

# Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

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## The Amalgamated and the B. R. T.

THE events of the past week have justified the position taken early in the Brooklyn strike by Receiver Garrison, acting under instructions of the Court, to have no further dealings with the Amalgamated Association. Even the effort of Governor Smith to bring about a conference over the situation between Judge Mayer and the head of the American Federation of Labor was unsuccessful. Evidently the time of the Amalgamated on the Brooklyn system has passed. It may be that the situation got out of the control of its highest officials during the early part of the contest. In that case, as Mr. Garrison points out and as was done in the Pittsburgh strike, the men should have been ordered back to work. As it is now, the officers responsible for the operation of the Brooklyn Rapid Transit system will have the opportunity of comparing the relative efficiency and discipline of its force under Amalgamated control, as during the past twenty months, and outside that control, as in the future.

## Motor Truck Competition Is Not on a Sound Basis

THE motor truck manufacturers and rubber tire producers are engaged in a very broad and vigorous campaign to foster the "ship-by-truck" movement for evident selfish reasons. They are making real headway despite the fact that shipping by road is bound to be more expensive than by rail, except for the short-haul business.

The phenomenal growth of the ship-by-truck movement, in our opinion, has been due primarily to the inability of the steam railroads to handle the business offered, either at all or only with great delay. The cost of transportation has been of minor importance to the shipper, whose principal problem was to send to the consumer, or that of the consumer to get from the manufacturer, the equipment, merchandise, materials or supplies that were essential to the continuity of a business enterprise. In this circumstance an abnormally high transportation charge was of insignificant consequence compared to the need for the thing or material wanted, and wanted quickly. And since with war conditions there was no end of instances of this kind the truck transportation business flourished, and as war conditions or worse have continued since the signing of the armistice the trucking business has continued to grow. The companies so engaged have made money, but they have made it at fairly high rates and largely at the expense of the taxpayers who have built the roads.

In June of this year the writer drove from New York City to Chicago over the Lincoln Highway. Undoubtedly this highway has had more maintenance and improvement work done upon it in the last three years than any other series of roads in the country, by far. Yet, despite the enormous expenditures of money used in this

way, decidedly the greater part of that famous highway between New York and Chicago is not only not good for driving but is decidedly bad. The only really good portions are those stretches that have been built within a year—or at least are practically new. Outside of these stretches of new construction the roads vary from fair, with an occasional hole, to roads with the surface all gone and the stone foundation so full of sharp holes that it is passable only at the slowest speed at which a car can be driven. For as much as 60 miles in a stretch road is encountered on which the surface is all gone, and the tourist—as well as the local farmer—is compelled to travel at a snail's pace and suffer great discomfort, not to mention the strain and wear on a car or farm motor truck. Then there is mile after mile where the tourists (and all vehicles) have taken refuge from the once improved road in a new trail in the sod along the roadside. Even road that is comparatively good is studded here and there with a dangerous hole or break in the paving—the beginning of what soon becomes a complete disintegration.

This is a rough picture of what heavy trucking is doing for our principal national highway, and we are informed by highway experts that it is typical of the deterioration of the improved roads everywhere, but particularly in the country surrounding all of the larger cities. Concrete, stone and macadam, brick and gravel roads, all seem to suffer a similarly rapid disintegration, for the better the road the heavier the traffic. Seemingly the only roads that are standing up are those from which heavy trucking is barred, and the number of such restricted roads is rapidly increasing.

## This Form of Competition Should Grow Less

IT SEEMS to us that these things point unmistakably to the following conclusions:

The abnormally congested condition for freight on the steam roads, which has contributed so greatly to the success of motor truck companies in the past, is rapidly passing, so that the expense of transportation will be a more and more important consideration in the future when a choice of carrier is made. The astounding disintegration of the good roads, due to the trucking, is bound to react against the ship-by-truck movement. It is only a matter of time until the farmers and motorists and taxpayers generally will become aroused to the destruction of the roads that is resulting from the trucks and will then either insist upon truck transportation companies paying a justly heavy penalty for the privilege of using the roads or will rule them off the roads altogether. When truck companies are forced to pay their fair share of the original construction cost and maintenance of the highways they use their operating costs will be so high as to react seriously against their ability to secure business, except short haul. And this condition is surely coming.

The public is slow to appreciate a situation of this kind, but there are already frequent evidences of an aroused opinion against allowing the truck companies the free use of the highways. Certainly the people are not going to tolerate an endlessly increasing tax rate made necessary in large part by increasing road maintenance costs. And if the roads are not maintained because of limited funds truck companies are going to suffer materially and their operating costs and rates increase correspondingly, even though they are not made to share directly in road maintenance, for bad roads mean very high truck-maintenance costs.

Mindful of these things, we incline to the belief that the electric railways have not a great deal to fear in the future from motor truck competition. With a return to normal business conditions shipments of all kinds will find their way back to transportation by rail, and at rates that the truck companies cannot possibly meet. Normal times will mean a return of normal competition, and that is what the electric railways can welcome, for in neither service nor cost can the gasoline-propelled highway motor truck compete with the electrically propelled rail car—certainly not if the truck is compelled to pay a proper portion of the roadway expense, and probably not even without this expense.

We think the motor truck companies know full well that they must sooner or later stand a share of the highway expense, but they are getting business while the getting is good. If they can jump in now, free from right-of-way expense, and make a large profit they can afford to conduct an insecure business, retiring therefrom when the public is aroused to action. This would seem to point to the logical interest of the electric railways, as very large taxpayers, in the enlightenment of the public on the use of the rails to save the highways.

### A Tremendous Undertaking Well Done

NO SMALL task confronted the Interborough Rapid Transit Company in the Brooklyn Rapid Transit strike. The company has long had short extensions in operation between Manhattan and Brooklyn, but just before the strike the Nostrand Avenue and the Eastern Parkway extensions of the subway were opened in that borough. It was to these lines that the principal task fell of lending transportation succor to the residents of the East New York and Flatbush sections of the "city of churches." The lines were not thoroughly tuned up when the call was made upon them for service in the strike, but so thoroughly had the Interborough done its work of schooling its men and preparing for the opening that the company was able to handle approximately 400,000 additional Brooklyn passengers a day on all of its lines. This was a physical task of tremendous proportions.

Motor bus lines and vehicles of all descriptions fed their hordes into the sixteen Interborough stations in Brooklyn, but the company picked the passengers up and landed them in Manhattan via two tubes under the East River with a minimum of discomfort as far as its part of the work was concerned. Publicity played its part in the undertaking, for the company, previous to opening the lines, carefully placarded its stations with maps and distributed pamphlets giving all details as to trains. Great credit has been reflected upon the whole organization by the celerity with which the task was accomplished. The Interborough has good reason

to be proud of its record. New Yorkers, however, seem to have accepted as a matter of course a transportation feat at which men acquainted with problems of traffic handling all marvel.

### That Section Membership Trophy Still Reposes at Providence

THE company section movement has not been very active during the past three years or so, which is not to be wondered at in view of the circumstances under which electric railways have been operating. The clouds are lifting now, however, and some live spirits in the industry ought to be starting new company sections of the American Electric Railway Association. With a view to stimulating interest in this worthy field of association activities, the ELECTRIC RAILWAY JOURNAL, in the spring of 1918, donated to the association a silver cup to be held by the section organized with the largest membership. This was in due course awarded to the Rhode Island Company section, which still retains it. Without desiring to deprive the section at Providence of the "rights, privileges and honors thereunto appertaining," the JOURNAL would suggest that the trophy fails of its main purpose unless it passes occasionally from hand to hand. It is necessary only to start a section with 217 members to secure possession of it.

### A Live Line Not Necessarily a Deadly Line

SOME power companies have been testing and repairing high-voltage lines while "hot" and claim that such practice is cheaper, safer and quicker than the usual one of "killing" the line when work is to be done upon it. Shields, tools, insulators and methods have been developed to such an extent that many power companies now do all insulator replacement and testing, splicing and other line work on live lines. For example, the Consumers' Power Company in Michigan and the Georgia Railway & Power Company in Georgia have developed and successfully used methods for live work on their lines.

Both safety and service conditions indicate a trend toward other methods in line work than have been the practice. Accidents to employees occur to a great extent among linemen and electricians who have been educated in the "dead line" school. Sudden circuit interruptions, insulator and transformer breakdowns, rotary flashovers, fuse burnouts and other continuity-of-service factors in our ever-growing complexity of apparatus and circuits all tend to make for a quicker and better method for handling emergency and routine line and substation conditions.

Dead lines become live ones too frequently for safety in spite of extraordinary precautions; network circuits offer too many opportunities for energizing supposedly dead lines. Most accidents are due to the old story: "It was supposed to be a dead line." No man takes liberties with a live line, and perhaps there are many advantages in treating all lines as live lines. If we adopt the live-line method of operation only two factors enter into consideration, relative speed and availability of properly insulated apparatus and methods.

It is claimed that speed in repair and testing is much greater in live-line working, as no time delay occurs because of communication with substations or power stations in order to kill or energize lines and no special

grounding apparatus is necessary. The line force can operate on the emergency repair immediately and need have no connection with any other division of the operating organization. All insulator tests can be made while lines are utilized for delivering energy. A remarkable fact is that the employees prefer live work. It means steady employment with better morale instead of late-at-night or off-load emergency and rush work. It permits routine rather than emergency line force conditions.

Probably the greatest asset to operating companies in live-line repair work is the fact that service interruptions are quickly repaired without disturbing the system routine. Costs of tools and the other items are immaterial under these conditions and only speed and safety are considered. We venture to predict a greatly increased amount of live-line work for the electrical industry and can see many advantages of live-line work on the high-voltage lines that will be used in connection with future trunk line electrification projects, particularly in the West.

### Speeding Up Car Repairs

THE combination of high prices and lack of money has forced electric railways to defer the purchase of new rolling stock, and on many properties all of the available cars are needed continually. Naturally, considerable pressure is brought to bear upon the mechanical departments by officials to insure that necessary repairs are made as speedily as possible. Labor organizations have condemned the practice of working overtime, so the getting out of damaged cars and even those that are brought in for repairs on a prearranged schedule has proved a serious problem. The effect of this need is to place maintenance programs and practices on a higher plane than ever before. Railways are giving more attention to the arranging of repair schedules so as to fit in with the needs of the transportation department.

In the old days when duplicate equipment was used the open cars were repainted in winter and the closed cars in summer. Now with equipment in operation continually throughout the year the best schedule for the paint shop, the overhauling shop and other repair departments would be to have the cars pass through the shops at a uniform rate. But when the field of transportation is considered with a view to producing the most efficient system as a whole it is evident that there must be intimate co-operation between the operating and mechanical departments. The best arranged schedule of repairs from the transportation department standpoint would be one under which cars are withdrawn from service in greater numbers during off-peak periods of traffic. Thus, for example, if the transportation department finds that it needs all of the cars during December and January, repairs during these months should be limited to such as are absolutely necessary and should be carried out as speedily as possible.

The question in its broadest aspect then is to decide between low maintenance cost, which results from a uniform schedule of repairs with more equipment, as against a plan of eliminating certain work and classes of repairs during maximum periods of traffic in order to have a smaller investment in rolling stock.

To assist in this work the operating department can

also do much. Careful operation decreases the number of damaged cars. Furthermore, cars should not be turned in for minor repairs by the transportation department as happens to suit its convenience, but they should be ordered in by the mechanical department at times when they can be handled speedily. It is only by exerting their best efforts in such directions as this that railways can give most satisfactory service to the public.

### Automatic Substation Invades Cleveland

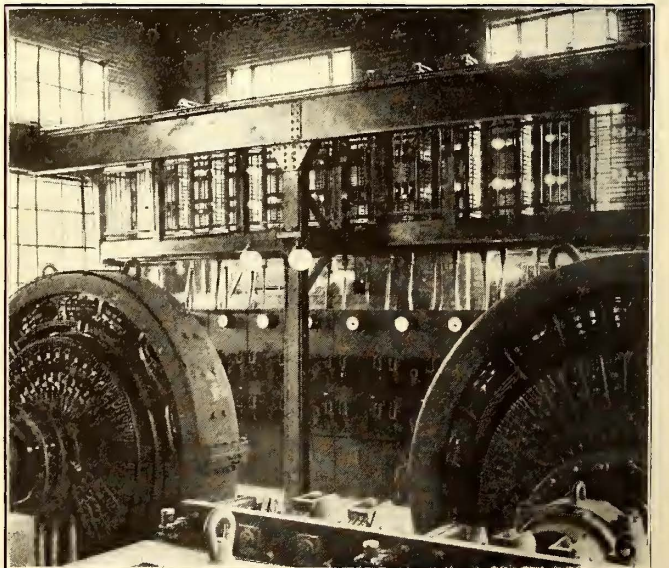
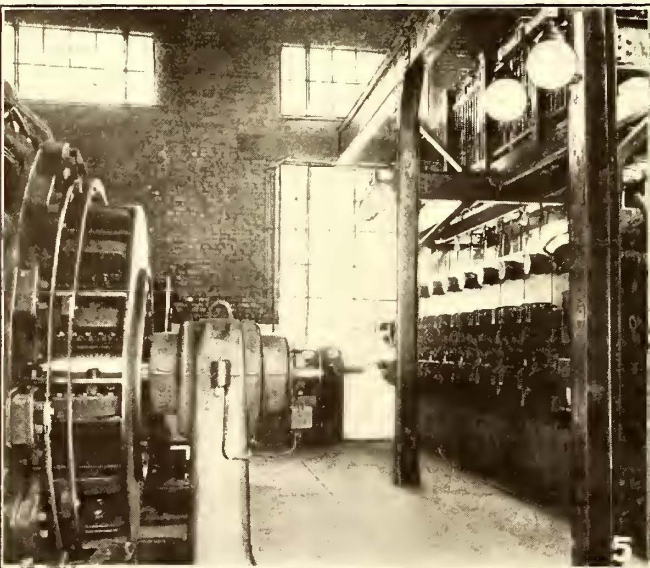
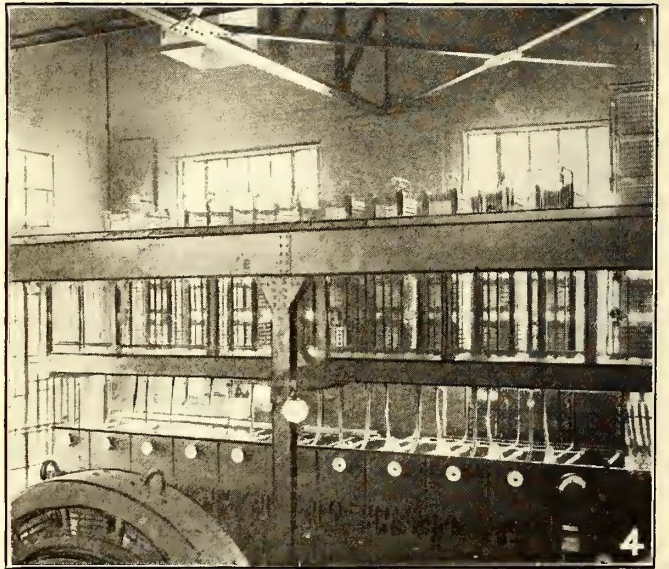
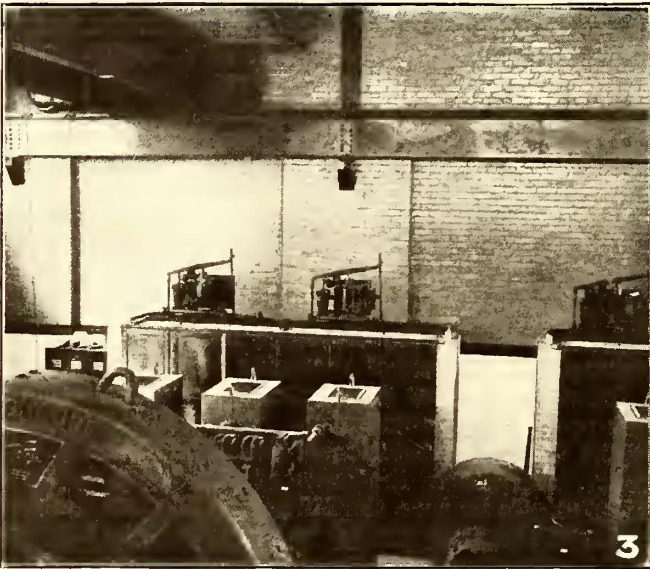
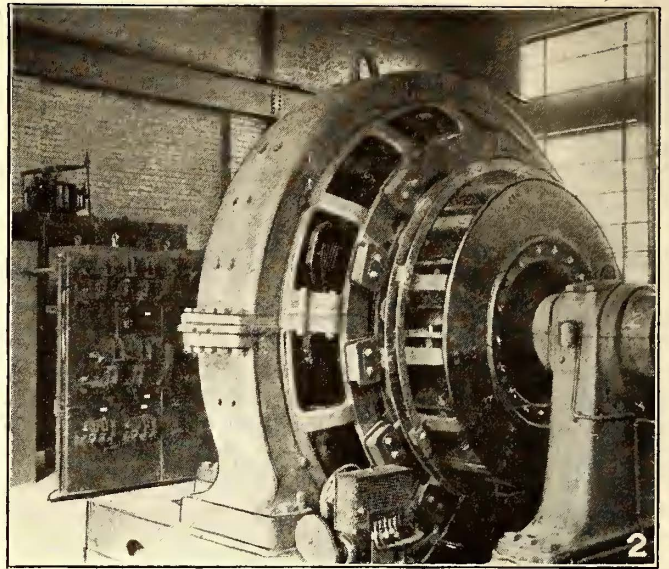
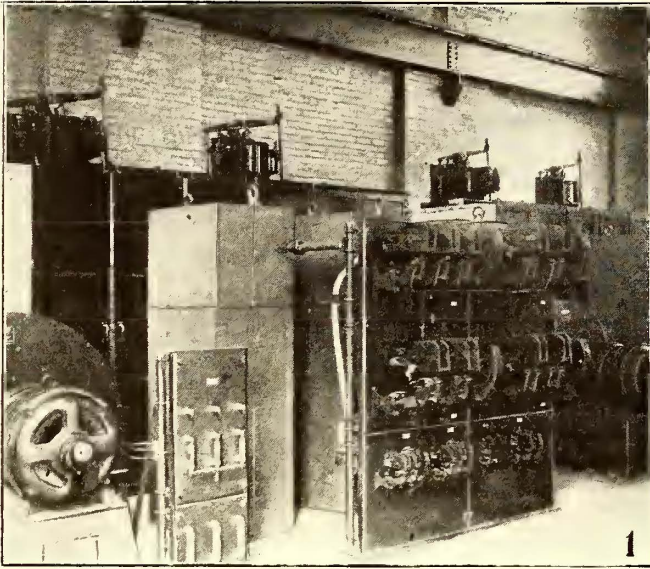
THE Cleveland (Ohio) Railway decided to try out the automatic control plan only after considerable deliberation. There was no question in the minds of its engineers as to the applicability of automatic control to interurban line operation and to many city conditions. Whether it would function adequately in Cleveland was another question. This question was considered several years ago, in fact as soon as the scheme was seen to have possibilities. If it had not been for the war Cleveland would have had at least one "automatic" much earlier, as it was the ardent desire of L. P. Crecelius, superintendent of power, to study the performance of a sample equipment under actual local conditions.

Now, when automatic equipments can be obtained with reasonable celerity, the railway company cannot wait to experiment, for Cleveland is growing so rapidly, with a corresponding demand for power to drive the cars, that additional substations had to be provided at once. And, fortunately, the reputation of the automatic substation is now so good that the decision was promptly reached to equip the next four "subs" at least, including the Cleveland Heights station just completed, with control apparatus of this type.

Practically all of the "automatics" now in operation are of the one-unit type. The notable exception is the Oakland substation of the Rhode Island Company, described in the issue of this paper for Dec. 14, 1918. To be sure, the Milwaukee Electric Railway & Light Company put in an automatic station with two rotaries as long ago as three years, but these were 600-volt machines, operated as a pair in series, and were essentially one unit as far as the control was concerned. The Heights substation in Cleveland contains a two-unit equipment and the two machines are arranged ingeniously to relay each other, keeping the individual rotary load factor as high as possible. This is the most difficult duty which can be imposed on the apparatus, but there is no inherent reason why it should not be reliably performed. The results here will be watched with particular interest because the Cleveland Railway has been very successful in keeping the rotary capacity adjusted to the "load line" in its manual substations. How the two methods of control compare in this respect will be considered later after operating records are available.

In an article printed elsewhere in this issue the appearance of the Heights substation is shown by means of drawings and pictures, and the essential operating principles are pointed out. A few minor changes in the control are still being made, so that the technical account of the layout will be deferred for a few weeks until the finishing touches have been applied. In the meantime the station is giving an excellent account of itself.

## Cleveland Heights Two-Unit Automatic Substation



1—Starting panels for rotary and blower motor.  
 2—One of the 1,500-kw. rotary converters.  
 3—Looking down from gallery over one rotary and its starting panel, transformers and oil switches.  
 4—General view of equipment in and under gallery.

5—Commutator-end bearing of rotary, switchboard and columns supporting one crane rail.  
 6—Alternating-current end of rotaries with resistor gallery in background, taken from top of alternating-current oil-switch compartments.

# The Cleveland Railway Commissions Its First Automatic Substation

**Cleveland Heights Section Now Supplied from Two-Unit Station Containing 1,500-Kw. Rotary Converters, Arranged to Adjust Capacity to Load Automatically**

**T**HE Cleveland (Ohio) Railway has just put into operation the first of several automatic substations to care for the rapidly growing demand for power from its system. This substation is of particular interest because it is the first of the Westinghouse two-unit substations. It is the largest automatic substation yet put into operation and it embodies a number of new operating details. In fact, there are several minor improvements still being installed, so that at this time it is possible only to give a preliminary statement of the details. A later article will take up the technical features, with an account of the exact sequence of operations. The accompanying illustrations are from recent photographs and drawings and show the station as it is today, complete as far as the general apparatus is concerned, but awaiting a few finishing touches inside and out.

For about eight years the Cleveland Railway has been using power in increasing quantities from the Cleveland Electric Illuminating Company. The contract with the power company went into effect Nov. 15, 1912, at which time the railway had one substation in operation. A comprehensive program of expansion of substations and distribution systems has been under way in the meantime.

In an article in the issue of the *ELECTRIC RAILWAY JOURNAL* for April 5, 1913, page 618, the subject was covered in a rather complete fashion and the design and construction of the Windermere substation, the first one, were discussed and illustrated. In that article a map was given showing the substation layout plan then under way, four substations being indicated. These were: Windermere, with an immediate installation of four rotaries and an ultimate installation of five, all of 1,500-kw. capacity; Harvard Avenue, with three and five rotaries respectively; Coutant Avenue, with two and four, and West Twenty-fifth Street, with two 1,000-kw. rotaries at the start and four 1,000-kw. rotaries ultimately. In the article attention was directed particularly to the design of the 60-cycle rotary converters used in these substations, which embodied a number of features included for the purpose of min-

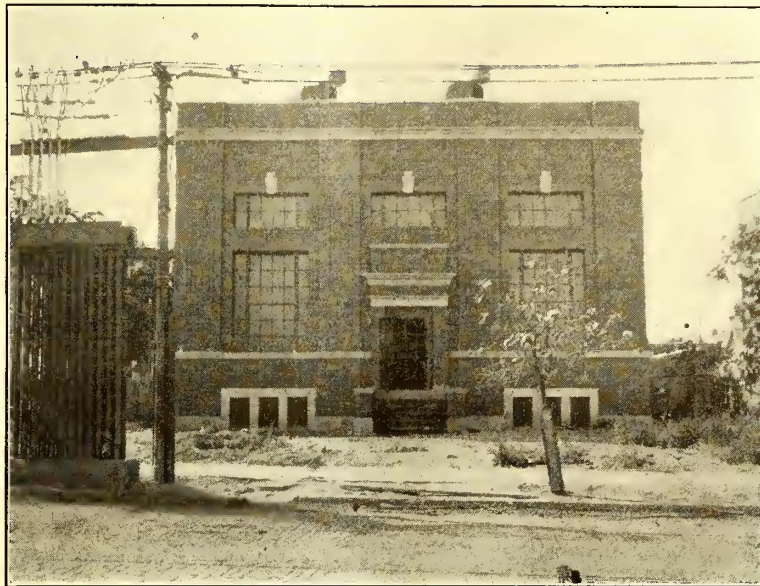
imizing danger of flashover, hunting, etc. The rotaries were built with liberal quantities of active iron and copper, and with very heavy armatures having great energy storage capacities and operating at high rotative speed. The rotaries are provided with squirrel-cage dampers, mounted in the main pole pieces, for use in starting and for preventing hunting. These rotary converters operated very satisfactorily.

The experience of the Cleveland Railway with this new type of rotary was covered in a paper read by L. P. Crecelius, superintendent of power of the railway, before the Cleveland Section of the American Institute of Electrical Engineers, on March 23, 1914. This was abstracted in the issue of the *ELECTRIC RAILWAY JOURNAL* for March 28, page 713. Mr. Crecelius' remarks and the resulting discussion showed conclusively that the 60-cycle rotary converter was an assured success

and that the fear of unsatisfactory operation was not warranted as a deterrent in the use of machines of this type where there was good reason otherwise for using them.

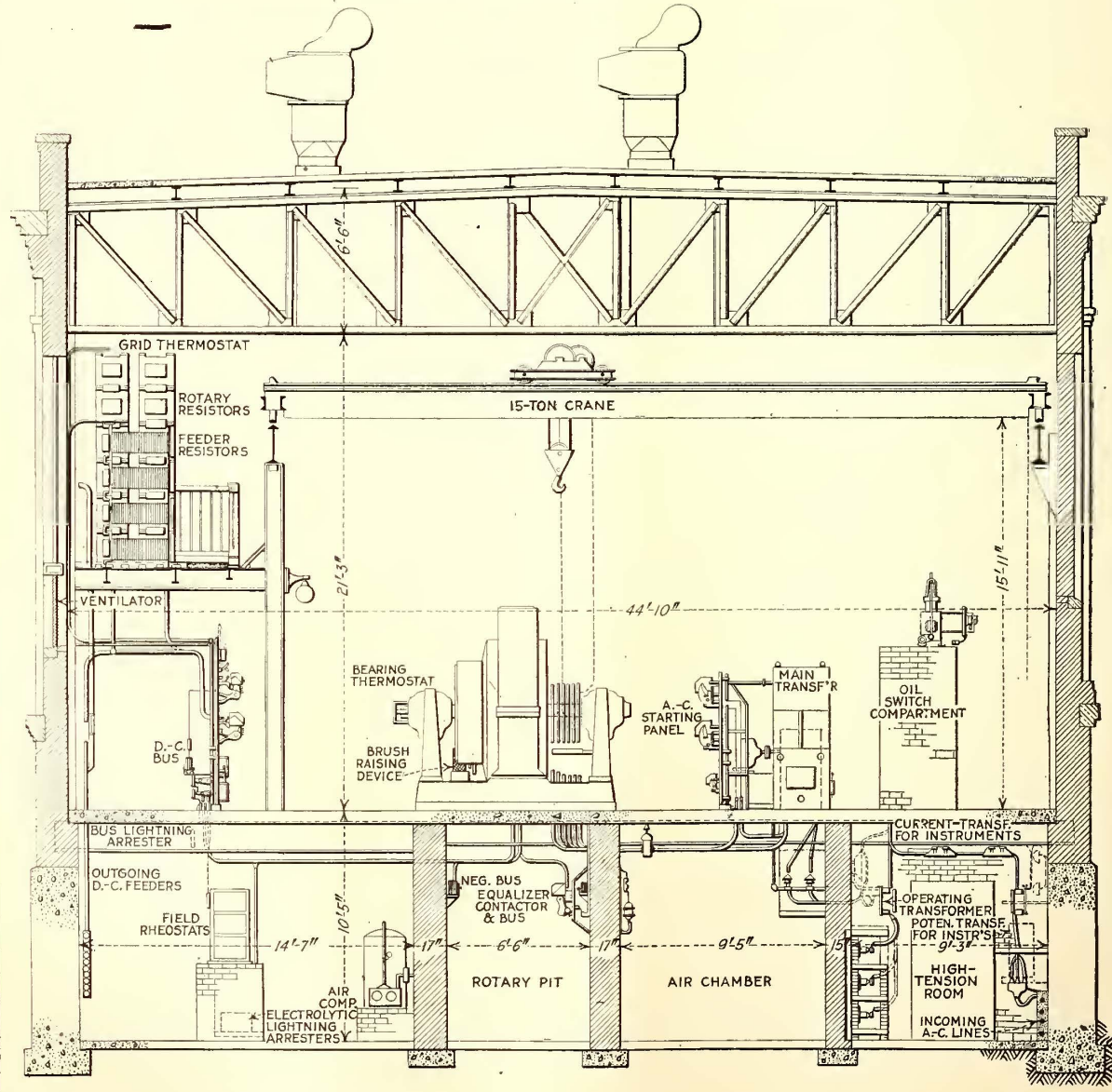
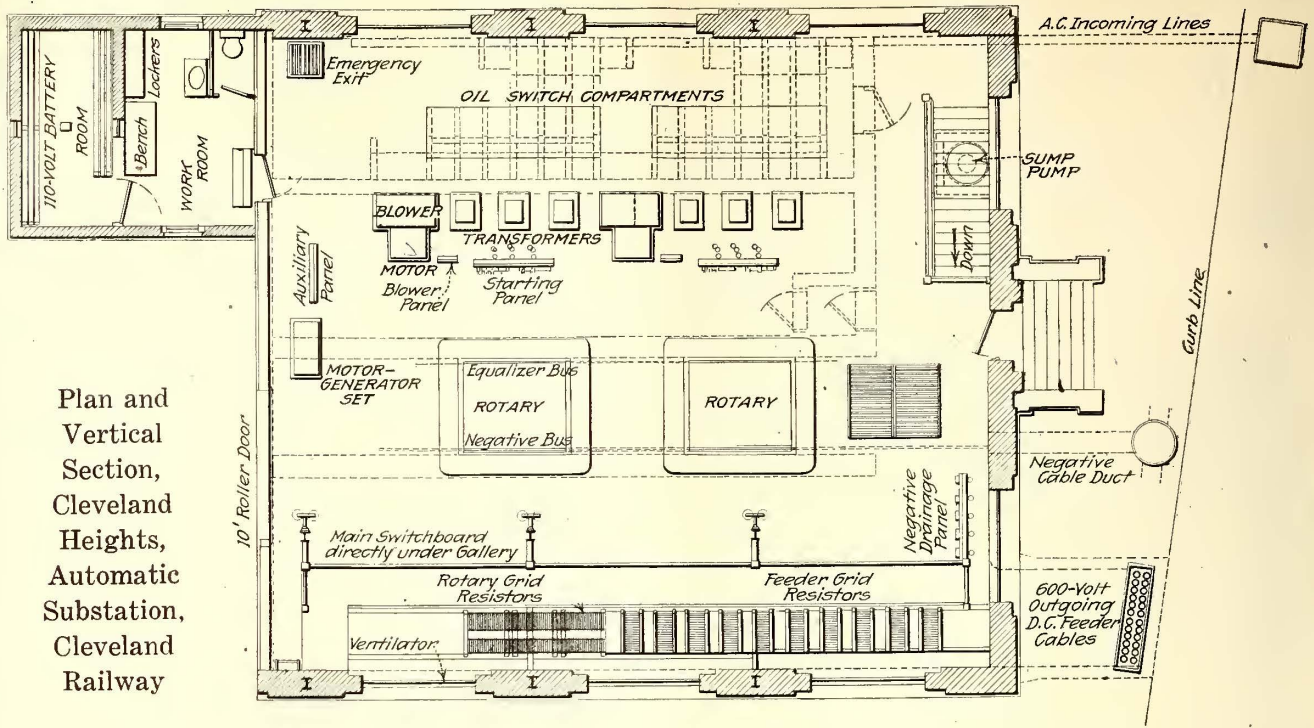
These references to the early history of the Cleveland Railway substations are given in order to show how a logical foundation was laid for such future developments as that of the automatic substations, although at the time this particular innovation had existed in the minds of only a few pioneers.

The fifth substation in the series, and the immediate predecessor of the new automatic substation, was that located on Cedar Avenue at the point where a steam power plant had been previously located. This steam plant is shown on the map reproduced with the first article referred to. The Cedar Avenue substation was the largest of the series, containing eight 1,500-kw. rotaries. This brought the total substation equipment of the system up to twenty-three 1,500-kw. units and two 1,000-kw. units, a combined capacity of 36,500 kw. In addition there is the Viaduct power plant, 600-volt direct current, with a capacity of 42,500 kw. When the four automatic substations forming the present program are completed the substation capacity will have been



FACADE OF SUBSTATION WITH CONDUIT TERMINAL AT LEFT IN FOREGROUND

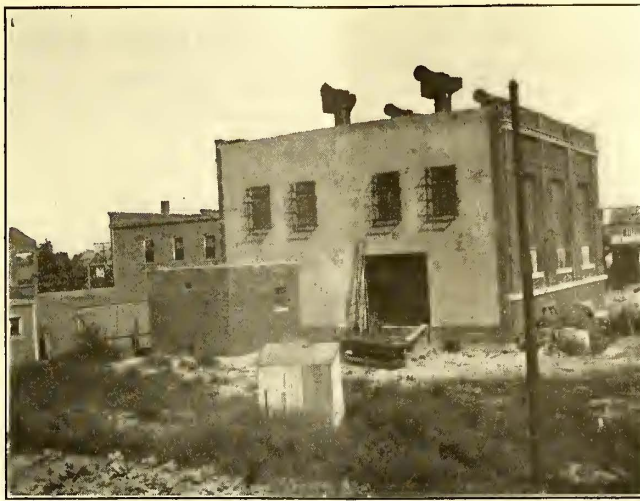
Plan and Vertical Section, Cleveland Heights, Automatic Substation, Cleveland Railway



increased by 12,000 kw., or to a total of 46,500 kw. The combined power capacity of the system will then be more than 90,000 kw.

The new automatic substation, known as the Heights substation from its location in Cleveland Heights, has been installed to take care of the city load which is outside of the two-mile limit of the Cedar Avenue substation and the load of the new Cleveland Interurban Railway line, which is being operated by the Cleveland Railway. This line was described in the issue of this paper for July 31, 1920, page 204. The interurban line extends about two miles beyond the Heights substation, so that its load can be easily taken care of. In addition the station will relieve greatly the load on the Cedar Avenue substation, which is in the most densely populated residential section of the city.

