traction Company has asked for prices on twenty-five safety one-man cars. As far as could be learned orders have not been placed.

St. Louis (Mo.) Municipal Railway has placed an order for two one-man safety cars with the National Safety Car & Equipment Company. These cars will be built by the Cincinnati Car Company.

Galveston-Houston Electric Company, Galveston, Tex., has received three rebuilt interurban cars which have been put into service on the Galveston-Houston Interurban. Another rebuilt car is on the way and will also be put in this service when it arrives.

Colorado Springs & Interurban Railway, Colorado Springs, Col., has placed an order with the National Safety Car & Equipment Company for twenty-four safety cars. These cars will be built by the Cincinnati Car Company and will be delivered in December.

New Brunswick Power Company, St. John, N. B., may be in the market later for one-man cars. The Royal Commission, which recently authorized the company to increase its fare to 6 cents, also recommended to the company the introduction of one-man cars.

Gary & Valparaiso Railway, Gary, Ind., has obtained a loan of \$33,000 from the government and has contracted to spend the amount for new passenger and freight cars, the cars to be of steel construction and to accommodate sixty-five persons. The railway company must pay 5 per cent interest on the loan during the period of the war and later, if it desires, can buy the cars at cost, less depreciation.

Trade Notes

Chicago Pneumatic Tool Company of Massachusetts announces the appointment of B. H. Tripp as district manager of sales, Pacific Coast territory, succeeding M. W. Priseler.

G. F. Heffler has been chosen to succeed M. A. Curran as manager of the line material department of the Western Electric Company. Mr. Curran has been appointed assistant manager of the company's Philadelphia house.

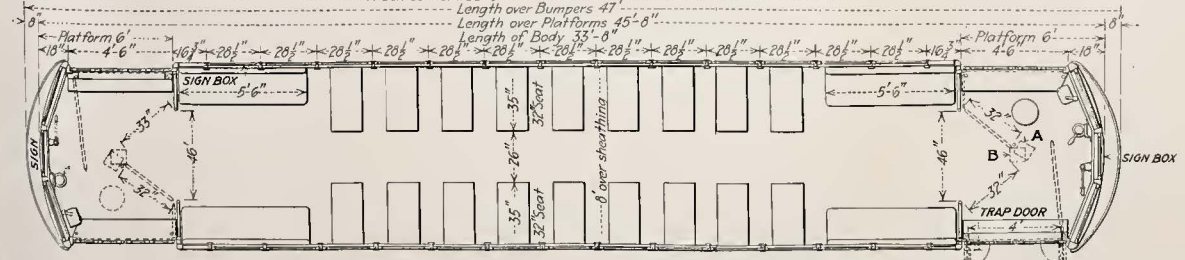
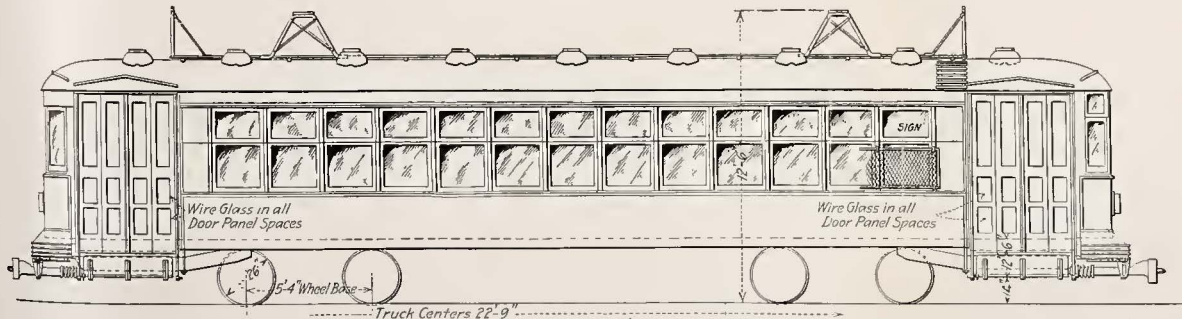
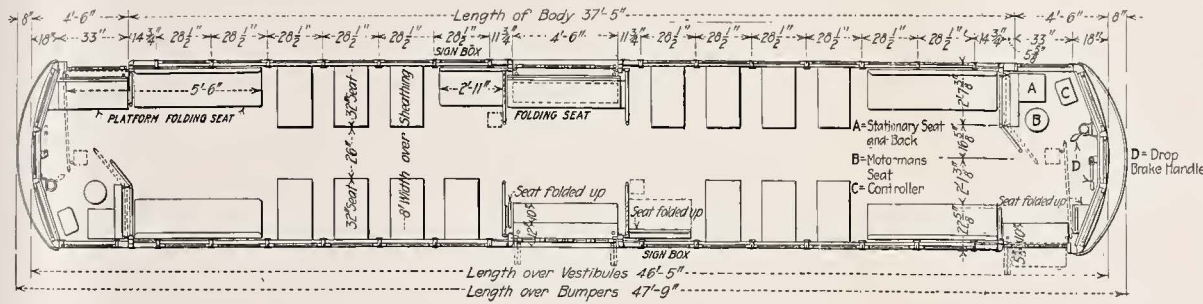
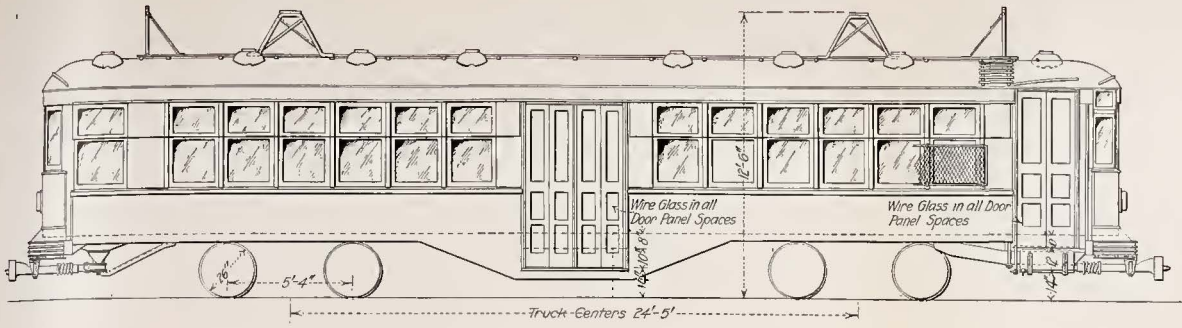
Milliken Brothers Manufacturing Company, Inc., New York City, has been organized to succeed Milliken Brothers, Inc., established 1857, taking over certain assets, including patent rights, good will, etc., of the former company. The new company will specialize in the manufacture of galvanized-steel transmission towers. The new organization will also manufacture galvanized-steel wireless towers, special steel poles for distributing and interurban railway lines, as well as the standardized truss unit system, a patented system of construction for steel buildings designed by J. E. Jennings, vice-president and secretary of the company and for many years in charge of the power transmission department of the former company. C. T. Clack, for many years connected with the United States Steel Corporation, is president of the company, and Robert Grant, iron and steel merchant, is treasurer. General offices will be in the Woolworth Building.

