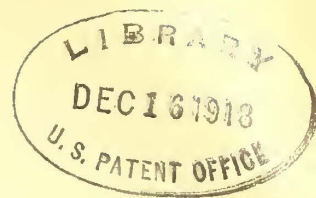


Electric Railway Journal



Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

Volume 52

New York, Saturday, December 14, 1918

Number 24

Don't Stop On the Skip Stop

THE skip stop, one of the great benefits produced by the war, seems threatened in many places. We told in last week's issue of the systematic plan of public education on the merits of skipping stops being conducted in Philadelphia because of some objections raised. Similar opposition to the skip stop has been reported this past week in Atlanta, Ga.; Alton, Quincy and Peoria, Ill.; Knoxville, Tenn.; Minneapolis, Minn.; Springfield and Joplin, Mo., and other places. The claim is being made in those cities that now the war is over there is no need to save coal; hence the skip stop might just as well be discontinued. But this claim disregards every advantage of the skip stop except that of saving fuel. Actually, that is one of the least of the advantages. The main benefit is that there is increase in schedule speed without any increase in maximum speed and real rapid transit is given. In fact, skip stops were in use in a number of cities, notably Cleveland, long before there was any call for saving coal because of the war. There are always some who prefer old methods to new, simply because they are old, and the history of every reform is that it encounters opposition. We do not believe that any city which has given the skip stop a fair trial would go back to the old "stop-at-every-corner" plan if a census could be taken of all users. But in every city where the plan is followed there will always be some who will be offended because the cars do not stop at their corner, irrespective of the effect on the service if every corner is made a stopping place. In consequence some complaint must be expected. It is necessary to show the public that good service is possible only when the interests of all are broadly considered. A comparison of the distances between stopping points on different systems shows that popular acceptance of these distances is largely a matter of education. Now is the time to establish them on a scientific basis.

Automatic Substation Making Progress Step by Step

THE automatic substation is one of the few elements of the electric railway power system which is at present in a condition of rapid development. While the war has put the quietus on construction for the moment, the effect is only transitory because the forces which acted to bring the "automatic" into existence a few years ago are now more potent than ever. We refer primarily to labor scarcity and consequent high price. Even now, in spite of adverse circumstances, a great deal is being done to perfect and extend the scope of this useful device. One of the latest to be completed is the Rhode Island Company's substation at Oakland. It is the most ambitious one yet, in that it contains two units, either of which can take the bulk of the load, the other taking the fluctuations. Moreover, the design of this station is the result of an attempt to standardize automatic substation units generally for this property. In other words, it is part of a comprehensive power distribution scheme for the whole system. For this reason a leading place is given in this issue to an article on the Oakland plant by Walter C. Slade, superintendent of power and lines of the company. This article, like an earlier one by the same

RESOLUTION

on Public Utilities adopted at the Conference of the United States Chamber of Commerce War Service Committees at Atlantic City last week

Public utilities have faced difficult problems, which have been accentuated by conditions arising out of war. The development and efficiency of such a utility as local transportation has immediate importance for every community. It is recommended that the Chamber of Commerce of the United States should appoint a committee to investigate and study the question of local transportation as it relates to the control of rates and service, franchises, taxes, the attraction of capital into the business, and such other questions, as the committee may find pertinent. Such a committee should report its recommendations to the board of directors of the National Chamber, and the board should deal with them in accordance with the established procedure of the Chamber.

This resolution was suggested by the Committee on Readjustment of the American Electric Railway Association.

writer, is the outgrowth of a lecture delivered last spring before the Rhode Island Company section of the American Electric Railway Association. Mr. Slade then attempted to make the general scheme clear to the laymen present, and also to get them to visualize the operation of the several relays, switches, controllers, etc., which go to make up the control equipment. The plan followed in the lecture has been carried farther in the present article, and particular attention is directed to the way in which the important parts of the control have been photographed and labelled so as to make the wiring diagram more intelligible.

Neither Mr. Slade nor anyone else can make the auto-

matic substation diagram so simple that it can be comprehended without a mental effort. He has, however, provided the means for minimizing this effort.

More Common Sense Needed in Buffalo

THE first default in bond interest directly due to an award of the National War Labor Board is reported from Buffalo, where the International Railway Company recently was compelled to pass its November installment. Thus the people of Buffalo have brought home to them a serious development of the fare situation, which may be traced to their unfavorable vote on the proposed rate increase in the referendum held some time ago.

Buffalo is not very different from any other large city, and the outcome there is alarming because it points to what one may look for in scores of other places. The International Railway Company was in need of more revenue before the War Labor Board added to its difficulties. Wages had to be advanced under that award, and when the people were asked to sanction a fare increase which had been approved by the City Council they refused to do so. Other remedies were then discussed, but according to the latest reports it will be many months before proper relief can be given.

Meanwhile one does not have to look far to see prospects of a receivership, with a heavy loss to investors and a period of inefficient service. The great need in Buffalo, as in many other places, seems to be for more common sense and less politics. The sooner the American people consider the utility problem without prejudice, the more quickly will conditions be adjusted in their real interest as well as in behalf of the long-suffering companies.

Poor Local Transportation Bad Advertisement for Any City

A GREAT deal has been said in the past by boomers for Buffalo about its advantages as a site for large manufacturing and distributing establishments. The advantages claimed have been that the city has cheap power and also excellent lake and rail transportation facilities. Both of these are good in their way, but there is another factor which those who contemplate the erection of a large industrial plant in a city are also sure to consider most carefully, especially where the industry which they propose to conduct is on the outskirts of the city. This is the quality of the local transportation facilities. If these are poor and workmen lose time in getting to or from their work, it is a factor which may settle the question of the erection of a plant in any particular city.

There is another way in which the financial condition of the local electric railway has a direct bearing upon the manufacturing prosperity of any city. The cars of the local traction property are the most conspicuous objects on its streets. If they are well painted and look up to date with the track and overhead system well maintained, they give an air of prosperity to a town as well as an evidence of broadminded treatment of invested capital there which nothing else will do. But if the contrary is the case, especially if the railway is known to be in bad condition because the citizens op-

posed a reasonable increase in fare, an unfavorable opinion of the town is apt to be raised. The needs of the electric railway for more liberal treatment have now been so widely heralded and so many cities have granted increases that failure so to act in the case of any city is noticeable. It is true that many railway companies have not all of the increase in fare which they need, but those communities which are showing a willingness to cooperate with the public utilities in working out their problems are certainly establishing a reputation for broad-mindedness and liberality when compared with those which take the opposite course.

Commissions Should Tell the Public Its Responsibility

VARIOUS commissioners in these days are speaking of a maximum price which the public will pay for electric railway service. This is a general observation which might be seriously misinterpreted by the public unless, properly amplified.

The maximum fare which the public should be willing to pay—and the minimum fare which the railway should receive—is that one which through the combination of all rate-making factors is decided by the commission to be reasonable. Presumably what the commissioners intend to bring out by their references to the maximum price which the public is willing to pay is the fact that as fares are increased electric railway travel is reduced on account of more pedestrian travel, greater use of other vehicles and even a larger amount of staying at home. But what the car riders might infer is that the commissioners, in noting the reduction in travel, are thereby indorsing the idea, which many people have, that if enough of them think that a former fare is adequate, it should remain unchanged.

It would help greatly if the commissions should try to inhibit such a thought in the public mind by repeatedly giving voice to the facts, just as the War Labor Board has done in its wage decisions, that the cost of electric railway operation has greatly increased during the past few years and that it must be paid either through fares or through fares and taxes, if the service is to be maintained, and finally that if too many people stop riding at the increased fare, the enterprise will have to be abandoned altogether.

For such a publicity platform we commend for consideration the following paragraphs which the War Labor Board saw fit to use in connection with the recent Charleston (S. C.) and Lewiston, Augusta & Waterville cases respectively:

If the public desires to retain its electric railways to a reasonable degree of efficiency, it must expect to pay more for the service rendered.

We desire to point out to the riding public the absolute necessity of continuing the patronage of the past, if the company is to continue to give any service upon its lines. A public service corporation must be supported by the public, and if that support is withdrawn the company must of necessity either cut down its service radically or else cease its operations altogether.

The public, we believe, is willing to pay for what it gets when it knows that the price is fair. The work of education, however, will be handicapped if the public gets into its head the notion that any particular fare marks the limit of reasonableness in all cases.

More Attention Should Be Concentrated on Ballasting of Track

THE subject of ballast has been receiving a great deal of attention of late on the part of steam railroad engineers in connection with their efforts to make the tracks withstand the increasing loads. The Pennsylvania Railroad engineers, together with the committee on roadway and the committee on stresses in track of the American Railway Engineering Association, have conducted investigations of the subject which have developed a vast amount of authoritative information. They had to start from the beginning and develop methods and apparatus for tests, while many special pieces of track were constructed and the performance thereof carefully noted.

Intimately related to that of the ballast is the question of the bearing power of soils in the roadbed upon which the ballast rests. It is but a short time since a national classification and nomenclature of soils was presented by the United States Department of Agriculture in Bulletin No. 84. Meanwhile very few data have been available as to their bearing power under the conditions imposed in roadbed service where the question involved is in relation to action of soils immediately at or slightly below the surface, especially when alternately wet and dry. Once the bearing power of soils of various classes is determined for these conditions, there still remains the question of the relative ability of the various materials used for ballast, to transmit the loads to the soils. In addition to this there is the question of size and spacing of ties in relation to their ability to transmit the loads to the ballast. The action of rails as beams and the influence of the loads themselves upon all these variables are other points which must be taken into consideration.

Ballast has to some extent been considered a rather expensive luxury, a sort of necessary evil as it were, but the more the matter is studied the more definite becomes the conviction that, on the other hand, the lack of a sufficient quantity and quality of ballast is a much more expensive evil. In fact, within reason, it is becoming almost axiomatic that the greater the depth of the ballast, the less the cost of maintenance of track will be. It will be seen, therefore, that the forthcoming report of the committee on stresses in track is eagerly awaited by those who are interested in track construction, as it is expected that considerable valuable data will come to hand.

The early electric railways gave very little thought to the subject, and generally failed to benefit from the experience of their steam road brethren. As these roads increased in importance, however, they commenced to take pattern after them, and we now have plenty of evidence that the electric railway roadbed and ballast sections are tending to equal those of the steam roads. In 1916, the way committee of the American Electric Railway Engineering Association presented a report on ballast, wherein conclusions were given which called for a minimum depth of 8 in. under the ties for crushed stone or washed gravel ballast for main-line tracks and a minimum of 12 in. for bank run gravel and cinders. It is thought that these depths are none too great and that perhaps it may soon be advisable to consider whether they should be increased. Meanwhile, the committee did not present any conclusions in regard to road-

bed sections, which are really quite as important as ballast depths. It is suggested that the committee on subjects should assign the subject of roadbed sections to the way committee for early consideration.

Mr. Walsh on the Future of Wages

THE Hon. Frank P. Walsh, recently joint chairman of the National War Labor Board, is entitled to his opinion—expressed a few days ago in a public statement—that labor must not be expected to return to the pre-war basis of wages and working hours. Neither should anyone object to his right to predict that there will be no return to the pre-war level of costs of necessities within five years at least.

As labor's representative in the joint chairmanship of this important board, Mr. Walsh might have been expected to speak for the maintenance of high wages for the working man. Employers with the proper public spirit undoubtedly will be glad to indorse this sentiment, with the proviso that means are at hand to make possible the continuance of a high standard of living for the laborer. But no industry, perhaps, will be so handicapped as the electric railways in meeting the standard of 72½ cents an hour, based on an eight hour day, which Mr. Walsh believes to be a satisfactory wage minimum.

Mr. Walsh was speaking of general industry, not of electric railway conditions. If he had had the latter in mind he would have modified his reference to the eight-hour day because of the fact recognized in Mr. Walsh's own electric railway decisions that no one has yet been able to devise operating schedules in which an eight-hour shift can be utilized economically to meet the peak-load requirements. Therefore, desirable as an eight-hour working day may be in other industries from a humanitarian standpoint, it cannot be generally adopted by these public utilities without adding a prohibitive burden to the cost of hauling passengers.

Assuming, then, that organized labor might be satisfied with a ten-hour day at 58 cents an hour to give the equivalent of 72½ cents for eight hours, the question arises as to how the average electric railway could pay even such a wage. In the past few years this item of operating expense has increased for the average company from 26 to 40 per cent of the transportation revenue.

This of course applies to the companies which have not been allowed to increase their revenues by the collection of higher fares. In a lesser degree it will apply to many of the companies which have been so favored. Therefore, unless the public authorities take some action looking toward higher receipts or lower expenses it will not be practicable to continue paying wages even at the maximum of 48 cents an hour which the War Labor Board has established during recent months for many of the larger utility companies' platform men.

Mr. Walsh may be right in his prediction of continued high wages and high cost of necessities, but both of these matters will be settled in the end by the law of supply and demand. Labor will have the satisfaction, however, of knowing that the same economic factors which would tend to reduce wages would tend to reduce also the cost of living, so that the relation between the two will be largely unchanged.