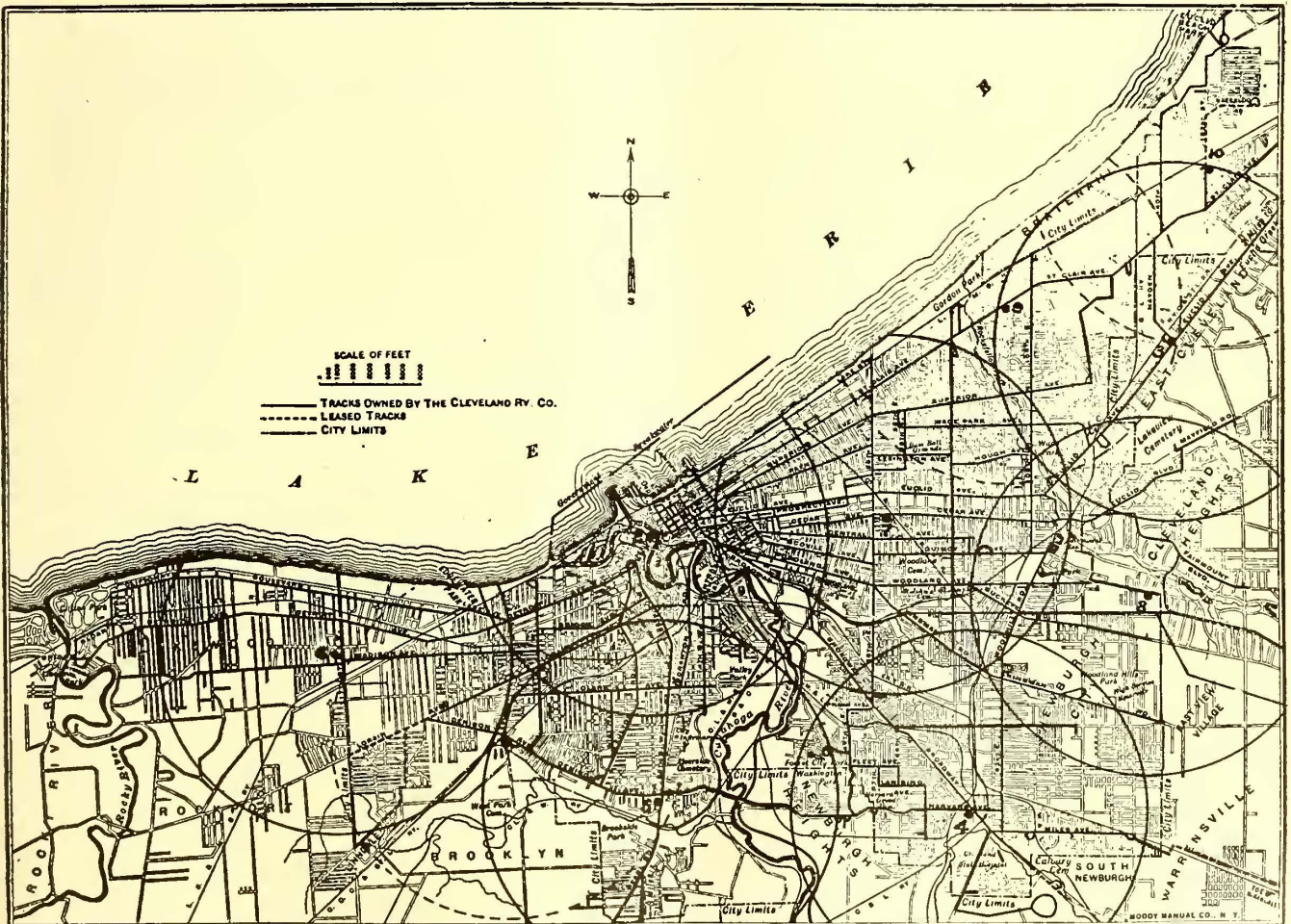
The Heights substation contains two 1,500-kw. Westinghouse rotary converters, each equipped with circuit breakers, transformers and automatic control equip-



BACKYARD VIEW OF THE SUBSTATION, SHOP-BATTERY WING AT LEFT

ment. Although the station will not carry a load continuously, at least one of the units will be operated from about 4 a.m. until midnight. This machine will be placed on the line automatically, when the cars in its district start running, and the trolley voltage drops below normal. After this happens it will take the unit about forty seconds to get under way and converting energy for the transportation system. This unit will continue to take care of the load until such time arrives as it has been obliged to carry full load for about fifteen minutes. At this time the second machine will be started automatically to take its share of the load.

The two machines will carry the load through the morning peak, the second continuing to operate until it carries only 50 per cent of normal load. Fifteen minutes after this point is reached the second machine will shut down, leaving the first to supply the energy for the day load. Then when the evening load comes on and goes off the second machine will be started and



POWER ZONES OF 2 MILES RADIUS SURROUNDING SUBSTATIONS

- 2—Viaduct power plant. 3—Windermere. 4—Harvard. 5—West 25th Street. 6—Coutant. 7—Cedar. 8—Heights. 9—St. Clair. 10—Collinwood. 11—West Seventy-third Street.

stopped to meet these conditions. At midnight, when the cars stop running, the first machine will automatically shut down.

Besides being designed to take care of varying conditions as described, precautions have been taken to meet all difficulties that can be foreseen. For this purpose there are eighteen protective relays, each one functioning as conditions for its use arise. As previously mentioned, the details connected with these relays will be taken up in a later article.

The next automatic station which is now under construction, the St. Clair substation, will pick up primarily the load on the St. Clair line between the districts economically served by Cedar Avenue and Windermere substations. The other new automatic substation, the Collinwood, will take care of increased load on existing stations and load of lines extended since the former stations were built. An interesting feature of the load to be served by the Collinwood station lies in the fact that the equipment is needed continuously in this location, near Euclid Beach, where heretofore only a summer load existed. So scarce have homes become in Cleveland that the summer cottages are being converted so as to be used the year round. This, of course, has increased the winter load materially in this locality.

#### SCHOOL INITIATED TO TEACH MEN PROPER MAINTENANCE OF SUBSTATIONS

The difficulty of obtaining proper maintenance men, sometimes encountered in the installation of automatic substation equipment, was obviated by the Cleveland Railway in the following manner: When the stations were contemplated it was seen that several high-class men were desirable who would be well informed as to the layout of the stations in order properly to locate trouble and maintain the equipment. For this reason Lawrence D. Bale, engineer of substations, who had spent the past year and a half in the study of automatic operation, selected three likely men and initiated a school, wherein he and the men studied extensively the complete working diagrams and schematic diagrams of the stations. Questions were raised as to what would happen if a relay failed to operate, or if certain conditions were present, and the answers were obtained by actually working through the circuits. In addition, a separate circuit diagram was made for each piece of apparatus, so that in case of trouble the exact cause could be located with the least difficulty and in the quickest possible manner.

The equipment for the four automatic substations was designed by the engineers of the Westinghouse Electric & Manufacturing Company, working in close conjunction with those of the Cleveland Railway. In this connection the practical experience of the operating company proved to be of no little value to the designing engineers. In numerous instances the former were able to point out the need for protective devices and relays to provide for varying operating contingencies.

The manufacturer forthwith designed and constructed the apparatus with which to meet these needs. Throughout the long period of development, which now terminates in the successful operation of the new automatic substation, Mr. Bale has worked indefatigably in co-operation with the engineers of the Westinghouse company.

## Safety Lights for Safety Cars

Two Additional Lights Are Installed, One at the Rear to Signal Traffic, the Other on the Front Platform

BY C. H. COPLEY

Superintendent Springfield Traction Company, Springfield, Mo.

IN OPERATING our one-man safety cars we have had a considerable number of complaints from vehicle drivers that they experienced difficulty in telling when a safety car is standing with doors opened, either to pick up or discharge passengers. Our operators have also complained somewhat that, when operating at night with curtains drawn so as to shut off the light from the inside of car, whenever passengers board the car it is necessary to lift the curtain to secure sufficient light for making change.

To overcome these difficulties we have installed two lights with connections as shown in the accompanying diagram. One of these lights is installed directly over the operator's head and the other at the rear left-hand side of the car, which is the rear right-hand side to a vehicle traveling in the same direction as the car. This lamp at the rear is installed behind red glass, and apparatus and circuits are arranged so that these lights are lighted whenever the doors are open. By referring to the diagram it will be seen that these two lights are in a parallel circuit with two lights used for lighting the inside of the car. For opening and closing the

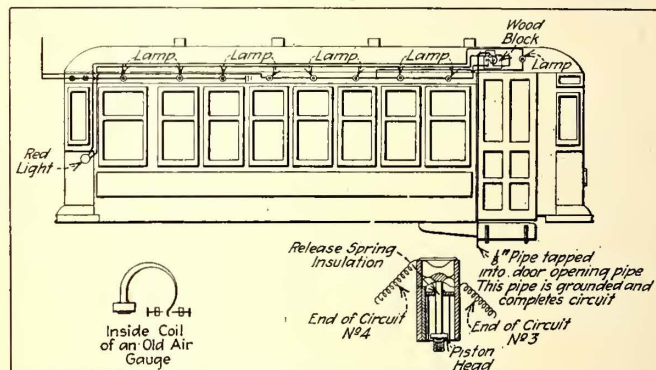


DIAGRAM OF CONNECTIONS FOR SAFETY LIGHTS IN SAFETY CARS

circuit we use a small cylinder that is air-operated. This cylinder is inserted in or connected with the door opening air pipe, so that whenever air is applied for opening the doors the piston of this cylinder is pushed out and this action opens the circuit for the two lights in the interior of the car and closes the circuit for the two additional lights, one over the motorman's head and the other the signal light at the rear of the car. The light over the operator's head is not only of great assistance to him for making change and saving the lifting of the curtains, etc., but it also lights up the front end of the car so that passengers, checkers and others interested in car operation can see just what is taking place at the front end of the car.

In the accompanying illustration I have indicated the construction of the air cylinder. The same results can be obtained by using an old discarded air gage. The current to be broken is very small and we have found that an air gage can break the circuit satisfactorily and it is much cheaper to provide where old air gages are available.



# Maintenance of Air Brake and Safety Car Control Equipment

Inspection Methods Should Be So Thorough That the Remotest Failures Will Be Guarded Against and Prevented and Tests Should Be Simple But Accurate

By JOSEPH C. McCUNE

Assistant to District Engineer Westinghouse Traction Brake Company  
New York, N. Y.



SAFETY CAR PROVIDES IDEAL SERVICE FOR SUBURBAN SECTIONS

IT HAS been well said that "an ounce of prevention is worth a pound of cure." Preventive measures against all manner of anticipated difficulties are assuming increasing importance in every line of endeavor and in few lines do preventive measures have greater significance than in electric railway car maintenance. Inspection, cleaning, overhauling, renewals, etc., intelligently planned and properly carried out anticipate and thus avoid equipment failures in actual service and permit the uninterrupted sale of transportation, the commodity an electric railway has to offer.

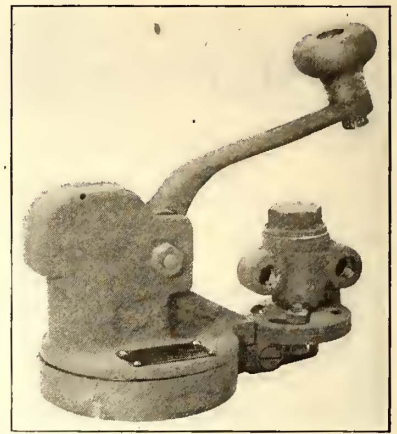
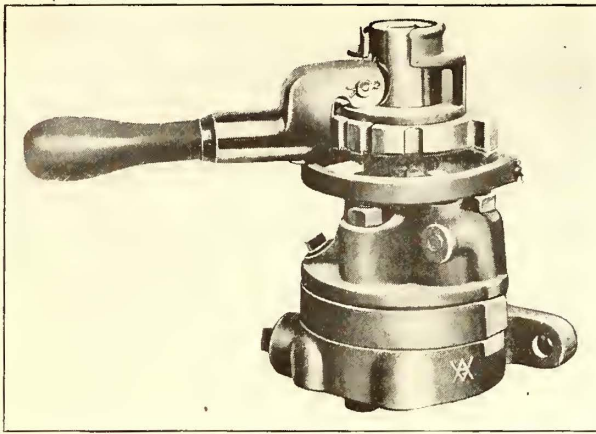
Many preventive measures are in effect only on large properties. The larger the property and the more severe the operating requirements the more obvious the desirability of putting into force the most far-reaching preventive measures. Some of the very largest properties in the East are guided by the principle that anything that can happen will happen and take measures accordingly. Provision is made on such properties to guard against the most remote contingencies, since on account of the vast number of operations, failures are appreciable, even when such failures involve but a minute percentage of the total operations.

It is believed that many of the smaller roads could adopt more extensive preventive measures and thereby obtain very worth-while benefits. Particularly is this true of roads where cars, prior to the introduction of the safety car, were not equipped with power brakes. Precautionary steps on such roads must obviously be less far reaching than if the very large roads mentioned were involved. Possibly the most desirable and prac-

tical step is to place overhauling upon a more systematic basis. The article following describes practices which apply more particularly to systems operating large numbers of cars. Yet it is possible to employ, without change, many of these practices upon the smaller roads.

A preventive measure universally adopted is that of frequent inspection of the equipment. Such inspection detects not only actual shortcomings but also conditions which unless remedied are apt to result in failures. How frequent the inspections are to be is a question which must be settled by a consideration of local conditions, such as density of traffic, frequency of stops, climate, etc. But a broad rule which has rather a general application is that cars supplied with air brake and safety car control equipment require the same inspection as other air brake equipped cars. Such cars on large Eastern properties are quite commonly inspected every 1,000 miles.

It is quite frequently the practice to inspect the brake rigging and shoe adjustment daily. Piston travel should be maintained at about 4 in., measured after a full service application made while the car is standing. Running piston travel is about  $\frac{1}{2}$  to 1 in. more than standing travel, depending upon the brake rigging. As 5-in. running piston travel is desired, it is evident that the standing travel should be adjusted to about 4 in. If the running piston travel is too great, operators will complain of poor brakes; if too short, brake shoes will drag upon the wheels and cause excessive power consumption.



AT LEFT, BRAKE VALVE. IN CENTER, EMERGENCY VALVE. AT RIGHT, CONTROLLER HANDLE AND PILOT VALVE

The inspection made every 1,000 miles should be more thorough. It is necessary to inspect all parts of the air brake and safety car control equipment. Compressor crank cases must be refilled with oil. They must not be allowed to run dry, for then armatures and bearings will be burned. Compressor brushes need careful attention in order to detect brushes that, on account of wear, require replacement. Air gages require frequent attention in order to keep them properly adjusted. To adjust them accurately a special test gage is demanded, and such a gage ought to be part of the shop equipment. Governor settings vary widely in time from the standard unless readjusted at intervals. The standard setting provides that the compressor shall cut in at 50 lb. and out at 60 lb. The safety valve is set 15 lb. higher; that is, at 75 lb. Noticeable pipe leaks must be eliminated, as additional

leakage means unnecessary work for the compressor and a consequent shortening of its life.

To determine if all parts of the air brake and safety car control equipment are in working order the following tests can be employed:

TESTS OF AIR BRAKE AND SAFETY CAR CONTROL EQUIPMENT

Begin the test at No. 1 end of car. Observe that the main reservoir drain cocks are closed, the cutout cock in the governor pipe open (if such a cock is supplied), the compressor fuse in place and "live," the brake valve handle on the brake valve and in "release" position before starting the compressor.

After the governor has stopped operation of the compressor, observe if the air gages at both ends of the car agree, which will require an additional observer

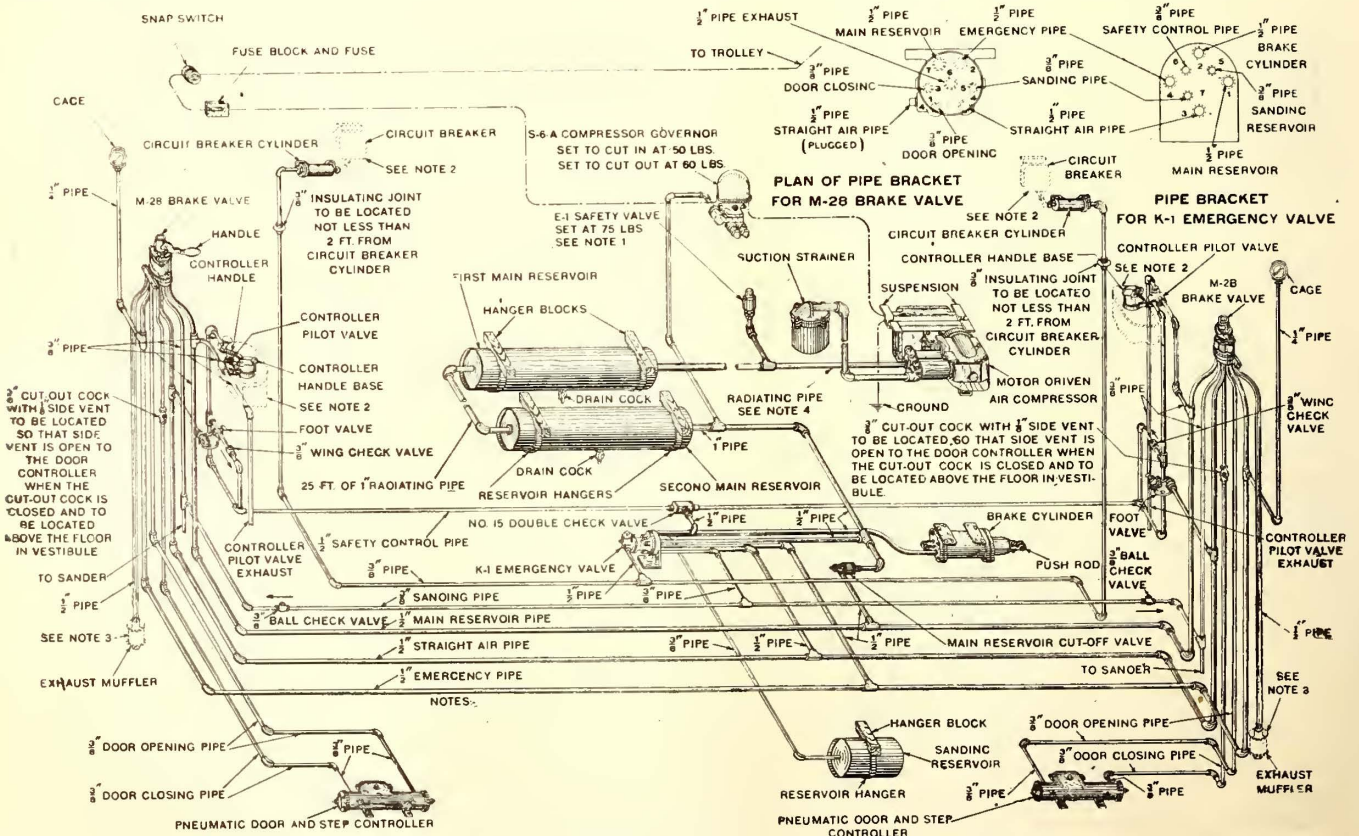
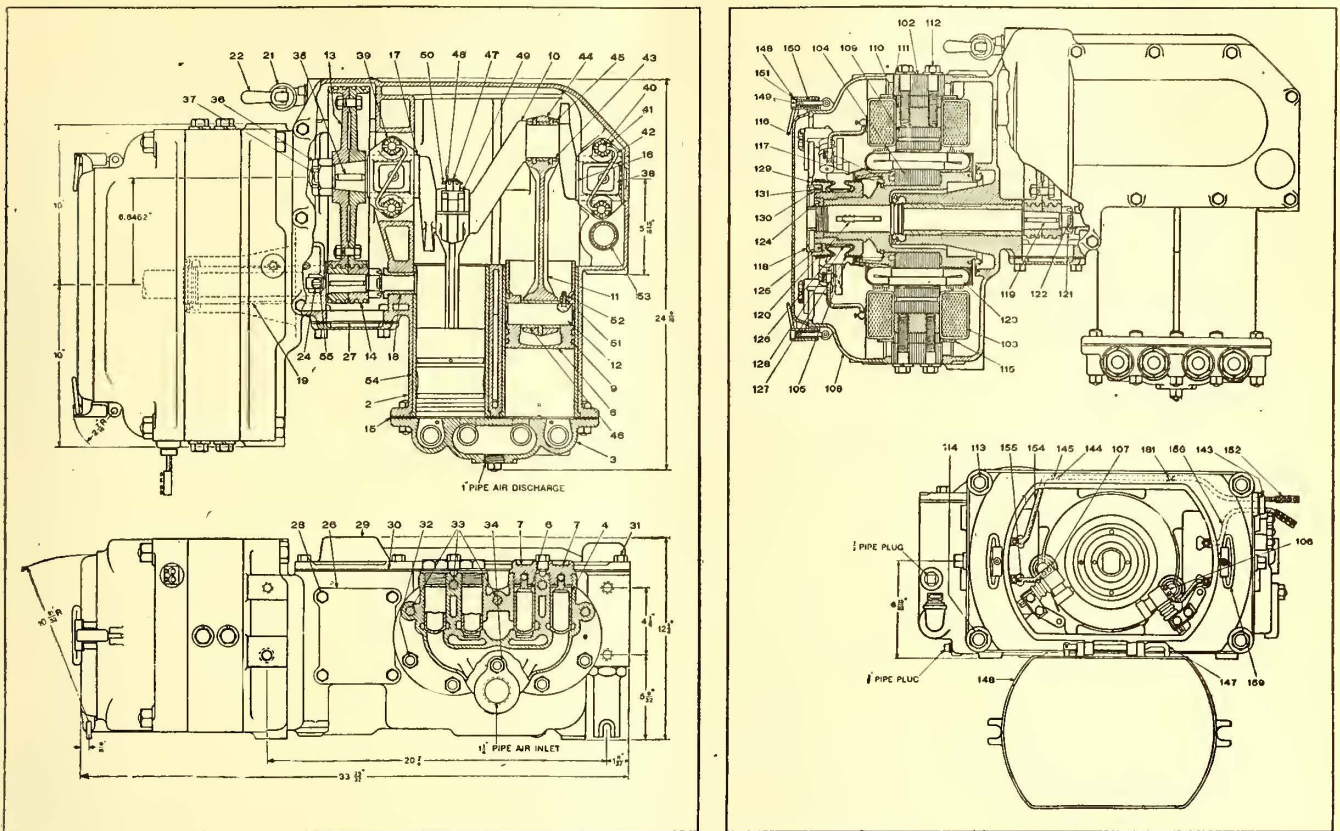


DIAGRAM OF AIR BRAKE AND SAFETY CAR CONTROL EQUIPMENT



OPERATING PARTS OF TYPE DH COMPRESSORS

The parts with which we are chiefly concerned are: 2—Cylinder and crank case; 4—inlet valve; 6—discharge valve; 8—piston; 10—crank shaft; 11—connecting rod; 13—gear; 14—pinion;

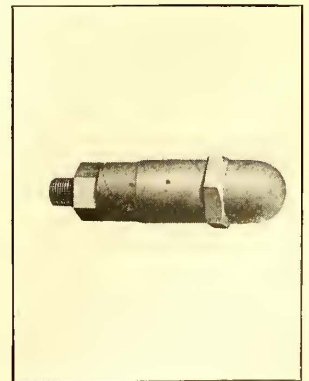
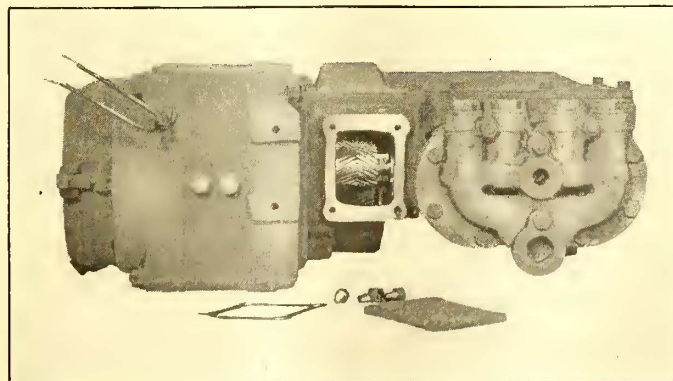
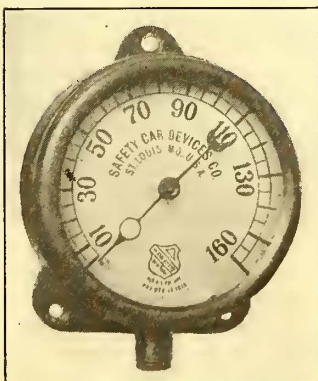
16—rear crank shaft bearing; 17—front crank shaft bearing; 19—motor bearing; 102—field yoke; 103—field coil; 104—armature; 105—commutator; 106 and 107—carbon holders.

for the gage at No. 2' end. If they do not, make certain that the gage hands are not binding. If the hands are not binding, detach the gages and take to a bench for adjustment. A special test gage should be set up at the bench, so that car gages may be checked against it. Better results are obtained if the gages are adjusted at the bench than if adjusted on the car. If sufficient spares are available, correctly adjusted gages can be kept on hand and substituted for those removed from the car, these latter being adjusted at some later time.

After it is known that the air gages are correctly adjusted, make sufficient brake applications and releases to start the compressor or start it by opening temporarily the main reservoir drain cock. Observe that the governor stops the compressor when the main reservoir pressure is 60 lb. If it does not, adjust the governor as described later. Cause the compressor to start again by reducing main reservoir pressure by

some means such as brake valve manipulation. Observe the main reservoir pressure when the compressor starts operation. If it is not 50 lb., make the necessary adjustments to bring it to this value. Cut out the governor by closing the cock in the governor pipe, when the compressor will start almost immediately. The safety valve, if correctly adjusted, will open at 75 lb. main reservoir pressure. If it does not open at this pressure, change the adjustment. After this test be certain to open the cock in the governor pipe. If there is no cutout cock in the governor pipe, short circuit the governor switch by the aid of a small wire jumper until the safety valve adjustment is determined.

It is important that leakage from the brake system be reduced as much as practicable. To determine the rate of leakage, after the compressor has stopped operating, wait for about one minute, then place the brake valve handle in release position and hold down on the controller handle. Observe the rate at which the air

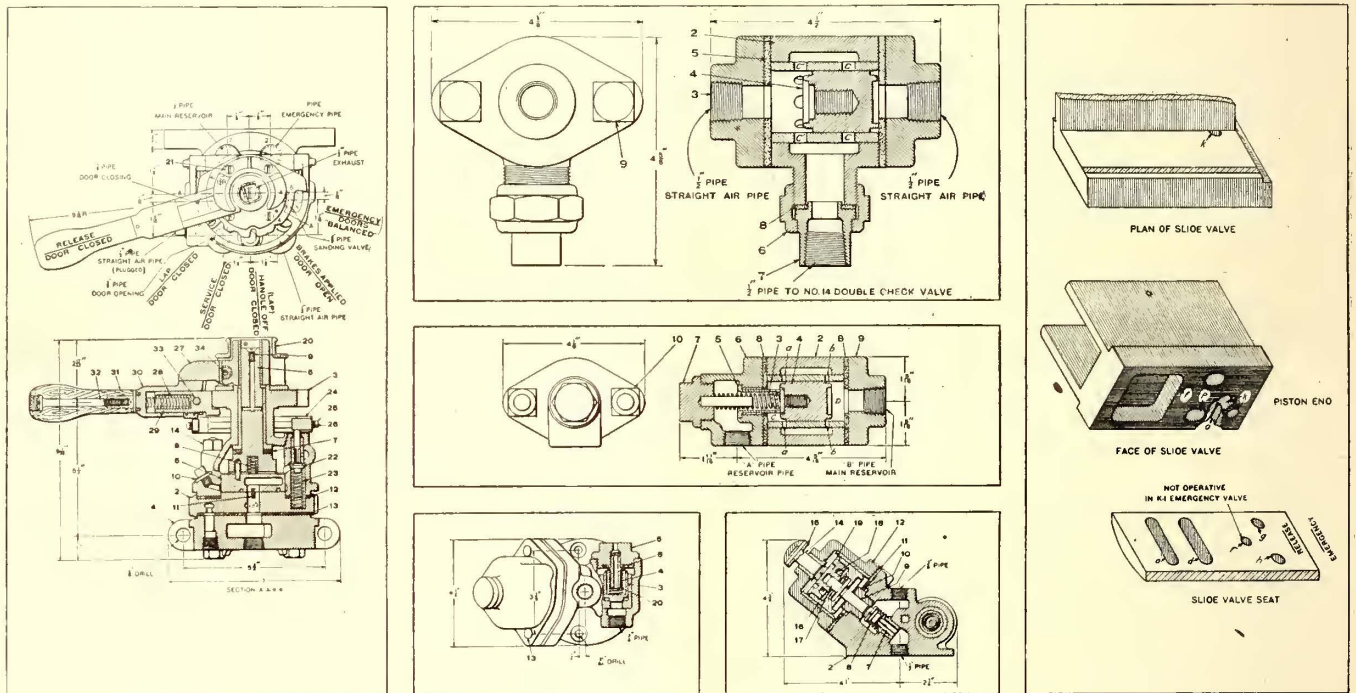


AT LEFT, AIR GAGE. IN CENTER, COMPRESSOR. AT RIGHT, SAFETY VALVE

gage pointer moves. It ought not to be more than 4 lb. a minute. In this test are included the main reservoir, emergency and control pipes, the pipe to the sanding reservoir, to the air gages, to the governor, the door-closing pipes and the door-closing chambers of the door engines. Move the brake valve handle to "service" position. By so doing, brake cylinder leakage is added to that from the pipes just mentioned. The combined leakage should not be more than 4 lb. a minute. Whether leakage found is in the brake cylinder or the door engines can be determined by closing the cock in each door-closing pipe, which cocks shut off the supply of air to the door engines. After leakage has been located, be careful to open these cocks again. After these tests have been completed, move the brake valve handle to "door open" position. Observe the combined leakage, which, as above, should not be more

the piston promptly returns fully home. Observe whether there is any fouling of the hand brake, and if so correct it. Make a full service application and then remove the hand from the controller handle. Note if the circuit breaker cylinder piston remains in position. If the piston moves out, examine the combined foot and cutoff valve to determine where the binding or sticking may be.

Make an emergency application by placing the brake valve handle in emergency position, but not releasing the controller handle. If the circuit breaker cylinder piston moves out, examine the combined foot and cutoff valve as above. Release controller handle and note if sand issues from all four sand pipes. If it does not, remove any wet sand found in the sand boxes. Determine if the air pressure has been removed from both doors by opening them by hand. Break a union in the



PLAN AND SECTIONAL VIEWS OF SAFETY CAR AIR EQUIPMENT

At left, brake valve. Top center, double check valve. Center, main reservoir cutoff valve. Bottom center, foot valve. At right, slide valve and slide valve seat for K-1 emergency valve.

than 4 lb. a minute. In this case, the leakage includes the door open side of the door engines, whereas in the previous case it included the door closed side. Unless leakage can be detected by sound, it will be necessary to coat the pipe fittings with soapsuds.

When leakage has been reduced to a permissible value and governor settings have been corrected the efficiency of the compressor can be roughly determined by noting the time the compressor operates in restoring main reservoir pressure to 60 lb. from 50 lb. This time will differ considerably with different cars, but an average time can be readily established, wide variation from which will justify examining the condition of the compressor.

**PISTON TRAVEL SHOULD BE MAINTAINED AT FOUR INCHES**

After the above tests have been concluded, make a service application from the No. 1 end of the car. Note if the piston moves out promptly to its full travel of 4 in. Then release the application. Make certain that

main reservoir pipe between the main reservoir cutoff valve and the brake valve and quickly spring apart the pipes so as to have the pipe fully open. If the flow of air from the pipe leading to the cutoff valve does not diminish considerably, remove and clean the main reservoir cutoff valve. Reconnect the union and move the brake valve handle to release position. Ascertain if the brake cylinder piston returns fully home.

If the brake valve handle is placed in door-open position, the door ought to open promptly without slamming; if the brake valve handle is placed in release position, the door ought to close promptly without slamming. Slamming of doors, in either opening or closing, is caused by lack of proper cushion for the moving piston. The cushion is normally provided by choking the air exhausting from before the piston, so that the moving piston has a tendency to compress it. If a door slams, therefore, examine the large ballcheck valve in the head toward which the piston is moving, since the air can exhaust rapidly if this valve is unseated. Also ascertain if the packing cup of the pis-

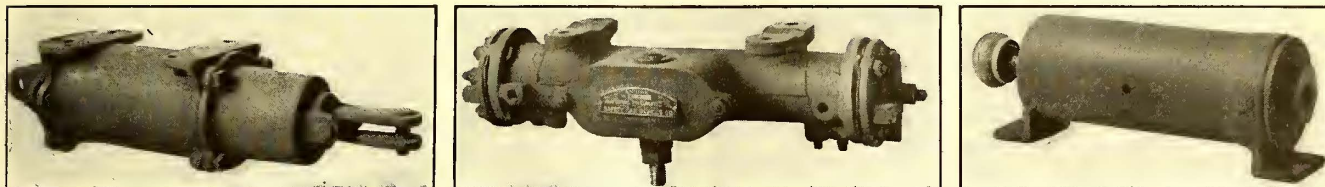
ton is in good condition and well lubricated. If it is desired to change the cushioning effect slightly, screw in or out the choke plug in the center of the door engine head. If the door opens slowly, it may be due to the slowness with which air is admitted to the one piston chamber or to the slowness with which the air is exhausted from the other. Examine the port in each head to determine if it is clear. Also make certain that the packing cups are tight. If the door opens slowly and air exhausts from the gear portion of the door engine, examine the small check valve in the door engine head from which the piston is moving away to determine if it is unseated.

#### TESTING THE EMERGENCY ACTION OF EQUIPMENT

To test the emergency action of the equipment, charge the system to at least 50 lb., with the brake valve in release position. Leaving the brake valve in release, remove the hand from the controller handle. The brake cylinder piston will at once move out, sand will issue at all four sand pipes, the circuit breaker cylinder piston will knock out the circuit breaker and the air pressure holding the doors closed will be removed. If sand does not issue from the sand pipes, examine the

the brakes cannot be released it is probable that some defect exists in the control system. Such defect is generally due to a bit of pipe scale lodging under a valve seat. With new cars, difficulties with pipe scale will be experienced until the scale works out of the various pipes. If the brakes cannot be released with the brake valve handle in release position, hold down on the controller handle and determine if there is a flow of air from the controller pilot valve atmospheric exhaust. If there is such a flow, clean the lower pilot valve and give it a good bearing on its seat. If there is not, examine the No. 15 double check valve to determine if it is seating against the seat away from the operating brake valve. If a satisfactory seat is being made, no air will flow when the pipe leading from the check valve to the non-operating end of the car is broken. If no difficulty exists with the double check valve, break the pipe connection leading from the relay valve of the emergency valve to the circuit breaker cylinders. If air passes the relay valve, this valve is at fault. If no air passes the relay valve, examine and clean the emergency valve.

If the brake applies when not intended, excessive leakage must exist from the emergency pipe and its



AT LEFT, BRAKE CYLINDER. IN CENTER, DOOR AND STEP CONTROLLER. AT RIGHT, CIRCUIT BREAKER CYLINDER

boxes for wet sand. If the circuit breaker is not knocked out, examine and clean the relay valve in the emergency valve. The other two events will invariably occur.

With the system fully charged and the brake valve in release position, press against the button of the combined foot and cutoff valve and then release the controller handle. Observe if the circuit breaker is knocked out. If it is, the valve actuated by the piston of the foot valve is not seating. Ascertain if the valve is held from its seat by foreign matter or if it is jammed. If the circuit breaker is not knocked out, remove the foot from the foot valve. The circuit breaker will then be opened, unless the valve just mentioned is stuck so as to restrict the opening from the control pipe. Make the same test by releasing the controller handle from power on position and note if the circuit breaker cylinder piston moves out. It is important for this test that the circuit breaker be opened by hand before commencement.

Depress the brake valve handle and observe if sand issues from the adjacent pair of sand pipes. If it does not and the sand boxes are in proper order, examine the sander valve in the brake valve.

Make a full service application by placing the brake valve in service position. Release the controller handle. The circuit breaker should not be opened. If it is opened examine and clean the combined foot and cutoff valve.

All of the above tests involving brake valve manipulation should be repeated from No. 2 end of the car.

If it is found that with the brake valve handle in release position and the controller handle held down

connections, which include the door-closing sides of the door engines. This piping must be tested for leaks, the removal of which will eliminate the trouble.

In case the circuit breaker is opened when the controller handle is released following a full service brake application, test the control pipe for leakage.

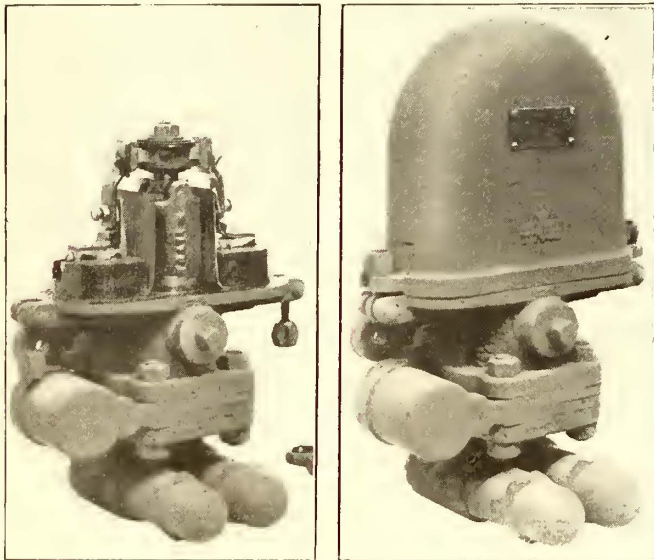
#### DETERMINING CAUSE OF ESCAPING AIR FROM BRAKE VALVE EXHAUST

To determine the cause of air escaping from the brake valve exhaust, move the brake valve handle to "handle off" position. If the flow of air then continues, it is due either to a leaking rotary valve or to a defective gasket between the brake valve and pipe bracket, though the former is the most common cause. If air escapes from the brake valve exhaust only in release position, it may be caused either by the emergency valve or by the brake valve at the other end of the car. To ascertain positively which of these is the source, disconnect the straight air pipe near the brake valve from which air is escaping. If no air issues from the section attached to the emergency valve, the trouble is with the brake valve. If air does issue from this pipe, disconnect the straight air branch pipe leading to the emergency valve. If air issues from the section attached to the emergency valve, the trouble is due to a leaking slide valve or a defective gasket in the emergency valve. If air does not issue from this section, the trouble is with the brake valve at the other end of the car. Air escaping around the sander valve stem can frequently be stopped by the operation of the valve a few times.