New Advertising Literature

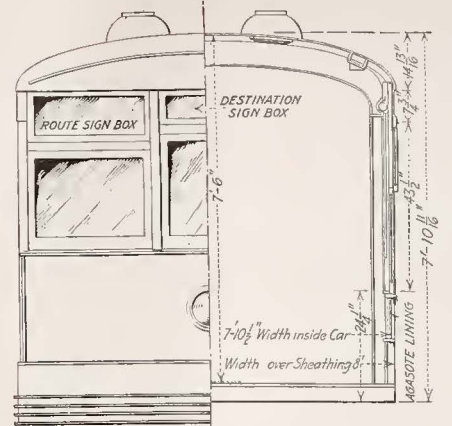
Walter A. Zelnicker Supply Company, St. Louis, Mo.: Bulletin No. 252, or that for Oct. 15, 1918, devoted largely to storage tanks, pressure tanks and tanks for other purposes.

Armeo Iron Culvert & Flume Manufacturers' Association, Chicago, Ill.: Sixteen-page folder entitled "Somewhere in the U. S. A." and containing views of installations of corrugated iron culverts in different cantonments.



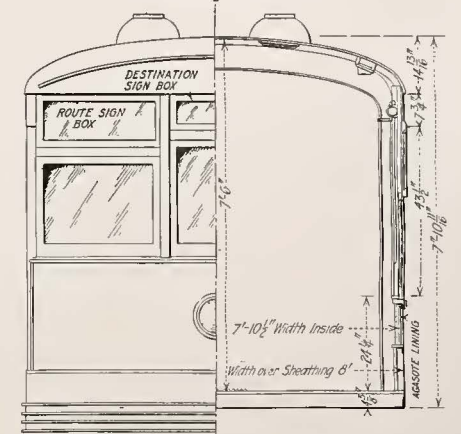


A = Location of Fare Box when one Man operated
 B = Location of Fare Box when two Men operated



End View of Car Section of Body

A.E.R.A. WAR BOARD
STANDARD CAR CLASS A
 Standard Double-Truck, Double-End,
 Electric Motor Passenger Car
 Arranged for Single Car, or Train Operation
 To be operated by One or Two Persons
 Front or Side- Entrance and Exit



End View of Car Section of Body

A.E.R.A. WAR BOARD
STANDARD CAR CLASS B
 Standard Double-Truck, Double-End,
 Electric Motor Passenger Car
 Arranged for Single Car, or Train Operation
 To be operated by One or Two Persons
 Front or Rear- Entrance and Exit

NOTE: Supersedes Supplement to the Electric Railway Journal for Oct. 26, 1918.