A Two-Unit Automatic Substation

The Rhode Island Company's Substation at Oakland Illustrates the Latest Practice in This Important Field—Author Goes Into Economics of Automatic Substation Application

BY WALTER C. SLADE

Superintendent of Power and Lines The Rhode Island Company,
Providence, R. I.

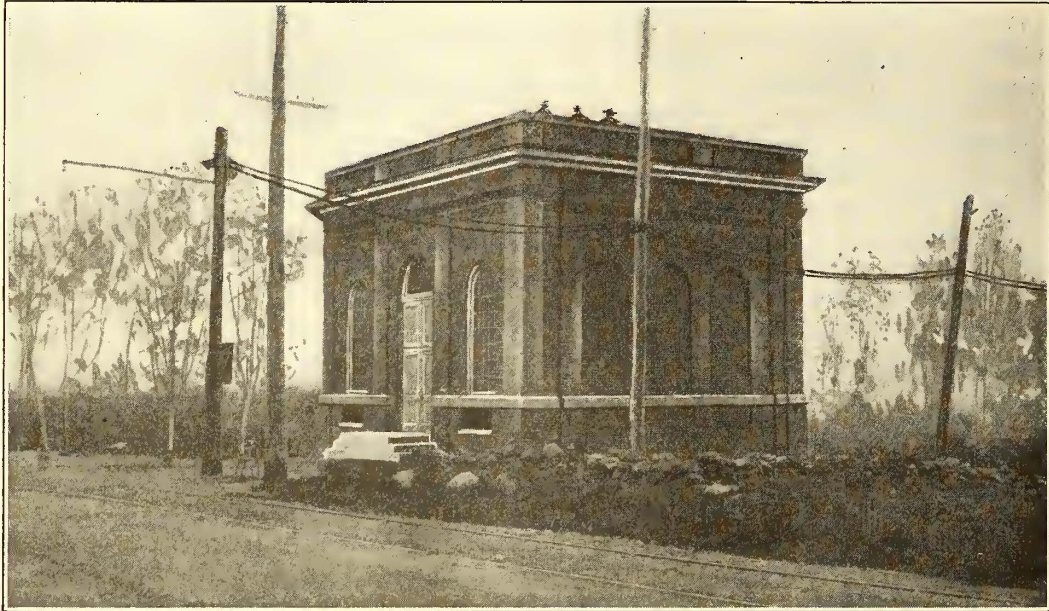


FIG. 1—TYPE OF AUTOMATIC SUBSTATION BUILDINGS—HARMONY SUBSTATION

THIS article describes recent developments in the automatic control of railway substation equipment on the system of The Rhode Island Company, and is devoted mainly to an account of the first two-unit rotary converter automatic station wherein two machines are arranged to run singly or in parallel as required by load conditions. This two-unit station, at Oakland, R. I., employs one of the two systems of automatic control mentioned in an article in the *ELECTRIC RAILWAY JOURNAL* of Oct. 12, 1918.

LOCATION OF THE TWO AUTOMATIC SUBSTATIONS IN THE GENERAL DISTRIBUTION SYSTEM

Thus far two automatic substations have been built and put into operation on this property. One is located at Harmony on the Chepachet line and is supplied with 60-cycle energy at 11,000 volts, purchased from the Narragansett Electric Lighting Company. This suburban line was formerly fed from a booster circuit supplied from the Olneyville substation of The Rhode Island Company.

Due to the distance of the site of the Harmony automatic station from the Olneyville substation, and further due to the small capacity required, it was determined that the fixed and maintenance charges on an extension of the 25-cycle transmission system to Harmony were so great that 60-cycle energy could be purchased at Harmony from the central station more

cheaply than could the 25-cycle energy be delivered at the same point. The station would have been the only load on the 25-cycle extension and it is but part of the load on the 60-cycle circuit. The central station power was cheaper even though the rate was based on a service charge plus an energy charge, a condition which counteracted in part any saving in power bills, although there was an actual saving in energy possible, due to automatic shutdowns.

The substation building is identical with the two-unit building at Oakland, the second automatic substation referred to, but contains only one 300-kw., 600-volt d.c. rotary converter at present. The booster is still retained and can be substituted at any time for the substation, although to the detriment of service on the road as the end of the line is nearly 16 miles distant.

The Oakland station is on the suburban line to Pascoag, which extends westerly about 14.4 miles from Woonsocket. The substation is 4.25 miles from the end of the line by the feeder circuit (5.4 miles by the track) and 4.75 miles from Slatersville, which is near the neutral point between the substation and Woonsocket power supplies. The road has many curves and grades, and some sharp curves on grades. A booster in the Woonsocket power station of the Blackstone Valley Gas & Electric Company formerly supplied energy for the road, and an excessive quantity of feeder copper was used between Oakland and Woonsocket. Now energy

is purchased at the switchboard in Woonsocket (in accordance with the terms of an old contract) and is transmitted at 25 cycles and 13,200 volts over transmission wire installed and owned by The Rhode Island Company.

The building contains two 300-kw., 600-volt d.c. rotary converters. One machine is required practically continuously during an eighteen-hour day, but the other machine is called upon to operate only at the morning and evening peaks for short periods. However on Saturday afternoons and Sundays, when the riding from the mill towns through which the road passes is much heavier, both machines operate for long periods continuously. A compromise was necessary in selecting the capacities of the machines. One machine serves as a stand-by at least 75 per cent of the time and, with certain modifications in schedule, the road could be kept in operation all of the time should any accident occur to one of the units. At the same time the average efficiency of the rotary converter is greater than the efficiency of a somewhat larger machine would have been.

The locations of the Oakland and Harmony automatic substations, with reference to the various suburban lines and their sources of energy supply in northern Rhode Island, are shown in detail on the accompanying map. Possible locations of additional automatic substations are also indicated. When market conditions are favorable for further developments, it has been considered possible that the city of Pawtucket, shown on the map, which is now served by a 3000-kw. manually operated substation, may be served to greater advantage by several automatic substations. Also at a later date the construction of an automatic substation in the city of Woonsocket would work in with the general scheme.

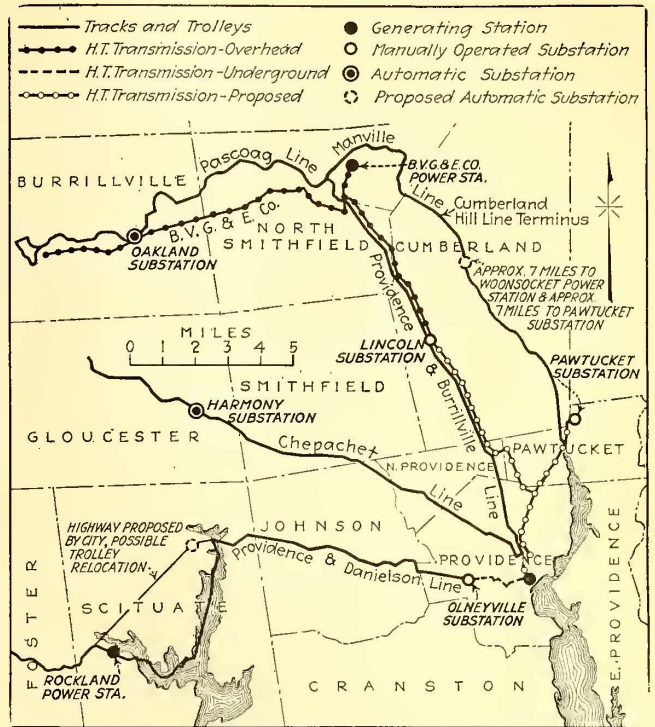


FIG. 2—MAP SHOWING SUBURBAN TROLLEY ROADS AND POWER SUPPLY IN NORTHERN RHODE ISLAND

Within a few years it will be necessary to dismantle the Rockland power station which serves the Providence and Danielson trolley line. This will be done when the new reservoir of the Providence water supply, which is outlined on the map and which will inundate a considerable portion of the trolley road, requiring its relocation, has been completed. If this road is then served by one or two automatic substations, a single

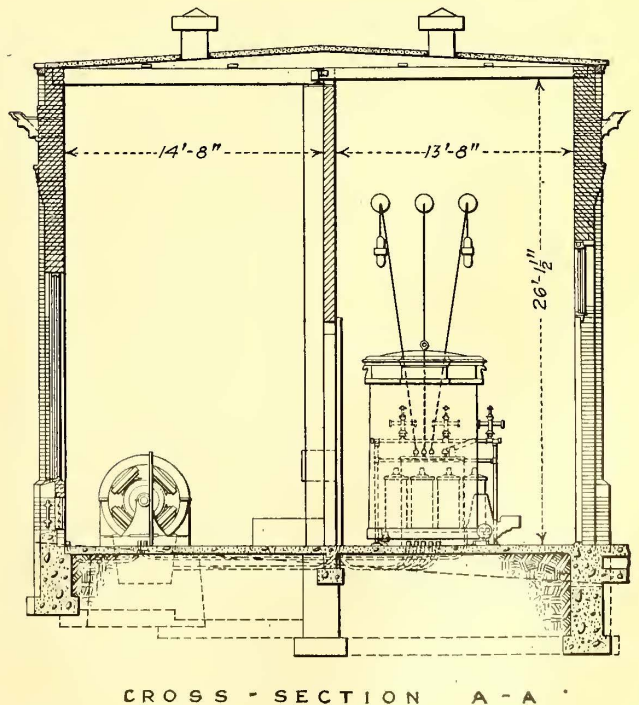
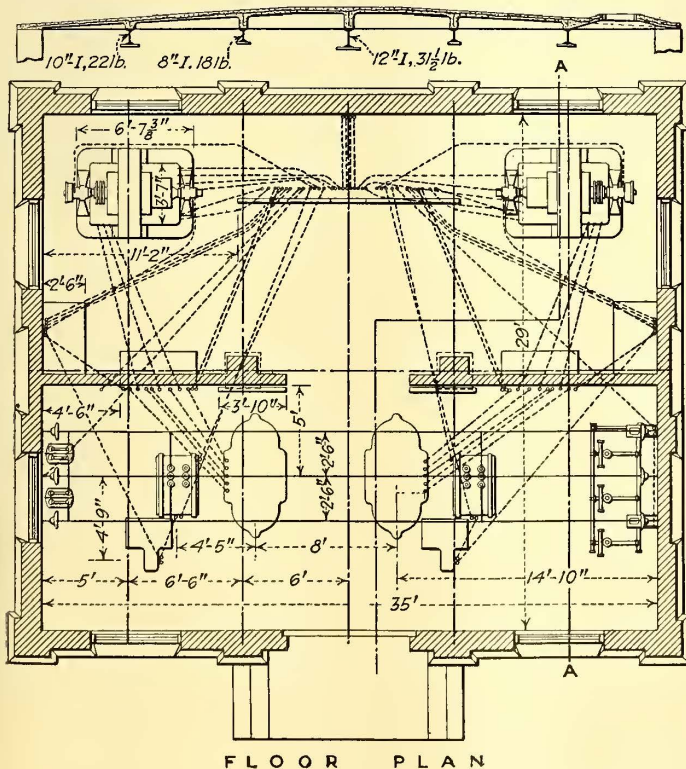