Escape of air from the lower vent port of the com-

bined foot and cutoff valve, at either end of the car, with the brake released, indicates leakage around the upper of the double valves and its stem. Escape of air at either vent port, at either end of the car, with the brakes fully applied, indicates that the seal of the valve adjacent to the vent is not tight. Leakage by the stem of the knob indicates that the valve on the end of the stem is not seating. If, with the brake fully applied, air escapes at the pilot valve exhaust when the controller handle is released, examine the by-pass check valve for leakage.

Air issuing at the operative end of the car from the pilot valve exhaust with the controller handle held down is caused either by the lower valve not seating or by its making a poor seat. With the controller handle released, escape of air at the same exhaust is due either to the upper pilot valve, to the lower of the double valves in the foot valve or to the by-pass check valve. By successively disconnecting pipes, leakage may be traced to one of these three sources. In the event that



ELECTRIC COMPRESSOR GOVERNOR

the trouble is discovered to be with the upper pilot valve, make certain that the lever in the handle base is so adjusted that the upper pilot valve is caused to seat when the controller handle is released. The contrary applies to the lower pilot valve. Escape of air from the pilot valve exhaust at the non-operative end of the car results either from a leaking upper pilot valve or from a double check valve which does not seat properly.

Issuance of air from the exhaust port in the main body of the emergency valve can be stopped by fitting the emergency slide valve to its seat. Air escaping from the exhaust port in the casting containing the relay valve with the brakes released comes either from a defective gasket or a poor seal made by the small end of the emergency piston. Leakage by the relay valve in release position is evidenced by air escaping from the circuit breaker cylinders.

#### GENERAL REPAIRS TO COMPRESSOR AND ACCESSORIES

It is advisable to follow a systematic schedule in making general repairs or overhauling equipment. Such schedules are carefully laid out upon all large properties. Smaller roads will find it decidedly practical from an economical standpoint to follow their example. Overhauling is generally upon a time basis

and the interval adopted is usually one year. Emergency valves may require more frequent cleaning, determined by local conditions. A yearly basis, however, will probably be found satisfactory for the other items of the air brake and safety car control equipment.

The efficiency of a compressor may be determined by a suitable operating test and this efficiency used to determine whether or not the compressor is in need of overhauling. Such procedure is quite general in connection with steam-driven compressors on steam railroads, but is very exceptional on electric roads. Overhauling of motor-driven compressors is generally on a yearly basis, at least on properties in the East, without reference to the actual condition of a particular compressor.

To make satisfactory repairs to a compressor, it is necessary to provide a bench with such air and electrical connections that the compressor may be operated under pressure. It is advisable to have sufficient spare compressors in order that time may be available to do all necessary repairing to the compressors before their return to service. At each overhauling drain all oil from the crank case and clean up the compressor portion thoroughly with gasoline. Examine piston rings to ascertain if they have been making good contact against the cylinder walls and in their grooves. If not, replace with new rings, as the efficiency of the compressor and any tendency to pass oil will thereby be considerably bettered. If many compressors are overhauled, a clamping device to permit the easy installation of segmental rings is a worth-while addition to the shop equipment.

After the cylinder walls become worn from long service, the efficiency of the compressor can only be maintained by reboring or rebushing the cylinders. After the cylinder walls have been reduced in thickness by reboring, it is necessary that they be rebushed. Two sizes of repair piston rings can be furnished for DH-16 compressors, one size  $\frac{1}{16}$  in. larger than standard and one  $\frac{1}{8}$  in. When rings  $\frac{1}{8}$  in. over size are no longer able to take care of wear, it is necessary that the cylinders be rebushed.

The valves in the cylinder head require cleaning, any carbonization being removed. Valve seats must be refaced when it is evident that valves are seating badly. This work must be so carried out that the valve lift is not changed from that specified for the compressor. Tools are manufactured by which this work may be readily done. It is important that the slope of the seat be retained as it existed in the original design in order that the bearing area of the valve may not be changed.

Crankshafts may require new bearings. Connecting rod bearings must be tightened up and shims adjusted. Bearings must be rebabbitted when sufficiently worn. Nuts throughout the compressor demand tightening. Pinion and gear, the pinion particularly, need examination, for the pinion after long wear may require replacement.

Armature and field coils of the motor should be blown out, then cleaned with gasoline, dried and finally shellacked or varnished. Bearings must be tested by checking the armature gap in the usual way. After commutators have worn down to the mica, turn and reslot. Brushes ought to be free in their holders. The proper spring tension, with adjustable brush holders, is 4 and 5 lb. per square inch of brush area.

When the compressor is reassembled, care must be taken that the cylinder head is drawn up tightly against the cylinder casting. If cork cylinder gaskets are used, they can be held in place by shellacking the side which goes against the cylinder casting. If the other side is coated with graphite grease or finely powdered graphite the cylinder head may be removed without tearing the gasket.

The strainer is not generally given the attention warranted by its importance on account of the vital bearing its proper functioning has upon the life of the compressor. Many compressor troubles are due to neglect of the strainer. Compressors have been found in service without any strainer. The strainer needs to be blown out frequently, the more frequently the better. At the yearly overhauling the hair should be removed and cleaned.

Overhauling of governors should be done at a suitable bench and not attempted upon the car. Leather seats and gaskets when found leaking need to be replaced. The governor strainer must be given attention. In time, valve cylinders will have to be rebushed. To adjust the setting of the governor, remove the caps covering the regulating nuts and screw down the cut-out regulating nut until the compressor cuts out at approximately the pressure desired. At the same time or possibly before this nut is adjusted, back off the cut-in nut until it is certain that the cutting-in point is below the cutting-out point. If this is not done, it will be difficult to make proper adjustment. After the cutting-out point has been set, screw down on the cut-in regulating nut until the compressor cuts in as desired. The caps covering the regulating nuts must be in place and tightened when the final adjustments are made, as otherwise the adjustment will be disturbed when they are put back. At the yearly overhauling testing the adjustment of the safety valve should be carefully and accurately done. This setting should be 75 lb.

#### CARE OF EMERGENCY AND OTHER VALVES

The emergency valve must be gone over at least once a year or if dirt, gum or verdigris accumulates in sufficient quantity every six months. It is very desirable that the overhauling be done at a bench provided with means for testing the valve under pressure. A suitable test rack was described in the Aug. 21 issue of this publication in connection with an account of safety car operation in Kansas City. If any slide valve leakage is found, the slide valve must be ground in or spotted to overcome it. Gaskets and leather seats must be renewed when found leaking. The cleaning of the relay valve cannot be overlooked. Relay valve and main piston must move freely in their cylinders. When new piston rings are installed, ascertain that they make a tight and uniform fit in their groove. New rings can be worn in by moving the piston back and forth by hand or by a proper tool. Good practice requires that the ring be fitted to the cylinder rather than the cylinder to the ring. It goes without saying that piston and slide valve should be returned to the body from which removed. Emergency valves may be applied, however, to any pipe bracket. The lubrication of the emergency valve has been described in a previous article.

The circuit breaker cylinder, the double check valve, the main reservoir cutoff valve and the combined foot

and cutoff valve must all receive attention at the same time as the emergency valve. Cleaning is the principal work to be done. Gaskets and seats must be replaced when necessary to overcome leakage. Valves in the combined foot and cutoff valve or in the pilot valve when discovered leaking will have to be ground in.

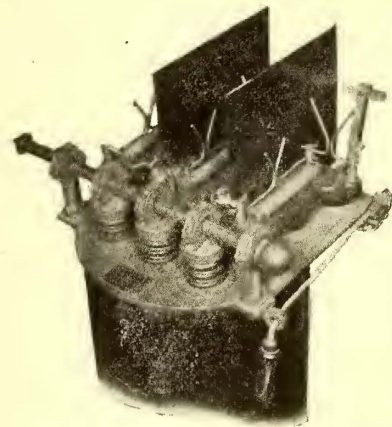
Gaskets and leather seats require renewal when found leaking. Handles can be rebushed when they become loose on the brake valve stem. The sander valve needs to be inspected for leakage. Worn latches require replacement. The wearing strip bearing on the bail will have to be renewed before it becomes too thin. Brake cylinders ought to be cleaned yearly. Door and step controllers can be on the same basis. Cup leathers worn and cracked must be replaced. All leathers should be lubricated. The gear case must be kept filled with a suitable non-fluid oil or a hard grease.

In following out the tests for locating troubles as described, charts, diagrams and sectional views of the character illustrated will be found of great assistance to the workmen. The manufacturers of the equipment have these in convenient size and can supply them as required.

#### Improved Electrolytic Lightning Arrester

**M**OUNTING the transfer switch and gap structure on the tank top is one of the main features of the 1,000-7,500-volt type AK lightning arresters recently placed upon the market by the Westinghouse Electric & Manufacturing Company. This arrester is self-contained and of the indoor mounting form. Transfer switch, horn gaps, charging resistance and short-circuiting devices are all located on the tank top.

The transfer switch is of the sliding rod type, consisting of a rod with sections of conducting and insu-



LOW-VOLTAGE ELECTROLYTIC LIGHTNING ARRESTER

lating materials, operating through five self-aligning contacts, supported by the cover. Three middle contacts are insulated from the tank cover by porcelain pillar insulators, but the end contacts are connected directly to the tank top through their metal supports and form a part of the ground circuit. A ball handle with guard provides an easy method of operating the switch.

The horn gap, charging resistance and short-circuiting device are mounted on insulating bases located between barriers and on the tank top. Short-circuiting metal strips are carried by insulated supports attached to a shaft. The shaft or rod is operated by means of a rope or handle against a spring which normally holds the short-circuiting device in the open position.

## Use of Solid Lubricants

### Two Functions of Making Rubbing Surfaces Smooth and Slippery Are Supplied by Solid and Semi-Solid Lubricants

THE Department of Scientific and Industrial Research in Great Britain has just issued a memorandum on solid lubricants. Certain points discussed, of interest to electric railways, are abstracted below:

On introducing a solid lubricant between otherwise unlubricated surfaces the finely divided particles of the lubricant associate themselves with one or the other of the rubbing surfaces, filling in the pores and depressions, and acting to some extent as a smoothing and polishing agent. As a result, the coefficient of friction is reduced and the solid friction between the more or less rough original rubbing surfaces is replaced by the lesser solid friction between the smooth surfaces formed by the solid lubricant.

When oil lubricated surfaces remain at rest for some time the oil film is more or less completely squeezed out and a certain amount of solid contact takes place. As a result, the starting effort is much greater than the running effort; in fact, the static coefficient of friction usually approximates to the values applying to dry friction. The high values for the static coefficient of friction explain the great effort often required to start machinery from rest and form one of the chief reasons why ball and roller bearings are used, as with surfaces in rolling contact there is practically no difference between the static and kinetic coefficient of friction.

The effect of the use of a suitable solid lubricant or a solid colloidal lubricant is to reduce the tendency to abrasion and to produce smoothness of the surfaces. As the solid lubricant cannot be displaced by pressure, the static coefficient of friction is reduced as compared with the result obtained when oil alone is used, assuming that the solid lubricant is of such a nature and used in such a manner that it has increased the smoothness of the rubbing surfaces.

#### FLAKE GRAPHITE FORMS SLIPPERY SURFACE

Makers of the flake variety of graphite claim that this type of graphite lends itself better to the production of very smooth and slippery surfaces than the amorphous varieties; in bearings with rough surfaces the flakes adhere to one another and easily build up a smooth surface. When the bearing surfaces are reasonably well finished this "building up" action of the flake graphite does not appear to be of special value; in fact, it may be detrimental where small clearances exist, particularly if fed in excess.

A good solid lubricant must possess ability to adhere to metallic surfaces and it must be capable of producing a smooth surface. Graphite possesses both of these properties to a marked degree. Tale and mica do not adhere to surfaces as well as graphite does, nor do they produce so smooth a surface.

In the case of well-finished rubbing surfaces very finely divided graphite must obviously be used, and the coating of the surfaces is easier to accomplish than with rough surfaces. Under these conditions, makers of amorphous graphite claim that flake graphite, when used in excess, is apt to build up too thick a surface and reduce the working clearance to a dangerous extent, whereas with amorphous graphite excessive use can have no ill effects; the soft amorphous grains are easily

crushed; in fact, a surface of fine amorphous graphite under pressure moves within itself like a film of oil.

The admixture of a hard solid lubricant, like hard tale or mica, with a grease, particularly if an excessive amount is added, may cause a great deal of continuous uniform wear, yet with no cutting or excessive heating of the bearing.

When a bearing gives warning by heating the usual procedure is to resort to the use of a fixed oil, like castor or rape oil, or to a viscous mineral oil, like steam cylinder oil; the effect of using such oils is to produce a better film, which separates the metallic surfaces and reduces the temperature. When the surfaces have commenced seriously to abrade one another oils may prove of no avail and solid lubricants must be used, such as graphite.

#### MILD ABRASIVES CURE HOT BEARINGS

Flowers of sulphur and white lead are often used to cure hot bearings; they act not so much as lubricants, but rather as mild abrasives; they grind away the rough spots and produce a smooth surface. Much more drastic remedies, such as salt, brick dust and grindstone dust have been successfully employed in very serious cases of large hot bearings; their function is quickly to grind away the rough parts which have commenced to seize. They may be applied mixed with thick oils. The oil should be applied in a liberal manner in order that it may clean away the gritty powder after it has done its duty.

Speaking generally, semi-solid lubricants are always improved by the admixture of a small amount of finely pulverized pure flake or amorphous graphite. In this case a softer grease, or a grease containing a lower viscosity oil, can be employed than that used without the addition of a solid lubricant. Exceptions are bearings with highly polished surfaces and small clearances and high-class ball and roller bearings, for which colloidal solid lubricants are the only solid lubricants that can be considered.

There are numerous experiences which testify to the value of solid lubricants, and graphite in particular, for use in bearings. One British railway reports that good results have been obtained by using either colloidal graphite or flake graphite mixed with their ordinary engine oil.

The graphite is used for regular running, but only as a temporary remedy, whenever important bearings are inclined to heat. Several railways report that by continuous use of colloidal graphite mixed with pure mineral oils they have obtained excellent results on heavy duty bearings which previously gave trouble, even when using oils heavily compounded with fixed oil. Not only did the bearings run cooler but also with an appreciable reduction in consumption of oil, and without flocculation of the graphite.

Bulletin No. 7 of the Federated American Engineering Societies announces the addition of the Cleveland Engineering Society to the list of charter members. This bulletin also discusses the form of organization, showing why a federation form is superior for the purposes involved to any new all inclusive body of individuals which could be found. It further emphasizes the retention of autonomy by each member society and also discusses the manner of the selection of representatives.



# Modifying Open Cars for Prepayment Service

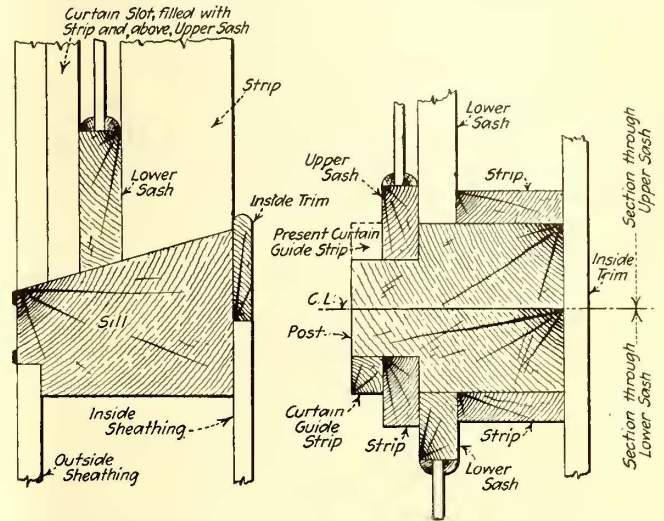
Connecticut Company Rebuilds Fifty Cars for P.A.Y.E. Operation—Although Company Plans to Use Them Only for Summer Open Service, Cars Are Adaptable to Conversion to Closed All-Year Types

AS THE Connecticut Company approached the summer months it was evident that it would have a large amount of open equipment which would be useless under the zone system of fare collection, which was in vogue on the lines of the company during the spring. While some use could be made of open equipment for a few standard runs on express service, with one cash fare for the entire run or any part of it, there were still many of the more than 400 open cars which would necessarily be idle under a zone system. Plans were therefore made to change over 100 of these cars, as a first step, in such a way that they could be used on the zone system with the same sort of fare collection in use on the ordinary closed car.

The Connecticut Company's open cars, seating seventy-five passengers, were of the ordinary reversible-seat, open-platform, two-step running-board type. One of these is shown in an accompanying illustration.

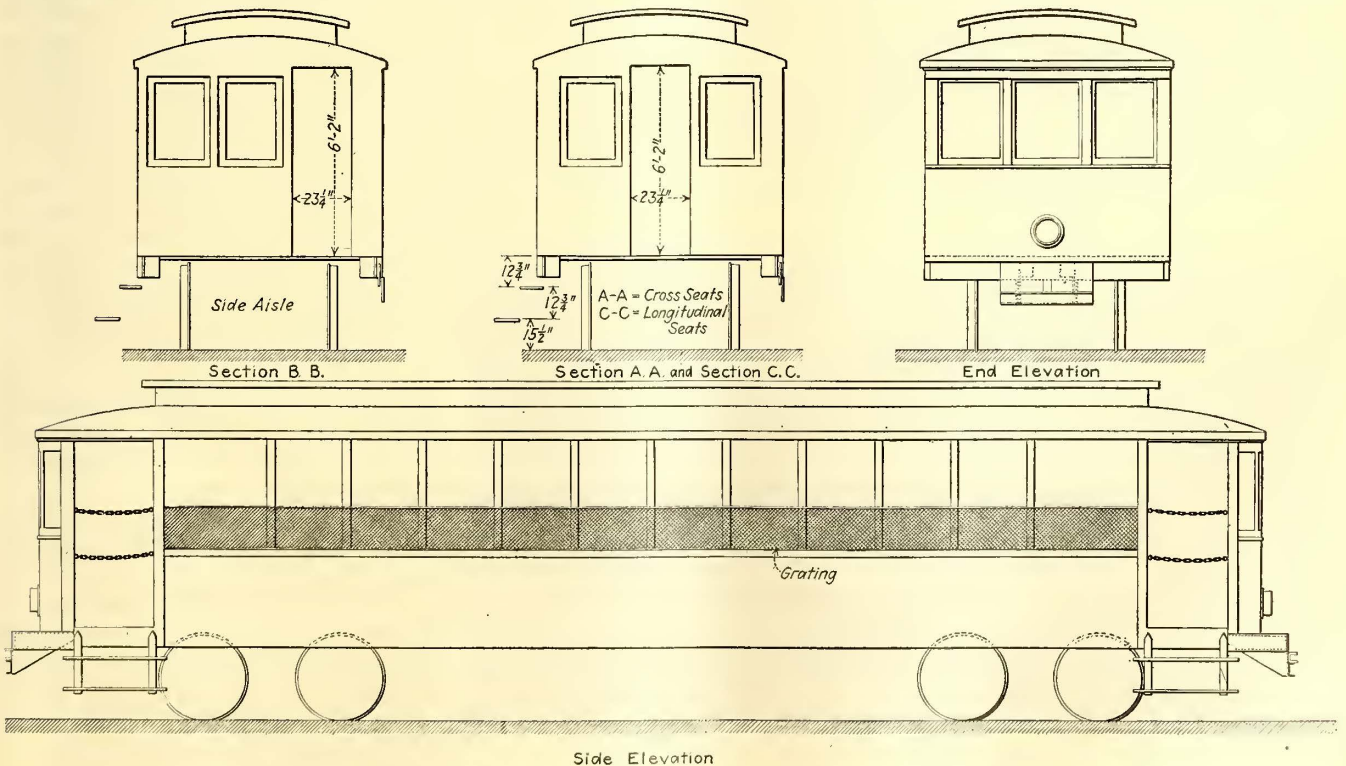
Various seating arrangements for the rebuilt cars were suggested which would allow ingress and egress of passengers in such a way that fares could be collected on the zone system. A sample car was constructed on each of three seating arrangement designs. The three designs are shown in an accompanying drawing and interior views of the three finished cars are shown in an accompanying illustration. One of these is the ordinary longitudinal-seat car, largely designed for rush-hour extras. This car will seat forty-eight passengers as now arranged. The second style is the cross-seat, with a center aisle, and arranged to seat fifty passengers.

The third style is the side aisle arrangement with cross seats, which provides a seating capacity of fifty-two. Original plans called for fifty cars with longitudinal seats, ten with the cross-seat center-aisle plan and forty

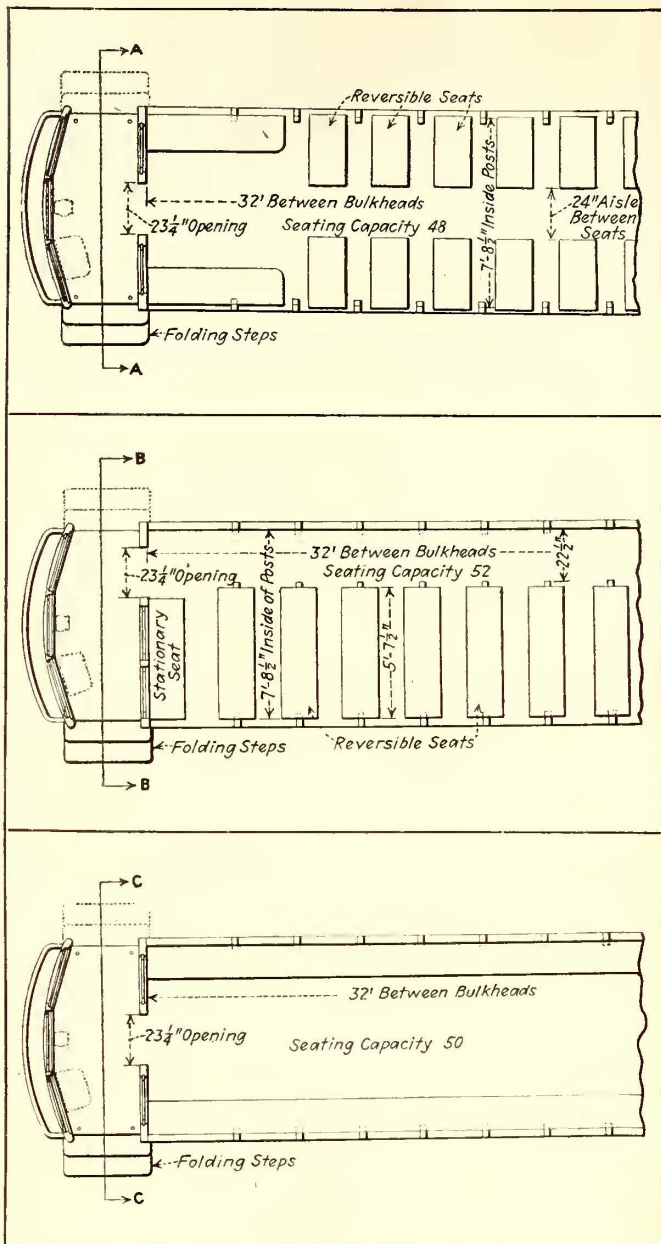


HOW IT IS PLANNED TO SET WINDOWS, USING THE PRESENT CURTAIN POSTS

with the cross-seat side-aisle. It was soon evident, however, that the complete 100-car program could not be carried out in time for use during the summer of 1920 and the program was reduced to fifty. The plans



ELEVATIONS SHOWING DETAILS OF CONNECTICUT COMPANY'S MODIFIED OPEN CARS



THE THREE SEATING ARRANGEMENTS USED ON THE MODIFIED OPEN CARS

called for using the existing material in the open cars to make the three-quarter width seats and to make the longitudinal seats, but the cross seats for the center-aisle cars were to be purchased. As these orders had already been given, on the basis of the original program of ten cross seats, and as there were on hand enough cross seats in abandoned cars to equip three more of the new cars the following program was decided upon and carried into execution: Thirty-six longitudinal-seat, thirteen cross-seat, center-aisle, and one, the sample, side-aisle car. It was planned that the cars with longitudinal seats would be used for rush-hour extras and those with cross-seats in suburban service.

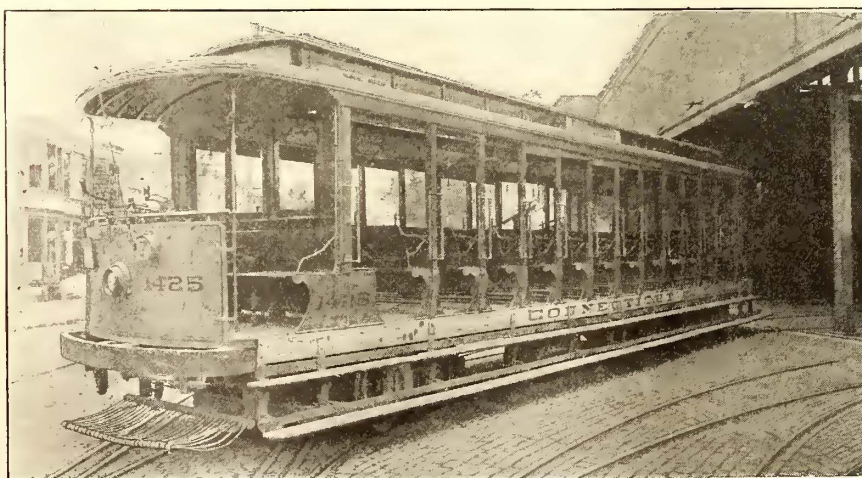
Most of these cars have already been put into service, and the reports received by the company indicate that the cars are very well liked. It is interesting to note that in some localities where both longitudinal and cross seats have been provided there is a demand that all the cars have longitudinal seats; in other communities the demand is exactly the opposite, i.e., that all the cars should be of the cross-seat type.

These cars are arranged to be operated on the "pay-as-you-enter" scheme, the same as the standard two-man car. Of course, under the zone system as worked by the Connecticut Company, entrance was by the front platform and exit at the rear, using "pay-as-you-leave" collection. Since these cars are built to collect fares the same as a regular car, they can now be used as "pay-as-you-enter" cars on the present fare system.

In the actual change-over of the cars, attempt was made, of course, to utilize as much of the original open car material and construction in place as possible. The first plan called for the use of sheet iron for the sides, shaping this to the curtain posts. As it was impossible to get the material in time to make the reconstruction for this summer's period this plan had to be abandoned. A second scheme was then evolved to use agasote or nevasplit, putting this in the curtain slots, thus again following the shape of the posts. This material could not be promised on time, and this plan also had to be abandoned. The third and final scheme then adopted was to use straight siding material which could be secured locally. This necessitated, of course, bolting on to the existing sill of the car an additional sill or extension to bring the bottom support of the sheathing out in line with the upper part of the curtain posts. In bolting on this additional sill the old step-bracket holes were used. Flooring was brought out flush with the outer edge of the extended sill. An intermediate strip was set into the curtain posts about half way between the window ledge height and the sill and made flush with the upper part of the curtain posts and the lower sill. Sheathing was then applied vertically, as indicated in an accompanying photograph.

Care was taken in making both the window ledge and in inserting the intermediate strip so that it would be easy, without any additional rebuilding work, to install an inside lining in the car so that it could be used for all-year-round service. This inside lining has already been applied on all of the cross-seat cars that are in service.

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THE ORIGINAL DOUBLE-TRUCK OPEN CAR WITH DOUBLE RUNNING BOARD

Since, however, the present plan contemplates using these cars only in the summertime no windows or doors have been provided, but the curtains have been retained. Bottoms have been cut off the curtains, so that they now reach only to the window ledge rather than to the floor as originally. The old flooring on the cars was used as a base and they were refloored on top of this to 8 in. in front of the longitudinal seats on the longitudinal-seat cars and out to the end of the cross seats on the cross-seat cars. The original slats, which ran crosswise on the open cars, were taken up and laid longitudinally on the rest of the floors of the remodeled cars.

As stated above, the same seats and backs were used in the longitudinal and the side-aisle cars as had been previously used in the open summer cars. In the case of the side-aisle cars these were merely cut down and the same hardware used. In the case of the longitudinal cars all of the hardware was taken off, of course, the remaining material being used to construct one long longitudinal seat on each side of the car.

While the remodeling was being done it was decided best to put a vestibule on, and this vestibule was made ready to take a one-door wide, two-piece folding door of the same type as used on other single-entrance cars of the company. The old dashboards were, of course, removed and new dashers installed as part of the new vestibule.

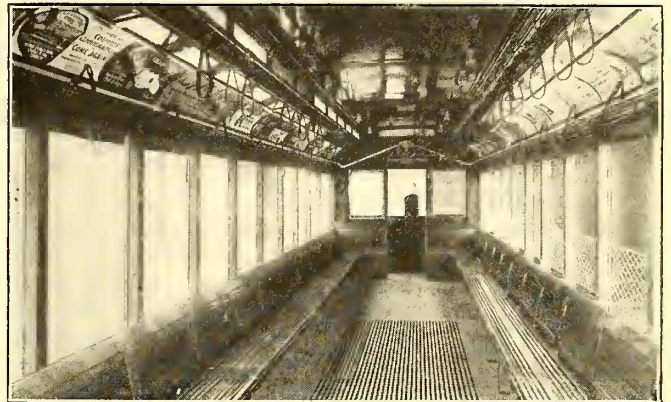
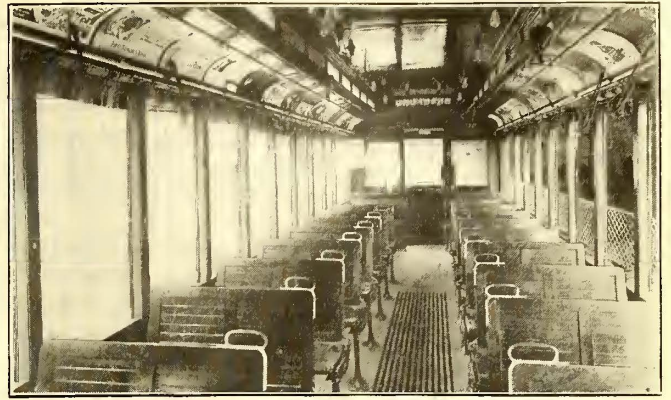
There was no change whatever in the framework of the car. A stanchion was provided on either side of the entrance in the vestibule and no arrangements were made for a door from the vestibule to the car.

With reference to the steps, all of the open cars were, as seen in an accompanying photograph, provided with a two-step running board. In making the remodeled car the same steps and brackets were used as far as needed, the unused part of the running board being cut off without the necessity for removal. It happened that the two front brackets were so spaced as to be in just exactly the right location for the steps needed to enter the vestibule. These steps are not now arranged to be operated from the motorman's or conductor's position, but must be operated manually from the outside. If doors are added, it is planned to have these steps worked by a mechanism which operates when the doors are opened and closed.

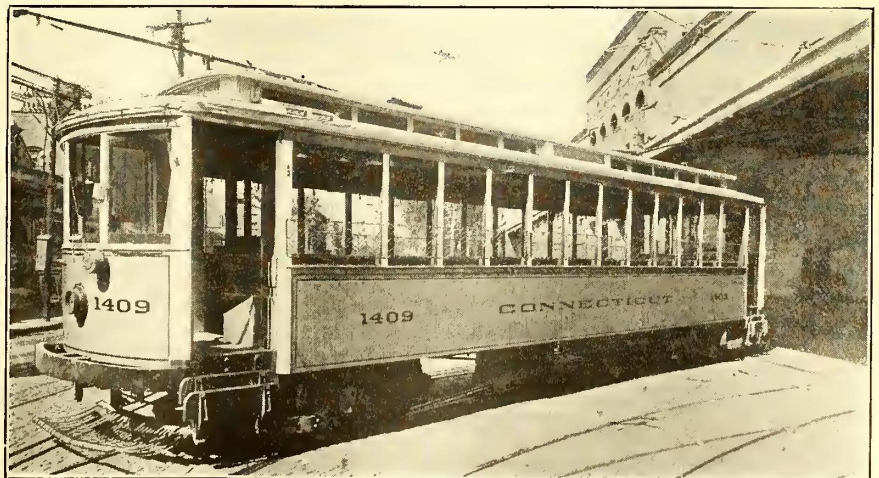
The accompanying illustrations show the arrangements which have been made to take windows in case it is decided to make the cars all-year-round cars. It is planned to set the upper sash in the present curtain slot and place a solid strip below the upper sash so it will be permanently in position. The lower sash will operate between this strip on the one hand and a strip nailed against the post on the other hand and will raise its entire height. In the drawings illustrating the plans for the addition of windows the strips there indicated, the inside sheathing, the inside trim and the sash are not now installed in the cars.

Some weight has been added to the cars, but the exact amount is not yet known.

All of the cars are equipped with O-50 trucks, with 4 G.E. motors and with G.E. control, either K-6 or K-35.



INTERIOR VIEWS SHOWING THE THREE SEATING ARRANGEMENTS



HOW THE CAR LOOKS AFTER RECONSTRUCTION, READY FOR PLATFORM ENTRANCE AND ZONE FARE COLLECTION

No change was made in the lighting or the ceiling of any of the cars with the exception of refinishing.

It may be of interest to know what the cost of this change-over has been. The first three cars fitted out as samples were prepared in the company's Grand Avenue carhouses, New Haven, by the company itself. The rest of the work was done by contract and the cost per car has been approximately \$1,000.

Most of the responsibility for this change-over, including the making of the plans, has rested upon H. C. Beebe, superintendent of equipment, from whom most of this information was obtained.

## Suggestions to Foremen

### Be a Salesman and Sell Satisfaction—Lead, Not Drive, the Keynote of Success—Character Study Essential

BY JOHN F. SPENCER

**I**F YOU are a foreman and have to handle men your problem is the same as that of a salesman. If a man goes into a store and a salesman sells him something good he goes out satisfied and remains satisfied, so if a man comes to you and wants something, you, as foreman, must see that he is satisfied if it is in your power to do so. If you cannot give him what he wants state the reason and only let him leave when he is satisfied you cannot do what he desires. You, as foreman, are a salesman selling satisfaction, not goods.

Ninety per cent of the men know the conditions in the shop, factory or power station about as well as you do, so it is useless to try to fool them or put them off. Treat them so as to retain their friendship and respect so they will come back for another favor. This is the policy of any good salesman.

You should never be too busy to talk to a man. It is human nature to like to deal with a busy man, for that is the type that gets results. If you are not busy you are not selling anything. Do not read the newspaper or look out the window when a man tells you something about a car, but give him your attention. The inattentive treatment might cause him not to come back to tell you of other troubles which, if remedied, would prevent serious accidents.

Do not try to do too much for your men or to patronize them. They are quick to detect insincerity and you will spoil all discipline. Do not be familiar with the men or put your hand on their shoulders. They are sensitive and have no use for such behavior.

If you reprimand a man do it without losing your temper and the next time you meet him engage him in pleasant conversation not connected with his work. This action will convince him there was nothing personal in your reprimand.

You should be a teacher to your men. Never refuse to show a man the schedule, the plans or the working of a machine. The more you explain a thing the better you understand it yourself. Do not tell a curious man to see some one else. Make the question an opportunity for getting better acquainted. Your aim is to lead your men and not drive them, so no legitimate opportunity for better personal relations should be neglected.

Never dismiss a man with an order until he understands exactly what is wanted. You will find men different, and it pays to study character. You may have to talk fast to blond men and slow to brunette men in

order to make them quickly understand your order. Different men require different treatment.

Always be frank, truthful and sincere with your men. Use good judgement in making promises and, above all, do not make promises you cannot carry out. Favoritism will cause endless trouble, while a square deal and consideration for every man will get co-operation in the work. Nothing is too slight to watch in avoiding charges of favoritism. Do not go on fishing trips, theater parties, etc., with your men unless all go.

There are many incidental things not directly connected with your duties as foreman that will help you handle men. Learn all you can about the fire protection, safety and sanitary appliances. A knowledge of first aid is an invaluable asset as it affords opportunity for your talking to a man in an emergency when he is not so critical in his attitude and at the same time you are placing him under a slight feeling of personal obligation to you for your aid.

Let your men talk and make suggestions about the work. Many of them will be valuable and every man likes to express his ideas.

You should keep a complete record of all your men in great detail. You should know whether they are married or single, whether they own or rent their homes, pay high or low rent, where they live and their telephone numbers.

You can also help them by posting notices of athletic events, etc., on the plant bulletin board.

A large measure of your success will be determined by your ability to handle your men, for, to the men, you are the company.

## Insuring Current for Bond Testing

**B**OND testing on street railway tracks is generally unsatisfactory because the amount of current flowing through the rails is not known. The Wilkes-Barre Railway Company, under the direction of E. A. Hoffman, chief engineer, has devised a method of testing which removes this uncertainty.

The company has several small portable resistance welders used for welding joints, bonding tracks, etc. To insure a current flowing through the rail to be tested, the terminal of one of these welders is grounded to the rail, and the joints between the machine and the power house are tested approximately every 300 ft., or every four or five joints to each setting of the machine. The welder weighs only about 80 lb. and is easily moved about by two men. In open track two or three men are used. About 50 per cent of the track of this company is paved, and for testing this portion two laborers in addition to the men necessary for the testing operations are used to open up and relay the paving around the joints.

All the track on the system, consisting of approximately 100 miles, will be tested out this season. It is expected that the testing crew will average about 1 mile a day, repairing all bad joints and bad bonds with the welder as they proceed with the work. Past experience indicates that not more than 3 per cent of the bonds will have to be renewed. Bonds recently tested have shown a conductivity equivalent to from 3.3 to 4.4 ft. of rail. About 7 ft. is used as a standard on this property. The average weight of all rail on the property is 75 lb. The estimated cost of making this test and performing the repair work necessary over the Wilkes-Barre Railway's entire system is \$2,000.

# New Standard Type of Safety Car Suggested

## Separate Entrance and Exit, Longitudinal Seats at the Ends and Other Changes Recommended to Make the Small One-Man Car Better Adapted to Fairly Heavy Traffic Lines

By WRAY T. THORN  
Equipment Engineer, Chicago, Ill.

THE birth of the safety car was occasioned very largely by the competition of that *bête noir* of the electric railway business, the jitney. In its early application it was thought of more particularly for use in the smaller cities where traffic conditions are not particularly severe. However, the economic advantages of these cars in the smaller cities were so quickly demonstrated that there has been a decided tendency to make use of them in larger and larger cities and on increasingly heavy traffic lines. In fact, this increase in the use of the safety car is truly remarkable and forms a well-earned tribute to its originators and to those who in the beginning had the courage to take it up and place it in operation.

In those metropolitan communities in which the safety car has been used, such as Brooklyn, Philadelphia, Baltimore, Boston, etc., it has been installed in most instances on routes not having severe traffic characteristics. The notable exception to this is Kansas City, where the safety cars have been operated through the downtown district, but in this connection recent reports of John A. Beeler have recommended that the cars be arranged so that auxiliary collectors stationed in the downtown district could open the rear door from the outside of the car and permit the egress and ingress of passengers from the rear end as well as at the front.

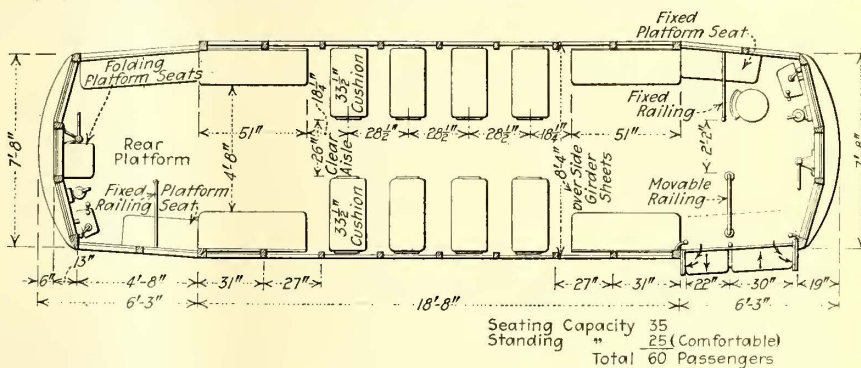
In order to make the great economic advantages of the safety car available in a broader way to properties operating in large cities it would seem that it might be advisable to have two standard designs of the one-man safety car—the present standard for smaller cities and lighter traffic lines and another standard car built along the same general lines but revised in some respects, as pointed out below, for use in larger cities and on heavier traffic lines. In this discussion no disparagement of the present standard car is intended. Rather, it is desired to give certain suggestions as to designs which it is believed would better adapt these small light-weight cars to the cross-town lines and some main lines of the larger systems. With the proposed second standard available a company would then simply make a choice as to which car would better meet its operating requirements.

### DESIGN FOR HEAVIER TRAFFIC ROUTES

In planning a safety car suitable for installation in large cities, where the equipment in use consists of double-truck cars which have comfortable seats, ample aisle width, low steps and platforms so arranged that passengers can board and alight simultaneously without confusion or delay, great care must be taken that the design of any new car will not be such as to suffer

by comparison with the older cars and produce unfavorable reaction because of less comfortable seats, narrow aisles and excessive standing time while loading and unloading. With this thought in mind it is suggested that the following features, as shown in the accompanying floor plan, should be incorporated in the proposed new standard:

1. Car arranged for double-end operation.
2. Width over all to be such as to provide (a) an aisle width of not less than 26 in., (b) a length of cross-seat cushion not less than 33½ in., (c) longitudinal seats at each end of the car body to seat three persons at 17 in. each.
3. Platform arranged with double-door opening, one for entrance and one for exit, with approximately 22 in. clear opening for exit and 30 in. for entrance.



FLOOR PLAN OF PROPOSED ONE-MAN SAFETY CAR FOR LARGE CITY USE

Seating Capacity 35  
Standing 25 (Comfortable)  
Total 60 Passengers

4. Exit and entrance doors to be arranged, if possible, for independent operation so that the operator can close the exit door when all passengers have alighted and confine the ingress of passengers to the entrance door, if this is found necessary to prevent loss of fares. This independent operation of the doors would also minimize the loss of heat in cold weather.

5. Platform railings to be arranged to separate boarding and alighting passengers.

6. Step heights made as low as possible by ramps from the car body to the platform floor, taking into consideration the proper wheel diameter and clearance. By this means step heights of 13 and 12 in. into the car could readily be secured, using 24-in. wheels.

7. Install platform seats in order to give the maximum seating capacity in the space available.

A car designed along these lines would have the following approximate dimensions as compared with the present standard car:

	Proposed car	Present car
Length over body	18 ft. 8 in.	17 ft. 9½ in.
Length over all	31 ft. 2 in.	27 ft. 9½ in.
Length of platform	6 ft. 3 in.	5 ft. 0 in.
Width over side girder plates	8 ft. 4 in.	7 ft. 8 in.
Seating capacity	35	30

Such a car would weigh, with careful designing, about 17,000 lb., as compared to the average weight of the present standard car of 14,500 lb.

#### ADVANTAGES SET FORTH

The proposed car differs from the present standard principally in the provision for the double opening of the platforms, the width over all and the arrangement of longitudinal seats at the ends of the car body.

With respect to the width over all of the car, which is determined by the width of aisle and length of cross-seat cushions, it is very necessary in a car where the movement of passengers is to and from the same platform that an aisle of ample width be provided so that standees will not interfere too seriously with such passenger movement. The desirability of a comfortable length of cross-seat cushion is obvious. The arrangement of longitudinal seats at the ends of the car body, each seating three persons, provides an ample maneuvering space at the point where experience on street, elevated and subway properties has shown it to be very desirable. Such longitudinal seats have already been adopted on the safety cars of the Kansas City (Mo.) Railways.

Platforms of sufficient length to provide for separate entrance and exit passageways are believed to be necessary in order to conserve time at points of comparatively heavy passenger interchange. Such points are rather numerous in large cities, and the double door would provide for the rapid unloading of the car without causing boarding passengers the irritation of having to wait until leaving passengers have alighted, and also thereby provide a distinct saving in the standing time.

The objection will be raised that the double-door platform will allow passengers to sneak in through the exit opening during times of passenger interchange. This point is not believed to be well founded, for the car operator would occupy practically the same relative position with respect to the exit opening as does the conductor on the so-called near-side car. There has been no trouble of this sort reported on the large number of near-side cars operated in three of our large cities.

At such places as baseball parks, amusement parks and large industrial plants, where it is possible to arrange for prepayment areas, the whole platform could be used for loading, or two streams of boarding passengers could be handled, the fares of one queue being collected by the operator and those of the other queue, entering through the exit door, by an operator or special collector.

There is also the possibility, which is worthy of serious study, of operating these safety cars on the pay-leave plan on routes where there are many stops at which large groups of passengers board the cars, thus saving considerable time. Or it is entirely possible that on the average line a combination use of pay-enter during the morning rush, when the loading is scattered and the unloading concentrated in the downtown district, and a pay-leave plan during the evening rush, when the loading is concentrated downtown and the unloading scattered, would prove advantageous.

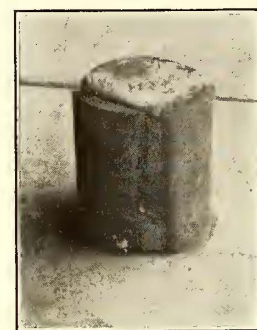
All of the standard safety equipment now in use on the present type of car could be used without change on the proposed car, except for the alterations in the door-operating mechanism to provide for independent operation of the entrance and exit doors. It is understood that electrical manufacturers have stated that the motors now developed for the safety car will satisfactorily handle equipment weighing up to 17,000 lb. light. The

present truck would be suitable for the proposed car, maintaining the present 9-ft. wheelbase and general design, changing only the weight of the springs and perhaps slightly strengthening some of the truck members.

It is hoped that this article will bring out discussion on the car proposed, for it is believed that it would have a wide field of usefulness without encroaching on the field of the present standard car.

#### Solid Manganese Special Trackwork Repairs

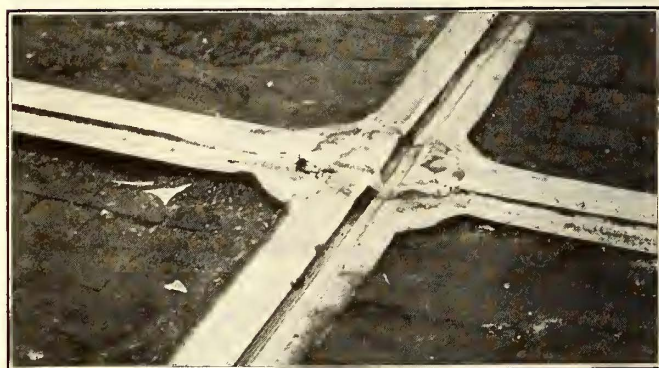
**F**EW railway track engineers have had much success in building up solid manganese special trackwork with an electric welder. However, C. L. Hawkins, engineer maintenance of way United Railways of St. Louis, Mo., has developed a scheme for renewing the frogs in this type of special trackwork which seems to be working out very satisfactorily.



CAST-STEEL INSERT AND THE TWO WEDGES USED IN REPAIRING BROKEN-DOWN SOLID MANGANESE SPECIAL TRACKWORK

Making use of an acetylene torch, the top of the casting at the frog points is cut out back to the walls of the cylindrical web which supports the frogs. A hollow cast-steel cylindrical block which is flattened on two sides is then inserted in this hole. It is wedged in place by means of two steel wedges shaped to fit the space between the flattened sides of the block and the cylindrical web of the special work. An

electric welder is then used to build up the tread and flangeways on the top of this cast-steel insert, the great



A SOLID MANGANESE INTERSECTION REPAIRED WITH CAST-STEEL INSERTS, AFTER SEVERAL MONTHS' SERVICE

diversity of crossing angles making it impractical to cast the tread on the insert. A grinder then finishes the job.

An increase of 104.5 per cent in the cost of living of American wage-earners between July, 1914, and July, 1920, is shown in a statement issued Sept. 13 by the National Industrial Conference Board. This figure is based on the board's most recent investigation of changes in the cost of living, a complete report of which will be made public shortly. This increase marks a rise of nearly 19 per cent within the last year and of 5 per cent since March, 1920, the date of the board's last survey of the problem.

# New Motor and Trail Cars for St. Louis

Peter Witt Type Motor Cars Have Only Two Steps — Trailers Are Center Entrance and Exit, but Front Half of Car Is Made a Loading Platform



NEW PETER WITT TYPE MOTOR CAR FOR ST. LOUIS, HAVING ONLY TWO STEPS

**T**HE United Railways of St. Louis, Mo., has on order with the St. Louis Car Company for October delivery fifty trailer cars which embody a new idea in trailer design. These cars will be designed for one-way operation, with a separate entrance and exit on the side of the car, both of which are ahead of the center of the car body and separated by a 36-in. space providing a convenient location for the conductor between the doors and on the near side of the car. Passengers will enter the forward door, be seated on the longitudinal seats without paying their fare and later leave the car by the exit door and pay their fare as they pass the conductor, or they may enter the forward door and immediately pass the conductor, paying as they pass, and be seated on one of the cross seats to the rear of the conductor's position. This makes an arrangement much the same as that employed in the Peter Witt type motor car, except that the entrance is near the center of the car instead of at the front end.

The advantages advanced for this arrangement of a trailer by M. O'Brien, master mechanic, are that it separates the incoming from the outgoing passengers, provides a very large loading space, induces a single-file entrance of passengers, so that the conductor has better control; minimizes the possibility of losing fares and decreases the standing time required to load. Since the more comfortable cross seats are placed at the rear of the car, passengers are induced to pay their fare immediately upon boarding the car and thereby reduce the amount of attention required from the conductor by alighting passengers. The detailed seating arrangement, door locations, conductor's position and other interior arrangements are clearly shown in the accompanying floor plan of the car.

The trailer design used by the United Railways heretofore has been of the double-door, center-entrance type, with a well in the center of the car and the conductor's

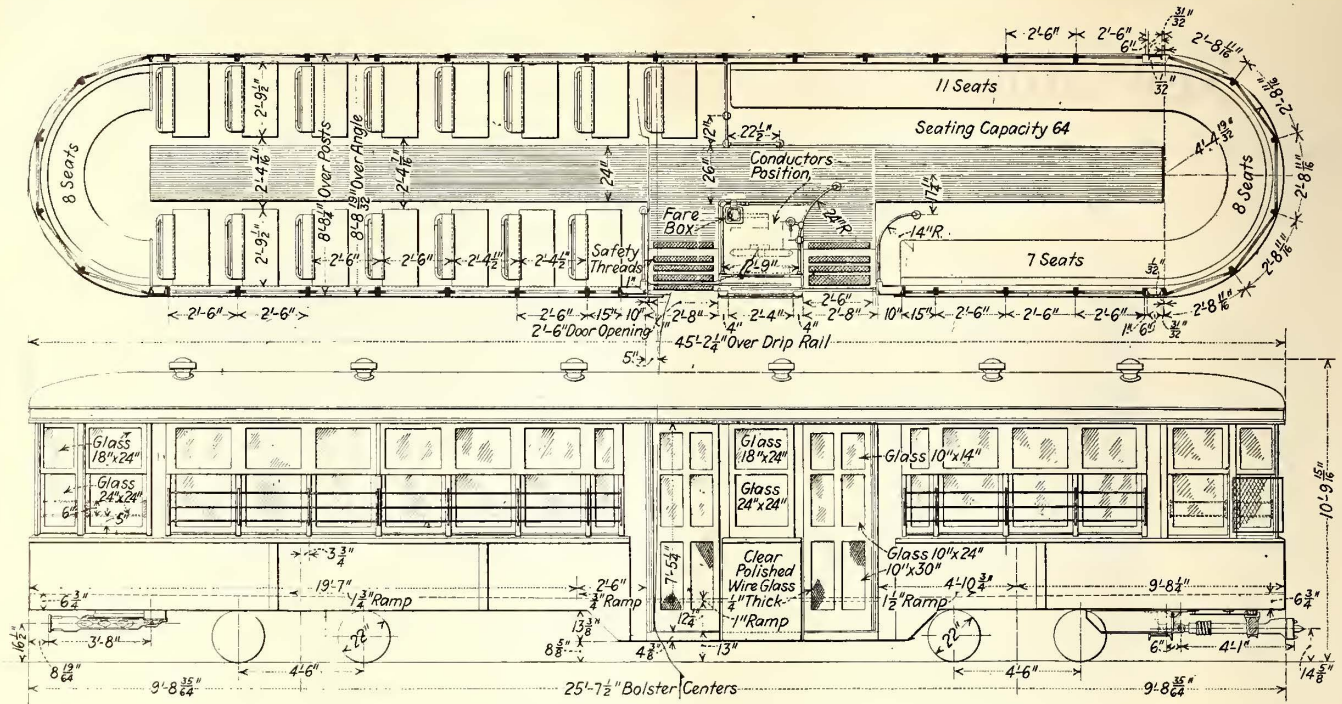
position on the far side of the car opposite the doors. In these cars there was one step to the floor of the well and another step onto the car floor. With passengers boarding this type of car in double file and passing both ways to seats, it is believed that a number of fares are lost. In the new car there is no well and the two steps of 13 in. and 12 $\frac{1}{2}$  in. are both placed at the doors. These step heights have been reduced to these figures by ramping the car floor from the bolsters to the center platform and the platform from the far side to the near side. This ramp from the forward bolster to the platform is 1 $\frac{1}{2}$  in. in 5 ft., from the rear bolster to the platform 1 $\frac{3}{4}$  in. in 22 ft. and for the platform itself 1 in. across the car.

The general construction of the trailer will be steel up to the belt rail, with a wood superstructure and arched roof. It will be mounted on trucks placed at 25-ft. 7 $\frac{1}{2}$ -in. centers, which will be equipped with 22-in. wheels on a 4-ft. 6-in. wheel-base. These trucks are of a special design drawn up by the engineers of the United Railways in conjunction with the Commonwealth Steel Company. Completely equipped, it is expected that these trailers will weigh approximately 25,000 lb. They will seat sixty-four passengers and will be hauled by some of the heavier type motor cars of the company now in service.

One of the features of the car body construction is the stiffening of the superstructure, which is obtained through the use of a steel frame around the doors and a steel post at each of the four corners of the car body.

## FIFTY NEW MOTOR CARS TO BE BUILT

The United Railways has ordered the necessary materials and is getting ready to build fifty Peter Witt type motor cars in its own shops. A sample car of this type has already been built in the company's shops and placed in operation. It is pictured herewith. The



FLOOR PLAN AND ELEVATION OF NEW TRAILERS FOR ST. LOUIS

principal feature of the new car is that by cutting down the clearance between the motor trucks and car floor and by ramping the floors it has been possible to build this car without a center well and with only two steps of 15 in. and 12½ in. onto the car floor at center and front, instead of the usual three steps either at the entrance or distributed between the entrance and the steps from well to car floor. The ramp from the front bolster to the center platform was made 4 in. in 6 ft. 9 in., from the rear bolster to the center platform 4 in. in 7 ft. 10 in. and from the aisle to the steps at the center door 1½ in. in 24 in. There are also ramps in the floor and platform at the front end of the car so that the same step heights prevail as at the center. At the front entrance there is a double two-part folding door which folds outward and is air operated and controlled by the motorman. At the side exit there is a double sliding door, also air operated and each half independently controlled by the conductor. The entrance and exit doors have a clear opening of 5 ft., which is divided in the center by an aluminum railing, providing passageway for two streams of passengers either boarding or alighting.

The car body is of all steel construction up to the belt rail, with a wooden superstructure. The equipment of the new motor cars will consist of special designed trucks developed by the Commonwealth Steel Company in co-operation with the railway company engineers and arranged for four inside hung motors. These trucks are of the full-equalized, arch-bar type, the principal feature being that the main frame is made of a single steel casting, which is said to eliminate all the usual connecting bolts and rivets and at the same time to make it impossible for the truck to get out of square. The cars will be equipped with four Westinghouse 508-A, 25-hp. motors and K-35 AA 2 control with a ratchet switch for operating the line switch, and a National Pneumatic Company door-interlock system. A plain magnetic blowout switch is placed in the motorman's cab for use in opening the main power circuit by hand when desired. The overload relay on the line

switch takes the place of a circuit breaker and causes the circuit to be broken underneath the car, thus eliminating all noise and flash from the interior.

The new cars will have an over-all length of 50 ft. 6 in. and an extreme width of 8 ft. 10 in. Completely equipped, the weight of the sample car was 36,300 lb., which for a seating capacity of fifty-nine gives a dead load of 615 lb. per seated passenger.

### Lubrication of Pneumatic Tools

Some Common-Sense Comments from the Standpoint of the Lubrication Expert of Value to Electric Railway Shop Men

IN ORDER to obtain a full measure of service from pneumatic tools and eliminate the necessity for repairs, it is important that they be handled carefully, be kept clean and be well lubricated with a high-grade lubricant. In the July issue of *Lubrication* some notes on lubricants for pneumatic tools are given which should be of value to electric railway shop men and others. The following points among others are made:

Moisture and some little dust are contained in the air carried into the cylinders of pneumatic tools. Further, the moisture in the air tends to corrode the transmission pipes and storage tanks, with the result that some small particles of rust are carried along by the air. Particles of rubber from the air hose and gaskets may find their way with the other foreign matter into the air passages and cylinders and greatly interfere with the free operation of the tool. Dust, rust or rubber cannot be classed as lubricants and should be kept out of the tool by means of a fine wire strainer inserted in the inlet pipe.

Not all foreign matter which gets into the cylinders and valves of pneumatic tools is carried in with the air. Unless care is exercised a great deal may be fed in with the lubricant. Cases have been known where the lubricant for pneumatic drills was kept in an open can near the drills. A great deal of dust and grit naturally fell into the can, with the result that the drills were being "lubricated" with an abrasive compound.



The lubricant most suitable for any particular pneumatic tool will vary with the type of tool, the nature of the work, the condition of the air and the state of the atmosphere. Generally speaking, the heavier tools require the heaviest lubricants, slow-moving tools requiring a heavier lubricant than those operating at high speed. Heavy lubricants are necessary for use on tools using preheated air or those exposed to high temperatures.

Tools of the trunk-piston and rotary types are commonly lubricated with a light grease, while the high-speed, hammer types, such as riveting hammers, under average conditions of operation are most successfully lubricated with a light oil of about 100-150 seconds viscosity, Saybolt, at 100 deg. F. Tools such as reciprocating drills are provided with grease chambers which are filled by means of a grease gun and from which the grease slowly exudes into the cylinders. One charge of grease if suitable should last several weeks. The gears, crankshaft and pistons of rotary tools all operate in a bath of grease, new applications of which are necessary only after long periods of time. The high-speed tools are lubricated with oil by means of a squirt can. As there is a tendency on the part of the exhausting air to carry a light oil out with it, tools of this kind should receive a few drops of oil every hour or so.

Oils used upon pneumatic tools should have a low cold test, and greases to be successful must be manufactured from low cold-test oils. In addition, pneumatic-tool lubricants should possess enough body to prevent metal contact and friction, but if they are too heavy for the mechanical conditions they tend to impede the action of the tools.

## Fundamentals of Substitute Tie Design

THE American Railway Engineering Association has devoted a great amount of time to the study of the subject of substitute ties. In Bulletin No. 227, July, 1920, the association presents the special report of the committee on ties relating to this important subject. Certain conclusions are reached which should be of interest to electric railway engineers. The opinion is expressed that railways should take a more active part in the design and development of substitute ties. This is in line with the editorial which was published in this paper for Aug. 21, which indicated the need for similar procedure on the part of electric railway engineers.

The conclusions of the committee on ties are as follows:

1. No substitute tie has yet been developed which can be recommended for general use on high-speed railroad tracks.
2. The development of substitute ties should be taken up by the railroads with a view of conserving the available timber supply and of producing a track structure of longer life which may be maintained with less labor.
3. Any statements made to urge the introduction of substitute ties on the claim that safe tracks cannot be maintained with wooden ties, such as will be available for some time to come, are without foundation and are contrary to the facts.

This steam railroad point of view will be of interest to electric railway men. The report is exhaustive and is too long for reprinting in these columns. However, Appendix E of the report gives the fundamentals which the committee believes essential in connection with substitute tie design, and this should be of value in connection with designs for tracks in streets and we reprint it in full.

### Some Fundamentals Regarding Substitute Tie Design

The tie committee in its investigation of various substitute ties has been impressed with the fact that many of them violate fundamental principles of track construction or maintenance, and it is with a view of pointing out some of those features that this appendix is added to the report.

The experience with substitute ties, so far recorded, indicates the following features as being productive of failure:

- (1) Lack of efficient protection against corrosion.
- (2) Failure of rail fastenings.
- (3) Failure of insulation.
- (4) Loss of beam strength due to weakening tie in vicinity of rail to accommodate rail fastening features.
- (5) Use of sharp interior angles or square holes, from which cracks are developed.
- (6) Lack of protection against derailed wheels.
- (7) Design of base of tie such as to render tamping difficult or impossible and such as to make maintenance of proper surface of track impracticable.
- (8) Design of the tie such that track will not hold line, or such as to make lining of track impracticable.
- (9) Lack of beam strength, causing breakage on yielding roadbed.
- (10) Lack of protection from abrasion from ballast in concrete ties.

It is believed that any track supported on ties will not remain permanently to gage, surface and line and that the labor operations necessary to restore it to gage, surface and line will

have to be performed with more or less frequency. Therefore, any substitute tie should be designed as far as practicable to

- (a) Resist the forces tending to disturb gage, surface and line, and
- (b) Lend itself readily to the labor operations necessary to restore the track to its original position.

It is recognized that no tie can completely meet these requirements and that the most that can be expected is a compromise.

**Gage.**—The fastenings, in addition to being of sufficient strength to resist the stresses produced by traffic, should be of such design that without taking the tie from the track and without change to the holes or fixed bolts or projections in the tie, a reasonable change of width of base of rail or variation of gage may be made. The fastenings should provide a freeway between the base of rail and lip of the fastening.

If the tie is so designed that it is essentially one support under each rail united by a transverse member to hold gage, this transverse piece must be of sufficient strength to maintain gage under all conditions.

**Surface.**—The tie should have sufficient strength as a beam to support the loads imposed without undue deflection, so that the load may be distributed properly over the tamped bed.

The shape of the base of the tie must be such that it will not cut into or destroy the tamped bed. And, further, it must be possible readily to tamp the ballast under the tie.

**Line.**—The tie should be of such shape that it will not only resist the tendency of track to get out of line but also permit the track to be thrown back to line.

Ties clamped in pairs or which inclose considerable amounts of ballast between their several parts to such extent that the ballast must be removed before the track is lined would add a material burden to the labor necessary to line track.

Projections on the base of the tie that project into the ballast would make necessary throwing the track out of surface before same can be lined. Such a design would so interfere with lining track as to make it impossible to do satisfactory work.

The end of the tie should be of such shape that the ballast beyond the end would offer resistance to the later movement of the track.

In addition to the above the following features should be provided for:

(c) Insulation or the possibility of insulation without a material change in the tie proper should be provided.

(d) The fastenings should be such as to offer as little obstruction to derailed wheels as possible. They should permit the changing of a defective rail or the renewal of rails with ease, and should be of such character that they can be replaced if broken or defective without disturbing the tie.

(e) The tie should be of such design as to be able to stand a reasonable amount of punishment from derailed cars.

## Switchman's Station Supported on Reinforced Concrete Pole

Temporary Wooden Signal Tower on Lines of United Railroads of San Francisco Replaced with Concrete Structure

THE United Railroads of San Francisco has recently completed an installation at Spear and Market Streets by means of which cars approaching the ferry loop are switched from inner to outer tracks from a tower control station on the sidewalk. The crossover between these two tracks was installed when the third loop at the ferry was put in, as described on page 103 of the *ELECTRIC RAILWAY JOURNAL* for Jan. 11, 1919. The temporary wooden switch control tower which was

put in at that time has recently been replaced by the more modern installation shown in the accompanying illustration. Because of the importance of getting cars past this crossover with the absolute minimum of delay, every effort was made to have the switching installation as convenient as possible. The equipment consists of an electrically operated switch of standard type with the remote control push button in a tower. These control cir-

cuits are so interconnected with the controls of two signal lights and a target that when the switch is closed the red target turns to a horizontal plane or, after dark, the green light shows. When the switch is thrown to the open position the target is in a vertical plane or the red light shows. Thus green light or flat target is a signal for the motorman on the outer track to proceed at will and for the motorman on the inner track to wait.

When the target is in a vertical plane or the red light shows it indicates that the crossover is open to the car from the inner track and that the car on the outer track must wait.

In planning the construction of the tower it was found most economical to use one of the standard reinforced concrete trolley poles made for the Municipal Railways. One was accordingly selected and the concrete was cut off at the desired height, leaving the reinforcing bars projecting for a bond with the top to be cast upon it. As there is a basement under the sidewalk at this point it was necessary to have the concrete trolley pole extend through the pavement and into the concrete floor of the basement.

When the pole had been set in place and the usual cast-iron base placed around it at curb level wooden forms were built up around the top of the pole and the floor for the superstructure or house was cast monolithic. The house has a wood frame with sheet iron panels and is bolted and grouted to the concrete floor.

The pair of conduits cast in the original reinforced concrete pole are used for the wiring. In addition to the switch control circuits, the house has electric light and telephone connections. An electric heater is also provided. The ladder which gives access to the house was set about 18 in. away from the post so that a crippled operator could wedge himself between pillar and ladder while changing holds on the ladder. The finish on the concrete work of the tower is a rough surface which was put on by sprinkling on grout with a whiskbroom. This is to prevent defacement, such as writing with chalk and crayon, which would be likely on a smooth finish surface.

The setting of the tower on the curb at the intersection of property lines prevents interference with the traffic in front of or the view from the bank building adjoining. The projection over the windows on the street side is a sheet-iron shield or shade put up to screen the operator's eyes from the sun's rays. The design of the tower is such that it has an attractive appearance and blends with the surroundings. The total cost was about \$750. This includes the pole, but does not include the street work, which had already been put in for the temporary wooden tower.

The installation was made under the direction of B. P. Legare, engineer maintenance of way United Railroads, in accordance with designs prepared by the city engineer.

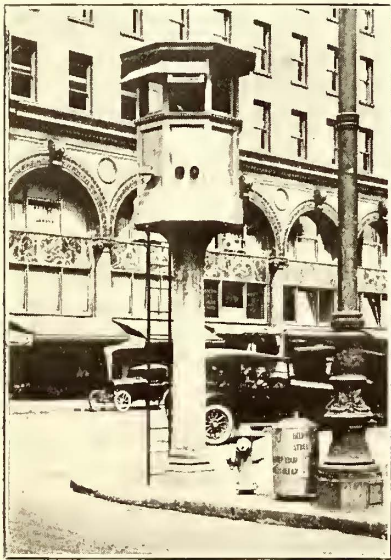
## Rail Depends Upon Ingot

Bureau of Standards Finds That Rails Made from Sink-Head Ingots Are in General More Free from Piping

THERE is a constant endeavor toward the betterment of steel rails through improvements in mill practice. Among the details of manufacture the size, shape and method of casting of the ingot have had considerable attention. The United States Bureau of Standards has recently issued a technologic paper by George K. Burgess, entitled "Steel Rails from Sink-Head and Ordinary Rail Ingots," covering a report on tests of several types of ingots and rail steels. The following abstract of this paper should be of interest:

The object of this investigation was to determine the relation of ingot practice to the properties of rails from such ingots, and in particular the amount of total discard necessary to obtain rails free from piping and segregation above 12 per cent which had been rolled from steel made in accordance with varying melting, casting and ingot practices.

To that end thirty-five ingots made by the converter process at Hadfield's, Sheffield, England, and cast by the sink-head process with large end uppermost were shipped to Sparrows Point, Md., and rolled into rails in comparison with fifteen rail ingots made in the ordinary manner with the small end uppermost. Each sink-head ingot, of about 5,300 lb. weight and deoxidized with aluminium in the mold, represented a separate heat of converter steel and all the heats and ingots were made in the same manner. The composition and properties of these ingots were of remarkable uniformity. The comparison ingots, of 7,300 lb. each, were from three separate open-hearth heats, an intentional variation being made in the open hearth and casting practice for each. Five ingots were selected from each of these three heats. Thus, in reality, comparison was made of



SWITCHING TOWER IN SAN FRANCISCO

four different kinds of steel, of very nearly the same composition and physical properties and of two types of ingot form.

The comparison was made by rolling most of the ingots into rails and taking test specimens at each rail cut, as well as from a considerable portion of the upper part, in 5-ft. steps, of the rail bar from each ingot. In this way there was obtained a detailed physical, chemical and metallographic survey of each ingot, and it was possible exactly to delimit the regions of sound and homogeneous from those of unsound and segregated steel. Two complete sink-head ingots were cut longitudinally and examined, as well as representative blooms from both sink-head and ordinary ingots.

The results obtained indicate a decided superiority of the sink-head ingots over the comparison ingots as made of three grades of steel in spite of the fact that the sink-head ingots suffered from the disadvantage of having gone cold before rolling. The Hadfield type of ingot required a total discard of only 18.4 per cent on the average (13 per cent top discard to eliminate piping and segregation above 12 per cent), while the average ingot of the ordinary type for rails required a total discard of 43.9 per cent (26 per cent top discard), with great variations dependent upon the furnace and ingot practices.

The comparison ingots from heat M1-M5 made of non-deoxidized rising steel, chilled on top of ingot by cast-iron caps, required excessive discard to eliminate positive segregation at the top and negative segregation at the bottom of the ingot, the latter often accompanied by dangerous enclosed pipes.

The second heat (M6-M10) made of rising steel deoxidized with aluminum in the molds and the ingot tops of which were cooled with water, required the least total discard of the three heats. It was more subject to piping and less to segregation than the first heat of ingots made in the usual manner.

The third heat (M11-M15), made of quiet or "killed" steel, was not chilled on top with water or caps and was deoxidized with aluminum in the molds. The ingots of this heat required an intermediate amount of total discard when compared to the first and second heats; this heat was the only one for which a greater top discard was required to eliminate piping than to eliminate segregation above 12 per cent. One of the ingots of this third heat contained a small pipe at the bottom and all the rails from the middle and bottom of the ingots showed high negative segregation.

The distribution of physical properties throughout the length of each ingot is characteristic not only of the type of the ingot, as sink-head or ordinary, but also of the state of the steel when cast and the ingot practice.

It has been established in the foregoing that after removal of the top discard of 13 per cent the Hadfield type of sink-head ingot is free from piping and undue segregation. The ordinary type of ingot, cast small end up without sink-head, as is usual for rail ingots, requires an average top discard of 26 per cent, and the remainder of the ingot is liable to contain enclosed piping and excessive segregation. Defective rails, from the middle and bottom portion of the ingot, are not certainly detected by means of existing rail specifications, and as a result of this uncertainty rails containing pipes or excessive segregation may get into service, with disastrous results.

The surface condition of the rails from the sink-head ingots was not as good as for the ordinary ingots, but

this is not considered an essential characteristic for rails from such ingots.

The markedly differing characteristics of the three heats of Maryland ingots lead one to raise the question whether or not it might be advisable to specify, at least in some degree, the methods of steel manufacture or of ingot practice for rails and similar products on which the safety of the traveling public depends.

While it is not claimed that the use of the sink-head process for the manufacture of ingots will solve all rail problems, it is maintained that its adoption would be a step in the right direction in view of the present heavy casualties and property losses on American railroads. The necessary changes in mill operations, it is believed, could be made without too great difficulties.

## Specifications for Wood Ties

### In Specifying the Material the Physical Qualities and Characteristics of the Wood Must Be Considered

BY HOWARD H. GEORGE

Assistant Engineer Public Service Railway of New Jersey

THE difficulty of securing satisfactory timber for ties has increased greatly during the last few years. Costs have increased from about 75 cents per tie to approximately \$1.50, and in some cases as high as \$1.75 each f.o.b. point of shipment. This scarcity and high price has been an incentive for trying many experiments with steel, concrete and composite ties, but the great majority of railways still favor wood for ties. In view of the diversity of practice in connection with ties other than wood and of their, as yet, relatively limited use, no attempt will be made here to give detailed specifications for such ties.

Of course, the problem, as regards the kind of timber to be used, is largely controlled by local considerations. The specifications appended were intended to cover the conditions which govern for our own territory in so far as the kinds of timber are concerned. Other companies will undoubtedly find it necessary to include other timber in their specifications, which may be easily purchased locally or which is within easy shipping distance of the property. It is generally conceded that the following woods may satisfactorily be used untreated for ties: White oak family, long-leaf strict heart yellow pine, red cypress, red wood, white cedar, chestnut, catalpa and locust, except honey locust. In addition the following timber will make satisfactory ties when treated: red oak family, beech, birch, elm, maple, gum, douglass fir, spruce, hemlock, tamarack, yellow and white cypress, and all pines except long-leaf strict heart yellow pine. In the attached specifications the sound and square-edged long and short leaf yellow pine ties are generally purchased for treatment and are rarely used untreated.