FIG. 3—PLAN AND CROSS-SECTION OF BUILDING—OAKLAND SUBSTATION

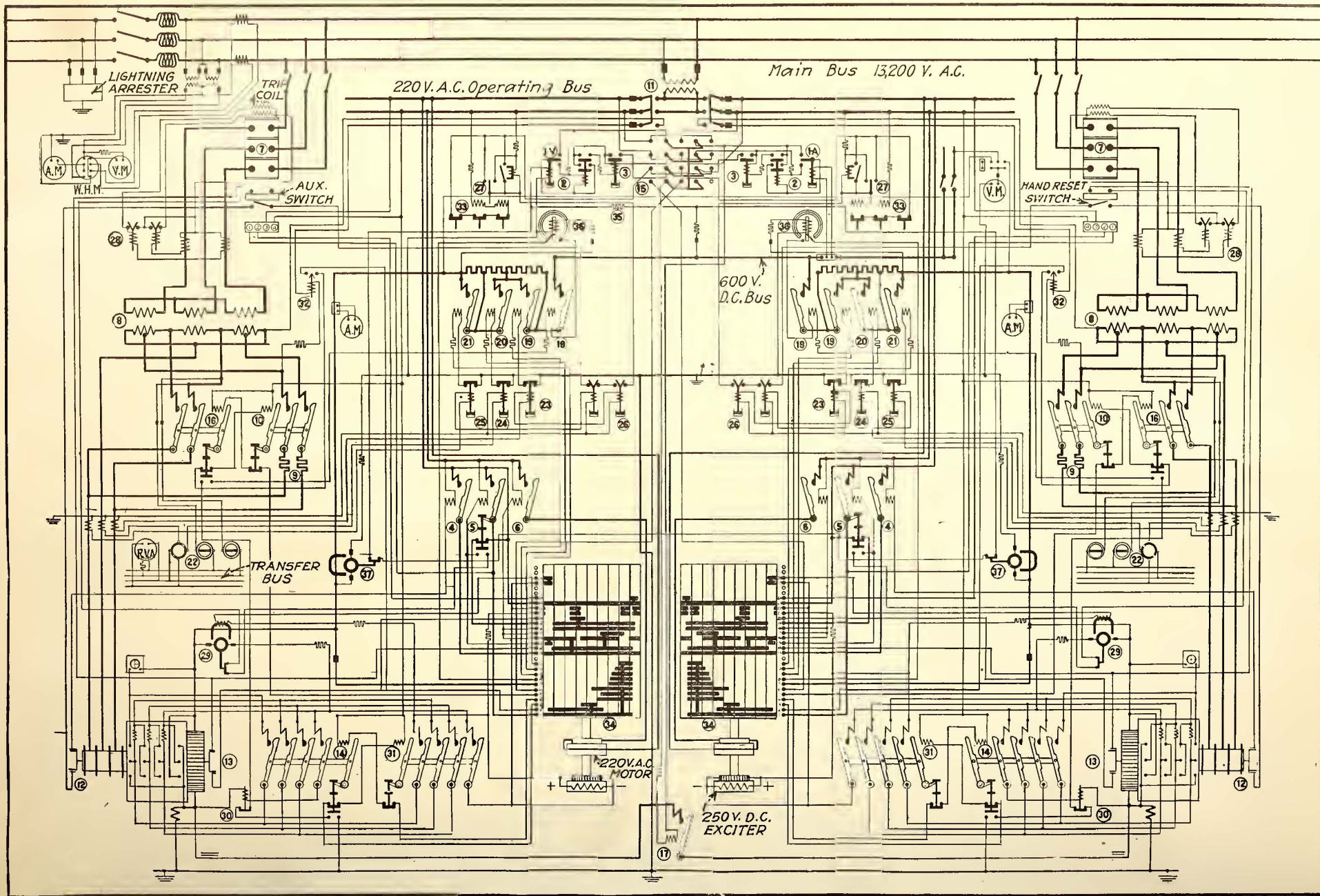


FIG. 4—WIRING DIAGRAM FOR OAKLAND SUBSTATION

inspector in caring for these stations with time for other duties, will be able to replace seven men now employed at the power station.

WHY AUTOMATIC CONTROL WAS ADOPTED FOR OAKLAND AND HARMONY

The Oakland and Harmony substations had to be built to meet the demands of increased and adequate transportation service. The construction of the former allowed about 186,000 lb. of copper in the form of feeder wire to be removed. Nearly 20 miles of insulated 500,000-circ.mil wire in excellent condition became available, and already a part of this has been sold for use elsewhere at a price much above the scrap value. Judging from sales already made, including sales of wire for scrap only, it now appears that a net credit, depending on the market conditions, of from \$42,000 to \$48,000 should be realized. No wire was removed on the Harmony line. However, when the booster is not used, about 5 miles of 500,000-circ.-mil feeder is now available for increasing the capacity of the distribution to a section where the voltage was low at times.

Automatic control was adopted mainly because of assured saving in operating labor. Incidentally a small amount of saving in the power bill for the Harmony station was possible. The fact that the two substation

sites are only $9\frac{1}{2}$ miles apart by State highway ($5\frac{1}{2}$ miles by air line) made it possible to treat the apparently independent developments as a single one in regard to inspection, labor and maintenance expense. Each station stands in an isolated position with relation to both Providence and Woonsocket. Taken together, the inspection required by the three equipments is sufficient to justify keeping an inspector in the vicinity of the stations continuously. As the equipments in the group are relatively close together, the inspector could take care of an additional station if not too distant. He is provided with a Ford automobile for traveling between the two stations for his daily inspection duties.

The original estimates indicated that an annual saving in labor of inspection expense over the labor of substation operators required for manual operation would have been slightly over \$3,000. This saving was, of course, to be offset materially by the fixed charges on and the cost of operating and maintaining the automobile; also it was decreased by the fixed charges and the cost of maintaining that part of the equipment in the two stations additional to the equipment that would have been required for purely manually operated stations. The automobile cost was taken at \$600 annually, and \$1,800 was assumed for fixed charges and maintenance of the purely automatic part of the equipments.

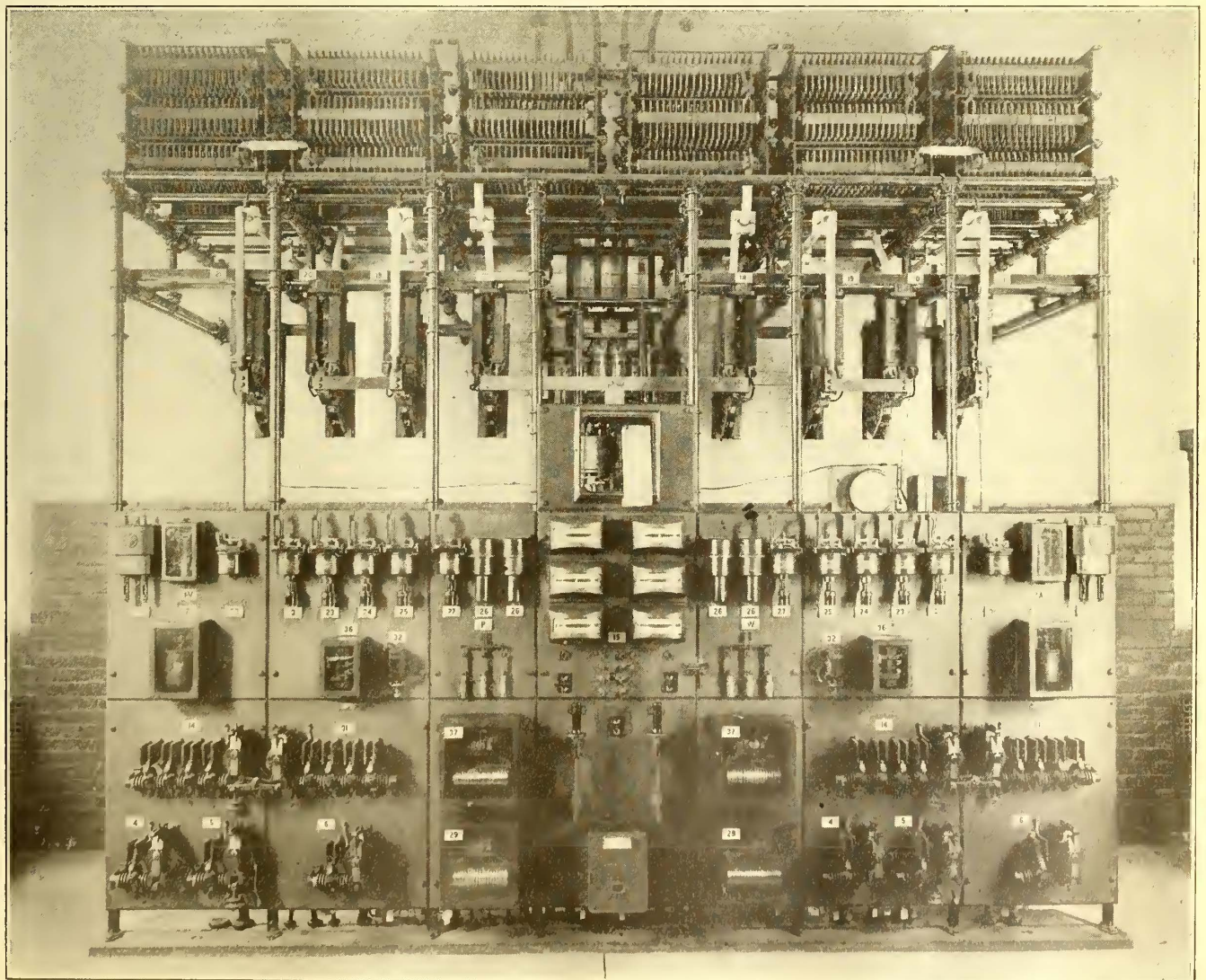


FIG. 5—SWITCHBOARD FOR TWO UNITS IN OAKLAND SUBSTATION

The total of these costs, \$2,400, would allow at least a net saving of \$600 per year through the automatic operation of the two stations. As it turned out, however, considerably increased wages are being paid substation operators at present on the basis of an award by the National War Labor Board. The inspector now receives \$35.70 per week. The payroll for the operators required for manual operation would have called for a total expenditure of about \$117.70 per week. Two operators at Oakland and one at Harmony would have been required. The saving in labor alone at present is therefore estimated at about \$4,264 per year, and the net saving is correspondingly increased to roughly \$1,800 per year.

The figures given do not, as stated, include \$200 or \$300 of expense that will be saved in power through automatic operation of the Harmony substation. At present the Harmony line is being operated on a two-hour schedule part of the day, which was not previously anticipated and which is accordingly being taken advantage of. Thus the total shutdown time will equal 35 to 40 per cent of the time that the station would have been in service if manually operated. As the two stations have been in operation only for a few months, it is at present impossible to check estimates previously made with definite results obtained at this time.

CONSTRUCTION COSTS FOR THE DEVELOPMENT DESCRIBED

Both automatic substations were built at the same time. An approximate separation of the total capital expenditure of \$74,100 is made herewith, with particular reference to the Oakland substation. As previously mentioned, a credit of as much as \$48,000 may be realized through the sale of copper wire that has been removed from the Pascoag line. Further, a credit of possibly \$2,500 may be realized through the sale of the equipment purchased for a temporary substation at Oakland that was constructed for manual operation during the period of construction of the automatic station. These credits will reduce the total capital expenditure to a net estimated figure of \$23,600. The data are given in Table I.

The expenditures for temporary manual operation were required because of uncertain deliveries on the new equipment caused by the war. It is interesting to note that the credit on the Oakland substation will be sufficient to pay for the construction of both substation and transmission line.

SPECIAL FEATURES OF CONSTRUCTION IN THE AUTOMATIC SUBSTATION BUILDINGS

It was considered advisable to standardize as far as possible upon a type of substation building for automatic operation. Accordingly a building was constructed of a type adapted entirely to housing the substation equipment, with no provisions for the comfort of an operator, such as a heating plant, toilet facilities, additional floor space, etc. It was considered further that it would be advisable to provide for a two-unit building so that it would be possible, as was done at Oakland, to install a machine of a capacity sufficient to handle, without much overload, all of the service except at brief peak loads.

It appears to the writer that as a rule it is wise to

plan buildings for housing automatic substation equipment of sufficient size to accommodate two units of equal capacity although the initial installation would call for but a single unit. The building required for a single unit need cost but little as compared with the buildings formerly built for manually operated stations, and the provision at the time of construction of sufficient building space to accommodate a second unit would be inconsiderable in view of the ease with which the power supply could be increased at later date if necessary. Few installations in urban service would not be subject to growth, and doubtless the majority of installations on interurban lines would in time require increased capacity. This point of view is based upon a broad generalization and circumstances would always indicate the actual requirements.