In determining problems of this character it is well to keep in mind the physical qualities and characteristics of the wood under consideration. Red oak, for example, is a porous wood which is generally full of water and which, if exposed to seasoning influences, has a tendency to dry with great rapidity in a more or less uneven manner, which is apt to result in checks and splits. Checks in this wood are largely end checks and there is a tendency for section men to drive spikes into small checks, thereby increasing the split. This peculiarity is also common to beech and gum.

## Cross Ties

### Quality:

All ties to be cut within ten months from the time of delivery from sound, straight, live and thrifty timber, free from loose or rotten knots, dry rot, splits, wind shakes or any other imperfection affecting the strength or durability of the timber.

### Dimensions:

6 in. thick, 8 in. width of face and 8 ft. long. A variation from above specifications will be allowed as follows:

	Hewn	Pole	Sawed
Depth not less than...	6 in.	6 in.	6 in.
Depth not more than...	7 in.	7 in.	7 in.
Face not less than...	7 1/2 in.	6 in.	8 in.
Length.....	8 ft. to 8 ft. 2 in.	8 ft. to 8 ft. 2 in.	8 ft. to 0 in.

Ties which do not conform in size to the above or have any other defects will be classed as cull ties and will not be accepted.

### White Oak and Rock Oak:

Hewn ties must be stripped of bark, hewn smooth and clean of all splinters, deep score marks, straight, with faces true and parallel and of uniform thickness with ends sawed off square. Ties hewn from one-half or one-quarter logs, or sawed from large timber will not be accepted. No off oaks will be accepted.

### Mixed Oak and Chestnut:

Hewn ties must be stripped of all bark, hewn smooth and clean of all splinters, deep score marks, straight with faces true and parallel and of uniform thickness and ends saw butted. Ties hewn from one-half or one-quarter logs or sawed from large timber will not be accepted.

### Yellow Pine Heart Ties:

Ties must be of good, sound Southern long leaf yellow pine and must be hewn smooth on all sides with faces parallel and of uniform thickness with ends sawed off square. Ties must be free from defects such as injurious heart or wind shakes, red heart, rot, worm holes, loose or unsound knots, or other defects that will impair the strength and durability of the ties.

Ties must be hewn so that the heart will be at or near the center of the tie and must not have over one inch of sap on each corner, which means the tie must show 6 in. clear heart on the 8-in. face and 4 in. of clear heart on the 6-in. side.

No short leaf pine will be accepted.

Sound and square edge long leaf yellow pine: Ties must be of good Southern long leaf yellow pine, or, in

other words, must have the same qualities and must pass the same inspection as the heart pine regardless of the sap.

### Sound and Square Edge Yellow Pine:

Ties must be of good Southern yellow pine, and must pass the same inspection as the sound and square edge long leaf yellow pine except that all kinds of Southern pines will be accepted.

### Cypress:

Hewn ties must be of good red cypress, free from wane, rot, dote, honeycomb or other defects, to show one heart face, allowance 1-in. sap on two opposite corners.

Ties must be hewn smooth on all sides with faces parallel and of uniform thickness and saw butted at both ends.

No white cypress will be accepted.

### Inspection:

All ties shall be subject to the inspection of an agent of the Maintenance of Way Department at the point of shipment as ties are being loaded into cars or vessels. Any ties shipped for point of destination inspection, without our consent, will be rejected and be subject to owner's risk.

It is very desirable that a definite permissible variation be adhered to in the general dimensions of the ties. This is particularly true in the case of city track, where a trench of limited width is provided, and where excess length means greater disturbance of the adjacent paving. It is also very important that the width of the tie at the bearing point be maintained up to a certain standard in order to prevent premature failure of the tie due to crushing.

The cost of inspection, of course, varies widely. Under favorable conditions, it may not run over 2 cents per tie, while it may approximate 25 cents. The latter cost is, however, exceptional and excessive, and no order should be placed where a dealer is not in a position to furnish a sufficient number of satisfactory ties at one location to eliminate the possibility of such an expense being incurred. The writer has in mind one instance where, out of a total of about 6,000 ties offered, only about 900 were accepted by the inspector, the period of inspection covering about ten days. However, one experience of this kind should be sufficient to bar such a dealer from doing any further business with a railway company. When ties are running as they should and the dealer is honestly endeavoring to comply with the specifications and is not trying to palm off a lot of defective ties, a competent inspector should be able to pass a carload of approximately 500 ties per day in the hardwood districts. In the case of pine ties, where shipment is being made by boat, it may be possible, under very favorable conditions, to accept as many as 8,000 ties per week, but this is the exception rather than the rule and 4,000 ties would be considered a good week's work for one inspector. It is generally desirable that tie inspection be made by the railway company's own inspector at the point of shipment, as this eliminates the possibility of disputes which almost

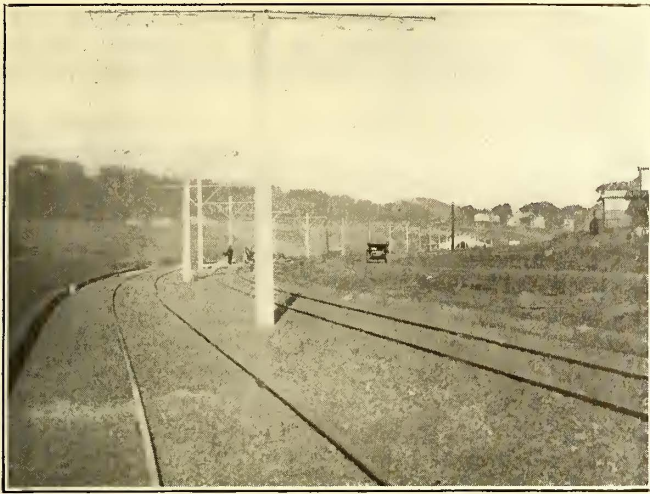
invariably arise where inspection is made at destination. The cost of handling is largely increased due to having to handle a lot of ties which are not up to the requirements of the specifications.

## Glass Headlight Reflectors

A SATISFACTORY headlight is an important aid to railway operation and a recent report of the Electric Service Supplies Company gives some useful information about glass headlight reflectors. The ground and unground glass reflectors are compared on a basis of efficiency, cost, space saving, durability and optical qualities. In comparing cost and diameter for the two types the figures show that the cost increases rapidly for each type as the diameter increases and that the unground reflectors cost approximately one-third less than the ground reflectors. On comparing the reflectors on a beam candle-power basis the curves indicate that the beam candle-power increases only approximately as the square of the reflector diameter and that the ground and polished reflector averages about 50 per cent higher in beam candle-power than the unground for the same diameter of reflector, while on a cost per candle-power basis the curves indicate a much lower cost for the ground and polished reflector as compared with the use of the unground reflector.

These data lead to the conclusion that on the same candle-power basis the unground reflectors must have a larger diameter and a greater cost than the ground reflectors.

The diameter of the headlight reflector is an important factor in determining the cost and type of headlight case. The use of a strong and water-tight case is advocated in order to insure reliability and decrease maintenance.



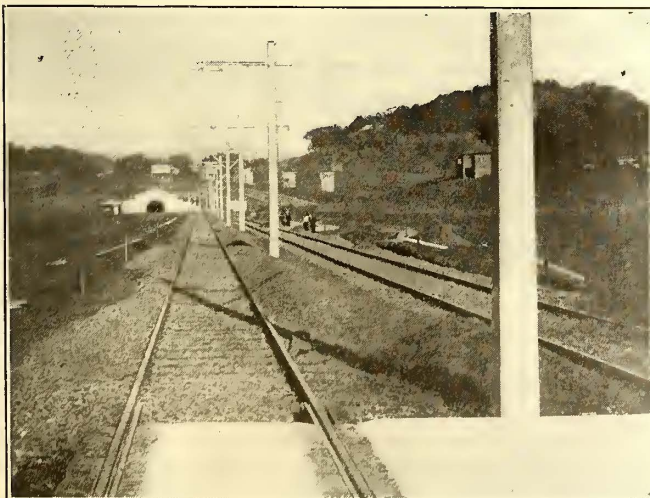
AN EXTENSION TO THE NEW BRACKET TAKES THE PLACE OF OUTSIDE POLES ON CURVES

## A Neat Trolley Bracket

### Extension to Specially Designed Angle-Iron Bracket Used in San Francisco to Take Place of Extra Poles

THE city of San Francisco, through the agency of its engineering department, has developed and adopted a particularly attractive and practical design of trolley bracket arm for use on ornamental concrete poles. Aside from its use upon tangent track as a very effective and economical support for the trolley wire, it is adapted for use upon curves as well, thereby eliminating the extra poles usually set upon the outside of the curve to support "pull-off" wires.

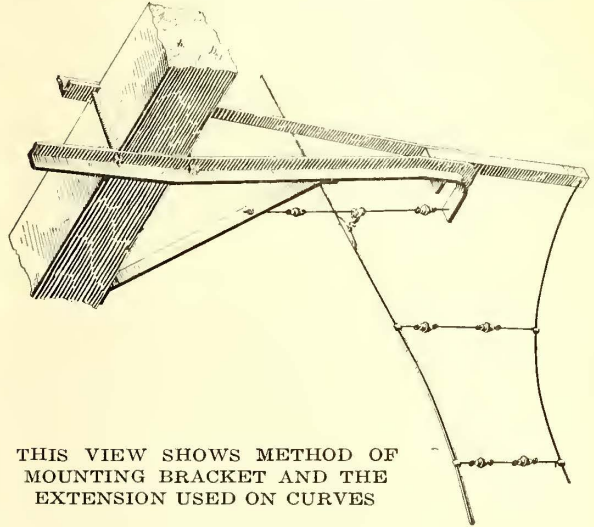
Concrete poles of square cross-section with graceful tapers and pyramid tops are provided, when poured, with transverse slots at the proper height for the support of a double angle-iron bracket. This bracket is mounted rigidly in the slot in the pole by means of two bolts passing through both angles just outside the pole, as indicated in the accompanying drawing. A 45-deg. brace of similar cross-section extends from the bracket down to the pole. The outer end of the bracket is tapered to a point and bent downward in a quarter-bend of about 8-in. radius. This forms the outer support for the strain insulators and short span-wire holding the trolley wire. The inner end of the span-wire is



USE OF ANGLE-IRON TROLLEY-WIRE BRACKET IN SAN FRANCISCO UPON TANGENT TRACK

connected, with the proper insulation, to the brace.

When used upon curves an extension is bolted to the angle-iron bracket. This extension is sufficiently long to support the necessary bridle span-wire for the trolley "pull-offs" required by the curve. The construction



THIS VIEW SHOWS METHOD OF MOUNTING BRACKET AND THE EXTENSION USED ON CURVES

is clearly shown in the accompanying plan view drawing.

Two photographs, reproduced herewith, illustrate very well the use of this new double-bracket construction upon both curves and tangent track.

## Stopping Rust Formation

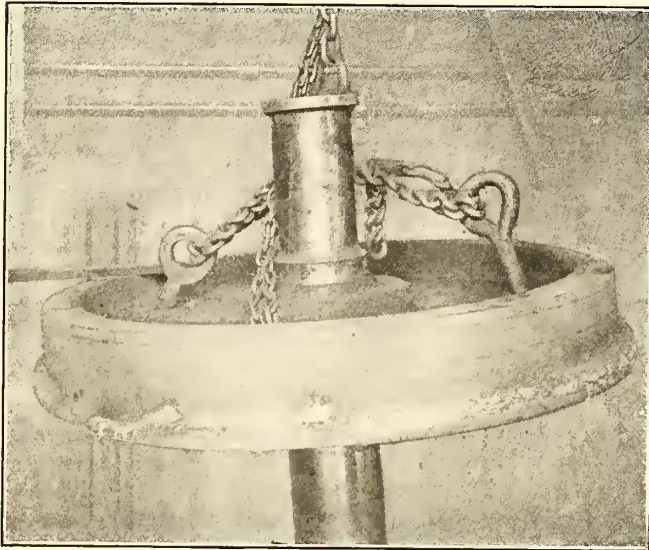
AN OIL for use on metallic surfaces which have already become rusted or for use on new surfaces as a preventive for rust is being placed on the market by the American Chemicals & Manufacturing Company, New York. It is claimed that this oil has such an affinity for steel that it practically welds itself to the steel whether it has a smooth or rough surface. It penetrates through the rust to the clean base metal and stops further corrosion. By chemical action it causes the rust to unite with the oil, forming a non-porous elastic film, which toughens with age and remains flexible. Its flexibility will meet the expansion and contraction of metals to the extent of bending over a radius smaller than the diameter of the thickness of the metal to which it is applied. This oil is sold under the trade name of "Hippo" permanent, pliable oil, and other claims made for its use are that it will withstand the destructive influences of acids, alkali and gases and that it is entirely waterproof. It is a good insulator.

In the current issue of *National Safety News* a form of stop sign is described which is located at the door opening of center-entrance cars. This sign and its method of operation were developed by J. F. McInerney, master mechanic New York State Railways, Syracuse. This railway is a member of the National Safety Council. The sign has a white background and in black letters is the word "Stop." When the car is in motion the sign lies flat against the door. As soon as the car stops and the doors are open the sign is released and swings out by the action of a small spring to a position at right angles to the side of the car. Automobileists who are following are thus warned that the car has stopped and is about to receive or discharge passengers and reminded that the traffic ordinance forbids them to pass a car at such a time.

## Thickening Wheel Flanges by Welding

**This Process Was Promising When Introduced,  
but Metallurgical Experts Advised Caution—  
What Results Have Been Obtained Since?**

SOMEWHAT more than five years ago an article on restoring steel wheel flanges with a welder by F. A. Murphy, Ottawa, Ill., was published. (See *ELECTRIC RAILWAY JOURNAL*, April 10, 1915, page 719.) He had found the practice economical, although it was confessedly experimental. He invited comment, and in response Morgan D. Hayes, Midvale Steel Company, Philadelphia, Pa., gave valuable information as to the metallurgy of the matter. Mr. Hayes advised caution



WORN FLANGES BEING THICKENED BY ARC WELDING

on account of the complications in the structure of the steel caused by the unequal distribution of heat in the welding process.

Commenting at the time upon the then new application of the welding art, this paper said editorially:

There are, it seems to us, three questions to be answered: First, if wheel flanges and treads can be built up without serious injury to the structure of the metal, would such building up be profitable? Assuming an affirmative answer for the sake of argument, then, in the second place, is it possible to build up worn or broken sections without the formation of hard and soft zones? Finally, assuming a negative answer for the same reason, is such stratification a dangerous condition under some conditions of railway service, and if so, under what conditions?

During the period which has elapsed since the above discussion the electric railways have passed through the war period, with its difficult maintenance problems. The practice of building up thin tires has been found very useful, as was illustrated by the experience of the Western Ohio Railway, described in the paper by E. B. Gunn at the July meeting of the Central Electric Railway Association. (See *ELECTRIC RAILWAY JOURNAL*, July 17, page 127.) This paper brought out much valuable discussion. At the meeting of steam railroad master mechanics, held at Atlantic City in June, the discussion also favored the practice.

The plan is followed in the shops of the Spokane & Eastern Railway & Power Company, Spokane, Wash., with good results. The photograph reproduced herewith

was taken recently by the writer when inspecting these shops under the guidance of M. G. Charles, master mechanic. The job is an excellent one from the welding standpoint.

It appears to be a good time to bring together the experience of other roads in this matter. The *ELECTRIC RAILWAY JOURNAL* would be pleased to hear from them.

## Co-operation Between Shop and Train Men

INTEREST of the trainmen, co-operation of all departments and competent instruction are essential to success in high coasting records. The benefits, however, fully justify the effort put forth, as shown by the experience of one company recently. This company feels confident that more than 95 per cent of its motormen are sincerely trying to run their cars correctly. The evidence of this is the fact that this percentage of the cars are operated with a record of more than 30 per cent coasting. As the vice-president of this company says, "No man who is not really trying can possibly make such a record." The benefits of coasting are not alone in operation, for the maintenance work is greatly facilitated by accurate reports of motor, brake and other equipment conditions. A motorman who turns in a car with tight brakes will complain bitterly if his report of this condition does not receive immediate attention when he knows that failure to correct the difficulty means that his coasting record is spoiled. Light wear on brakes and wheels and all-around improvement in equipment condition follow from the co-operation between shop and train men.

The saving of current in coasting is, of course, the principal direct object of the effort. The experience of this above company indicates that this saving continues to be proportional even when coasting reaches high average percentages. A very material reduction in power costs is, therefore, possible when the best operating results are had.

## Joint Conference Committee Issues Bulletin

THE joint conference committee of the four founder societies, the ad interim executive body of the Federated American Engineering Societies, has issued under date of Aug. 20 its Bulletin No. 6, giving answer to several pertinent questions which have been asked and also telling of the recent action of the American Society of Civil Engineers in annual convention, when the board of direction was directed to conduct immediately a referendum vote on the question of the society's becoming a charter member of the new organization and to act immediately in case the referendum receives a favorable vote.

In answer to questions, the bulletin explains why the "proposed federation" should supplant Engineering Council if the latter is either a failure or a success; it tells what class of engineering organizations were invited to become members and states that the list it now has is not considered complete and that organizations eligible for membership, whether they have received formal invitations or not, may make application, and it explains how members of the executive board are elected to give fair representation.

Copies of this bulletin and other information regarding the Federated American Engineering Societies may be obtained from the committee, Engineering Societies Building, 29 West Thirty-ninth Street, New York.

# Federal Report Brings More Comment

Two Additional Statements, One Already Given Much Publicity  
in the Daily Press, Emphasize Some of the  
Features of the Report

**T**WO more statements, reflections of the report of the Federal Electric Railways Commission, are given below. Mr. Pardee's statement was released to the daily press the early part of this week and was widely printed. Mr. Mortimer calls the report a "masterly report" and suggests periodic repetitions of similar commission studies of the industry.

*John H. Pardee*

President American Electric Railway Association

Credit, vitally needed by electric railways throughout the United States, can best be restored by regulatory bodies making the rates of returns to lines more flexible. I strongly indorse the declaration of the Federal Electric Railways Commission, in its report to President Wilson, that "the first essential to the industry is to restore credit."

In the electric railway industry, as in every other business, economic law dictates that the price of the product must be based upon the cost of producing it. In the attempt to regulate the profits and the service of electric railways, this truth has been lost sight of and the operation of these carriers has been so hedged about with laws, ordinances, regulations and contract restrictions, that in the main their revenue has been controlled by the dictum of commissions and other regulatory authorities, while their expenses have been controlled by economic law alone, and have mounted as expenses in all other business and among private individuals have mounted.

To restore electric railway credit it is essential that these artificial methods of fixing electric railway prices should be done away with. As the commission well states, "public control must be flexible enough to enable them to secure sufficient revenues to pay the entire cost of the service rendered, including the necessary cost of both capital and labor."

The report of the Federal Electric Railways Commission strongly emphasizes its finding that the systems of electric railway transportation are permanent, essential to, and must be preserved for, the social and economic functioning of our cities and communities.

A very acute situation exists among the electric railways at the present time. The abnormal increase in urban population, which has marked the development of the country during the last thirty years, continues, as is evidenced by the latest census returns. The problem of caring for these new millions of city dwellers is not alone one of providing dwellings, it is equally a problem of providing local transportation facilities.

The industry needs immediately for such extensions and betterments and for the rehabilitation of existing properties which have deteriorated during the war between \$300,000,000 and \$400,000,000 of new capital and it will need for years to come an average of more than \$200,000,000 a year, exclusive of its refunding obligations. Today, the investor looks askance at electric railway securities, and it is practically impossible for these companies to dispose of either their stocks or bonds.

Under such circumstances, it is no wonder that the commission declared that the "first essential is to restore credit." No impartial investigator can come to any other conclusion, and it cannot too forcibly be brought home to the American public, that unless the confidence of the investor be regained, the electric railways of this country, which represent an outlay of more than five billions of dollars, will cease properly to function and will prove of little avail in the solution of the housing and transporta-

tion problem which confronts almost every community in the entire United States.

Ordinary business common sense dictates the way in which this must be accomplished. The credit of the industry was destroyed because its revenues were insufficient to provide a return satisfactory to the investor and at the same time provide surety that this return should be continuously forthcoming.

The social service performed by these utilities is their most important function and the public interest demands that no undue obstacles should be put in the way of the performance of their full public duty. They perform an essential public service, which as the commission points out can be performed by no other means of transportation now in existence. They should not be weakened in their ability to serve the public by the competition of jitneys or city buses which cannot approach the complete service rendered by electric railways; they should not be compelled to bear an undue burden of taxation and public charges and they should be given freedom to put into operation every practicable operating economy that is in the public interest. Only in this way are low fares possible, and the lowest fare compatible with the payment of full cost of service, including a return that will attract the necessary new capital, is in the interest of both the public and the companies.

The report of the commission should awaken the public to the necessity of restoring electric railway credit, and if so, the commission will have accomplished a great work in the public interest.

The report deserves wide publicity and close study by all having real interest in the affairs of their respective communities.

*J. D. Mortimer*

New York, N. Y.

In many respects the July 28, 1920, report of the Federal Electric Railways Commission is a masterly document. It discusses the most important questions having to do with the electric railway industry and arrives at general conclusions. The similar characteristics of these problems, as they are met throughout the country, show that we have to do with a national problem; the symptoms may differ, but the general remedy is the same. All the railways require new capital. New capital cannot be obtained without credit. Credit cannot exist without adequate net earnings. Adequate net earnings cannot exist unless the operating revenues show a stable difference over operating expenses in sufficient amount to permit the issue of securities that will be absorbed by the investing public in sufficiently large amounts. All the other things are details fastened on the main trunk.

The unanimity of the report is striking. Many questions of a controversial nature were dealt with. It required important concessions in expressed opinions on the part of individual members to arrive at unanimous conclusions. Here is one of the principal elements of the value of the report. If the commission had split up into little groups, each with an impending separate report, much of the work done before and by the commission would have been lost.

At first study one is inclined to regret that the commission found it advisable to soft pedal the political problems met in dealing with the railway industry. Spades are spades but public co-operation may be the same as the elimination of politics in a public service. But, considering the results to be accomplished, the commission wisely avoided direct reference to problems raised or accentuated by the public office seeker.

It is no doubt true that in the final analysis "Fair

Valuation" of the utility property will play a prominent part in any readjustment of contractual relations between utility corporation and municipality. It is already one of the two big factors in states where the regulating commissions have power over fares. The federal commission follows up this idea by inviting the electric railway corporations to reduce capitalization to the respective "fair values" of physical property where differences of that nature exist. Probably the commission is right in its recommendation. Probably the readjustment would be advantageous in the long run. Probably railway utility corporations would find it easier to attract new capital. Probably the differences between "fair value" and capitalization, where they exist, have an important influence on credit. But we need a new breed of men to have any reasonable expectation that the electric railway industry will voluntarily destroy whatever investments have been honestly made in the securities which would suffer the most by such a reorganization. Forced reorganization is another thing; there the proper relationship of fair value and capitalization should be recognized.

From the personal point of view I regret that the federal commission could not see its way clear to say something more complimentary toward public ownership of electric railways. Those who heard the testimony on the subject were not impressed with the logic of the public ownership advocates. The best argument was that of Bauer, who favored free street railway service. The "mathematician" from St. Louis hurt the idea by this excessive enthusiasm. The commission probably passed on this question of public ownership with its eye on the pocket of the public. The commission would later be subjected to criticism if it favored public ownership in its report and it worked out to be advantageous to the railway corporations, rather than the public.

Without any suggestion of attempted compromise in viewpoint leading to inconsistency, the report supports the views of practically all the schools of operators and publicists. Any one can find portions of the report that will support his theories. But the report as a whole is consistent. If the business were re-established on the basis recommended, it would be in better condition than is now the case. Many operators probably feel that the same commission, were it to report a few years later, would lay greater stress on certain matters not touched on or only incidentally referred to in this report. The success attained by the first Federal Electric Railways Commission suggests that the idea is meritorious and investigations and reports at five-year intervals might do much to re-establish the electric railway business as a necessary industry and give it an improved position in the investment markets of the world.

## Association News

ATLANTIC CITY CONVENTION, OCT. 11 TO 15

### Up-to-the-Minute Convention Notes

**A** DISCUSSION of the report of the Federal Electric Railways Commission will be given a prominent place on the American Association program at the Atlantic City convention. Arrangements are being made with men prominently identified with the federal inquiry to lead in this discussion.

\* \* \*

The committee having in charge the transportation of the Western delegates to the convention has sent out a circular calling attention to the necessity of securing 125 passengers to insure the provision of a special train. Otherwise special sleeping cars will be attached to regular trains. The special schedule is as follows: Leave Chicago, Oct. 9, 5.30 p.m.; leave Ft. Wayne, Oct. 9, 9.08 p.m.; leave Pittsburgh, Oct. 10, 7 a.m.; leave

Harrisburg, Oct. 10, 12.55 p.m.; arrive Atlantic City, Oct. 10, 5.40 p.m. Reservations can be made by application to the chairman, H. J. Kenfield, or to any of the sub-chairmen, as listed in the issue of the *ELECTRIC RAILWAY JOURNAL* for Aug. 21, page 375.

\* \* \*

The list of convention exhibitors continues to grow, the following names having been added since the publication of lists in the issues of this paper for Aug. 21, page 376, and Sept. 4, page 469: Rowe Motor Manufacturing Company, Packard Motor Car Company, the White Company, V. V. Fittings Company, Standard Coin Counter, Inc., C. I. Earll and Foamite Fire Foam Company.

### Committee on Safety Car Operation

**T**HE T. & T. Association committee on safety car operation met in New York on Sept. 8. In the absence of the chairman, C. W. Kellogg, New York City, E. M. Walker, Terre Haute, Ind., presided. There were present also C. H. Beck, New York City; W. H. Burke, Boston, Mass. (representing Mr. Kellogg); L. H. Palmer, Baltimore, Md. (sponsor); J. C. Thirlwall, Schenectady, N. Y.; Gardner F. Wells, New York City, and J. W. Welsh, of the association staff. The committee considered a preliminary draft of a report prepared by the chairman and the results of a questionnaire as tabulated by the association staff. The situation regarding safety car operation was discussed by the committee in detail.

### Reunion of Past-Presidents of Accountants' Association

**P**LANS are under way for a reunion meeting and dinner at the time of the Atlantic City convention of past-presidents of the American Electric Railway Accountants' Association and of its predecessor the Street Railway Accountants' Association of America. The idea was originally suggested in a letter published in the issue of this paper for June 26, 1920, by Walter B. Brockway, former president of the Accountants' Association and for many years its secretary, and the matter is now in charge of a committee consisting of three past presidents, the present president and the secretary. The dinner will be held on the evening of Tuesday, Oct. 12, unless some change is made in the program as now arranged.

### Company Section Committee Meets

**M.** H. SOMMERVILLE, Toledo, Ohio, chairman of the American Association committee on company sections, met with C. H. Jones, Chicago Elevated Railways, and Messrs. Burritt and Welsh of the association staff, on Sept. 2, to put the finishing touches upon the report of the committee for the current year.

### Safety Car Accident Data

In the communication from E. M. Walker, printed in the issue of the paper for Sept. 11, page 509, a typographical error occurs in the accident data table, third line from bottom. The figures should read "per 1,000 car-miles," and on this basis are as follows: \$8.38 for the safety cars and \$15.78 for the two-man cars.



# News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION

PERSONAL MENTION

## Council Postpones Action

**Toledo Railway Measures Before Council Again on Sept. 27—Bus Interests Busy**

The Council of Toledo, Ohio, postponed action upon the cost-of-service and twin municipal ownership propositions when it met on Sept. 13. The measures will be passed again for submission to the electorate at the November election when Council meets on Sept. 27 if present plans and a gentlemen's agreement are carried out.

### BUS MEASURE PRESENTED

At the meeting of the Council, however, two propositions came up which may have a bearing upon the solution of the question and the final vote of the people. One is a measure authorizing the issuance of \$845,000 of deficiency bonds. The other is a bus regulation ordinance.

The deficiency bond issue discloses a system of city finance that may throw additional light upon the wisdom of refraining from purchase of the street railway system, or rather, the issuance of \$7,000,000 for an indefinite "transportation system."

The municipal ownership enthusiasts used as their argument the fact that the city was a corporation larger than the railway and better able to finance itself, when they urged the passage of the bond issues at the primary election.

At the present time the city has a deficit for last year of nearly \$350,000 in operating expenses alone. This same amount has been accumulating three years and the deficit will be enhanced this year because of increased salaries for practically all city employees.

On account of tax limitations revenue does not increase and there is also a limitation placed upon the amount of bonded indebtedness which the city can assume. If the deficiency bond issues become a regular annual procedure then in the event of a municipal ownership of the railway system it would only be a few years till no further financing could be secured through bond issues.

### CAMPAIGN SLOW IN STARTING

Councilman Bitter, socialist, submitted to the Council on Monday evening an ordinance prepared by Leo Griswold and other bus owners for the regulation of motor buses. It was referred to the railroad committee. The ordinance provides for the licensing of bus owners and drivers and requires the posting of a \$10,000 bond with the Council for indemnity in case of acci-

dents. Maximum fare to be charged is placed at 10 cents.

It is thought that the regulatory measure is a move on the part of the bus owners to protect their business against any regulations which might be asked on the part of the traction interests if either the city regulation or city ownership ordinances passes or by the Toledo Railways & Light Company in case the measures just mentioned should fail.

Neither of the interested parties in the coming election has begun any definite campaign.

## Help in Housing

**Home Building Fund of \$150,000 Created by Los Angeles Railway for Its Employees**

An extensive plan for improving the housing conditions of the employees of the Los Angeles (Cal.) Railway was announced by G. J. Kuhrts, general manager, on Sept. 6. The railway plans to create a home building fund of \$150,000 for the use of employees in purchasing or building houses.

Housing conditions in Los Angeles have been a considerable problem for some time and the shortage of homes near the five division points and the main shops has assumed serious proportions.

### \$150,000 ROTATING FUND

Although details of the plan have not been completed, it is proposed that employees will be loaned money from the \$150,000 fund at a minimum rate of interest and allowed to repay the railway in small monthly installments deducted from the pay check. This is expected to relieve the burden that would be occasioned by a loan from an outside source requiring large payments.

Another tentative plan of the company is the building of bungalow courts near the division points and placing the homes at the disposal of employees only, at a moderate rent.

The fund will be revolving so that as one employee repays his loan the money becomes available for other employees to establish homes. Applications will be considered in the order they are made to the company and the amount to be advanced will be determined on the merits and needs of the individual case. To prevent employees commercializing the offer, it is proposed that no loan shall be made to an employee who already has a home and who might use the fund for building another house or houses to rent.

Complete details of the plan will be announced later by Mr. Kuhrts.

## New Franchise Planned

**Dallas Railway Will Seek Real Service-at-Cost Grant at Spring Election—Financing Impossible Now**

Richard Meriwether, vice-president and general manager of the Dallas (Tex.) Railway, has announced that his company will seek a strictly service-at-cost franchise from the city of Dallas at the municipal elections to be held in April, 1921. The new franchise will be asked with a view to completion of an "ultimate development plan," which will include a number of extensions, improvements and betterments.

### PRESENT FRANCHISE UNSATISFACTORY

The Dallas Railway has been operating under a franchise embodying some of the service-at-cost features since its new grant at the election in April, 1917. The present franchise, however, does not guarantee a fixed return, but provides that whenever the earnings of the company shall exceed 7 per cent on the agreed valuation, the fare shall be automatically reduced. The company has never earned 7 per cent under this franchise, but there has been a steadily accumulating deficit.

Under the terms of the 1917 franchise, the company is to make certain improvements, all looking to an "ultimate development plan," which calls for the construction of several cross-town lines that will eliminate much wasted mileage as compared with the present system and at the same time relieve congestion on downtown streets.

Although the fare was fixed under the 1917 grant at 5 cents, the City Commission recently granted a 6-cent fare. This was done when the company represented that the 5-cent fare was confiscatory. Mr. Meriwether said that the company's gross operating revenue had increased 8 per cent during the five months the 6-cent fare had been in effect as compared with the same five months of last year. During this time, however, increased operating expenses had more than offset the increased revenue. Mr. Meriwether said the company was unable to borrow money for improvements under the present franchise.

### VALUATION ALREADY MADE

Under the present franchise the city has the exact value of the railroad property, all expenditures for improvements having to be approved by the Board of City Commissioners before they can be made. The new franchise will also embody the benefit assessment plan. This would place the burden of extension on the property owners that benefit directly rather than on the general public.

## \$1,400,000 Additional for Bay State Men

### Eleven Cents an Hour More Awarded in Arbitration Under Way Since Last Spring—Company's Arbitrator Dissents

An increase of 21½ per cent in the wages of the trainmen of the Eastern Massachusetts Street Railway, Boston, or a jump to each of the 4,000 employees of 11 cents an hour, was announced on Sept. 11 in a majority decision handed down by the board of arbitrators between the company and the Amalgamated Association. The men asked for a flat rate of 75 cents an hour, an increase of 24 cents. The award means an increase in pay from 51 cents an hour to 62 cents. The decision is retroactive to May 1. It means that the company will have to make up back pay of \$500,000. The annual payroll is increased \$1,400,000 by the award. At meetings of the men Saturday night the award was accepted. The award is effective only until May 1, 1921.

**W**ITHIN a very short time, the company proposes to declare a new schedule of rates on all its lines. In connection with this it is also announced that all workingmen's tickets are to be called in and all free transfers to be abolished. It seemed doubtful on Sept. 13 whether any increase would be made in the flat 10-cent fare now in force on the company's lines. The burden of any advance appeared at that time more likely to hit the steady customers of the road or users of the reduced rate punch tickets.

#### TRYING TIMES AHEAD

The seriousness of the situation was emphasized by the trustees of the company on Sept. 12 in a statement as follows:

Of the \$1,400,000 additional which the company must pay its employees annually the car riders in the principal districts will be called upon to share approximately as follows: Lynn, \$180,000; Salem, \$140,000; Brockton \$190,000; Chelsea \$160,000; Lowell \$170,000; Lawrence \$120,000; Haverhill \$65,000; Quincy \$115,000; Taunton \$40,000; Fall River \$125,000; Melrose-Woburn \$90,000; Norwood \$20,000.

Two courses are now open to us in our efforts to obtain the money to pay this 21½ per cent increase.

One course is substantially to increase fares; the other is greatly to reduce service.

Thoroughly convinced as we have been since our appointment by the Governor to rehabilitate this railway that what the public wants and needs more than anything else is good service, we have concluded to increase fares.

The revenue of the company from fares was so divided that until the award 60.58 per cent of the whole went toward paying wages of the trainmen. As a result of the award the company will now be compelled to pay in wages 71 per cent of its total revenue from fares. The trustees maintain the company has virtually no other sources of income.

#### FIVE CENTS EXTRA FOR ONE-MAN OPERATORS

Special provision has been made for the operators of one-man cars. There are some 200 of these on the lines of the company. They have been awarded an extra 5 cents an hour over the pay of the regular motormen and conductors. It was the problem as to what larger pay should be awarded to operators of one-man cars that began the arbitration proceedings back in December, 1919, the problem concerning a general wage increase to all the employees of the road being drawn into the proceedings as events developed.

The board of arbitration was com-

posed of Philip G. Carleton, Cambridge, for the company; James H. Vahey, Wattertown, for the workers; and Hugh W. Ogden, Brookline, the neutral arbitrator.

Under the award the employees of the company receive 8 cents less in pay per hour than the employees of the Boston Elevated Railway.

Mr. Ogden and Mr. Vahey concurred in the finding. Mr. Carleton dissented.

The points at issue resolved themselves into three main divisions:

1. What, if any, increase in wages shall be awarded to the employees whose wage scale is now under consideration?
2. What shall be the rate of compensation for employees operating one-man cars?
3. What, if any, change in hours of labor shall be inaugurated?

Hearings began June 29 and proceeded until Aug. 9, when briefs were filed. Two thousand pages of testimony and 115 exhibits were submitted to the board. One of the points brought out was that a total of 150.82 miles of track has been discontinued within the last three years, leaving a total of about 750 miles of track now in operation. The capitalization of the company was fixed by the act of the Legislature at not to exceed \$40,282,340, plus certain amounts to be approved by the Public Service Commission, which fixation of capital was based upon an investigation and finding of the Public Service Commission of Massachusetts.

#### BASIS OF MEN'S CLAIM

The men based their claim to an increased wage at this time upon two propositions:

1. The increase in the cost of living during the last six years has more than kept pace with their increased wage, and therefore they are today relatively worse off than they were in 1914.
2. Other systems geographically near, upon which the work done is substantially the same, pay a very much higher rate of compensation.

They contended that upon both of these grounds the men should receive at least 66½ cents an hour, and in justice and equity a minimum wage of \$6 a day, that day to consist of eight working hours.