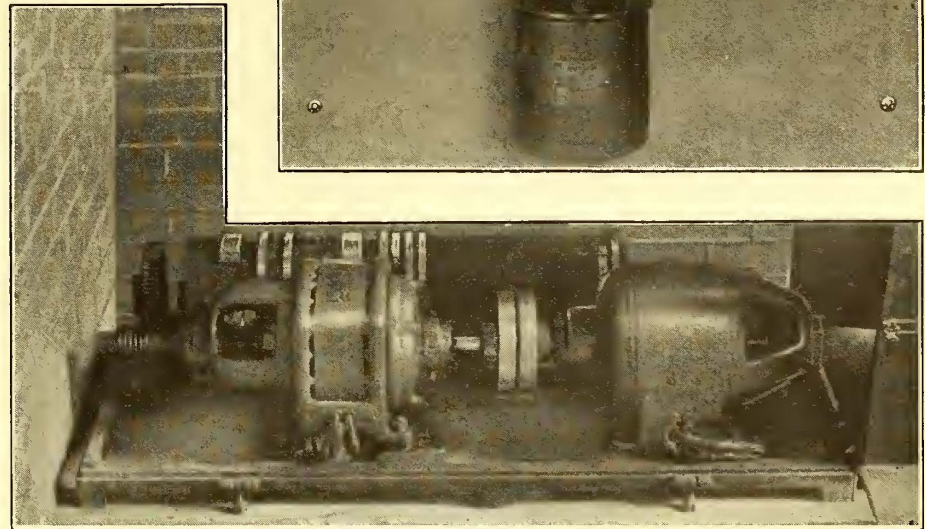
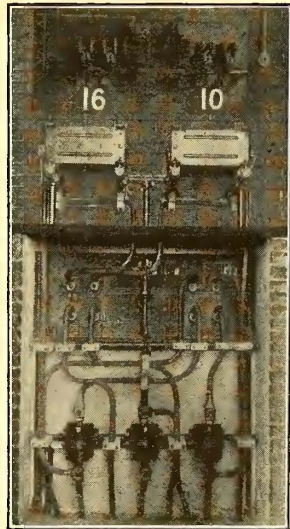
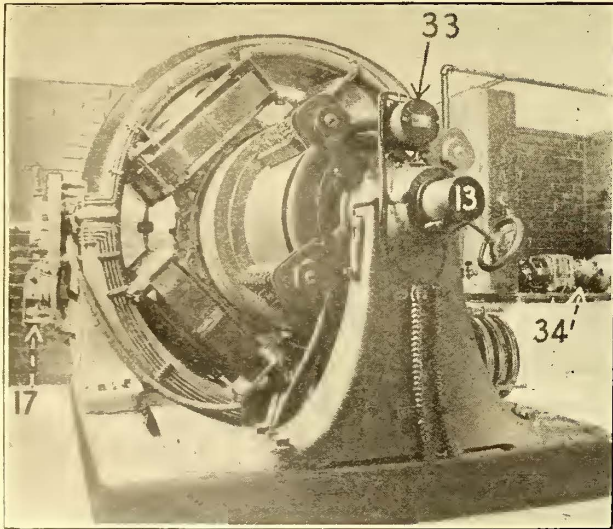
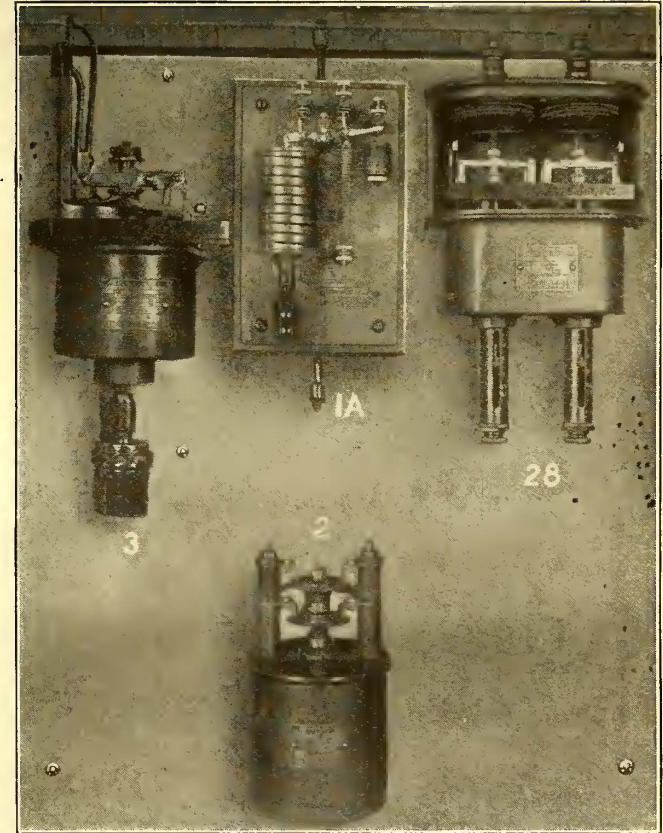
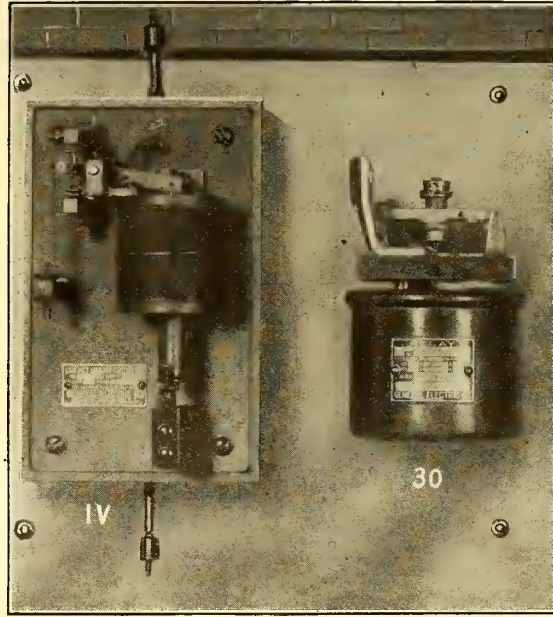
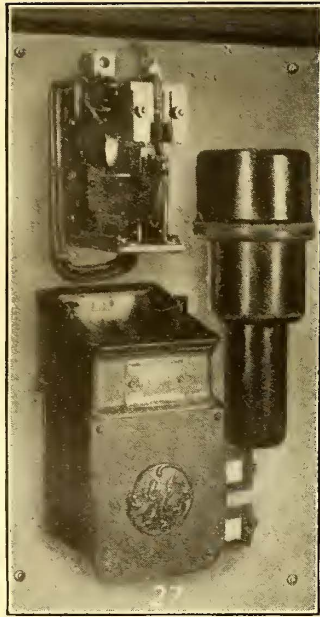
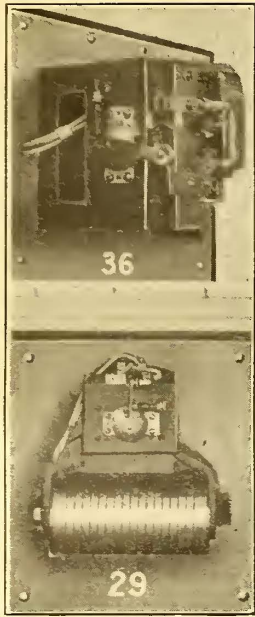
A photograph of the Harmony substation building is given in Fig. 1 while a cross-section of the Oakland substation building, showing also the location of equipment, is given in Fig. 3. It will be noticed that space has been economized in all ways, allowing, however, sufficient room for dismantling any of the equipment for making repairs. Provision for handling the equipment before installation was accomplished by utilizing I-beams in the roof structure for supporting chain falls hung from trolleys which are moved on these beams. Fig. 11 shows how the starting and running contactor panels were set into the middle wall of the station to economize space. The height of the building was required to allow the core of the transformer to be removed within the building if desired. It was cheaper to extend the building than to build a waterproof pit. Incidentally, ample radiation space is provided in the building and ventilation is effected very efficiently by a combination of roof ventilators and adjustable shutters set at the base of the building in openings protected by grating and screening.

The building is entirely of fireproof construction and it has no basement. The foundations, floor and roof

TABLE I—COST OF GENERAL DEVELOPMENT

Land for Oakland station.....	\$300
Building, conduits and furnishings.....	8,500
Equipment installed.....	22,500
Total.....	\$31,300
Transmission line, No. 3 copper wire installed, right-of-way, etc.....	\$14,000
Total of above.....	\$45,300
Half of engineering and miscellaneous expense chargeable to complete development.....	\$3,000
Total chargeable to Oakland.....	\$48,300
Total chargeable to Harmony.....	21,600
Expended for temporary manually operated station at Oakland.....	3,900
Expended for temporary manual operation at Harmony..	300
Total expenditure.....	\$74,100
Net expenditure (estimated maximum).....	\$29,600
Net expenditure (estimated minimum).....	23,600

are of concrete and the walls of red brick with stone trimmings. All high-voltage equipment is confined to one room, which is separated from the other room by a middle wall with sliding firedoors. The floor of the room in which the transformers are located is sloped toward the front door of the building where there is a narrow rectangular basin covered with grating and provided with a drain leading to a dry well outside of the building. In case of accident to a transformer, resulting in the expulsion of burning oil, the



Details of Control Equipment, Oakland, R. I., Automatic Substation

(Upper row, Figs. 6 to 9; lower row, Figs. 10 to 12)

Fig. 6—Reverse current relay (29) and polarized relay (36)
 Fig. 7—Low voltage relay (27) as shown on wiring diagram
 Fig. 8—Contact-making voltmeter (I-V) and rotary converter field relay (30)
 Fig. 9—Contact-making ammeter (1-A), relay (2), master relay (3) and overload relay (28)

Fig. 10—Rotary converter showing mounting of bearing thermostat (33), speed-limit switch (13) and equalizer contactor (17)
 Fig. 11—(Above) Starting (10) and running (16) A. C. contactors showing mechanical and electrical interlocks. (Below) Back view of panel showing wiring and starting resistance
 Fig. 12—Motor-controller-exciter set

oil will quickly drain away from the room. It is impossible for the oil to find its way into the rotary converter room, a condition which would, if it occurred, cause a spread of the damage. The windows are large and are fitted with opaque wired glass which gives a desirable but ample diffused lighting of all of the equipment within the building.

Both buildings, which are identical in construction, were designed and built under the supervision of H. W. Sanborn, chief engineer of the company.

EQUIPMENT IN OAKLAND SUBSTATION

The Oakland substation is at present operating from energy transmitted over a 13,200-volt transmission line. The equipment is, however, designed to allow the station

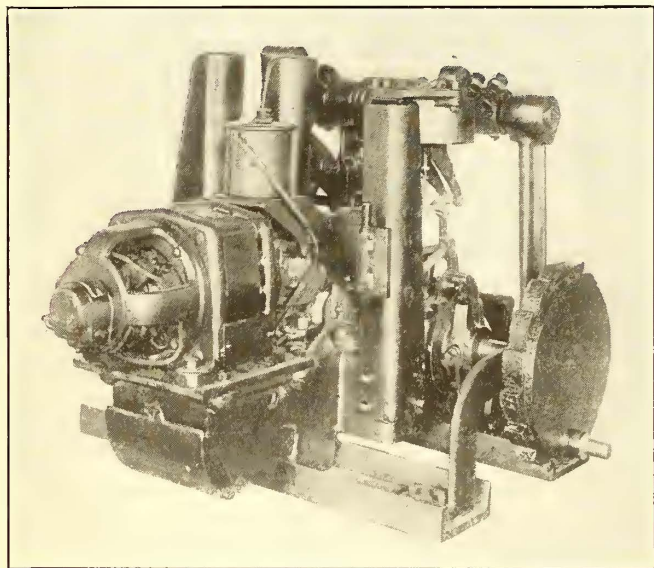


FIG. 13—A. C. MOTOR OPERATED MECHANISM WITH SOLENOID CLUTCH FOR OPERATING OIL SWITCH

at a later date to be operated from a 25-cycle, 11,000-volt transmission line. The equipment was supplied and installed by the General Electric Company. The detail parts of the equipment included are as listed in Table II.

One of the most valuable instruments in the metering equipment is a curve-drawing watt-hour meter which is installed to measure energy input to the station. An instrument of this kind should by all means be provided in every automatic substation. At the same time the installation of indicating instruments should not be neglected.

The switchboard, shown in Fig. 5, includes a number of instruments which are either especially developed for automatic stations and thus possess particular interest or, in service, are obscured by glass covers. Enlarged views of these instruments with covers removed are shown in Figs. 6, 7, 8 and 9. Low-voltage relay No. 27 in Fig. 7 does not correspond with the relay shown in Fig. 5 as the latter photograph was taken prior to the installation of the relay shown in Fig. 7. Space does not permit a detailed description of these relays. However, by comparing the photograph of the switchboard with the complete wiring diagram for the station shown in Fig. 4 an idea of the purpose and functioning of the various relays shown can be obtained. The operation of most of these relays has already been

described in the *ELECTRIC RAILWAY JOURNAL*.* The particular instruments not required in a single unit station are shown in the contact-making ammeter (No. 1-A) represented in Fig. 9 and the equalizer contactor (No. 17) which is shown mounted on the rotary converter in Fig. 10. The contact-making ammeter brings the second machine into service when the load on the leading machine has exceeded a predetermined overload value for a predetermined period of time. Either machine may be made the leading machine by throwing the transfer switch (No. 15) in the proper direction. This procedure transfers the connections of the contact-making voltmeter (No. 1-V) and its associated relays (Nos. 2 and 3) to the leading machine and the connections to the contact-making ammeter (No. 1-A) and its associated relays (Nos. 2 and 3) to the second machine. Also the operating circuit for the equalizer contactor (No. 17) is transferred to the second machine. The second machine is shut down through the action of the contact-making ammeter (No. 1-A) and

TABLE II—EQUIPMENT IN OAKLAND SUBSTATION

Two type TC, 300-kw., 600-volt rotary converters.
Two type HJT, 25-cycle, 300-kva., 13,200/11,000:370-volt, three-phase, O.I.S.C. transformers.
One type H, 25-cycle, 10-kva., single-phase transformer for control equipment.
One double-unit switchboard, a photograph of which is reproduced in Fig. 4.
Two K-12, 15,000-volt, 300-amp. oil switches.
One three-phase, 13,200-volt aluminum cell lightning arrester.
Two type C, 325-A motor control exciter sets, the construction of which is shown in Fig. 12.

its associated relays (Nos. 2 and 3), the latter of which is adjusted for the desired time element. Either machine when leading is shut down by the action of its particular underload relay (No. 37) in conjunction with the contact-making voltmeter. Reverse-current relay No. 29, shown in Fig. 6, is quite similar in construction to No. 37 except that it has a "flash coil" for stabilizing its polarity. In the starting of either machine the polarity of the rotary is definitely fixed by external excitation current from the small generator in its motor-controller-exciter set (Fig. 12) delivered through its polarizing four-pole contactor No. 31. Before either rotary converter can be connected to the line its polarity is checked by relay No. 36, shown in Fig. 6, which closes its contacts if the polarity is correct. This allows the coil of No. 18 contactor to receive direct current from controller segment No. 8, current reaching the negative bus through the electrical interlocks of contactors Nos. 16 and 14 and the contacts closed by field relay No. 30 (Fig. 8). Thermostats (No. 33) are shown in Figs. 4 and 10.