The men proved that the cost of living has increased since 1914 at least 100 per cent, and has increased from March, 1919, to March, 1920, at least 20 per cent. They proved that the scale of wages paid to them under the award of the War Labor Board dated Aug. 12, 1919, as of June 3, 1919, and now in force, has been and is less than the

wage scale paid by railways in many other cities.

To these propositions the company replied that the 51 cents an hour which the men have been receiving was a fair living wage and that the financial condition of the company absolutely forbade any increase in wages at this time. The public trustees of the road showed that since the road was taken out of the receivership in 1919 it has never earned the cost of service as defined in the statute which incorporated the company. They proved that each increase of fare for the last five years has resulted in a diminution in the public use of the system and in a percentage of increase in revenue much less than the percentage of the increase in fares.

In short the figures of the public trustees showed that in the aggregate the demands under the seventeen points at issue would more than consume that part of the total revenue of the road which is not devoted to wages. They offered evidence tending to show that they can hire all the men they need at present rates of pay and claim that the law of supply and demand has a decided bearing upon the question of whether the men are getting a living wage.

Mr. Ogden said that logical analysis seems to be this:

1. Are the street railway employees here considered, irrespective of the law of supply and demand, entitled to (a) a fair living wage; or (b) more than a fair living wage? If in each case the answer is "No," we need go no further; if in either case the answer is "Yes," then
2. Is the wage scale now in force equal to the requirements of (b) more than a fair living wage; or if not (b) is it equal to the requirements of (a) a fair living wage? If it is equal to (b) we need go no further; if it is equal to (a) we need go no further, if (a) is all that justice requires. If it is not equal to (a) then
3. Is the financial condition of the company an adequate answer to a demand for such increase? If so, we need go no further. If not,
4. What increase in the present wage scale shall be made to meet such demands?

In his finding he said in part:

I do not decide whether the company could fill these positions at its present wage scale, because I do not regard a finding upon that disputed question of fact as conclusive one way or the other.

The men strenuously argued that there are but two interested parties in this hearing—one themselves; the other the company—and that the neutral arbitrator has no right to take into account the interest of the public in any way.

It has seemed, therefore, to the neutral arbitrator that the highest considerations of public policy require him to view the maximum demands of the men in the light of their necessary consequences upon the common prosperity, which is the Commonwealth. So far as these employees are not receiving a minimum fair living wage, undoubtedly they should have it, even at the cost of a receivership; so far as these employees, however, in their demands have gone beyond that minimum, and in so doing insist upon a rate of compensation the effect of which cannot fail to bring disaster upon these other interests, the neutral arbitrator has felt constrained to refuse them. The public may not assert its interest against a particular group to deprive that group of fair living wages; on the other hand, neither may any group in an essential public utility assert its individual interest against the public to profit inordinately at the expense of all others concerned.

While I am convinced that the claim of the employees to a substantial increase of wages is justified, I do not believe that the claim of a minimum wage of \$6 a day, or \$2,000 a year, is warranted under the circumstances of this case.

Admitting that the men are otherwise entitled to an increase of pay, is the financial condition of the company a complete answer to such demand? The short and conclusive reply is "No." Federal judges have refused to allow full liberty to boards of arbitration to fix wages upon systems involved in receiverships and have insisted upon their duty and power to revise all findings. If a road is not in the hands of a receiver, however, the great weight of authority is in favor of the recognition of the power and duty of a board of arbitration to fix a minimum fair living wage for the employees, irrespective of the effect of such fixation upon the financial condition of the company. If the operation of miles of road, now non-productive, from original excess of optimism, the present existence of the jitney, or what not, should be accepted as a complete answer to a claim for higher wages, it would follow that the men might never get an increase, irrespective of their possible needs. This cannot be, and I have not therefore, in awarding what I deemed to be a minimum fair living wage, allowed the possible effect of such fixation upon the financial condition of the company to influence the amount of the award. That minimum must be a charge upon the revenues of the road if the line is going to operate within the Commonwealth of Massachusetts.

Based upon all the evidence I find that the wages which shall be paid to conductors and motormen, and employees of the mechanical and miscellaneous departments, shall be increased a total 20 per cent, the fraction in each case to count as an additional cent an hour. This will allow a small increase in the rate per hour above the increase in cost of living from June, 1919, to May, 1920, as shown by the best available figures, but no more than is amply justified by the considerations above set forth.

No arbitration hitherto has awarded a differential in excess of 5 cents to the operator of the one-man car. Upon many roads such operator receives no differential whatever. I think he is entitled to something, and decide the operator of a one-man car shall be paid a differential of 5 cents an hour.

So far as the eight-hour day is concerned I have given most anxious study to the very voluminous literature upon this subject which has been submitted to the board. From my general knowledge of the economic situation of the world to-day, however, both in Europe and in this country, I do not believe that any progress in this direction in this particular occupation is feasible at this time.

So far as the award seems inconsistent with the present financial exigencies of the corporation, I can only say that it is no more than the men are entitled to, and that the management, the public, and all who are interested in the preservation and maintenance of an adequate trolley service, must co-operate to secure the necessary funds. I am confident that the operatives, by ready, efficient, careful and economical effort, can and will co-operate to that end so far as their ability lies.

I think the present compensation paid for breaking in new men adequate and therefore do not recommend any change in Item No. 10. Conversely, I recommend no change in 15, 16, 17 and 18. The company cannot grant vacations. Conversely, what privileges under present conditions the men enjoy I think for the present they should retain.

I think that the fourteen-hour span which the men must remain on duty to earn their day's pay is too long, and if the amount of extra compensation awarded in another part of this opinion did not reach such tremendous figures in the light of the financial condition of the company I should cut down the span of the working day at least to twelve hours. Under the circumstances, however, and for the reasons set forth above, I recommend no change.

I fail to find any evidence presented that the employees are not at the present time receiving what is described in the opinion of the majority as "a minimum fair living wage."

In his dissenting opinion Mr. Carleton said:

No evidence was offered of any hardships or privations. The U. S. National War Labor Board adopted the principle that "in fixing wages minimum rates of pay shall be established which will insure the subsistence of the employee and his family in health and reasonable comfort." No evidence was offered that the present wages did not enable employees and their families to live in health and reasonable comfort.

In granting an increase of 20 per cent, with the provision that the fraction in each case is to count as an additional cent per

hour, the board has granted an increase of 11 cents an hour, which is actually an increase of more than 21.5 per cent over the present wage of 51 cents. In other words, the award of the majority has exceeded by more than 5 per cent the actual increase in the cost of living since the award of the last War Labor Board. The majority decision, therefore, does not accurately follow the reasoning that it has tried to apply to the case.

In my opinion the increase awarded is grossly excessive from any standpoint. As shown in evidence each cent per hour of increase costs about \$109,000. The increase of 11 cents as granted by the majority aggregates practically \$1,400,000. This is as much as the interest on the entire funded debt of the company for a year. On July 1 the company was obliged to postpone payment of about \$400,000 interest on its bonds as it was allowed to do under its mortgage. After Jan. 1, 1921, it has no such privilege. The enormous increase given seems to me to favor out of all proportion the employees at the expense of the holders of the bonds, whose money largely built the very line and cars upon which these men are absolutely dependent for their livelihood. The decision of the board is likely to mean that the people whose investment enables these men to earn a living will eventually lose their investment.

I agree with a recent decision of the United States District Court in Iowa, in which the Court stated as follows: "I have held several times I have no power to take interest due upon indebtedness and apply it upon the wages of the men, because in

that event the mortgage would be foreclosed and the owners of the property would be deprived of every dollar of investment therein. The court has no power to deprive a man or corporation of its property in that way."

As shown in evidence the present payroll of the company takes 60.58 per cent of its passenger revenue. With the increase of \$1,200,000 granted by this award, more than 71 per cent, of the revenue will be devoted to the payroll. No industry should be required to pay any such proportion of its revenue to its employees.

Finally and of paramount importance, the public, which pays this company its only income in the shape of fares and in this way pays the wages of its employees, deserves consideration. This is especially true of a public service corporation operated by public trustees appointed by the Governor under an act of the Legislature. The present fares of the company as shown in evidence are as high as any trolley lines anywhere in the country. The granting of excessive wages to employees will mean one of two things—either numerous lines will have to be discontinued or the fares will have to be made higher than anywhere else in this country. This system serves small industrial cities and rural communities where the average car-rider is in poor or very moderate circumstances. If fares are increased, as seems inevitable in face of the award, it is taxing an absolute necessity of many poor persons in order to pay these employees an excessive wage. If the cars have to be discontinued so that these people must walk, the unfairness to the public is self-evident.

## Railway Insists on Co-operation

### Houston Electric Company Refuses to Proceed with Franchise Election in City Divided Against Itself

Hopes are not bright at this time for an extension of the franchise of the Houston (Tex.) Electric Company. The matter has been up recently for consideration and an election was practically arranged, but the company in an open letter to the Mayor and City Council some time ago requested the city officials to call off the election on the service-at-cost grant. This action was predicated on the company's belief that the co-operation essential to the successful working out of the service-at-cost franchise was lacking. The company is continuing to operate on a 7-cent fare under the protection of a court decree.

**T**HE conditions which led to the franchise negotiations will bear reciting. The company's condition since 1914 has been extremely precarious, due first to the jitney competition and then to the high operating costs brought about by the war. It asked many times for relief, but it was not until 1918 that the City Council passed the 6-cent fare ordinance.

Before that ordinance took effect, its operation was suspended by a referendum petition. At the election, the 6-cent fare ordinance was rejected and it was promptly repealed by the City Council. This left the company no alternative, and though reluctant to do so, it became necessary for it to go into the Federal Court to save its property from confiscation. The Federal Court, after a full hearing, enjoined the 5-cent fare ordinance. A 7-cent fare was then put into effect.

It had been publicly suggested to the company that a service-at-cost franchise might lead to an ultimate solution of the railway problem. The company, realizing the value of the good will and co-operation of the public, agreed to join with the city officials in endeavoring to work out such a plan. In entering into negotiations, therefore, it entertained the hope that they would lead to a clear recognition of the fundamental community of interest between the railway and the public, and would develop a helpful and sympathetic co-

operation as the predominating feature. It seemed to the company that only on such a basis would a service-at-cost franchise work out in a manner satisfactory alike to the car-riding public and the city and the company. If this vital element was lacking, the company had grave fears for the successful operation of such a franchise.

A franchise was drawn as a result of many conferences between Mayor Amerman, Special Attorney W. J. Howard, City Solicitor B. H. Powell of the firm of Vinson, Elkins & Wood, Lamar Lyndon, the city's expert, and the officials of the Houston Electric Company. The officials of the company approached the negotiations with the desire to be frank and fair. The merits and demerits of every proposed franchise feature were discussed frankly at the conference, the endeavor of all parties to the negotiations being to draft a franchise which would be workable, and assure the city of a railway adequate to its needs and one which would enable the company to assume and fulfill its obligations thereunder.

When the representatives of the city and the company believed that they had arrived at such a conclusion, the proposed franchise draft was submitted to and carefully considered by the special railway committee of the expansion board, and later by the full expansion board, in a series of public meetings. Thereafter the expansion board in-

dorsed the franchise and recommended its passage by the City Council. Subsequent events, however, seemed clearly to indicate that whatever the result of the election the company would not get that hearty support which it considered absolutely essential, for despite the long and conscientious work of the city representatives, and those of the company, and despite the approval of the franchise by the subcommittee and the expansion board, the City Council refused to pass the grant and send it to the people with their sanction. Thus, at the very beginning, even the city officials were divided. This division violated at the start the very spirit which was a moving factor throughout the negotiations. It was of so vital a nature that the company could not bring itself to believe it portended satisfactory results for the future. Thus convinced that no useful purpose would be served by continuing the matter, the company requested that the election be cancelled.

### Omaha Men Appeal to Court

The wage controversy which has been pending between the Omaha & Council Bluffs Street Railway, Omaha, Neb., and its employees, for several months, has been taken to the State Supreme Court through an appeal filed by the trainmen's union against the recent decision of the State Railway Commission. A transcript and bill of exceptions have been filed with the higher court, but briefs will not be filed earlier than the middle of October.

The threatened strike has not been called and there are no present indications that it will be ordered, although the union leaders say they have been authorized by the men to call a strike if in their judgment such action should be the thing to do.

The State Railway Commission recently rendered a lengthy finding and order which was against the men in their contention for an increase of 13 cents an hour above the existing scale of 53 to 57 cents an hour. One of the declarations of the State Commission was that the men did not have the legal right to interrupt the operations of a common carrier by striking, although one of the commissioners gave a dissenting opinion on that point.

In taking their case to the Supreme Court the men will endeavor to have the Railway Commission's finding on the right to strike set aside and also have the whole case referred back to the State Railway Commission for rehearing.

This decision of the commission was referred to at length in the *ELECTRIC RAILWAY JOURNAL* for Aug. 28, page 428. In the finding the application of the trainmen for an increase of 13 cents an hour in wages was refused. This denial was based on the principle that an increased wage scale would necessitate an increase in fare and that step the commission decided was not fair.

## Brooklyn's Striking Employees Abandon Hope Governor Fails in Effort to Have Court Confer with Mr. Gompers— Receiver Advises Men to Return

Outstanding features this week in connection with the Brooklyn strike were the refusal by Judge Mayer of Governor Smith's request to confer with Mr. Gompers, president of the American Federation of Labor, and with J. H. Vahey, general counsel for the Amalgamated Association, and the appeal of Lindley M. Garrison, receiver of the Brooklyn Rapid Transit Company, to the men who are still out to return to work. Service is gradually being restored. On Thursday nearly the complete complement of rapid transit cars was in use and 737 surface cars were in operation on fifty-one of the sixty-seven lines of the company. Under fully normal conditions 850 surface cars are run. Seven surface lines and all rapid transit lines are being run at night.

JUDGE Mayer reiterated his determination not to deal with the Amalgamated. The Governor, Judge Mayer and Mr. Garrison are said to have been closeted for several hours. The only statement the Governor would make was that he had been unsuccessful in his effort to arrange a conference. Judge Mayer said:

The Governor, Judge Mayer and Receiver Garrison had a conference this afternoon. The Governor stated that he had been visited by Mr. Vahey, the general counsel for the Amalgamated Association, accompanied by Mr. Gompers, and that they desired to have the Governor see if he could arrange a meeting with Judge Mayer.

Judge Mayer stated to the Governor that his position had been deliberately taken and was well known. He had definitely determined and publicly stated upon more than one occasion that he would not deal in any way with the Amalgamated Association directly or indirectly, and that so far as he was concerned the matter was closed.

He further stated that while under other circumstances he would, of course, meet Mr. Gompers, such a meeting at this time under the existing circumstances would not only be useless but would serve solely to prolong a situation which should be brought to an end. That it was obvious from the circumstances that Mr. Vahey and Mr. Gompers sought a meeting for the purpose of again going over the situation in respect of the Amalgamated Association. That Judge Mayer stated that his position had been fully, clearly and finally set forth in his letter to the Mayor dated Sept. 2, on which he stood.

"MOST HUMILIATING," SAYS  
MR. GOMPERS

Mr. Gompers let it be known that he considered the statement by the court to be "most humiliating." He said it was his purpose to suggest a way out of the present situation. This Judge Mayer, according to Mr. Gompers, resented without hearing "what might have been presented to him." It was Mr. Gompers' purpose to be observant in a difficult situation. This the court had declined. "This position," said Mr. Gompers, "is not judicial; it is autocratic."

Mr. Garrison's statement of Sept. 14 follows in full:

Any one who has followed events could have foretold the failure of Mr. Gompers to extricate the leaders of the Amalgamated Association from their inextricable position. This marks, I trust, the end of the efforts of these leaders to buoy up their deluded followers with false hopes. The vast majority of the men were given no opportunity to vote on the calling of the strike. They left their work reluctantly and in large part they remained out because of their reliance upon the assurances of their leaders that each new move would result in reinstating the Amalgamated in control. One after the other these leaders have appealed to every local and state agency, each time assuring their followers that success would attend their efforts. Before the strike Commissioner Delaney's advice to the men was that they should not break off negotiations with the receiver. Mayor

Hylan was then sought, with similar results.

After the strike was called the leaders appealed successively to Acting Public Service Commissioner Barrett, then to the Mayor and the Board of Estimate, then again to the Mayor and Board of Estimate (the Governor being present), and the advice received by the men was to return to work. Later, upon Commissioner Nixon's return, he gave similar advice.

In his letter of Sept. 2 Judge Mayer fully and finally stated his position.

Nevertheless, later, some days after the strike began, Mr. Mahon, president of the Amalgamated, appeared on the scene, and his arrival was heralded as the positive assurance of success. No result came from his efforts. Finally Mr. Vahey, from Boston, the general counsel for the Amalgamated, appeared and enlisted the services of Mr. Gompers, with the result now known.

### PLACES STILL OPEN

During all this time the men have been without their wages, thereby producing a situation which is serious to them now and will grow worse. If the number of men still on strike is anywhere near what is claimed by the Amalgamated officers, the aggregate of the weekly wages of such men is well over \$300,000. I have no faith that the Amalgamated Association or those that it can enlist in its cause will now or in the future pay these men this sum or any appreciable part of it.

I hope that in their own interests the men will face their situation in the light of facts and no longer be cruelly deluded by false hopes. I trust by this time that they fully realize that the courts and the receiver mean exactly what they say; that there is no hope now or in the future of the Amalgamated Association again being entrusted with the control. The one and only sensible course for the men to pursue is to return to work. We want and will welcome back our own experienced and trustworthy men, letting by-gones be by-gones. The agitators and disturbers are not wanted and will not be taken back.

Mr. Garrison said on Sept. 16 that the appeal of the strike leaders to all unions in New York city for financial support revealed that the "closed shop," despite assurances to the contrary, was the sole purpose of the strike on the B. R. T. lines.

### St. Louis Men Insist Upon Advance

The employees of the United Railways, St. Louis, Mo., through their attorney, Edward Foristel, submitted arguments on Aug. 30 before the Public Service Commission in support of an application to re-open consideration of the wage scale. Last July the commission increased the wages of the employees 5 cents an hour. The employees want an increase of 20 per cent, but judging from the arguments submitted to the commission, would be satisfied with an increase of 10 per cent added to the 5 per cent already granted. An increase of 10 per cent would give the old employees 75 cents an hour, and would cost the company \$1,600,000 a year, according to the estimates submitted.

## Wages Increased in Spokane

Wage increases of from \$12.50 to \$17.50 a month affecting some 500 employees and amounting to approximately \$100,000 a year have been announced by Vice-President F. E. Connors of the Spokane & Eastern Railway & Power Company, Spokane, Wash., retroactive to Sept. 1. Mr. Connors said:

I have received word from Chicago headquarters to the effect that a wage increase recommendation made by me has been approved by the board of directors. The increase will amount to approximately \$100,000 a year and will embrace all departments, including the office and depot people, with the exception of the car platform men.

All repair shop men, electricians, railway clerks and office employees are included. A year ago the company, then known as the Inland Empire System, suffered a strike of the electricians, machinists and other shop men, which it broke. The platform men remained at their posts, faithful to a recently signed contract which gave them better wages and improved conditions.

At that time Mr. Connors, then receiver, admitted the men who were on strike had a grievance in the matter of wages which he would gladly rectify if he could but that he was powerless. He agreed then that at the earliest date he could do so he would remedy the conditions about which complaint had been made. His statements of fact did not avert the strike, but he has now made good his word given at that time.

## New Akron Grant Completed

The proposed franchise to be granted the Northern Ohio Traction & Light Company for the operation of cars in Akron has been practically completed. The sixty-day limit under which the company has been collecting a 5-cent straight fare expired on Sept. 15, but an extension is understood to have been arranged.

The new arrangement provides for service at cost. The city will guarantee the company 7 per cent return on the valuation of the company's railway property. The initial fare will be 5 cents, but this will be increased from time to time if it is shown by the company that additional fare is needed to pay the 7 per cent and also to carry out other provisions of the new contract.

The company has agreed to open its books for inspection by the city under conditions imposed by the city and also to agree to the appointment of a utilities commissioner whose duty it will be to keep in close touch with the complete operations of the company and to make reports to Council. The valuation upon which the city will insure the company a 7 per cent return is to be determined by the city and the company jointly, under the new contract.

A feature of the proposal is that an auto bus system is provided to supplement the street railway system. There is a special incentive to the company to hold fares to 5 cents.

## News Notes

**Increase for Savannah Men.**—H. C. Foss, receiver of the Savannah (Ga.) Electric Company, stated on Aug. 26 that effective on Sept. 1 the compensation of conductors and motormen would be increased from the present rate of 38 cents to 42 cents an hour, and 41 cents to 46 cents an hour. One-man car operators are now receiving a bonus of 4 cents an hour.

**Pittsfield Men Accept.**—Announcement was made on Aug. 31 that the union had accepted by a small majority the latest offer of the Berkshire Street Railway, Pittsfield, Mass., which was for an increase of 16 per cent over the wages of last year and 10 cents an hour extra for one man cars. Conferences will be held shortly for the purpose of signing the agreement.

**Wage Rise in McAlester.**—After negotiations covering a period of thirty days, the employees of the Pittsburg County Railway, McAlester, Okla., have been granted a wage increase. The employees of the Choctaw Power & Light Company, an associate company, also receive wage increases. The wage advance ranges from 26 to 40 per cent and affects all employees except office men.

**Railway Electrification in South Africa.**—United States Trade Commissioner Lundquist reports from South Africa that a sum of \$48,665 is included in the railway estimates for the coming year for electrification purposes, the same apparently being provided for the preparation of detailed plans and specifications for electrification of a part of the main line between Durban and Glencoe Junction, in Natal Province.

**Western New York Line Advances Pay.**—Announcement was made on Aug. 30 that employees in car service on the lines of the Western New York & Pennsylvania Traction Company, Olean, N. Y., receive a raise in wages amounting to 5 cents an hour, effective Sept. 1. Carmen in passenger service receive from 43 to 48 cents an hour now and new men in freight service the same. Older men in freight work get 50 cents an hour.

**Holyoke Men Demand \$7 a Day.**—On Aug. 31 the union of employees of the Holyoke (Mass.) Street Railway presented demands to the company for a wage of \$7 a day and a straight eight-hour day with one day off in fifteen with pay. The demands also call for a pension system in effect after twenty years' service or after an employee has reached sixty years of age. Repairmen and others demand a 40 per cent increase.

**Suggests Alternative to Wage Increase.**—Replying to the demand of motormen and conductors of the West India Electric Company, Kingston, Jamaica, for increased pay and altered conditions of work, the manager says he has recommended to the directors in Canada that the men should get time and a half pay on two holidays, and in lieu of an increase each man should receive a life insurance policy of \$500.

**Wage Settlement at Lexington.**—George McLeod, representing the Kentucky Traction & Terminal Company, at Washington, in a wage dispute before Hyell Davies, federal conciliator, agreed to an increase of 7 cents an hour for employees of the Kentucky Traction & Terminal Company, according to a wire received by General Manager J. P. Pope, on Sept. 9. The workers asked for 20 cents an hour increase, from 40 cents to 60 cents, but will get 47 cents. It was decided that an increase of 7 cents an hour would meet the needs of the men on the basis of increased living costs.

## Program of Meeting

### Ninth Annual Safety Council

The National Safety Council has completed the program for the Ninth Annual Safety Congress which is to be held at the Auditorium, Milwaukee, Wis., Sept. 27 to Oct. 1. There will be two electric railway section sessions under the chairmanship of R. N. Hemming, superintendent of transportation, Indiana Service Corporation, Ft. Wayne.

The addresses to be delivered before the electric railway section are as follows:

"The Enforcement of Laws and Ordinances Relating to the Operation of Self-Propelled Vehicles," by J. A. Van Osdol, general attorney of the Union Traction Company of Indiana.

"Advertising Campaign to Reduce Automobile and Street Car Accidents," by Charles B. Hardin, general claim agent of the United Railways, St. Louis.

"Public Safety," by C. M. Talbert, chairman of the Public Safety Section of the National Safety Council.

"The Necessity for and Importance of Observing Operating Rules";

(a) "Safety Department," by Hugh Wilson, safety department of the Northern Ohio Traction & Light Company.

(b) "Claim Department," by F. T. Holliday, claim agent of the Gary (Ind.) Street Railway.

(c) "Transportation Department," by C. E. Thompson, assistant to the president of the Chicago, North Shore & Milwaukee Railroad, Highwood, Ill.

"Duties and Responsibilities with Reference to the Safety of Employees Under the Jurisdiction of Foremen and Men in Advisory Positions," by J. H. Mallon, Chicago, Ill.

There will be papers of interest to electric railway men to be read before the public utilities, public safety and other sections. The annual banquet will be held at the Arena on Sept. 30.

# Financial and Corporate

## May Reinstate Shore Line

Public Concerned When It Is Realized Tracks Are Being Torn Up—Operating Arrangement Proposed

The Shore Line Electric Railway, Norwich, Conn., the tracks of which from New Haven to Flanders were recently sold for junk, may not be allowed to die, though apparently the final gasp had already been made. Citizens along the western half of the abandoned part of the system grew much concerned over their transportation future when they saw men actually at work tearing up the one fixed line of local communication and are proposing to form an organization to buy the property and have it operated by the Connecticut Company, New Haven Division. Options have been secured from the present owners of the "junk" and negotiations are fast proceeding toward restoration of service.

### BUS LINE QUILTS

The Shore Line, operating more than 160 miles of single track in and between New Haven, Guilford, Saybrook, New London, Norwich, etc., was closed down entirely by a strike in May, 1919. The Norwich Division, New London to Norwich, and suburban to New London out to adjacent shore resorts, was started up again and is now operated by the Connecticut Company. That part of the New London-New Haven line from Flanders to New Haven, about 44 miles, however, was never brought to life and was recently sold for junk. From New Haven to Guilford, 16 miles, there is an all-year service demand, but, from Guilford east, about the only business is that of summer residents of the numerous shore resorts. During the past spring and summer, a bus line has operated from New Haven as far east as Saybrook, 33 miles, and another line as far as Madison, 22 miles, but the former ceased operation recently and the experience of last winter rouses no hopes for a continuation of the latter line, with any regularity, this coming winter.

### BUSINESS MEN ACT

As a result a group of interested business men from Foxon, a growing Italian suburb; North Branford, the seat of a large trap-rock industry, and Guilford, formerly dependent on the Shore Line, has arranged with the present owners not to tear up any of the line west of Madison and is raising money and working on an organization to take over the 16 miles at a price of \$10,000 per mile. An effort is also being made to interest Madisonites in assisting so that they may take over the other 6 miles to Madison. Indications are that the first 16 miles will surely be put in operation and probably the other six.

As to operation, it seems impracticable to try to utilize the heavy rolling stock of the Shore Line Electric Railway, and present plans indicate the use of one-man safeties. Gasoline-motor cars have been discussed, but as the overhead is still in good condition, electric power will probably be used.

The Connecticut Company has agreed to operate the line at cost plus a fixed sum for management and operating charges. The line will be manned by Connecticut Company employees and operated practically as a part of the New Haven Division.

## Seattle Increase Helpful

Average Daily Revenue of Municipal Railway Increased 27 per Cent Under Fare Advance

Figures compiled by the Seattle (Wash.) Municipal Railway Department show that one month's operation under increased fare has resulted in an increase of 27 per cent in the average daily revenue, and a decrease of 6.6 per cent in the average daily number of passengers.

Railway department officers assert that in the face of the estimates made at the time the city was considering the increase in fare, the increase in revenue is measuring up to expectations. The estimated increase in revenue on the 6½-cent fare basis made at that time was 30 per cent, a difference of only 3 per cent over the actual showing for thirty-one days from July 24, when the new fare became effective, to Aug. 23, inclusive.

Figures submitted to Mayor Caldwell show that from July 24 to Aug. 23, inclusive, the actual revenue under the increased fare was \$496,034; under the old fare, the revenue would have been \$388,972, showing an increase under the new fare of \$107,061, or 27.5 per cent.

The daily average under the old fare would have been \$12,547; under the new, it was \$16,001, or an increase of \$3,543. The daily average of passengers carried for the period from July 24 to Aug. 23 inclusive was 324,101, compared with 347,037, for the period from June 26 to July 23, inclusive. The average daily decrease in passengers compared with the period immediately preceding the increase in fare was 22,936 during the thirty-day period stated. The net decrease figures 6.6 per cent.

Figures prepared by the department show that the municipal railway system carried 630,559 more passengers in the first seven months of 1920 than in the corresponding period for 1919. From Jan. 1 to Aug. 1 the number of passengers carried was 74,832,148, compared with 74,201,589 for the same period in 1919.

## Railway Would Sell

Price Made to Ontario Hydro-Electric Commission for Toronto Railway and Allied Lines

Negotiations which have been carried on between Sir Adam Beck, chairman of the Ontario Hydro-Electric Power Commission, and Sir William MacKenzie, president of the Toronto Railway, have reached the point where a price has been made by Sir William MacKenzie for the sale to the Power Commission, on behalf of the Ontario Municipalities, of the Toronto Railway, the electric power generating plant at Niagara Falls belonging to the Electrical Development Company of Ontario, the transmission lines from Niagara to Toronto and the distribution system in Toronto belonging to the Toronto & Niagara Power Company; also the Metropolitan Railway line on Yonge Street and the Port Credit and Scarborough radial lines.

### POWER CONTRACT A FACTOR

The quoting of a lump price will place upon Sir Adam Beck the responsibility of apportioning the cost to be borne by the city of Toronto and the other Hydro power and Hydro-radial municipalities which are now using the Hydro-Electric power.

The prime consideration which it is reported is impelling Sir Adam Beck toward acceptance of the offer of the MacKenzie interests is the fact that in October next a five-year contract with the Toronto Power Company expires under which that company supplied the Ontario Power Company (now owned by the Hydro-Electric Power Commission) with 13,000 hp. at \$13 per horsepower.

The Hydro Power Commission has been notified that this supply of power will be cut off. This would cause much embarrassment to the Hydro Commission in view of the fact that the latter is now short of power owing to the great demand made upon it. As the Toronto Power Company (owned by the Toronto Railway-MacKenzie interests) can readily get \$35 per horsepower at present, it is not surprising that the company refuses to renew the contract with the Ontario Commission.

### \$28,000,000 OF SECURITIES INVOLVED

This important deal will include the local power, light and radial and railway lines in Toronto. It will involve approximately \$28,000,000 of bonds and securities. Before the purchase can be consummated the consent of the Provincial Government will have to be obtained.

It would cost about \$2,500,000 and take nearly a year to link up the Hydro substations with the Toronto Railway system in order to give a service next September when the railway franchise expires. In addition it is doubtful if the Chippewa development will be ready when the City Corporation of Toronto proposes to take over the property included in the Toronto Railway system next year.

## Receiver Appointed for Kansas City Railways

Frank C. Niles Named Temporarily Pending Hearing on Sept. 30—  
Second Receivership in Nine Years

The Kansas City (Mo.) Railways went into involuntary bankruptcy on Sept. 9, on the petition of the Kansas City Refining Company, Kansas City, Kan. The amount of the debt, incurred for oil and material since July 1, 1920, was \$21,404. There was no other petitioner. Acting on the application of the fuel company Judge Kimbrough Stone, sitting for Judge Arba S. Van Valkenburgh in the Federal Court, named Frank C. Niles, president of the Niles & Moser Cigar Company, temporary receiver. Mr. Niles will serve until Sept. 30, when a hearing to name a permanent receiver will be held in the Federal Court. Bond for Mr. Niles was fixed at \$50,000. He was one of the original city directors of the reorganized Kansas City Railways under the new franchise and was reappointed in July, 1916.

ON July 3, 1911, the local company, then known as the Metropolitan Street Railway, was placed in the hands of R. J. Dunham, Chicago, and Ford Harvey, Kansas City, as receivers. This receivership terminated on Oct. 26, 1916, following the reorganization of the company under the name of the Kansas City Railways, July, 1914. It has continued since that time under the present management. This, then, is the second receivership that has occurred in the last nine years.

In the application for a receivership the Kansas City Refining Company set forth the following facts regarding the condition of the Kansas City Railways, which were admitted by the company in a bill of acceptance:

That the railway company operates 370 miles of track and equipment for the same in Kansas City, Mo., Kansas City, Kan., Independence, Rosedale, and in territories outside of those cities.

That it has a capital stock of \$30,000,000 of which there has been issued and is outstanding stock to the amount of \$100,000.

That the company is subject to a first mortgage dated in July, 1916, bonds of which are outstanding in the sum of more than \$27,508,800.

That it also is subject to a second mortgage dated in July, 1916, bonds of which are now outstanding in the sum of \$5,290,000.

That \$11,590,600 of the first mortgage bonds have been pledged under indentures to secure gold notes of the company totaling \$3,500,000 and that \$1,000,000 of these notes are not paid, although due.

That the company defaulted in the payment of the interest due upon the first mortgage bonds on Jan. 1, 1920, and again on July 1, 1920.

That it defaulted in the payment of the interest on the second mortgage bonds and secured gold notes, which defaults have continued more than sixty days and are still unpaid.

That the company owes the Kansas City Refining Company \$21,404 for materials and supplies.

That the company has been operating at a loss and has not been paying its operating expenses.

That the fare increases granted by the public authorities of Kansas and Missouri, upon whose decision the right to collect increased revenue depends, have not been sufficient to keep the concern going.

That 2,000 suits are now pending in the various courts in which damages to the extent of \$20,000,000 are asked and that the company will be without means to meet judgments recovered in such suits.

That the railway has current liabilities in excess of \$5,500,000, represented by notes payable for materials, equipment, taxes, and supplies for \$2,230,000; vouchers payable for the same, \$625,000; accounts payable for the same, \$110,000; wages due employees, \$400,000; moneys due to city for Twenty-third Street viaduct, \$190,000, and accrued and matured interest, \$2,000,000.

That judgments which have not been satisfied are now in the courts of Missouri and Kansas against the company totaling approximately \$800,000, which include judgments rendered in the recent term of the Circuit Court for \$180,000.

That the company is without means to fight such cases or properly handle them.

That there is an additional several million dollars of indebtedness arising from the default of the first and second mortgage interest payments.

That the creditors are pressing the company for immediate payment and that some of these creditors have threatened to bring suit and levy executions upon the company's property.

That there is danger that the lines of the company may be broken up and operated separately.

That the cities through which the lines run are making claims for large amounts of capital expenditures, totaling nearly \$1,000,000, which cannot be obtained.

That there is a possibility that the company, through its financial condition, may default its franchise, and that the rights of the creditors should be ascertained and a receiver appointed.

Total liabilities are estimated at \$37,917,000. The company's assets as fixed by the Missouri Public Service Commission at the hearing for increased fare last year are \$27,866,345. This leaves a total liability over and above the assets of more than \$10,000,000.

Following a conference of the officials of the Kansas City Railways, Col. Philip J. Kealy, president, gave out a statement in which he attributed the company's present situation to the failure of the public to grasp the full significance of conditions, of three years' standing. He said:

The Kansas City Railways has been compelled to accept a receivership of its property by reason of the increased indebtedness that has been constantly piling up for the past three years. The public from time to time has been advised of the growing indebtedness of the company; but for one reason or another, the public has apparently not fully realized the seriousness of the company's situation. Contrary to the popular notion the Kansas City Railways is not owned by one man, or by any single interest, but is really the property of some 6,000 investors in its securities. Numerous savings banks, trust estates, life insurance companies and other such institutions, as well as private individuals, are the owners of the securities of the Kansas City Railways, and they have been the real sufferers from the inability of the company to make both ends meet.

The difficulties of the company date back more than three years, when the railway began to feel the effect of war inflation on prices of materials and labor. Such increases have continued progressively. The adjustments of fares have not been sufficient in time or amount to overcome the increased cost of operation.

The directors and the representatives of the securities holders have put forth strenuous efforts to avoid a receivership. Large sums of money have been advanced with which to continue the company's operation and meet its most pressing obligations. For example, representatives of the bondholders advanced nearly \$500,000 last February to pay the taxes on the property due for the year 1919; and a year ago, several of the Kansas City banks united in advancing to the company \$400,000 out of which the company met its payrolls.

The physical condition of the property,

upon the whole, is very good. There is sufficient business in Kansas City to justify the continuance and full operation of this property upon a basis that is fair, both to the public and the investors. I believe that even now, with the proper kind of co-operation, this property can be put upon such a basis that the revenues will pay all reasonable operating expenses, provide an allowance for future replacements and afford a reasonable return to the investors.

The company's officials repeatedly have complained to the city that the operation of jitneys has reduced the company's revenue between \$3,000 and \$5,000 daily. This curtailment of income, in addition to the advanced cost of operation and maintenance, it had been prophesied, would lead to a receivership.