In concluding this article the writer wishes to express appreciation of the valued co-operation and assistance which he has had from the engineers and other representatives of the manufacturer who furnished the equipment. Special credit is due also to F. L. Barnard and B. D. Whitcomb, of the power and line department of the railway company, for the making of tests and studies both prior and subsequent to the construction of the substations.

*For example, see issues as follows: Sept. 18, 1915, page 583; July 14, 1917. Many other articles on the subject have appeared in the paper during the past three years. Attention is directed particularly to the article by Mr. Slade in the issue for Oct. 12, 1918, and to one by H. E. Davis in the issue for April 13, 1918.

The Problem Must Be Solved*

The Needs of the Electric Roads Set Forth with An Outline of the New Kind of Franchise Necessary—Question Is of Paramount Interest to the Public

By P. H. GADSDEN

Chairman Committee on National Affairs, American Electric Railway Association

AT THIS very hour, the statesmen of practically all of the nations of the world are hastening to Versailles, with the fixed and unalterable purpose of laying down basic principles of conduct to be observed between nations as essential for the establishment of a lasting and durable peace. Heretofore, the spirit of aggrandizement and exploitation has been uppermost at such councils, and only now for the first time is it recognized that any peace, to be lasting, must be based upon mutuality and that the principles underlying it must commend themselves to reason and equity.

The same principles must guide us in reshaping industry in this country upon a peace-time basis. The experiences of war have brought home to us the interdependence of industry and have impressed upon us the necessity and value of co-operation. We have been made to realize, as never before, the community of interest which runs through the entire structure of our business life. Especially is this true of those industries which, under the shock and strain of war, have proved to be essential to the nation's welfare. As to these, never again can the public be indifferent to their success or failure. The great war has demonstrated that the country has a vital interest in their continued and efficient conduct. Their activities constitute an intimate and essential part of our national life and our national security, and from now on it must be the province of national and state governments to see that these essential industries are maintained in a high degree of efficiency and, to accomplish this end, that they are permitted to function under favorable conditions.

The public utilities have been officially declared by the President of the United States to be essential to the nation's life. But independently of this official recognition, the dependency of the nation upon the facilities and service rendered by them has been fully recognized. These facilities constitute the very base of our industrial commercial and social life. Never has the reliance of the nation, as a whole, upon them been greater than during the war. In any discussion of peace problems, in any convention called to adopt plans for readjustment, it is inevitable that public utilities should have a prominent place in the program.

NECESSARY STEPS IN RELIEF

In order to suggest a remedy for the conditions facing public utilities to-day, it is essential that there should first be a thorough understanding of the problems brought upon them by the war. These problems are

clearly seen by the men responsible for the continuing operation of the public utilities under the increased demands for service due to the national crisis, and became more and more apparent as the nation's industries were mobilized on a basis of maximum efficiency for the prosecution of the war. The authorities at Washington were promptly informed that if a breakdown in the essential service of public utilities was to be averted, four phases of the situation require speedy attention:

1. Rates must be increased sufficiently to absorb the increased cost of producing the service.
2. The utilities must be relieved during the period of the war, of all non-essential and unproductive requirements, such as paving, undergrounding of wires, duplication and unnecessary extension of service.
3. Some way must be found to enable the utilities to take care of obligations maturing while the war lasts.
4. Assistance must be provided to enable the companies to finance the unavoidable extensions of service made necessary by the nation's war program.

How those problems were met is now a matter of history. That they were not adequately met is recognized on all sides. Measures of relief were meager and too slow in coming. The needs of the industry were obvious, but no channels for immediate help were available. Proposals that offered hope were shrouded by constitutional doubts, and so one after another, the public utilities were forced into financial and operating difficulties, with the burdens of the war laid unrelentingly upon them.

It is to remove as far as possible a repetition of those conditions and to assure a safe future for the industry, and adequate service to the public that a readjustment of relationships is imperative.

ADJUSTMENT TO NEW CONDITIONS DIFFICULT

One of the facts brought to the front during the last two years is, that the whole structure of the franchise relationship between the public utilities and the various communities has broken down under the strain of war. The rapid increase in the cost of all material, the extraordinary demands of labor made necessary by the rise in the cost of living, the alarming decrease in the purchasing power of the dollar, have brought the industry, particularly the electric railways, face to face with bankruptcy, because no avenue of automatic escape from rising costs lay open.

Practically every industry, except public utilities, whose rates are regulated by law, has been able readily to adjust its methods of doing business to meet the war demands, and the radical increases in cost of operations and of manufacture have been promptly reflected in the selling price, and so on to the customer.

*Address delivered before group 5 at War Emergency and Reconstruction Congress of War Service Committees, United States Chamber of Commerce, Atlantic City, N. J., Dec. 4, 1918.

In all other departments of our commercial and industrial life where the economic laws of supply and demand have been unhampered and allowed free play, the inevitable increase in the cost of production has been taken care of in the perfectly normal way of increased cost to the consumer. It is only in those industries where the public has attempted to fix a just and fair price for the service rendered and where the artificial standard has been substituted for the natural one that we find this complete breakdown under war conditions.

Industry generally was never so prosperous, notwithstanding the increase in the cost of labor and materials. The public utilities, on the other hand, present practically the one great exception to this rule of prosperity. These utilities have been nearly destroyed by the war.

A tabulation of the income accounts of 388 electric railways, representing more than 63 per cent of the electric railway mileage of the United States, shows a falling off in net income of 82 per cent for the first six months of 1918 as compared with the corresponding period of 1917. Many of the companies are facing actual operating deficit in spite of increases in gross receipts.

These facts lead inevitably to the conclusion that the present relationship between the companies and the public, as evidenced by existing franchises with fixed rates of fare, is economically unsound; that the present system of regulating rates by franchises or through commissions is admittedly not sufficiently responsive to the violent and radical changes in operating conditions which are bound to occur.

Another fact emphasized by the war is that before a company can justify an increase of its rates it must first show that for a longer or shorter period it has suffered less under the existing rates, which loss cannot be compensated for by the new rates. In any other business the manager is able to provide against increases in cost by promptly advancing his selling price. The public utility must stagger along under inadequate rates for months until its credit is destroyed, its service impaired, its equipment deteriorated, and it has become obvious to the community that it is on the brink of destruction before its case has been sufficiently made out to justify an increase in its rate.

NEW RELATIONSHIP TO MUNICIPALITY NEEDED

Of all the problems of readjustment which the nation will have to meet and solve, none will be more serious or more difficult than that presented by the public utility. In the light of our experience as emphasized by war conditions, it is manifest that to insure the efficient operation of these companies, there must be a recasting of the entire basis of the relationship existing between them and the communities which they serve.

In many cases, franchises which had come to be considered as valuable assets, have been proved by recent experience to be liabilities. Already there is a growing recognition of this fact in different parts of the country, as evidenced by the "operation at cost" plans recently adopted in Boston, Chicago and Cincinnati.

In the past the sole interest of the community has been thought to be in the service rendered, but with a

broader conception of the underlying problems involved there is a growing tendency to recognize a community of interest in the problems of profit and loss, as having a direct and immediate bearing upon the rates.

LABOR BOARD DECISIONS AGGRAVATED CONDITIONS

The condition of the electric railways, although generally typical, is somewhat more aggravated than that of other public utilities at this time, not only because relatively few roads have received adequate rate increase, but also because their difficulties have been enhanced by the action of the National War Labor Board. The decisions of that Board will add more than \$100,000,000 annually to their greatly increased operating expenses. In every other industry, these additional labor costs have been promptly passed on to the customer, that is, to the government, in most cases during the war, but the case of electric railways the startling doctrine was announced by the National War Labor Board that it could not, and would not, take into consideration the financial condition of the companies, and that its award would not be influenced by the admitted inability of the companies to pay the increased wage scale.

Without questioning the justice or propriety of that position, it is apparent that the result of it is that a wage scale has been imposed upon the electric railways which cannot be taken care of by the present 5-cent fare, and a very grave question exists whether any rate of fare which the public is willing to permit will be sufficient for that purpose. This, then, is the situation which confronts the electric railways:

1. It is admitted that the service is essential to the nation's welfare.
2. A wage scale has been imposed upon the industry by national authority, which admittedly cannot be taken care of out of the present income of the electric railways.
3. The 5-cent fare which has heretofore been almost universal, is admittedly insufficient to provide the necessary revenue.
4. In order to obtain increases of rates, the companies, in some cases, are compelled to apply to state commissions, but in most cases to municipal authorities, and even under the pressure of war conditions only a relatively small number of electric railways have succeeded in securing an increased rate.

The result of these extraordinary increases in the cost of labor and of material as well, coupled with the inability of the companies to increase their rates, is shown by the tabulation of operating figures of 63 per cent of the electric railway mileage of the country, already referred to.

A careful study of these figures indicates that unless wise counsels prevail and the necessary relief is afforded electric railways in the near future, the industry, as an industry, is doomed to destruction. It needs no argument to establish the fact that no industry can continue successfully to function when deprived of the right to increase its rates to meet extraordinary increases in cost of operation.

What, then, are the remedies for the situation? Definite measures will suggest themselves as the problem is more thoroughly understood, but it is possible now to analyze the causes for the present situation and to suggest some of the basic principles which should control the relation of public utilities to their respective communities hereafter.

The chief difficulty has been that the viewpoint of both sides has been one of antagonism, instead of co-operation. Both the public and the companies have endeavored to obtain the greatest advantage for their respective interests, without considering the ultimate effect upon the industry or the community. The public, under the conviction that enormous profits were being realized, felt free to make one exaction after another, recognizing no interest in the public utility except the service rendered, and no responsibility for financial results. The companies, on the other hand, with no adequate appreciation of their true relationship to the public, and in some instances, it must be admitted, with reckless disregard for the future, insisted upon franchise provisions which seemed onerous to the municipalities.

The time has now come for a radical and thorough review of that relationship. In some way, the American people must realize that their interest in the continued efficient operation of these railways is such that it becomes imperative that they should recognize some responsibility for financial results. In some way the credit for the public must be put behind these properties in return for the class of service which it demands.

In view of the disastrous experiences of electric railways during the war, it is not reasonable that they will be able to attract, in the future, the private capital necessary for their further development. The fact that the public has been willing to permit this great industry to stagger on under the burdens of war, with inadequate relief in the way of increased rates, while exposed to the full brunt of the extraordinary increases in cost of labor and material, raises a question of fundamental equity and fair dealing. The public must be brought to realize that its interest in the electric railways of the country is greater than that of the stockholders or bondholders, and that if the electric railways are to continue to discharge their essential service, the public must, in some way, guarantee an adequate return upon the capital invested.

What is needed then, at this time, is a thorough and impartial study of the whole question of electric railway franchise, with the end in view of establishing the industry on a wholesome, economic basis, which will guarantee continued efficient service to the public. Such a study should be made primarily from the standpoint of the public interest—what is best for the communities served. It is a national problem and not one for the owners of the railways alone, or chiefly.

The solution must provide for adequate service to the public and a proper return upon the invested capital.

FRANCHISE SHOULD PROVIDE FAIR RETURN

The time has come for the electric railways to say to the public that they are willing to co-operate in the working of a standard franchise, which shall provide for a proper return upon the fair value of the property, and guarantee efficient service to the communities. On such a basis there is little room for difference of opinion. On such a basis the matter of fares readily adjusts itself. On such a basis, the responsibility of electric railways for paving, the annually recurring question of taxation, the undergrounding of trolleys, the extension

of service into unproductive territory, and numerous other questions that have caused irritation in the past, present themselves for consideration in an entirely new aspect. The experiences through which we have just passed have impressed upon the public mind the fact that additional and unnecessary burdens imposed upon the electric railways must logically and inevitably be reflected, sooner or later, in the rate of fare, or in the impairment of the service rendered. With this fact established, the question whether the entire cost of the transportation should be borne by the passenger, or whether a certain part should not be absorbed as a community charge, can be fairly considered on its merits. It is in this spirit that we must approach the consideration of this important question. We should urge upon the Chamber of Commerce of the United States the importance to the business and commercial interests of the country of an independent investigation of electric transportation, and urge them to assist in formulating the basic principles upon which the industry may safely and successfully continue in operation.

At the annual meeting of executives of electric railways, held in New York on Nov. 1, with a full realization of the desperate condition of the industry and the imperative necessity of placing it upon a plane for the future that will demand the confidence not only of the passenger, but the public in general, and of the investor in particular, a committee was appointed charged with the duty of making a thorough and exhaustive study of this whole question, in the hope of arriving at certain fundamental principles which will meet with the approval of the country at large, and which will form a basis for the continuance of electric transportation hereafter. This committee conceives it as a part of its duty to bring this subject to the attention of all bodies assembling at this time to consider plans for reorganization and readjustment.

It is our purpose, so far as we are able, to impress upon the public mind that this is one of the greatest national questions which demands solution at the hands of the American public. The solution cannot be worked out by the owners and operators of the railways, but must, in the very nature of things, be the result of deliberation of all parties in interest. It is our confident hope and belief that when the situation of electric railways and the problems which they are called upon to solve, are properly and fairly candidly presented to the American public, for healthy discussion, a new relationship will come, based upon a recognition of the essential nature of the service rendered, the mutuality of interest involved, and the paramount interest of the public in the subject.

New Officers of A. S. M. E.

At the annual meeting of the American Society of Mechanical Engineers, held in New York City, last week, Dean Mortimer E. Cooley of the University of Michigan, Ann Arbor, was elected president. A biographical sketch of Dean Cooley will be found in the "Personal" columns in this issue. Other officers elected were as follows: Vice-Presidents, F. R. Low, New York City; Henry B. Sargent, New Haven, Conn., and John A. Stevens, Lowell, Mass. William H. Wiley was re-elected treasurer.

The Human Touch in Supervision

The Object of the Management Should Be to Instil a Spirit of Co-operation Among the Employees—How It May Be Done—The Bulletin a Great Help

BY E. C. CLARKE

Superintendent of Instruction Tacoma Railway & Power Company

THERE has never before been a time when the electric railway industry has had presented to it so many apparently insurmountable obstacles. Probably the greatest at the present time is that of securing a sufficient number of competent employees in all departments—competent trainmen to perform their work in a safe and efficient manner, experienced shopmen to maintain the equipment at standard, and able power-house and substation attendants. The problems are particularly serious in the cities where much work is being done on war orders for munitions and ships.

It would mean financial ruin for a street railway company to compete with the large wages paid by the shipyards unless the railways are allowed an increase in the rate of fare and a reduction in taxation. While an increase in fare makes it possible to increase the wages of employees, thereby keeping the older employees in service and getting a good type of new employees, only a very large increase in fare would make it possible to meet the increased cost of supplies that are needed to maintain power houses, substations and cars.

In coast cities where much shipbuilding is under way, the large number of people attracted by large wages demands that the railway provide more service rather than less. It is not at all an easy matter to keep men in service, for labor at the present time is so restless that the workman feels that he must change positions even if the other job pays only a few cents more a day. In numerous cases employees have resigned, often sacrificing years of service, to work in the shipyards or munition plants at a slight increase in wages. Then after beginning work in the shipyards they found the job harder and quite different from what they had been doing. Such men often return to their old jobs to start over again at the bottom of the list.

In some cities on the Pacific Coast there is a free and independent spirit not met with in the East, with its larger proportion of foreigners. One effect of this spirit, in many cases, is to retard that co-operation which is so necessary to the successful and efficient conduct of any business. To create such a co-operative spirit, one of the most essential things is the "human touch."

INSTIL THE IDEA OF CO-OPERATION

The lack of co-operation between the men themselves, and between the men as a whole and the company, is very often due to the fact that the employees do not fully understand the meaning of co-operation. This lack of understanding causes management and men to drift further and further apart. This can often be overcome by the injection of some personal contact into the work. It is undeniable that if there is any dissatisfaction among the men, more will be caused by an

"overt act" by some official who may come in direct contact with the men. Whether the wrong is actual or imagined in the minds of the men, the story is added to with each repetition until a "mountain has been made out of a mole hill." The addition to the story is in proportion to the dissatisfaction, or lack of co-operation. As the cause of such misunderstandings is ignorance, it follows that proper instruction, education and thorough aboveboard publicity are necessary to eliminate them. Conditions should be explained clearly and concisely to correct any condition that may obstruct the full amount of co-operation and to inject the necessary personality into the situation.

A feeling which is very apt to creep into an organization is that the employees do not want to co-operate. This feeling in time permeates the men, causing the latter to believe that if the company does not expect their co-operation and help, it is not worth while for them to exert themselves to do their best for the company. The resultant effect is that the men work as individualists, not caring whether they please either the management or the men with whom they are working.

ENCOURAGE EMPLOYEES TO MAKE SUGGESTIONS

The idea that the officers should not talk to the men except on a matter of business is a mistaken one, for the men as a general rule want to be successful. Therefore, they like to see and talk with the officials about their work. The man who has his heart in his work is always trying to find a better way to perform his duties. In such endeavors naturally the desire comes over him to suggest the improvement which will increase the efficiency of the company as a whole.

For such suggestions there ought to be some channel through which men can present their views to the company in a very informal manner. There are plenty of men who feel that they know so much about their duties that they can tell their superiors how to run the business successfully. When such an employee cannot get his ideas before the proper official in an informal manner, he feels that the company does not want suggestions. It not infrequently occurs that the ideas and suggestions of the workman given in an offhand talk develop into most valuable information.

It should, therefore, be the duty of some official who possesses the necessary personality to meet the men individually while at work to discuss their duties with them. Such a man can make each employee feel that his work is just as necessary to the welfare of the company as that of any other employee and that the company welcomes any suggestion that will better working conditions, increase efficiency or improve safety. Every suggestion offered should receive due consideration, and

if it is adopted full credit should be given to the man who made it.

Several successful methods have been used in many industries to secure suggestions from employees. However, the degree of success obtained in practically every case, has been in direct proportion to the amount of personal feeling and interest injected into the project by the employer. A very good and interesting method is that of the Yale & Towne Manufacturing Company. This company built several small individual work rooms and equipped each with a complete set of tools—in fact, everything a workman would need. If a workman thought he could make an improvement on any of the articles manufactured, the company assigned a work room to him to develop his idea until its value was determined.

A large number of electric and steam railroads make

from the service. In most cases where men qualify for the positions to which they are appointed they will improve after starting to work for themselves, but sometimes the newly qualified men will not only fail to improve but will not do as well as when under instruction.


Therefore, it is necessary to keep in such close touch with the new man's work that it will be possible to check him in his downward path before he seriously injures himself and others. To carry on this weeding out process successfully at this period of the employee's service, it is necessary to maintain an efficient corps of instructors who have the ability to interpret the rules intelligently and to render unbiased opinions that will enable their superior to determine the student's fitness. The instructors should also continue the instruction work after the new man starts to work for himself.

BULLETIN NO. 7 MAY 11, 1918

PATRIOTISM!

THE PREVENTION OF AN ACCIDENT IS AN ACT OF PATRIOTISM.

AN ACCIDENT MAY DELAY A SHIPMENT OF SUPPLIES TO THE MEN IN THE TRENCH. ES. THE LACK OF SUPPLIES MAY CAUSE THE LOSS OF A BATTLE.




Prevent the Accident Regardless Who May be at Fault.

Howe-Bownde *Edelmann*
General Superintendent Day of Instruction and Education
Tacoma Railway & Power Co. Pacific Traction Company

BULLETIN NO. 17 JULY 6, 1918

HELP! THE NEW MAN

Do What You Can
to Help the Student
and the NEW MAN
They Need Your Help



CO-OPERATION Means Success

Howe-Bownde *Edelmann*
General Superintendent Day of Instruction and Education
Tacoma Railway & Power Co. Pacific Traction Company

BULLETIN NO. 19 JULY 20, 1918

The BIG SHOW!

We are Going to Have a
SHOW ALL OUR OWN.
There are some amongst us
who have considerable tal-
ent, also two who have been
"Over There" one having
been "Over the Top" three
times.

**WE SHOULD ALSO HAVE
AN ORCHESTRA**

Let Us Hear from You

Howe-Bownde *Edelmann*
General Superintendent Day of Instruction and Education
Tacoma Railway & Power Co. Pacific Traction Company

THESE ARE REPRODUCTIONS OF THREE TYPICAL BULLETINS ISSUED IN TACOMA

special efforts to secure suggestions from their employees. In practically all cases the plan has proved beneficial to both employer and employees.

PROPER SELECTION AND INSTRUCTION OF MEN ESSENTIAL

Necessarily, the proper selection and instruction of the men play a most important part in successful co-operation. Selection is made of those who it is believed will become competent and desirable employees by responding to instructions and disciplinary rules. When the applicant first presents himself it is not possible always to determine to a certainty his fitness and desirability. However, it is reasonable to give the applicant the benefit of the doubt and assign him to competent instructors where his work and actions can be observed. If the new man, while technically competent, demonstrates by his actions and general demeanor that he will become an undesirable employee or obnoxious to fellow-workers, he should be eliminated as soon as the facts are proved. Weeding out should not end when the student is pronounced competent and put to work but should be continued indefinitely by following up his work closely as well as giving the necessary instructions. If the new man does not respond to the instructions and does not continue to improve he should be separated

There is still another reason why it is necessary to determine an employee's fitness. This is that the older employees resent working with an incompetent or undesirable employee and care no more for his company than the management cares for his services.

The periodical issue of bulletins and literature has proved one of the best channels through which to reach all employees. The bulletin is not effective, however, unless it is short and snappy, something which the men can read at a glance. Merely to put words together or to quote rules does not get over. It is necessary to go straight to the point without beating around the bush and to use words and phraseology which the men will readily understand. However, it is not at all necessary that the text of the bulletin should be in the vernacular of the "extra" room or the shop. The style of the bulletin presented to the men should be so strongly suggestive of personality that when the men read the bulletin they will feel as if they were being spoken to directly by the official who issues it. This can be accomplished only by one who understands the whims of the workers and the conditions under which they discharge their duties. If the workers feel that the man who promulgated the bulletin does not fully understand their work, they will be very likely to take the text of the bulletin with the proverbial grain of salt. They must

have confidence in the official and feel that he is willing and ready at all times to do anything possible in furthering their success. This feeling of the employees will be reflected in their effort to please with their work. The resultant effect is co-operation.

After the foregoing facts in issuing the bulletin have received due consideration, the next important factor is the proper presentation of the bulletin. Although the bulletin board may have been in use from time immemorial, it is nevertheless still a very good way to reach the workmen. However, the bulletin board must be so designed and so prominently placed that it will attract and hold the attention of those for whom it is intended. The bulletin board should be in a naturally well-lighted place, or if this is not feasible it should be especially illuminated, for the bulletin is useless if not read.

If no board is used, the bulletin may be printed on stock of letterhead size for insertion in neat, well-placed frames. As small frames are inexpensive, any number of bulletins that may be desired may be displayed at one time. Two other good methods of insuring the reading of all bulletins by all employees are, first, require all employees to sign their names in a book showing that they have read the bulletin; second, issue the bulletin on 4-in. x 5-in. stock for distribution to each employee by instructors and let the latter check off the employee's name from a list containing the names of all employees. The added advantage of the second method is that it affords an opportunity for the instructor personally to explain any bulletin statement which the employee may not thoroughly understand.

The bulletin should be illustrated whenever possible. The picture does more than to attract attention for it is also most natural to teach through the eye. Pictures constitute a universal language understood by both the educated and uneducated.

Efficient Operation with the Skip-Stop Service

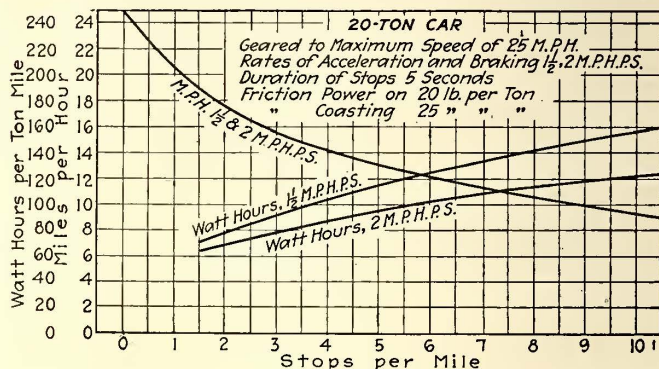
Specially Prepared by the
UNITED STATES FUEL ADMINISTRATION

AQUESTION that is frequently asked is as to the real economies which are produced by operating cars on the skip-stop system. In order to set forth the economies actually produced, in a partial way, some few facts are summarized in the following paragraphs:

Skip-stop service involves a reduction in the number of stops made, and theoretically there should be saved the amount of time previously lost in the stops thus eliminated. If, however, the schedules are not revised to compensate for the eliminated stops there will be a natural tendency for the motorman to accelerate and brake his car more slowly than before, and both motorman and conductor will tend to permit the stops to be extended in length. In order to get the full advantages of the skip-stop plan, therefore, car operators should use the maximum rates of acceleration and braking with the minimum duration of stop which are possible with due regard for the comfort and safety of the passengers. Time saved in reducing the accelerating, braking and stop periods can be utilized in increasing the schedule speed, or it can be added to the coasting

interval, or it can be divided, part being used for each. To demonstrate the relation between schedule speed, energy consumption and stops per mile the accompanying curves have been prepared covering two rates of acceleration and braking. These curves are based upon data for a 20-ton car geared for a maximum running speed of 25 m.p.h. Acceleration and braking rates are assumed first at 1½ and then at 2 m.p.h.p.s., and the car is assumed to be operated at maximum schedule speed with five-second stops. The friction with power on is taken at 20 lb. per ton and for coasting at 25 lb.