The first official order of Frank C. Niles, temporary receiver, was to the effect that all the officers and employees of the company were appointed as officers and employees of the receiver. No steps will be taken in the actual work of adjusting the company's financial difficulties until the court names a permanent receiver.

## New Haven Changes Explained

There is misunderstanding, explains the Boston News Bureau, in the financial district relative to the granting of approval in the United States District Court, New York, for a merger of the Harlem River & Portchester Railroad and the Central New England Railway with the New York, New Haven & Hartford Railroad. Press accounts as to what the New Haven sought have been inaccurate and obscure. The News Bureau says that the New Haven actually asked:

1. Permission to merge the Harlem River & Portchester.
2. Permission to merge the Central New England.
3. Direction to trustees of the Connecticut Company stock to vote for a mortgage to secure Consolidated Railway debentures amounting to \$10,884,000.

The merger of the two roads with the New Haven is both a logical and desirable development. The New Haven owns all of the Harlem River & Portchester stock and all but 50 shares of the capital stock of the Central New England.

These roads are really integral parts of the New Haven system and a merger is both in line with past policy of the New Haven and with the evident intent of the transportation act which permits mergers where desirable in the public interest.

The only obstacle to carrying this out, so far as the New Haven was concerned, was possibly the federal decree of dissolution for the New Haven. Accordingly, the New Haven asked the court to modify the decree to permit the merger. As the department of justice agreed to this the District Court signed the order.

The real purpose in asking the Court to require the Connecticut Company to secure the Consolidated Railway debentures by a mortgage on its property was to relieve the New Haven, if it should ever mortgage its own property, of the necessity of securing these debentures by such mortgage.

The Consolidated Railway, which formerly owned, controlled or leased a large number of electric railways and public utilities in New England, was merged with the New Haven in 1910. The 400,000 shares of stock of the Connecticut Company, controlling trolley lines in Connecticut, are owned by the New Haven but are in the hands of trustees under the dissolution decree.

Judge Mayer, in the District Court, declined to grant the New Haven's request with reference to the Connecticut Company until the electric railway situation in Connecticut has been straightened out to greater extent.

### City Wants Fund

Asks That Dividend Over 6 Per Cent Be Returned by Cleveland Railway—Company Going Behind

The Mayor of Cleveland, Ohio, has ordered Street Railroad Commissioner Fielder Sanders to make formal demand on the Cleveland Railway for the return of \$72,000 paid stockholders on April 1 as dividends at the rate of 7 per cent. If the \$72,000 is paid back it will keep the interest fund, the fare barometer, from going below \$300,000 as of Aug. 31, and will put off a fare increase until the interest fund goes below that figure despite the addition of the \$72,000.

It is understood the company takes the position that the \$72,000 was paid legally because petitions for the referendum, which defeated the dividend increase from 6 to 7 per cent, had been held invalid by the Common Pleas Court at that time. It was on additional petitions that the election was brought about which defeated the dividend increase Aug. 10.

A report made by city accountants to Commissioner Sanders showed that in June, July and August the actual cost of operating the system exceeded the income by \$415,087 under the present rate of 5 cents.

The company has operated under a deficit of 2 cents a car-mile in the last six months, President John J. Stanley advised Council. That is why he asked for an additional allowance of 4 cents a car-mile for operation, 2 cents to make up the deficit and 2 cents to break even in the ensuing six months.

Accountants have reported to Commissioner Sanders the receipts, costs and deficits in the three months after the new wage increase of 25 per cent went into effect May 1 as follows:

May—Receipts \$1,498,405.52; cost of service \$1,542,056.96; deficit \$42,651.44.

June—Receipts \$1,507,526.76, cost of service \$1,731,869.10, deficit \$224,342.34.

July—Receipts \$1,531,008.56, cost of service \$1,679,101.84, deficit \$148,093.28.

This is a partial report. As soon as the report is complete, Mayor Fitzgerald will call a meeting of the street railway committee and ask as to the city's course on the allowance demands.

### Utility Investments Will Be Stabilized

Large speculative profits in public utility securities are a thing of the past, according to H. M. Addinsell of Harris, Forbes & Company, New York, N. Y., investment bankers, who is a member of the public utility committee of the Investment Bankers' Association. It is his contention that securities of this character, because of the public necessity which the industries serve, and because of the regulation which is consequently put upon them, will eventually become in the nature of quasi-municipal securities enjoying somewhat the same degree of stability as municipal issues.

In an address at New London on Sept. 15 before the annual convention of the

Association of Edison Illuminating Companies he emphasized the fact that the public utilities need fair play and a square deal. After discussing the various methods of financing that are open to these properties and the necessity for regulation sufficiently elastic to permit changes in rates to meet varying costs of operation, he said in part:

We may just as well face frankly the fact that the day of possible large speculative profit in public utility securities is passed.

With the regulation that exists and the incontrovertible fact that these industries

### New York Gross Increases

Deductions, However, Overbalance Gross Income—Net Corporate Income Shows a Deficit

The October-December, 1919, quarterly report of the revenues and expenses of the surface and rapid transit electric railways operating in New York City has recently been issued by the Public Service Commission for the First District.

The summary shows that passenger

#### EARNINGS OF NEW YORK CITY COMPANIES

Quarter October—December	1919	1918	Percentage Change
Passenger revenue	\$30,320,201	\$24,496,272	+23.8
Other transportation revenue	199,436	177,757	+10.0
Total revenue from transportation	\$30,515,637	\$24,674,029	+23.7
Other railway operating revenue	2,222,644	1,431,577	+55.3
Total railway operating revenue	\$32,738,281	\$26,105,606	+25.4
Operating expenses:			
Maintenance expended	\$6,101,896	\$5,137,886	+18.7
Depreciation reserve	562,993	903,074	+162.5
Operation of power plant	4,462,132	3,729,806	+19.6
Operation of cars	11,242,763	8,566,902	+30.9
Injuries and damages	888,866	1,253,400	-29.1
Traffic and general expenses	1,186,483	885,593	+33.9
Total operating expenses	\$24,445,132	\$18,671,513	+30.9
Net operating income	\$8,293,149	\$7,434,093	+11.6
Street railway taxes	1,820,784	1,914,442	-4.9
Operating income	\$6,472,365	\$5,519,651	+17.3
Non-operating income	\$1,099,677	1,062,834	+3.5
Gross income	\$7,572,042	\$6,582,485	+15.0
Deductions from gross income:			
Interest	\$5,552,298	\$4,557,012	+21.8
Rents	3,769,038	3,956,348	-4.7
Miscellaneous	642,767	421,831	+52.5
Total deductions from gross income	\$9,964,103	\$8,935,191	+11.5
Net corporate income	*\$2,392,061	*\$2,352,706	-1.7

\* Deficit.

are an indispensable and permanent part of the economic structure of the communities they serve they are becoming, and I think will become, increasingly of the nature of quasi-municipal securities.

I look forward to the day when the public utility practice and financing will be so standardized and stabilized that the securities of these companies, at first in the larger communities and eventually everywhere, will command a market closely approximating—both as to level and real marketability—that enjoyed by the obligations of the municipalities themselves.

I think that eventually some combination of the indeterminate permit and service-at-cost franchise will be universal. I perhaps should mention, however, that in view of

revenue has increased \$5,823,929 or 23.8 per cent over the 1918 quarter. Operating expenses increased by 31 per cent from \$18,671,000 in 1918 to \$24,445,000 in 1919. Total deductions from the gross income of the various companies increased about the same amount as the gross income itself.

#### NET CORPORATE INCOME UNCHANGED

Net corporate income was approximately the same as the corresponding

#### TRAFFIC AND MISCELLANEOUS STATISTICS OF NEW YORK CITY COMPANIES

Quarter October—December	1919	1918	Percentage Change
Miles of track, exclusive of storage and yard tracks	1,789.62	8,069	
Average daily maximum number cars operated (Dec.)	85,454,471		
Passenger car-miles (active)	4,267,022,623	83,151,313	+4.7
Car seat miles	87,099,022	7,253,771	
Total revenue car-miles	7,253,771	11.76	
Passenger car-hours	603,472,394	491,785,623	+22.7
Ratio C. M. to C. H. (speed m.p.h.)	12,587,642		
Revenue passengers	616,060,036	491,785,623	+25.3
Revenue, transfer passengers	32,120,419	66,821,552	-51.9
Total revenue passengers	648,180,455	558,607,175	+16.0
Free transfer passengers	74.67	71.38	+3.3
Total passengers	648,180,455	558,607,175	+16.0
Operating ratio	74.67	71.38	+3.3
Statistics per car-mile:			
Operating revenue (cents)	37.55	30.21	+24.3
Operating expenses (cents)	28.10	22.48	+25.0
Net income (cents)	*2.75	*2.83	-2.8
Number of passengers (total)	7.44	6.73	+10.5
Car-miles per revenue passenger	0.144	0.169	-14.8

\* Deficit.

recent experience, to be satisfactory, such franchises should contain no maximum rate and should provide a cushion in the form of a reserve fund to take up slack pending the readjustment of rates and thus insure continuously to the companies the fair rate of return on their investment that is contemplated by such a franchise. So the broad solution lies in frankly putting the cards on the table and letting the light of publicity shine on the problems and purposes.

quarter a year previous, the increase in deficit being only \$40,000. This made a total deficit of \$2,392,061 for 1919. The operating ratio increased only 3.3 per cent, although approximately 90,000,000 more passengers were carried than in 1918, and the car-miles increased by 4,000,000 or 4.7 per cent.



## Mr. Allen Has Plan to Rescue Road

C. Loomis Allen, president of the Syracuse & Suburban Traction Company, Syracuse, N. Y., has sent to Ira L. Terry, chairman of the committee appointed by the Long Island Real Estate Board, a sketch of his proposal for the operation of the New York & North Shore Traction Company, which has recently discontinued service on its lines between Flushing and Roslyn.

His proposition is that the line should be purchased outright, that the power house at Douglaston, which has long been a burden to the company, be disposed of and that power be purchased. He further believes that one-man cars should be substituted for the present equipment.

Mr. Allen considers that about \$350,000 would be sufficient to purchase the road and meet all these needs. He bases his belief that the road could be put on a sound operating basis on the decision of the Court of Appeals that the Public Service Commission had a right to grant an increase in fare to the line if the franchise had been granted since the passing of the law creating the commission.

In the matter of fares Mr. Allen has indicated further that Long Island residents are willing to pay an increased fare if the operation of the cars is assured them. The Real Estate Board will consider the proposition of Mr. Allen and if thought practicable a stock corporation will be formed.

## Financial News Notes

**May Issue Common Stock.**—The Public Service Commission for the Second District on Aug. 27 authorized the International Railway, Buffalo, N. Y., to issue \$792,500 in common stock. Proceeds to be realized from the stock are to be used to pay for additions and betterments to the railway.

**Deferred Dividends Paid.**—A dividend of 2½ per cent was paid on Aug. 20 on the preferred stock of the Washington Railway & Electric Company, Washington, D. C. This represented the quarterly disbursements of 1½ per cent which were due on March 1 and on June 1 and on which no action was taken because of the poor financial condition of the company. No action has been taken on the quarterly dividend that fell due on Sept. 1.

**Interest Payment Postponed.**—The directors of the Hudson & Manhattan Railroad, New York, N. Y., at their August meeting decided that income from operation has been insufficient to permit the resumption of interest payment on the 5 per cent income bonds

on Oct. 1. It was explained that this was but a formal action, as there has been no intention of resuming payments at this time.

**Municipal Line Going Behind.**—The report of operation of the Tacoma (Wash.) Municipal Railway for the month of July shows a loss of \$5,010. Operating revenues amounted to \$11,879, with operating expenses of \$13,916. Interest on the investment and other charges against the line ran the deficit to more than \$5,000. Commissioner Harrison hopes to reduce operating expenses by the use of one-man cars, which are under construction at the present time.

**Corporate Changes Planned.**—A company bearing the name of United Light & Railways Company was incorporated under the laws of Delaware on Sept. 8 with a total authorized capital of \$50,000,000. This action, it is understood, is in line with a plan to be presented to the directors of the existing United Light & Railways Company, Grand Rapids, Mich., shortly, a scheme for changes in the corporate organization and in the capitalization.

**Interest Payments Put Over.**—The trustees of the Eastern Massachusetts Street Railway, Boston, Mass., state that coupon interest due on Sept. 15, 1920, on \$972,000 of Series C bonds, amounting to \$29,160 and coupon interest due on Oct. 1, 1920, on Series D bonds, amounting to \$24,180 will not be paid at maturity. The public trustees have been obliged to extend this interest under moratorium privilege of the mortgage indenture, because the company has no available income for its payment.

**Will Abandon Penn Line.**—By authority of the State Public Service Commission, the Waverly, Sayre & Athens Traction Company, Waverly, N. Y., will abandon a portion of its line in Pennsylvania. The parts of the line to be given up are those found by the commission to be unremunerative and such a burden that to require continued operation under the circumstances would be unreasonable. They comprise 2,000 ft. at the extreme southern end of the line at Athens, and the South Waverly branch.

**Bluefield Traction Deal Completed.**—President Hardy and General Manager Evans of the Princeton Power Company have reported to the board of directors of the Bluefield Chamber of Commerce that at a meeting of the stockholders of the Princeton Power Company held recently plans for taking over and operating the railway system of the Appalachian Power Company, in Bluefield and Graham, W. Va., had been approved, and that within sixty to ninety days the line would be under the new management. Relative to the suggestion of changing the name of the Princeton Power Company in order that Bluefield would appear in the official title it was decided to appoint a committee from the Bluefield chamber to confer with a similar committee from

the Princeton Chamber of Commerce. The name Bluefield-Princeton Traction Company is one to be considered.

**Consolidation Talk Again.**—The city lines of the Spokane & Eastern Railway & Power Company, Spokane, Wash., carried 765,181 passengers during the month of July, from whom it collected \$40,026 in 6-cent fares. The cars were operated 168,685 car-miles at a cost including depreciation of \$45,620. Plans for the consolidation of this property with that of the Washington Water Power Company, are again being discussed and have reached the same stage as when the matter was in the air several years ago, namely, a committee of engineers and accountants has practically completed the assembling of data which will show the gain to be made by the elimination of competing lines and the building of physical connections. Jacob Taylor, Chicago, president of the Spokane & Eastern Railway & Power Company, is expected in Spokane soon, at which time the consolidation plans are to be taken up again.

**Abandoned Road Reported Sold.**—The recently incorporated North Carolina Lines, Inc., Charlotte, N. C., is reported to have purchased the franchise rights of the Charlotte Rapid Transit Company. The latter road went into the hands of a receiver in 1918 and its effects were sold early in the present year at auction. The property consists of 2 miles of track and overhead work with some additional poles, ballast material and other supplies. Service was discontinued on May 19, 1918. Reference to the affairs of the company was made in the ELECTRIC RAILWAY JOURNAL for March 27, 1920, page 669. The North Carolina Lines, Inc., contemplates constructing an electric railway from Charlotte to Winston-Salem. Among the incorporators are Harry F. Hahn, Winston-Salem, and John McGibbons, vice-president of the U. S. Fidelity & Guaranty Company, Baltimore.

**Viaduct Payments Not Made.**—The Hecker Construction Company, building the Twenty-third Street viaduct, has complained to Mayor Cowgill that the Kansas City (Mo.) Railway is in arrears in the payment of its proportion toward the construction of the viaduct, estimated to cost \$750,000. The company's proportion, including engineering and inspection fees, amounts to \$267,000, and all it has paid of this amount is \$25,000 in cash and \$30,000 in materials. Philip J. Kealy, president of the railway, said he thought if the city advanced the \$85,000 the company could pay it back shortly from revenues anticipated as a result of negotiations pending for the sale of carhouses at St. John and Denver Avenues and Montgall and Nicholson Avenues respectively and the sale of the present buildings used for general headquarters at Fifteenth and Grand, and the sale of power houses, substations and transmitting lines to the Kansas City Power & Light Company. The receipts from the sales to the light company were estimated at \$6,500,000.

# Traffic and Transportation

## Would End All Transfers

President Mitten Proposes New Plan to Meet P. R. T. Needs—Would Yield \$350,000 Monthly

Abolition of all transfers of whatever nature is now proposed by Thomas E. Mitten, president of the Philadelphia (Pa.) Rapid Transit Company, as a temporary solution of the system's financial problems. Under the new plan as outlined by Mr. Mitten on Sept. 14 in a letter to the Philadelphia City Council the basic 5-cent fare would be retained.

### FRANCHISE DRAFT PRESENTED

The issuance of the 3-cent "exchange tickets," as well as free transfers, would be discontinued. Mr. Mitten estimates that the company's revenue would thus be increased to a sufficient extent to enable it to pay the carmen the wage increase due them.

With his letter to Council, Mr. Mitten submitted a draft of a proposed ordinance granting to the P. R. T. permission to apply to the State Public Service Commission for approval of the new fare system. The proposed tariff change would be temporary in character and would remain in force until the commission, on the basis of the valuation of the company's properties now under way, had been able to fix a permanent rate.

Mr. Mitten pointed out that the company's need of immediate financial relief resulted from the failure of the Union Traction Company, chief underlying company of the P. R. T. system, to sanction an issue of \$6,000,000 in equipment trust certificates. Under a continuance of existing conditions at the end of the current year, Dec. 31, the company will be short approximately \$2,000,000 and at the rate of about \$4,500,000 for the next twelve months. Of the P. R. T.'s present condition, Mr. Mitten said:

Increased revenue is immediately necessary not only to meet the already overdue wages of the men and other increased costs of operation but also to place the company in a position properly to handle the rush-hour traffic of the coming winter and later to operate city-built lines.

### MR. MITTEN'S LETTER

The discontinuance of all transfers is expected to yield increased revenues of \$350,000 monthly.

Mr. Mitten's letter follows in part:

P. R. T. has for ten years past increased in prosperity under present direction. Until overcome by war-time costs P. R. T. has consistently increased its earning capacity; nevertheless, in its endeavor to improve service, has confined its dividend payments to but 5 per cent per annum, and has put back into the property by way of improvements over \$4,000,000 of its net earnings which might otherwise have been used to make payment on account of the deferred dividends due to P. R. T. stockholders at the rate of 6 per cent per annum under the terms of the 1907 agreement. \* \* \* The company, after careful consideration,

is of the opinion that the simplest and most effective method of now securing the required increase will be to abolish all transfer and exchange tickets and make a straight charge of 5 cents for each ride. By this means it is estimated the company's revenue will be increased by about \$350,000 per month, an amount imperatively needed for the continued operation of the company. \* \* \*

Seven hundred and sixty million passengers or 76 per cent of all present passengers, will, it is estimated, be carried, without change of cars, for a 5-cent fare. These 5-cent passengers will not, therefore, be disturbed so as to lessen the number of short riders, in the encouragement and accommodation of which so much work on the part of both management and men has been expended.

It is estimated that of the present 230,000,000 free transfer and 3-cent exchange passengers per annum 100,000,000 will no longer make use of this privilege for very short distances. They do so now simply because it can be done for little or no cost. If this estimate be correct there will thus be provided an added available car capacity equal to 100,000,000 passengers per annum for those passengers whose ride is of sufficient importance to justify the payment of a 5-cent fare.

## Right-Hand Running Planned

A change in street traffic to operate in accordance with the right-hand rule in conformity with the rest of the continent is about to take place in the Province of British Columbia. Traffic in that province has always conformed to the English or left-hand rule. This is believed to have increased accidents and decreased automobile traffic from outside the province. There are no large cities in the province except Vancouver and Victoria. These and the neighboring communities of New Westminster and North Vancouver are the only ones with electric railway systems, except that in Nelson there is a small road which operates two cars.

The railways and other electrical utilities in Vancouver, Victoria, New Westminster and North Vancouver are operated by the British Columbia Electric Railway. The work of making this change will, therefore, be entirely a matter of the cost of changing the electric railway systems. The province has been divided into two parts separated by a range of mountains over which there is no road communication. The right-hand rule went into effect on July 15 in the interior of the province. It will not go into effect in that part occupied by the cities named until a date yet to be decided. This will depend upon the time required for changing the special work and switches and re-arranging the car platforms.

Estimates of the cost of the change to the railway range from \$1,000,000 to \$1,500,000. The allocation of this cost has not been decided, but the British Columbia Electric Railway contends that the provincial government should assume part of the cost inasmuch as the railway built its system in conformity to the road regulations which are now being changed at the request of the people.

## Norfolk Report and Valuation Completed

A. Merritt Taylor and his associate, Charles B. Cooke, Jr., have completed their report on the Norfolk street railway problem. Mr. Taylor has filed the report together with his recommendations, with the Norfolk Public Utilities Commission. This report was made at the instance of the city. Its purpose is to develop and define the respective rights and obligations of the city and of the Virginia Railway & Power Company. It includes a valuation of the company's property, a complete plan for the rehabilitation and extension of the company's property, definite recommendations with respect to rates of fare, and a complete outline of a recommended franchise which is designed to protect and advance the interests of the city and of the company and protect the capital invested in the public service.

It is understood that the report constitutes a very thorough treatise on all problems entering into valuation, rate making and franchise writing. It also discusses the jitney problem.

Because of Mr. Taylor's broad experience as a builder and operator of electric railway properties, as director of the Department of City Transit in Philadelphia, and as director of the Department of Housing & Transportation of the Emergency Fleet Corporation, where he had the responsibility of transportation to 180 shipyards, this report will be awaited with great interest by the electric railway industry. It will be published, it is understood, within a few days.

## Echoes of the Denver Strike

A mass meeting was held in the Municipal Auditorium at Denver, Col., on Sept. 13 to argue the strike. It was really an indignation meeting of union labor. G. Y. Harry, federal mediator and member of the National Labor Board, supposed to be a non-partisan, showed in his talk that he was a labor man and pointed with pride to the fact that the head of the department he represented was a union man and that he (Harry) advocated the closed shop.

The strikers apparently have some big point in view to accomplish their work. This seems to be in the form of initiated petitions being circulated on Sept. 16, calling for a special election for municipal ownership of the Denver Tramway. One of the sponsors of the petition is Henry Silberg, executive of Tramway Local 746, who is now in jail.

William Thornton, vice-president of the Colorado State Federation of Labor; William J. O'Brien, former president of the Tramway Employees' Union, and Charles Ahlstrom, president of the Denver Trades and Labor Assembly, have been indicted by the Grand Jury for inciting to riot. F. W. Jefferay, local clothing merchant and persistent villifier of General Manager Hild of the tramway, for four years, has also been indicted for inciting and participating in riots.

## Bay State Fares Up

Company Advances Rates to Meet \$1,400,000 Additional Wage Payment—May Shut Down Lines

To secure sufficient revenue for the payment of increased wages to its employees, the Eastern Massachusetts Street Railway, Boston, planned to place a revised schedule of rates in effect on Sept. 15. At the same time the railway management announced that higher fares alone would prove inadequate, and that the only hope of continued operation lay in the practice of the strictest economy. It also notified its employees that it would begin at once a policy of laying off all men who could be spared.

### WAGE INCREASE BRINGS CRISIS

The immediate cause of these measures was the award to the carmen of \$1,400,000 in increased pay, discussed at length on page 562 of this issue. Even before the granting of the higher pay the railway was losing money on all but one of its divisions. The company operates over 750 miles of street railway lines running from the New Hampshire line on the north to Boston. On the south its lines extend from Quincy to the Rhode Island boundary. The principal cities affected are Lowell, Lawrence, Haverhill, Salem, Lynn, Peabody, Chelsea, Revere, Woburn, Melrose and Malden on the north of Boston and Brockton and Taunton on the south.

Under the new fare system free transfers are discontinued. The sixteen-ride ticket, selling for \$1, is withdrawn, a fourteen-ride ticket selling at the same price taking its place. This ticket is good only for rides in more than one zone and in all cities and towns except Lynn, which is given a fifteen-ride ticket for \$1. Fares between Boston and Revere and between Lynn and Peabody are raised from 10 cents to 15 cents, while the fare between Boston and Lynn is advanced from 25 to 30 cents. The ten-ride ticket between Lynn and Boston is replaced by an eight-ride ticket selling at \$1.50, the price remaining unchanged. Zones are also shortened in a number of cases.

### NO RISE IN FALL RIVER

Fall River will be the only city served by the company which will not be affected in any way by the new schedule. Fares there will stay at the old figure because the district is earning its cost of service according to the public control act under which the road is operated. Each month has shown receipts enough to cover all expenses and leave a surplus. Homer Loring, chairman of the trustees, said yesterday that he attributed the success of the road in that district to public cooperation and particularly to the work of the home rule committee, headed by James Tansy, president of the Fall River Textile Council.

With regard to the possibility that the railway might be forced to dis-

continue a number of its lines if the revenue were not increased, an official of the company said:

Following every increase in fares traffic has fallen off. We do not anticipate any falling off now, but if the lines are found not to be supporting, it is probable that they will have to be lopped off and service discontinued.

The railway management on Sept. 13 summoned the joint conference board, representing the carmen, and announced that it would begin at once a policy of rigid economy embracing a more extended use of one-man cars and the laying off of many employees. The company's labor's committee reported that the joint board promised co-operation of the workers in cutting expenses and realized they would have to expect a weeding out of employees who could be dispensed with, if the rest of the men were to hold their jobs at increased pay. It was Manager Fritch who announced that the curtailing of the working force would be so regulated that it would not in any way cripple the service.

### Louisville Fares Await Election

There have been no developments of real interest lately in the fight of the Louisville (Ky.) Railway for higher fares. The "service-at-cost" plan of the Round Table Club apparently didn't get anywhere. The ordinance of the railway before the City Council was withdrawn. The various civic clubs, especially the smaller suburban ones, are voting pretty freely against any increases. The Board of Trade has again taken up a discussion of the matter.

Politics and the fall election have some considerable bearing on the matter. A member of the City Council, in discussing the increase on Sept. 10 with the representative of the ELECTRIC RAILWAY JOURNAL at Louisville, said:

The company must have an increase. I'm for it, and a lot of the other members are. However, there will be no service-at-cost plan. If there is any advance in fares it will be a flat increase, probably for one or two years, or under an agreement that the Council may renew the option at the end of one or two years. However, there isn't going to be anything done in the matter until after election. Everyone is sparring for time in the interval.

The man who made this statement is one of the best posted and shrewdest men in the Council. The slow progress that is being made bears out this statement.

### Six-Cent Fare Stands

The State Board of Public Utilities Commissioners has issued an order authorizing the Hudson & Manhattan Railroad, N. Y., to continue to collect a 6-cent fare between points in Hudson County, New Jersey. The company is required to refund 1 cent upon arrival at the point of destination, and to extend the time for redemption of excess fare tickets from ten minutes to one-half hour. The company was recently authorized by the Interstate Commerce Commission to raise its fare between New Jersey and downtown New York to 6 cents.

## Bus Compromise Likely

Seattle May Allow Jitneys to Operate on Some Routes—Drivers Offer to Pay City

An ordinance recently drafted by Corporation Counsel Walter F. Meier of Seattle, Wash., and transmitted to the City Council, provides new jitney regulations that would mean a compromise between the present jitney ordinance and complete ban of buses from the city streets. The bill provides for the creation of an area in the business district, in which section no jitneys would be permitted to operate.

### RESTRICTIONS SUGGESTED

To operate in districts outside the area, jitney drivers would be compelled to file applications for permits with the city comptroller, specifying the routes, terminals, schedules and rates of fare desired, and such permits would then be automatically granted by the comptroller without reference to the Council. The proposed bill, if adopted by the Council, would have to be submitted to the voters at the municipal election next March, as an alternative measure to the jitney initiative measure, which would permit jitneys to operate without city restrictions in any part of the city.

It also offers an alternative to the proposed ordinance which is to be considered soon by the utilities committee of the Council. This would entirely ban jitneys from operating within the corporate limits of the city. The new bill does not stipulate any rate of fare to be charged for jitney transportation, as is provided in the present regulations, since the city was enjoined from enforcing that part of the present ordinance by a decision rendered in the Federal Court. The bill provides, however, that persons operating jitneys must first obtain a permit from the city comptroller, and such permit must be posted on the front side of the machine's windshield. It would then be unlawful for any jitney driver to charge a fare other than that specified by the permit, or to operate over any routes other than that specified. It also provides that all buses will be subject to inspection by the Department of Public Utilities.

### CASE BEFORE COURT

The State Supreme Court has taken under advisement the case of the Seattle jitney interests' suit to prevent the King County Superior Court from vacating the temporary injunction under which jitneys are now operating in Seattle. Decision in the matter was deferred after hearing the arguments of Assistant Corporation Counsel George A. Meagher, representing the city, and W. R. Crawford, representing the jitney interests.

The attorney for the jitney drivers has made a tentative offer to the city utilities committee to pay  $\frac{1}{2}$  cent to the city for every passenger carried into or out of the business district by the jitney buses.

## Winnipeg Fares Up

Granting of Seven-Cent Rate by the Manitoba Commission Rounds Out Rehabilitation Program

Seven cents became the cash fare on the city lines of the Winnipeg (Man.) Electric Railway on Sept. 1. Four adults' tickets and seven children's tickets are sold for 25 cents. The sale of workmen's tickets at reduced rates has been discontinued. Fares on the company's suburban lines are raised approximately 25 per cent. The fare on the Winnipeg local lines was formerly 6 cents.

These increases were authorized by the Manitoba Public Utilities Commission in a judgment handed down on Aug. 23. During the past two years the commission has conducted an elaborate and thorough appraisal of the company's property, which it has valued at \$24,369,431. The commission fixed 8 per cent as constituting a fair return on the investment. The commission further points out that the new fares will provide surplus funds for contingencies.

### MANY OBSTACLES OVERCOME

This decision of the commission marks the successful close of a vigorous and consistent effort to put the Winnipeg Electric Railway on its feet, lasting since October, 1917, when A. W. McLimont took charge of the property as vice-president and general manager. At that time jitneys were on the street, making inroads into the company's revenues to the extent of \$1,000,000 a year. Traction fares were the same as those set in the original franchise, averaging 3.85 cents for each revenue passenger. Public opinion toward the company was not of the friendliest, while labor troubles were a continuous menace.

In the winter of 1917 Mr. McLimont conducted a campaign against the jitneys which resulted in their complete elimination from the streets in April of the following year. Incidentally he accomplished reforms in the matter of service, such as the inauguration of the skip-stop system, re-routing and other improvements which resulted in the revenue per car mile being increased very appreciably.

### COMMISSION GRANTS RELIEF

Four months after the elimination of the jitneys the company petitioned for increased fares. An interim increase was granted. The commission decided to make an appraisal of the company's property in order to fix a fare "which will produce revenue sufficient to cover operating costs and insure a fair return being paid those whose money is in the property." Twelve months later, in October, 1919, while the appraisal was still being made, the company was granted a further increase to 6 cents cash fares, with reduced rate tickets. Now comes the 7-cent fare with the elimination of all but two classes of tickets and the assurance from the commission that these fares will be suffi-

cient to permit adequate service being given, to keep the road in first class condition and to provide a return of 8 per cent.

Starting in the spring of 1918 the company embarked on a program to rehabilitate the rolling stock. The cars have been equipped with new motors, front and rear exits, and other improvements which make for more economical operation. Forty new cars have been purchased, thirty of which are now in operation. A sum of approximately \$1,000,000 has been applied during the past three years to this rehabilitation program.

## Will Bar New Haven Buses

An ordinance has been passed by the Board of Aldermen of New Haven, Conn., ruling motor buses off a number of streets in that city served by the Connecticut Company. The measure is similar to the one adopted recently by the city authorities of Bridgeport, and designates eleven streets in the central area of New Haven from which the jitneys will be barred. It is provided that all persons operating public service motor vehicles, while carrying passengers, "shall keep in the traffic route fixed in the ordinance."

Any person, firm, or corporation violating any of the provisions of the measure shall pay a fine of not more than \$100 for each offence. The bus men have announced their intention of fighting the measure in the courts. They claim that it is unconstitutional in that it was not given a public hearing prior to its passage.

The subject of bus regulation originally came before the board as a result of a letter from Lucius S. Storrs, president of the Connecticut Company, to Mayor Fitzgerald. Mr. Storrs declared that the company might have to suspend service on its New Haven division if jitney competition were not curtailed. The Mayor sent this letter and a communication of his own, urging immediate consideration of the emergency, to the Aldermen. The jitney men contend that enforcement of the new measure would put them out of business and give the trolley company a monopoly.

## Eight-Cent Fare in Geneva

The Public Service Commission for the Second District of New York has authorized the Geneva, Seneca Falls & Auburn Railroad, Seneca Falls, to charge a fare of 8 cents in Geneva including that part of the interurban line, city line to Lake road, and 8 cents in each of the existing zones. Commutation and school fares and chartered car rates remain unchanged. Book tickets may be sold as heretofore but on the basis of 7 cents for each zone involved. The new fare rates are effective for a year from Sept. 1 and thereafter until otherwise ordered by the commission. The fare on the company's line in Geneva has been 6 cents.

## Ten-Cent Fare Needed

President Kealy Tells State Commission Why Kansas City Lines Must Have More Revenue

Officials of the Kansas City, Mo., Railways appeared before the Missouri Public Service Commission on Sept. 8 at a hearing on the petition of the company for a further increase in fare. The railway recently applied to the commission for permission to install a sliding fare system, based on the service-at-cost principle. Under the proposed plan the fare would advance to 9 cents or possibly to 10 cents cash, with three tickets for 25 cents. The fare is now 8 cents straight.

### OFFICE WORKERS DEMAND SPEED

Phillip J. Kealy, president of the railway, in discussing the new plan before the commission, declared that a 10-cent fare would eliminate the inconvenience to the public of "making change." Mr. Kealy said that the dislike on the part of the public to make change was one reason why people were willing to pay 10 cents to ride in a jitney when they could ride at less cost in an electric car. He contended that a greater part of the jitney patrons were clerks and stenographers, to whom a saving by cheaper fare might mean more than to the more mature persons who almost uniformly use the street cars.

In discussing the jitneys, Mr. Kealy declared "that a rain during the rush hour was worth \$1,500 to the company any day." He said, however, that this extra patronage drawn from the jitneys often came unexpectedly and caused complaint because the railway had not foreseen that sudden showers would demand more street cars downtown. He did not believe that a 10-cent fare would increase jitney riding. He added that he believed that the use of private cars would be curtailed somewhat in the next few months.

Bus competition is largely responsible for the company's present plight. On fair days, said Mr. Kealy, the jitneys haul about 42,000 persons. Without jitney competition, he said, the company almost would have earned its interest charges in the period between January and June. He said that in Kansas City the joint business of the electric railway and of its jitney rivals was growing about 4 per cent a year, despite the thousands of privately owned cars. However, because of the jitneys, he said that the company was carrying from 3 per cent to 7 per cent fewer passengers than under the 5-cent fare.

### PASSENGER COST 6.96 CENTS

A cash fare of 10 cents, with tickets selling at three for a quarter, would bring the railway an average of 8 $\frac{1}{2}$  cents from each passenger, according to Mr. Kealy. He pointed out that without taking into consideration any return on investment, the cost of carrying a passenger had increased from 3.6 cents to 6.96 cents.

## No Opposition to Freight Increase

The petition of the Connecticut Company to the Public Utilities Commission for an increase of 40 per cent in its tariffs on all classes of freight was heard in the offices of the commission in Hartford on Sept. 16. The company wants a higher rate for freight on all sections of its lines except the New London Division. Victor S. Curtis, secretary of the company, and S. W. Baldwin, attorney for the company, presented the company's side of the case. No one appeared to oppose the granting of the increase. The company produced figures for the period from July, 1919, to June, 1920, showing that the trolley express service had been run at a loss. The commission probably will not decide for several days.

## Ten Killed in Interurban Crash

Ten persons were killed and 100 others were injured, several of them fatally, when two interurban electric cars of the Denver & Interurban Railroad met in a head-on collision on Sept. 6. The accident occurred near Globeville, Col., a Denver suburb. Failure on the part of the motorman of one of the cars to obey dispatchers' orders is said to have been the cause of the accident. Among those killed was Judge R. S. Morrison, pioneer resident of Denver and a recognized authority on mining law.

# Transportation News Notes

**Ten Cents on Newport Line.**—The Bay State Street Railway, Providence, R. I., has raised the fare on its Bay State line from 8 cents to 10 cents. The company operates between Newport and the Massachusetts State line.

**Twelve Cents on Interurban.**—The Lawton Railway & Lighting Company, Lawton, Okla., has been granted authority to increase fares between Lawton and Fort Sill from 10 cents to 12 cents. The new rate took effect on Sept. 1.