When the car is accelerated and retarded at the lower



CURVES SHOWING RELATION OF SPEED, ENERGY CONSUMPTION AND STOPS PER MILE AT TWO RATES OF ACCELERATION AND BRAKING

rate the energy consumption is greater than when the higher rate is used. From the curves the following table has been prepared to show the relation of values in the two cases:

Stops Per Mile	Watt-hours Per Ton Mile 1 1/2 M.p.h.p.s.	Watt-hours Per Ton Mile 2 M.p.h.p.s.	Ratio in Per Cent
3	92	78	84.5
5	114	95	83
7	134	108	80.6
9	150	118	78.7

The reason for the smaller energy consumption with the higher rate of acceleration and braking is that the motorman operates for less time on the resistance points of the controller. There is also less energy dissipated in the brakeshoes as well as in the resistors.

It is suggested that all railways might advantageously post in conspicuous places, where they will be seen by train crews and company officials, statements of the total amounts of energy used during the preceding week, with the car mileages and energy consumptions per car-mile, and with comparisons of past records to permit the checking up of the effect of the instructions issued to train crews and others. Some railway systems have their power lines sufficiently subdivided as to make records available for individual lines and thus to permit records to be compared. Comparison between divisions will usually result in personal and divisional rivalry.

The practice of checking operators as to rate of acceleration and braking used, and as to their success in reducing duration of stops to the minimum, cannot be too strongly advocated. The most systematic way of doing this is with the aid of some form of checking instrument. Verbal instructions, printed rules and other educational work require a relatively large amount

of effort and do not accomplish the results which can be obtained with the aid of some such device. It is reported that 98 per cent of the cars in Great Britain have for the past fifteen years been using some form of checking device. In America we probably use instruments of this character on fewer than 10 per cent of our cars. Records show that by using these devices, with proper follow-up systems, it is possible to save at least 15 per cent of the power consumption. Theoretical savings are from 20 to 25 per cent but in actual practice somewhat less is to be expected.

By reducing the actual number of stops which a car makes, by accelerating and braking at higher rates, and by shortening the duration of stops, it is usually possible greatly to increase the schedule speed of cars. This increase in many cases might be sufficient to allow as good service to be given with five cars as was formerly possible with six. With greater numbers of cars proportionately greater savings can be made.

Semi-Automatic Portable Substation Built at St. Louis

This 500-Kw. Equipment Provided with Numerous Protective Devices Will Care for Overloads at Isolated Points

A SHORT TIME ago the United Railways of St. Louis placed in service what is known in its power department as "No. 3 portable substation." This unit, of 500-kw. capacity, can be classed as of the semi-automatic type. Part of the electrical equipment was installed in another station in 1906. In 1913 there was urgent need for an additional portable station, to meet which the rotary converter with the auxiliary equipment was set on a flat car and a roof was built over it. This arrangement was neither ornamental nor safe, the lack of safety having been emphasized by two fire scares. Consequently the apparatus was embodied in a new substation.

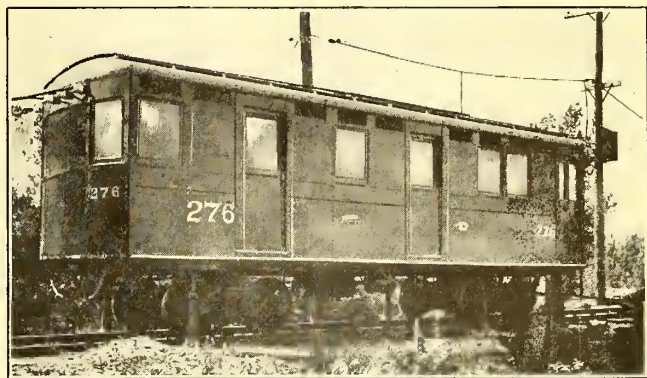
ALL STEEL CONSTRUCTION WITH REMOVABLE SIDE AND TOP

The present car is of steel construction throughout and it was built in the company's shops. Inside it is 34 ft. 8 3/4 in. long, 9 ft. wide and 8 ft. 9 in. high. The details of construction are shown in an accompanying drawing, from which an idea of the layout of the equipment can also be obtained. There are louvres near the top along both sides of the car to provide ventilation, and the transformer is set upon a raised air chamber, 12 in. high, through which air for cooling is forced by a fan. This equipment, with a reactance coil, is located about 5 ft. from one end of the car. In this 5-ft. space are the oil switch and the 11,000-volt Westinghouse multigap lightning arresters.

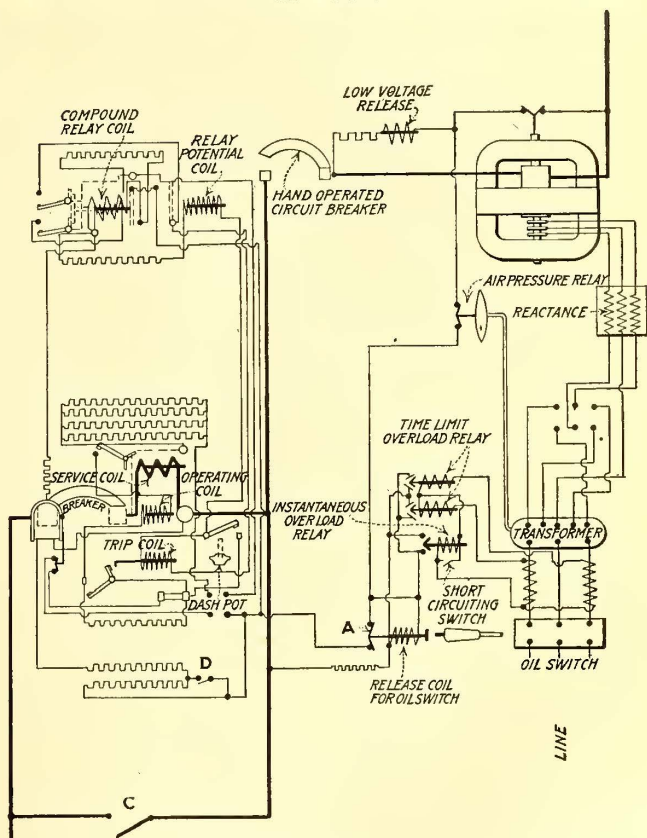
The converter is placed 3 ft. 4 in. from the opposite end of the car. As the bedplate measures 9 ft. 3 in. x 8 ft. 11 1/2 in., this leaves only 1/2-in. clearance from each side of the car. A special side-frame construction was, therefore, necessary. The three panels, alternating-current, direct-current and automatic, are located at one side of the center, leaving ample working space for manual attention. To permit the equipment to be placed in the car or removed from it, a large part of one

side of the car was made removable in two sections, as were also the corresponding sections of the top. The windows, of which there are fifteen, are of clear wire-glass, and the floor is covered with wood matting.

The main feature of interest in the electrical equipment is the automatic reclosing circuit breaker, made by the Automatic Reclosing Circuit Breaker Company, Columbus, Ohio, this allows the station to be operated



ALL-STEEL PORTABLE SUBSTATION CAR BUILT AT ST. LOUIS



WIRING DIAGRAM FOR PORTABLE SEMI-AUTOMATIC SUBSTATION

semi-automatically. It is necessary to start the station at the time it is due to be put on the line, as well as when the alternating-current supply is interrupted or when trouble causes the alternating-current oil circuit breaker to open. In case of a trolley break, however, the automatic reclosing circuit breaker comes into play, holding out the breaker until such time as the ground is altogether removed or reduced to a value that the machine will stand, when the unit will again cut in on the line.

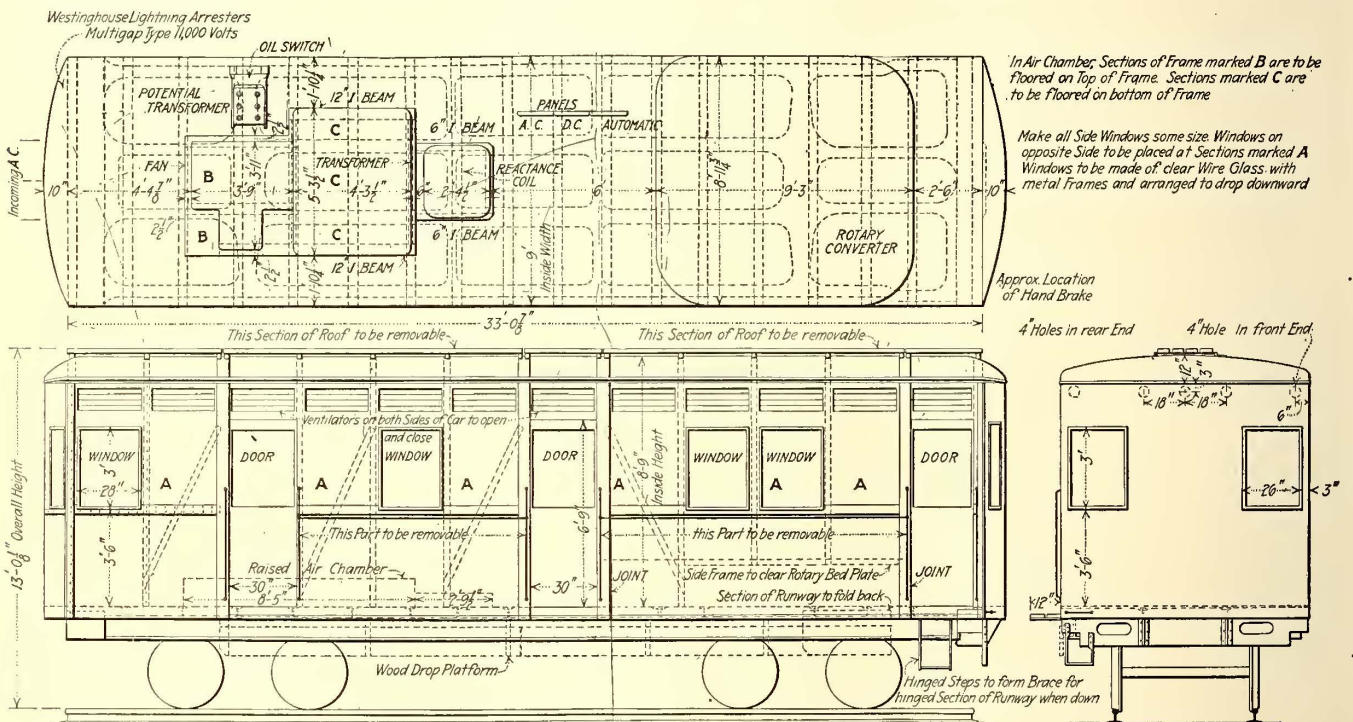
There are also numerous protective devices as shown on the wiring diagram on page 1051. The automatic apparatus is arranged so that the closing of a single switch makes all the special automatic apparatus non-operative, and the station can then go back to hand operation. This accounts for the use of two alternating-current relays, namely the time-limit and the instantaneous relays, the latter of which is short-circuited when the station is operated automatically. Thus in case of a surge on the direct-current side, the alternating-current switch is held in, momentarily, until the direct-current circuit breaker relieves the load. An air-bellows relay is provided also so that in case of lack of air for the air-blast transformers, the machine will "knock out" on the alternating-current and direct-current side. The over-speed mechanism also "knocks out" the machine on both sides. In case of an overload which

removed after the installation of the new station. In such cases, if the station is out of service, conditions are no worse than they were before the station was installed.

This new equipment gives the United Railways a total of three portable substations. The two other stations, however, consist of two cars each, one for the rotary converter and one for the transformers.

I. C. C. on Needs for Adequate Transportation System

The needs of an adequate transportation system for the United States, as outlined by the Interstate Commerce Commission in its recent annual report, requires provision for the following: (1) Prompt merger without friction of all the carriers' lines, facilities and or-



DETAILS OF CONSTRUCTION OF SEMI-AUTOMATIC SUBSTATION CAR AND LOCATION OF EQUIPMENT

trips the alternating-current oil switch through the release coil, the machine is cleared on the direct-current side by the breaking of the contact at A.

STATION IS LOCATED WHERE TEMPORARY INTERRUPTION IS NOT SERIOUS

Satisfactory tests have been made with this substation and in addition the machine has been operating well for some time under regular working conditions. It is not intended, of course, that a substation thus equipped would be used except under special conditions. It would have to be located at a point where a temporary interruption of the supply would not be particularly serious, because it is probable that from time to time there will be "knockouts" and attendant delays while the station is being put back on the line. However, there may be locations where a station is used to carry heavy loads at certain times and where a short interruption could not prove serious. There are several such locations on the St. Louis system, where small stations have been added at isolated points and no feed wire

organizations into a continental and unified system in time of stress or emergency; (2) merger within proper limits of the carriers' lines and facilities in such part and to such extent as may be necessary in the general public interest to meet the reasonable demands of domestic and foreign commerce; (3) limitation of railway construction to the necessities and convenience of the government and of the public, and assuring construction to the point of these limitations; and (4) development and encouragement of inland waterways and co-ordination of rail and water transportation systems.