**Seven Cents in Each Zone.**—Under authority of an order issued by the State Public Utilities Commission, the Western Virginia Traction & Electric Company, Wheeling, W. Va., has raised the fare in each of the four zones between Elm Grove, W. Va., and West Alexander, Pa., from 6 cents to 7 cents. The fare between Wheeling and Elm Grove remains at 10 cents. The total charge between Wheeling and West Alexander is raised from 34 cents to 38 cents.

**Would Raise Spartanburg Fares.**—George B. Tripp, vice-president and general manager of the South Carolina Light, Power & Railways Company,

Spartanburg, S. C., recently asked the Spartanburg City Council to allow the company to raise its fare from 7 cents to 10 cents. Mr. Tripp also asked that the company be relieved of street paving, which under the franchise it is obliged to do. The company seeks also to be excused from extending its lines to Whitney and Clifton Streets.

**Utah Interurban Wants More.**—A petition was recently filed with the Utah Public Utilities Commission by the Utah-Idaho Central railroad, Ogden, requesting permission to increase its minimum charges between stations 5 cents for one-way and 10 cents for round-trip fares, making a minimum of 10 cents for one-way and 20 cents for round-trip rates. The change would affect about fifty stations in Weber, Boxelder and Cache counties. The company operates 137 miles of electric line.

**Eight Cents in Muskogee.**—The Muskogee (Okla.) Electric Traction Company has been authorized by the State Corporation Commission to charge an 8-cent cash fare on its city lines. The company is directed to sell two tickets for 15 cents and fourteen for \$1. The new rates are to become effective at once. School children are to be allowed to buy twenty-five tickets for \$1. Fares between Muskogee and Hyde Park are to be 15 cents each, and the line to Fort Gibson, is to be divided to five zones in each of which the fare is to be 8 cents.

**Rate Interference Enjoined.**—A temporary injunction has been issued by Circuit Judge Stout restraining the Kentucky Railroad Commission from interfering with the collection of rates now being charged by the Louisville & Interurban Railroad, Louisville. The company raised its fares on Sept. 1 without consulting the commission. The latter thereupon instructed the State Attorney General to take steps to prosecute the railway on the ground that it had violated the terms of an order issued by the commission a year ago fixing the fare to be charged.

**Hearings on Scranton Plea.**—Milton J. Brecht, a member of the Pennsylvania Public Service Commission, recently heard the petition of the Scranton Railway for permission to raise its fare to 10 cents. Counsel for the city of Scranton contended that although the company needs an increase in fare to meet obligations and to overcome a deficit a dividend was declared last winter when the railway deferred maintenance work, amounting to approximately \$300,000. It was also claimed that last year the company carried more passengers than in any other previous single year and that some of the earnings from this source had been used to pay dividends.

**Cars Collide; Five Persons Killed.**—In a head-on collision on Sept. 5 on the Fairview line of the Monongahela Valley Traction Company at Baxter, W. Va., five persons were killed and about twenty-five injured. A passenger car bound from Fairview to Fairmont collided with a freight electric

train heavily loaded. The freight train had followed a passenger car out from Fairmont and was scheduled to pass the passenger car bound from Fairview to Fairmont. The passenger car passed and instead of waiting in the switch for the freight train, which was signaled, the passenger car started toward Fairmont, and about a half-mile out the collision occurred.

**Interurban Rise Postponed.**—F. E. Connor, vice-president of the Spokane & Eastern Railway & Power Company, successor to the Spokane & Inland Empire Railroad, Spokane, Wash., has received notice from the State Public Service Commission that the company will be allowed to increase its interurban rates by 20 per cent beginning Sept. 26. The increase will be made to place the company on a par with the steam roads which received a similar increase recently from the Interstate Commerce Commission. The railway advanced its freight rates on Aug. 26. Mr. Connor has announced that simultaneously with the advance in passenger fares, the pay of the carmen in the company's employ will be substantially increased.

**May Raise Syracuse Rate.**—An increase in the fare charged on the Syracuse lines of the New York State Railways is likely in the near future. Mayor Farmer of Syracuse sometime ago appointed a committee of citizens to recommend measures of relief for the local system. The committee engaged the firm of Ford, Bacon & Davis, to investigate the local railway situation. In their report, which has just been submitted to the committee and which will now be placed in the hands of the Mayor, the engineers favor adoption of a service-at-cost plan for the Syracuse lines. If the city enters into a service-at-cost agreement with the company, the latter will make a number of improvements in its local service.

**Will Hear Los Angeles Petition.**—A hearing on the application of the Los Angeles (Cal.) Railway for an increase in fare will be conducted by the California Railway Commission in Los Angeles on Sept. 20. It is expected that one day will be sufficient for the railway to set forth its need for increased revenue. The commission is familiar with the affairs of the company due to the thorough survey made last year which resulted in the rerouting of the entire system last May and the establishment of safety-car service on some lines. The city has announced that it will ask a continuance of the case after the railway has presented its side so that the statements may be investigated. The Business Men's Co-operative Association, an organization of merchants, has announced that it favors an increase of fare, provided the new rate does not exceed 7 cents. The Los Angeles Railway is charging a 5-cent fare. The application for an increase does not ask a specific rate. The commission is asked to authorize what it considers a just and necessary fare to make income meet operating expense.

## Personal Mention

### F. C. Niles, Receiver

Temporary Representative of Court for  
Kansas City Railways a Successful  
Merchant of Broad Vision

Frank C. Niles, recently appointed temporary receiver of the Kansas City (Mo.) Railways by Judge Kimbrough Stone of the federal court, is an example of the quiet civic worker and high type of business man who comes into prominence only when matters are put up to him. He has never sought publicity, yet is known in Kansas City as an exceedingly efficient man, capable of carrying through any civic project for which he assumes responsibility.

Mr. Niles was born in Waymart, Wayne County, Pa., Oct. 21, 1858, the son of Frank Niles, a country physician. He started his business career at sixteen as a school teacher. One year later he took over the management of a country store in that section and ran it for three years. When he was between nineteen and twenty he went West and settled in St. Paul, Minn. For about ten years he traveled for a grocery and cigar house. Later he went to Kansas and traveled for the H. C. Fischer Company, Chicago. He was also on the road for a time for Rothenberg & Schloss when they were located in Leavenworth, Kan. In 1899 he went into business for himself and established a wholesale cigar business in St. Joseph, Mo., under the firm name of the Niles & Moser Cigar Company. Six months later the firm moved its headquarters to Kansas City. It is now one of the largest jobbing houses of its kind in the Middle West.

He was named one of the original city directors of the Kansas City Railways and was reappointed to that office in July, 1916. His appointment as temporary receiver met with the approval of R. J. Higgins, attorney for the railway; Arthur Miller, counsel for the Kansas City Refining Company, which initiated the receivership proceedings, and Henry R. Platt, Chicago, representing the bondholders' protective committee.

Otis Gerke has been appointed auditor of the Eastern Wisconsin Electric Company, Sheboygan, Wis. Mr. Gerke was formerly assistant to the auditor of the company.

A. E. Harvey, chief engineer of the Kansas City (Mo.) Railways, has been appointed a member of a National Committee on Employment of the American Association of Engineers.

J. A. Beard has been appointed general manager of the Richmond & Fairfield Electric Railway. The company is the successor to the Richmond & Seven Pines Railway.

C. D. Purkhiser has been appointed receiver of the Caldwell Idaho Traction Company. Mr. Purkhiser was formerly assistant general manager of the company.

B. McGinnis has been appointed master mechanic of the Albany Southern Railroad, Albany, N. Y. Mr. McGinnis was formerly general foreman of the company.

Dennis J. Cullinan has resigned as track foreman of the Bangor Railway & Electric Company, Bangor, Maine, after spending twenty years in the service of the company.

R. S. Reading has been appointed electrical engineer of the Galveston (Texas) Electric Company, the Galveston-Houston Electric Railway and the Houston Electric Company.

Oscar E. Parish has been elected vice-president and treasurer of the Richmond & Fairfield Electric Railway, Richmond, Va., the successor to the Richmond & Seven Pines Railway.

J. C. Robbins has been appointed mechanical and electrical engineer of the Albany Southern Railroad, Albany, N. Y., succeeding George Osburn, who has been made general superintendent.

George Osburn has been appointed general superintendent of the Albany Southern Railroad, Albany, N. Y. Mr. Osburn was formerly the chemical and electrical superintendent of the company.

E. P. Williams, assistant treasurer of the Baton Rouge (La.) Electric Company, has resigned to accept a position as assistant comptroller of the Godchaux Sugars, Inc., with headquarters in New Orleans, La.

R. R. Randall has been appointed an assistant engineer on the staff of the Federal Power Commission. Mr. Randall has been in immediate charge of water-power matters for the United States Forest Service.

J. C. Lamb has succeeded W. R. Bell as commercial agent of the Baton Rouge (La.) Electric Company. Mr. Lamb has for some years past been in the commercial department of the Tampa (Fla.) Electric Company.

H. C. Pressler has succeeded J. E. Gallaher as master mechanic of the Eastern Texas Electric Company, Beaumont, Texas. Mr. Pressler was formerly general carhouse foreman of the Galveston Electric Company.

J. V. Sutton has been appointed chief claim agent of the Southern Public Utilities Company, the Southern Power Company, and the Piedmont & Northern Railway, Charlotte, N. C. Mr. Sutton was formerly connected with the claim department of the Southern Railway.

William E. Blodgett, secretary-treasurer of the Utah Light & Traction Company, Salt Lake City, Utah, has been appointed comptroller of the Winnipeg (Man.) Electric Railway. Mr. Blodgett has been connected with the Salt Lake City company for several years.

Oliver J. Sands has been elected president of the Richmond & Fairfield Electric Railway, Richmond, Va., the successor to the Richmond & Seven Pines Railway. Mr. Sands, a Richmond banker, recently purchased the road, which is 8 miles in length, from the United States Housing Corporation.

Col. Bion J. Arnold, consulting engineer of Chicago, Ill., has been retained by the Hydro-Electric Power Commission of Ontario to make a report on the cost, earnings and operating expenses of the radial lines which it is the intention of the commission to construct in the near future.

Harry E. Gough, superintendent of generation of the Elmira Water, Light & Railroad Company, Elmira, N. Y., has been appointed assistant to the general manager. Mr. Gough will also act as superintendent of electric construction and as superintendent of the electric meter department.

J. L. Longino has been appointed manager of the Pine Bluff Company, Pine Bluff, Ark., which operates the electric railway system in that city. Mr. Longino succeeds J. A. Whitlow, who will in the future devote his entire attention to his duties with the Arkansas Light & Power Company.

Harry B. Cleveland has been elected secretary and treasurer of the Elmira Water, Light & Railroad Company, Elmira, N. Y., succeeding C. A. Kolstad. Mr. Cleveland, who was at one time auditor of the company, has been for a number of years an expert accountant with the New York State Tax Commission.

Emil Schroeder has been appointed superintendent of the Norwood Division of the Eastern Massachusetts Street Railway, Boston. The division, which has just been established, includes the company's Norwood & Walpole lines. Mr. Schroeder has been in the employ of the Eastern Massachusetts system for several years.

Edwin Gruhl has been chosen a vice-president of the Milwaukee Electric Railway & Light Company, Milwaukee, Wis. Mr. Gruhl's election to this position follows quite naturally his assumption of the duties of a vice-president of the North American Company, New York, N. Y., which controls the Milwaukee system.

W. H. Flury has been appointed a division superintendent of the Georgia Railway & Power Company, Atlanta, Ga., to succeed R. W. George, resigned. Mr. Flury was formerly a car starter. He has been connected with the company and its predecessors since 1898. Since that time he has filled the posi-

tions of conductor, motorman, instructor, complaint investigator and starter.

James B. Neal, a motorman in the employ of the Boston (Mass.) Elevated Railway, has retired on a pension after fifty-two years of service with the Boston street railway system. Mr. Neal is known to thousands of patrons of the elevated lines as a special officer during the rush hours at the Copley Square and Massachusetts Avenue station in the Bolyston Street subway. He was a driver in the old horse car days.

Alfred C. Jordan, superintendent of equipment and distribution of the Elmira Water, Light & Railroad Company, Elmira, N. Y., will also assume the duties of superintendent of generation of the company. Mr. Jordan will have charge of the operation of the power house and all substations. He succeeds Harry E. Gough, who has been appointed assistant to the general manager.

Otto Gottschalk has been appointed engineer of railway equipment of the Havana Electric Railway, Light & Power Company, Havana, Cuba. Mr. Gottschalk was formerly master mechanic of the Richmond Light & Railroad Company, Richmond Borough, New York City. Before joining that company two years ago he was assistant superintendent of electrical equipment of the Interborough Rapid Transit Company.

W. O. Clure, general passenger agent of the Twin City Rapid Transit Company, Minneapolis, Minn., was severely injured on Sept. 6 when he stepped into an open elevator shaft, falling twelve feet. Mr. Clure is now in a Minneapolis hospital with a fractured pelvis, a fractured left wrist and a compound fracture of the elbow. The accident occurred at the general office building of the railway at Hennepin Avenue and Eleventh Street, Minneapolis.

William B. Graham, formerly superintendent of the Southern Division of the Public Service Railway, Newark, N. J., who has been appointed a member of the staff of N. W. Bolen, general superintendent, with headquarters at Newark, has been presented with a gold watch by carmen of the Camden local, No. 180, Amalgamated Association of Street & Electric Railway Employees of America. The presentation was made at a farewell reception to Mr. Graham held at the Camden carhouse.

Charles Whiting Baker, who was editor-in-chief of *Engineering News* from 1895 to 1917, and has been consulting editor of *Engineering News-Record* for the past three years, announces his retirement from engineering journalism to organize the Engineering Business Exchange. The headquarters of the Exchange will be at 30 Church Street, New York City; and its purpose is to bring together those desiring to sell any sound engineering or technical business, manufacturing, constructing, selling or professional, and those who seek opportunities to purchase. Appraisals of

such enterprises and similar allied work will be conducted by the Exchange.

David H. Goodwillie, City Service Director of Toledo, Ohio, whose name has figured prominently in the controversy between the city and the Toledo Railways & Light Company, has resigned. Mr. Goodwillie has accepted a position with the Edward Ford Plate Glass Company, Rossford, Ohio. He has been Service Director since January, 1916. During his tenure of office he has been active in working out the valuation of the properties of the Toledo Railways & Light Company. He was the chairman of a committee of three which set the \$8,000,000 valuation on the Rail-Light property.

## Obituary

### E. A. Maher, Sr., Dead

Former President Third Avenue Railway Was a Pioneer in Electric Traction and Lighting Fields

Edward A. Maher, Sr., formerly president of the Third Avenue Railway, New York, N. Y., died at his home in New York City on Sept. 13. Mr. Maher was seventy-two years old. He retired from the presidency of the Third Avenue system two years ago.

Mr. Maher's connection with the Third Avenue Railway began nearly thirty years ago. In May, 1917, when he was vice-president of the company, he completed twenty-five years of service with the railway. The unexpected death of F. W. Whitridge, then president of the railway, changed Mr. Maher's plan to retire and he was elected president. He resigned in the following year, however, after being actively engaged in business for more than fifty years. His son, Edward A. Maher, Jr., was formerly vice-president and general manager of the company.

Mr. Maher was born in Albany, N. Y. He was graduated from the State Normal School and then entered politics, being elected president of the Board of Supervisors of Albany County at the age of twenty-three years. He also served as a member of the New York Assembly and as Mayor of Albany in 1888 and 1889. Upon the expiration of his term as Mayor he was made president and general manager of the Albany Electric Illuminating Company.

In 1892 Mr. Maher became president of the Union Railway, New York City. When the Third Avenue Railway acquired the Union Railway's properties, Mr. Maher was retained as president and general manager of one of the subsidiary lines. He was appointed general manager of the Third Avenue Railway in 1908 and later was elected vice-president in addition. Three years ago he became president.

### A. L. Neereamer Dead

Secretary of Central Electric Railway Association Dies Suddenly Following Stroke of Apoplexy

Albert L. Neereamer, secretary-treasurer of the Central Electric Railway Association for the last twelve years, died at his home in the city of Indianapolis on Friday evening, Sept. 10, following a stroke of apoplexy. Mr. Neereamer had left his office shortly after 4 o'clock, and death came almost instantly while he was walking in his garden at the rear of his home.

Deep regret at the death of Mr. Neereamer was expressed by officials of the various electric railway systems operating out of Indianapolis. Robert I. Todd, president of the Indianapolis Street Railway and president of the Central Electric Railway Association, said:

In the death of Mr. Neereamer the inter-urban railways of the Middle West suffer a signal loss. Realizing the advantages of an organization which would unite and coordinate the mutual interests of the electric railways in the States of Indiana, Illinois, Ohio, Michigan, Kentucky and the northern part of West Virginia, the Central Electric Railway Association was organized some twelve years ago. Mr. Neereamer was elected secretary and treasurer soon after the association was organized and filled that position continuously up to the date of his death. His genial personality and splendid executive ability contributed largely to the building up of the association. At its inception twelve years ago the association included only a few electric lines with a very small membership, while at the present time there are sixty-six inter-urban railways with a total of 5,238 miles.

Mr. Neereamer also acted as chairman of the Central Traffic Association and helped materially in the compilation of joint passenger and freight tariffs, and the inauguration of the present interchangeable coupon mileage books.

He enjoyed the esteem and confidence of the officers and employees of the various electric railways, who keenly feel his loss. It might well be said of Mr. Neereamer that "none knew him but to love him, or named him but to praise."

To his work for the association Mr. Neereamer brought experience in steam railroad, accounting and traffic handling. Almost single-handedly he took care of all the mass of routine, correspondence and study which was represented but not seen in the finished product. It was his undaunted spirit and that of a few others which carried the association successfully through the early period of its establishment.

Mr. Neereamer was fifty-six years old. Previous to taking up residence in Indianapolis he was general superintendent and traffic manager of the Columbus, Delaware & Marion Railway. He started his railroad career as a machinist apprentice in the shops of the Hocking Valley Railroad at Columbus, Ohio. He was later an engineer on this road. Mr. Neereamer then spent about three years in civil engineering work, and later became connected with the auditing department of the Hocking Valley and traffic department of the Columbus, Sandusky & Hocking Railway.

Mr. Neereamer was very active in Masonic affairs. He was a member of the Scottish Rite, of the Mystic Shrine and of the local Shrine Gatling Gun Squad. Mr. Neereamer is survived by his wife and a brother.

# Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER,

SALESMAN AND PURCHASING AGENT

• ROLLING STOCK PURCHASES

BUSINESS ANNOUNCEMENTS

## Raw Material Retarding Production of Electric Heaters

Shipments of Porcelain and Steel Are Slow—Prices Firm at Present—Labor Conditions Improved

Orders for electric railway heaters this season have not been up to the standard of other years, manufacturers report. Foreign inquiries are increasing, but the number of actual orders from abroad is light. The buying of heater repair parts, on the other hand, has been fully as large as in past years and perhaps even somewhat in excess of other seasons. The financial condition of many traction companies has resulted in fewer additions than usual being made to rolling stock and as a consequence the buying of new heaters has suffered.

This circumstance has been more than counteracted, however, by unfavorable conditions of production which manufacturers have met in respect to raw material. In an article which appeared in the April 3, 1920, issue of *ELECTRIC RAILWAY JOURNAL* deliveries were said to be lengthening and attention was called to the need of railways ordering heaters during the spring for use in the coming winter. Shipments of hollow ware and porcelain at that time were difficult to obtain under six to eight months. Several railways which heeded these conditions and ordered during April report that they are congratulating themselves upon receiving shipments in good time. Manufacturers seem to think there are still many traction companies which have neglected to order needed repair parts and heaters for this winter's equipment. If companies whose needs are not so pressing but which are anticipating future requirements should also dump their orders upon the manufacturer this fall, considerable delay and congestion may be expected to result.

### CONDITIONS SLIGHTLY IMPROVED

Manufacturing conditions show some improvement over last spring. There is still much room for further betterment, however. The prices of raw material are now fairly steady compared with early summer, but are much higher than last year at this time. Porcelain plants are swamped with orders and the best shipments of this material that are promised range from three to four months, manufacturers report. Wire for resistance coils is reported in good shape as to shipments, but no reduction in price is expected for some time. Deliveries of steel are very slow, and the items that are used in heaters, such as sheets, clips, screws, fastenings, etc., are especially scarce. If

this class of material is purchased from local stocks to cover rush orders premium prices are demanded and the material is not uniform. Transportation is easing up compared with the situation last spring, but the improvement on shipments of goods used by heater manufacturers has not been commensurate with other material.

Labor is now in greater supply, and a better class of workmen is said to be

available. The production per man is also increasing. Prices of heaters are fairly firm at present and no fluctuation is apparently anticipated in the immediate future. Manufacturers state that in view of existing conditions traction companies should begin to take stock of their future needs for heaters and parts, with a view toward ordering their 1921 supplies by April for shipment next August or September.

## Car Shortage to Blame for Wood Pole Tieup

Deliveries Slow in Spite of Sizeable Stocks at Storage Yards and Producing Points—Prices Show an Upward Tendency

Little improvement is evident in the transportation situation as it affects the wood pole supply, according to representative producers, for shortage of cars is still the main difficulty in filling orders promptly. Demand is holding up as strongly as it has been for some months. In some quarters the effect of the higher rates accorded to steam railroads is felt in heavier orders from them, and still other producers, who have not felt the increased buying yet, are anticipating it. Traction companies are not ordering heavily at present, it is stated.

Here in the East there is a considerable shortage, but at the producing points in the West fairly good stocks have accumulated, awaiting cars to carry away the poles. One of the large companies also reports good stocks at its storage yards in the Middle West, but another states that its supplies there are broken. Deliveries can be made from these storage points in from 4 to 6 weeks it is stated, while shipments from the Far West in general require from two to three months to reach the Atlantic seaboard. One of the largest pole consumers is sending out personal tracers in an effort to facilitate the movement of cars of poles. The unfavorable weather conditions last winter, when the lack of snow in the West hindered the work of getting out poles, is one of the factors to blame for present conditions.

In spite of the accumulation of back orders and the slowness of deliveries few cancellations have apparently been made. Hope is held out that if transportation continues to improve, all shortage of cedar poles will vanish. Chestnut poles, however, which have heretofore been in good supply, are now becoming more scarce. One reason for this is said to be the increasing difficulty of finding chestnut trees that are free from blight. The demand for yellow pine poles is reported as less

than in other seasons. Stocks of these poles are rarely carried, and deliveries can be made in from two to four weeks.

Representative prices quoted on western red cedar poles, f.o.b. New York, are as follows: 30-ft. 7-in. top, \$11.30; 35-ft. 7-in. top, \$17.95; 40-ft. 7-in. top, \$18.45; and 35-ft. 8-in. top, \$18.95. Yellow pine poles, 30-ft. 7-in. top, can be bought for \$7.50, and 35-ft. 7-in. top, \$8.50. In one instance at least all prices on poles have recently been withdrawn, and higher prices seem to be generally expected as a result of the increased cost of transportation.

## Insulated Wire Manufacturers Optimistic

Demand Slightly Less Now, but Big Market Seen Abroad—Transportation Improving

Manufacturers of insulated wire are very optimistic about the future of the business. Although in many quarters the demand is said to have fallen off recently, a good volume of business is still under way. A big market is looked for abroad, too, and the demand there, which several producers say has been rather off, seems to be picking up.

Reports on production vary. Some producers are turning out material considerably in advance of their normal output due to the strong demand which has existed. Other factories have been affected adversely by transportation and labor difficulties. The supply of raw cotton and copper is plentiful, but in spite of that the supplies reaching wire mills have in many cases not been adequate because of delays in delivery. The outlook in this respect is regarded as encouraging as the transportation tension has materially lessened within the last six weeks.

Rubber-covered wire appears to be in better supply than weatherproof.



Deliveries from the factory cover a wide range among different companies, some of which are in a position to deliver rubber-covered in two to four weeks. Other manufacturers who have had back orders pile up quote as long as ten weeks on this material. Shipments of weatherproof wire are somewhat slower and range as long as fifteen weeks. Manufacturers' stocks in general are very low. A few producers report fair supplies that are badly broken, while only in one or two cases are good stocks in existence.

Labor conditions do not seem as favorable with insulated wire manufacturers as in other branches of the electrical industry. Several producers report either that labor is scarce or that they are having strikes; or else the complaint is against current high wages. One of the large companies recently reduced prices on both insulated and weatherproof wire varying in amount according to size, but averaging in the main about 5 per cent. Inquiries reveal no further price changes on the part of other manufacturers, however. The general feeling seems to be that no immediate fluctuation is in sight. One or two express the view that any change in price will probably be upward because the new freight rates are expected to advance the price of copper. Weatherproof wire is quoted on 27 cents base and rubber-covered on 29 cents base.

## Deliveries Improved on Pole Line Hardware

**Better Transportation Is Easing the Situation—Demand Is Strong and Orders Are Still Behind**

Although supplies of pole line hardware in general are still low, manufacturers are more hopeful regarding the situation because transportation has improved materially. Deliveries, which were running from three to five months only two months ago, are now being made in from eight to ten weeks, according to representative manufacturers. This improvement is primarily a result of the better transportation situation. Steel mills are turning out material in about the same volume as ever, but they are now able to ship the goods away much faster, and this is reflected in the improved deliveries that have been noted. Some producers of line hardware are still resorting to trucks to supplement freight shipments and this is also helping to relieve congestion, albeit increasing overhead expenses. Prices have thus far remained firm in spite of higher freight costs.

Demand is holding up as strongly as ever and a very active market is also reported from abroad. In fact, some manufacturers state that their foreign sales are even larger than their volume of domestic orders, and this of course has a direct bearing on the supply available for home consumption. Electric railways are still purchasing only for immediate needs. Stocks in gen-

eral remain very low and manufacturers have not caught up with their back orders. In an effort to accomplish this, however, producers in some quarters are discouraging new buying it is reported, until they have caught up on filling orders. One of the largest distributors in the East recently received a couple of carloads of material and turned the goods over almost immediately. Word has just arrived from Chicago territory to the effect that new price lists on line hardware have been issued there amounting to an advance of about 5 per cent. According to this report, local jobbers' prices in that district on galvanized pole steps,  $\frac{5}{8}$  in. x 9 in., are \$92.51 per 1,000 in quantities of from 500 to 1,500 and \$104.10 per 1,000 in lesser quantities. Galvanized machine bolts,  $\frac{5}{8}$  in. x 10 in., are \$13.99 per 100 in large quantities and \$15.74 per 100 in small lots. No advance was recorded on cross-arm braces.

## Rolling Stock

The Portsmouth (N. H.) Electric Railway states that it has purchased three large snow plows.

The Detroit (Mich.) United Railway is reported to have purchased fifteen safety cars on Sept. 15.

The Detroit (Mich.) Municipal Railway was expected to place an order for fifty safety cars on Sept. 18.

The Lincoln (Neb.) Traction Company announces that it expects to purchase one No. P-1021 McGuire-Cummings snow plow.

The Chicago (Ill.) Surface Lines have placed an order for ten safety cars with the J. G. Brill Company. It is reported that the order was placed on a thirty to forty days' delivery basis.

The Dallas (Tex.) Railway announces that delivery of four of the fifty new safety cars that have been ordered is expected about the middle of the month. All of the new cars will be in Dallas by Oct. 10, it is stated, and will be put in service at once.

The Pacific Electric Railway, Los Angeles, Cal., announces that eleven of the forty-nine new Birney type one-man safety cars recently ordered by the company as announced in the August 21 issue of ELECTRIC RAILWAY JOURNAL have arrived in Los Angeles and are to be promptly equipped and placed in service within thirty days from Sept. 9. The company does not intend to place any of the one-man cars on its city lines in Los Angeles. The eleven just received will be used to replace the heavier equipment now in use on the company's city lines in Long Beach. Twenty-one additional cars of the same type are now en route to Los Angeles and when received will be placed in local service in Pasadena and other smaller towns on the company's system. Twenty-five safety cars have already been in service for some time at outside points, and it was because

of the efficient and economical showing of these cars that the additional equipment of this type was purchased. Delivery of the thirty large interurban all-steel type of cars now on order is expected by November 1, 1920. It is anticipated that with the addition of this new equipment much of the older equipment can be overhauled, thus permitting of a very decided improvement in the service on all the company's lines.

## Track and Roadway

Alabama Power Company, Gadsden, Ala.—According to President T. W. Martin the Alabama Power Company will spend \$100,000 on improvements on the system of the Gadsden Street Railway.

Lincoln (Neb.) Traction Company.—The Lincoln Traction Company within the next few months expects to rebuild the line to the State Penitentiary which was removed recently on account of the grading and paving of the roadway.

Pacific Electric Railway, Los Angeles, Cal.—The inspection trip over the lines of the Pacific Electric Railway has resulted in the approval by the legislative body of the concrete macadam pavement laid by the railway along its Santa Ana tracks.

Jacksonville (Fla.) Traction Company.—A movement has been started by the City Commission of Jacksonville to have the street line which at present runs to Eighth and Talleyrand Avenues extend to the municipal docks. The extension would be only a little over a half mile. Commissioner Acosta suggested that the city construct the line and that the Jacksonville Traction Company should operate it. According to the city attorney the city's charter will not permit the building of an electric line, and the question will be submitted to the Council.

Trenton & Mercer County Traction Corporation, Trenton, N. J.—The Public Utility Commission has approved the application of the Trenton & Mercer County Traction Corporation, Trenton, N. J., for the conveyance of a right-of-way to the borough of Princeton. The board also approved an application by the same company for the conveyance of the land to Princeton University. The traction company has changed its trolley terminus at Princeton that the university authorities might have additional land for a boulevard. The university agreed to furnish the land, buildings and all of the material for the construction of the new terminus.

Allen Street Railway, Nazareth, Pa.—The Allen Street Railway has just finished the erection of a steel trestle over a railroad crossing. This trestle replaces a wooden structure. The trestle was fabricated and erected by the Bethlehem Fabricators, Inc., and it was designed by R. T. Peppell.

**Dallas-Wichita Falls Interurban Railway, Dallas, Tex.**—The recent extension of the time within which to complete financial details of the building of the Dallas-Wichita Falls interurban line insures completion of the project, according to a telegram received by Wiley Blair of Dallas, Tex., chairman of the local interurban committee, from George Bishop of Cleveland, Ohio, who guaranteed to sell \$5,000,000 of first mortgage bonds of the company. Mr. Bishop has sold \$3,500,000 of the \$5,000,000 issue, and has until Dec. 1, under the terms of the extension, in which to dispose of the remaining \$1,500,000. Actual construction then must begin by March 1, 1921.

**Dallas (Tex.) Railway.**—The Dallas (Tex.) Railway will soon be asked by the City Commission to construct a new cross-town line, according to Hal Moseley, Commissioner of Streets. The proposed cross-town line will be operated in connection with the Masten Street extension now in course of construction, and will afford a means of re-routing cars that come into the business district from North Dallas and continue to South Dallas under the present plan of cross-town operation. These cars now make a loop of the business district before going to South Dallas, and under the plan now being worked out by Mr. Moseley, this downtown loop would be eliminated, effecting a saving of many car-miles for the traction company. While Richard Meriwether, vice-president and general manager of the railway, has not disclosed his plans, it is understood he contemplates the construction of a line on St. Paul from the Masten Street line to Commerce, thus affording a means of routing South Dallas cars out of Harwood Street.

### Power Houses, Shops and Buildings

**Lincoln (Neb.) Traction Company.**—The Lincoln Traction Company is considering the purchase of new additional boilers for the power station and also coal-handling equipment.

**Monongahela Valley Traction Company, Morgantown, W. Va.**—The Monongahela Valley Traction Company has installed three new transformers at a cost of more than \$10,000 at the Morgantown, W. Va., substation. Rights-of-way are being secured by the traction company for a new power line extension to Richard, W. Va., where a substation will be established.

**Southern Pacific Company, Portland, Ore.**—Plans have been approved for the new passenger station for the electric lines of the Southern Pacific Company at Portland. The new station will occupy the site of the old Lyric Theatre at Fourth and Stark Streets. The ground area is 50 ft. x 100 ft., and the arrangement will make it attractive in an architectural way, with ample room for the accommodation of traffic.

### Trade Notes

**Meters.**—The Economy Electric Devices Company, Chicago, Ill., is distributing information in the form of a letter with enclosures, showing the work of its Economy Power Saving Meters in conserving current on electric cars.

**Farrell-Cheek Steel Foundry Company, Sandusky, Ohio,** manufacturer of small steel castings, announces that Julius Jones has been appointed its sales representative for the Cleveland district. Mr. Jones was formerly president of the Standard Steel Castings Company, Cleveland, Ohio.

The National Association of Purchasing Agents will hold its annual convention at Chicago on Oct. 11, 12 and 13. Business sessions will be held on each of these dates. Some of the speakers on the program are: Russell A. Pettengill, of the Russell A. Pettengill Company, Chicago; Professor Irving Fisher of Yale University, and Dr. F. W. Russe of Mallinckrodt Chemical Works, St. Louis, Mo. The members of the association now number 3,500.

**The Economy Fuse & Manufacturing Company, Chicago, Ill.,** announce that S. W. Fries has been appointed district sales manager for Kansas City territory, with offices at 1205 Commerce Building, Kansas City, Mo. Mr. Fries succeeds R. P. Crawley, who has resigned to take over the active management of the Crawley Electric Company of Peoria, Ill. Mr. Fries has had a long and wide acquaintance with the electrical field. He has been with Economy Fuse & Manufacturing Company for a number of years.

**Fred W. Venton** of the Railroad Sales Department of Crane Company, Chicago, was elected president of the Air Brake Appliance Association for the ensuing year, at the twenty-seventh annual convention of the Air Brake Association, recently held in conjunction with the Air Brake Appliance Association. Mr. Venton was formerly secretary of the association, which is composed of manufacturers throughout this country and Canada. He remains as secretary of the Railway Equipment Manufacturers' Association.

The Super Refined Metals Company of Detroit, Mich., will exhibit at its space, Booth No. 7, Association of Iron & Steel Electrical Engineers' Convention, Pennsylvania Hotel Roof, New York City, Sept. 20 to 23, inclusive, an automobile motor mounted on Kelly metal bearings. This motor will be run continuously without lubrication for five days. The Kelly process for super-refining and alloying non-ferrous metals has been perfected to such a degree that a uniform amalgamation is obtained. It is particularly suitable for use on electric railway car journals and many roads have used it with good results. The exhibit and demonstration should be interesting to railway men.

**Ackley Brake and Supply Corporation, 50 Church Street, New York, N. Y.,**

has appointed Walter H. Evans, McCormack Building, Chicago, Ill., as general Western agent for the sale of Ackley brakes and G. & B. mineral oil paint in the territory covered by Illinois, Michigan, Wisconsin, Minnesota, part of Indiana and the city of Toledo, Ohio. Mr. Evans was connected for a number of years with the Baltimore & Ohio Railroad. He first entered electric railway work with the Twin City Rapid Transit Company at Minneapolis, Minn. He became connected with the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., and later became superintendent of motor power of the Indiana Union Traction Company, Anderson, Ind. He was formerly master mechanic of the International Railway, Buffalo, N. Y., and at one time was master mechanic of the Indianapolis Traction & Terminal Company, Indianapolis, Ind. In 1911 he resigned as superintendent of motor power of the Indiana Union Traction Company to accept the position of manager of one of the departments of the Edgar Allen American Manganese Steel Company, Chicago, Ill. Recently Mr. Evans entered, and still is in the railway supply field, with headquarters at Chicago, Ill.

### New Advertising Literature

**Signal Bells.**—Nachod Signal Company, Inc., Louisville, Ky., has issued catalog No. 720, which is a 14-page illustrated bulletin on highway crossing bells.

**Culverts.**—The Canton Culvert & Silo Company, Canton, Ohio, has issued a new catalog, No. 3, covering its "Acme" (Nestor) corrugated metal culverts and other products.

**Insulators.**—The Jeffrey-Dewitt Insulator Company, Huntington, W. Va., is distributing catalog No. 3, entitled "Rugged Insulators," covering different types of its disk insulators, etc.

**Flooring Material.**—Armstrong Cork & Insulation Company, Pittsburgh, Pa., is distributing new bulletins on "Linoleum Floors" and "Armstrong's Cork Tile," copies of which may be had upon request.

**Rail Bonds.**—General Electric Company, Schenectady, N. Y., has issued bulletin No. 44002-A, superseding bulletin No. 44002. Bonding tools and numerous forms of bonds covering wide variations in rails and joint plates are described.

**Steam Data.**—The Locomotive Superheater Company, New York City, through its industrial department, has issued a "Data Book for Engineers." This is a book with flexible covers containing sixty-four pages of data of every-day interest to the steam plant engineer; besides an abbreviated steam table it contains a table of the various coals of the United States arranged by states and giving an approximate analysis.