In discussing the effect of salt in warm climates on reinforced concrete in a recent issue of *Concrete* James C. Foss, Jr., an engineer of Hilo, Hawaii, states as a result of his observations that salt water should never be used in reinforced concrete, that all possibility that salt might be present must be eliminated, and that reinforced concrete where used in places having warm salt atmospheric conditions requires exceptionally careful construction.

Making the Old Track Last a Little Longer

What the Connecticut Company Did to Extend the Life of a Stretch of Track in New Haven, With Particular Reference to Arc Welding

By P. NEY WILSON

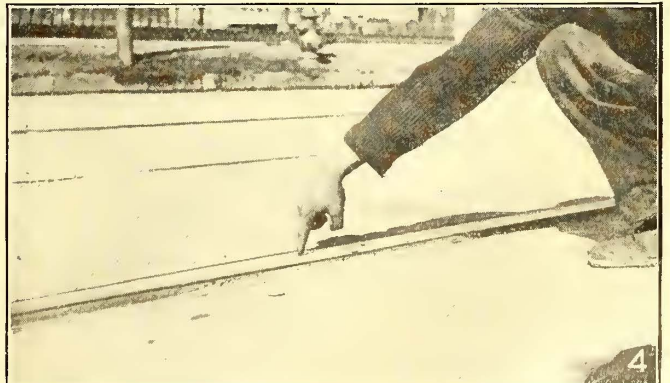
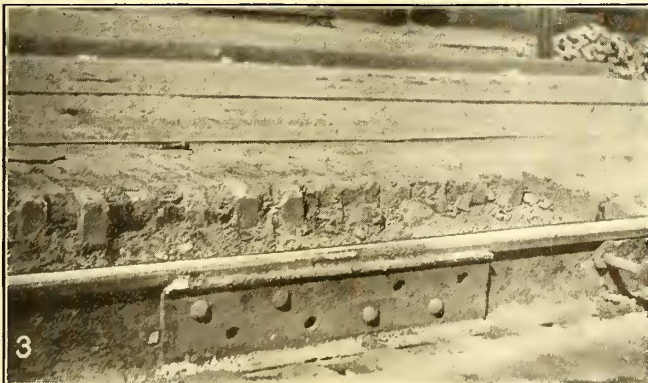
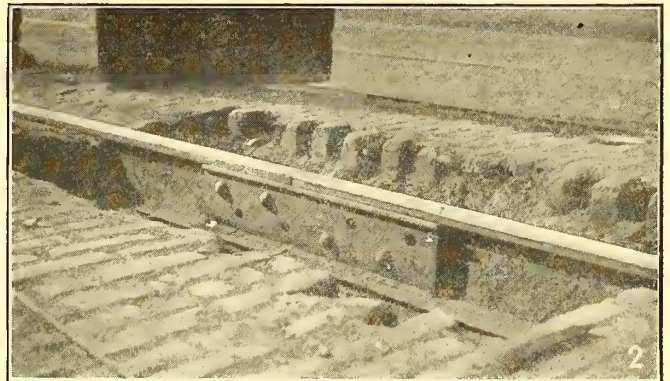
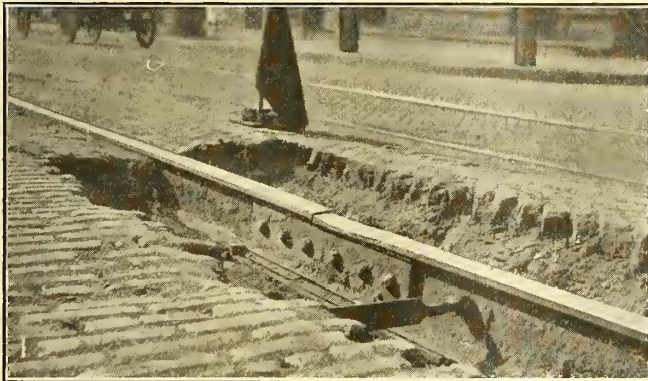
Roadmaster, The Connecticut Company, New Haven

ALTHOUGH the maintenance of way department of this company had been authorized last year to relay 6374 ft. of track on Grand Avenue, made up of 7-in., 70-lb. T-rail originally laid in 1896, no rail was available and an effort was made to fix it up to last over the war period. The joints were in a deplorable condition, resulting in vertical movement of the rail which loosened the pavement. Complaints were numerous on account of noise and bad pavement conditions. It was finally decided to try to arc weld the old plates to the rails, doing the "shimming," regaging, etc., necessary to make the road safe for two or three years. The work was done late last year and the results have proved very satisfactory. Not a single joint has failed and, while a few show

January. The procedure in the "rejuvenation" was as below. The costs are given in the accompanying tables.

OLD FISH-PLATES INVERTED AND WELDED TO RAIL

As soon as the track was excavated, the old fish-plates were removed, turned upside down, and put back with the bottom flanges of the plates under the head of the rail. The plates were held in this position by four track bolts, and the upper and lower edges were arc-welded to the head and base of the rail. It was necessary to reverse the plates in order to get a weld at the head of the rail. The bottom flanges of the old fish-plates were much wider than the top and provided a "shelf" upon which the hot steel was laid. Surface depressions were then filled in with welding



REHABILITATING AN ANCIENT JOINT IN NEW HAVEN

Fig. 1—Condition before repair. Fig. 2—Bolted up, ready for welding. Fig. 3—Welded complete. Fig. 4—Ground to surface and paved in

some slight indication of fracture along the upper seam, these imperfections seem not to be serious. The indications are that the life of the rail has been extended from three to six years, depending upon the amount of maintenance work that is done. The track had quite a test soon after the work was done due to the occurrence of zero weather in December and

steel, after which the joints were ground to a true surface with a rotary grinding machine.

A considerable number of "dutchmen" were welded in the above manner, no attempt being made to remove them. This is an unusual procedure as it is customary to cut in new rails where dutchmen have been used. Some extra precaution was necessary in welding these

TABLE I—COSTS OF GRAND AVENUE WORK

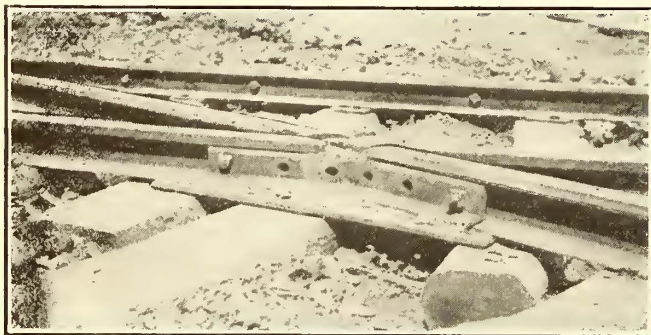
417 Joints Arc-Welded and Ground, 457 Joints Surface Welded

Labor, welding and grinding	\$657.17
Labor, excavating, replacing pavement, and miscellaneous track work	1,572.32
Total labor	\$2,229.49
Material, miscellaneous plates, bolts, etc.	\$572.86
Cost of Abbott plates	115.60
Total material	\$457.26
Total labor and material	\$2,686.75
<i>Unit Costs, Based Upon 417 Finished Joints</i>	
Cost per joint, welding and grinding	\$1.57
Cost per joint, excavating, replacing pavement, and miscellaneous track work	3.77
Cost per joint, material	1.09
Cost per joint, labor and material	\$6.43

NOTES—The above costs include regaging track and miscellaneous track work not necessary in repairing joints; also cost of surface welding forty cups in rails, not at joints, although necessary to produce smooth track. The estimate for this work was \$6.90 per joint, showing a difference in favor of the actual work of 47 cents per joint.

Cost of Abbott plates deducted from totals as they will be reclaimed when track is scrapped. No charges are included for the consumption of power nor for depreciation on the machines used.

short pieces which, of course, raised the unit cost slightly. The nuts on the bolts were spot-welded and Abbott plates were placed under the joints. About 25 per cent of the rail ends were found to be fractured in the web near the ball. In a few exceptional cases, rails were cut in. In general, however, the cracked rails were welded fast to the upper edge of the plates



HOMEMADE FROG USED IN EMERGENCY CASES

in the new position in order to save expense in the hope that the experiment would prove successful, which it has done. The Abbott plates were not welded to the rails as it was thought that they could be reclaimed at some future time when the track is scrapped.

TABLE II—MISCELLANEOUS REPAIRS

Showing saving effected by the use on the New Haven Lines of one welding and grinding outfit for one year

	Old Method, Cutting in New Rail	New Method, Welding Break	Saving
Repairing 127 broken rails in paved streets	\$2,286.00	\$285.45	\$2,000.55
<i>Sundry Repairs</i>			
	Cost of New Pieces	Cost of Welding	
One switch, Meriden	\$207.00	\$6.75	\$200.27
Two mates, State near Grand Ave., one frog, State near Grand Ave.	415.00	10.41	404.59
Three center plates, State and Chapel Sts.	88.00	6.94	81.06
One center plate, Meadow St. crossover	20.00	5.30	14.70
Four frogs, four center plates, Church and Elm Sts.	500.00	33.83	466.17
Two mates, Grand Ave. carhouse	310.00	9.45	300.55
One center plate, Dixwell and Lake Pl.	20.00	5.55	14.45
One mate, Grand Ave. carhouse	155.00	12.50	142.50
Totals	\$1,715.00	\$90.71	\$3,624.84
Number of joints surface welded in paved streets			1,016
Number of joints surface welded in macadam or dirt streets			327
Work done on special work			197
Total			1,540 joints
In Wallingford			30 joints
Compromise joints, Whalley Ave., T. O.			8 joints
Compromise joints, Church and Elm Sts.			2 joints
Compromise joints for Waterbury			3 joints
Total			1,583 joints

TABLE III—GENERAL SUMMARY

Electric welding Grand Ave., single track reclaimed by arc welding	6,375 ft.
Estimated cost per foot single track renewing rails and pavement on Grand Ave.	\$9.85
Total cost to renew	\$62,793.75
Interest at 6 per cent on investment for one year	\$3,767.62
Depreciation at 5 per cent for one year	3,139.68
Total	\$6,907.30
Interest and depreciation for three years, the estimated minimum life of old track after welding	\$20,721.90
Cost of welding	2,686.75
Saving in three years	\$18,035.15
Miscellaneous repairs by arc welding: Saving in one year from miscellaneous repair work to joints and special work in 1917 as per Table 11	3,624.84
Total saving	\$21,659.99

SOME JOINT TIES HAD DISAPPEARED

When the excavation were made the foundation under the joints was found to be in bad condition. The ties, although fairly sound considering their age, had settled from 1 in. to 2 in., requiring the use of a considerable number of iron shims. The joint ties had been cut rather badly due to rail movement, and at from twelve to fifteen joints the ties had disappeared. At these points half of a new tie was placed to support the rails. A very considerable amount of vertical movement was eliminated by making the joints tight. The foundation of this particular piece of track is twenty-one years old, however, and even now the track as a whole develops vertical movement which must, of course, affect the pavement adversely.

COST DATA ON REHABILITATION AND MAINTENANCE

The accompanying tables give actual cost data on the Grand Avenue job and also some more general data showing the savings effected by arc welding, including this job. The rate of pay for common labor involved in these data is \$2.50 per day of nine hours. The analysis of costs includes miscellaneous repairs to broken and cupped joints, as well as numerous special-work repairs. The analysis includes all of the work done by one complete welding outfit upon which economies can be figured. No savings are claimed for 1583 surface welds which were made, although there is no doubt that by surface welding battered rail ends the life of the track is extended.

Housing and Transportation Problems in London

In commenting on the parts of the recent report of the London (England) County Council committee on housing of the working classes which treated of tramway conditions, the *Electric Tramway and Railway World* has something to say regarding bus-line feeders. While no immediate increase in workmen's fares corresponding to the general increases is expected, nevertheless the position of workmen is considered likely to be affected prejudicially thereby. And any increase in workmen's fares in the future is likely to affect seriously the housing question in London. The tramways concerned, in outer London and the populous provincial districts, will undoubtedly find it politic to extend their existing motor bus service, or create new service, to serve as feeders to the tramways until such time as traffic will warrant the extension of the tramways themselves.

Just Values and Fair Rates Needed

Investment Bankers Point Out Requirements of Utility Situation—Mr. Taft Says Outlook Is Not Good

THE solution of the public utility and steam railroad problems, in the opinion of the investment bankers of the country, lies in charging regulatory commissions with responsibility for the welfare of the companies. This principle was expressed in the reports and resolutions before the convention of the Investment Bankers Association of America in Atlantic City on Dec. 9-11.

The committee reports of most direct interest to electric railway operators were those on public service securities and on steam railroad securities. The former report, which concluded that the interests of investors presents the study of the electric railway problem as one of the first duties of the committee during the reconstruction period, will be abstracted in a later issue.

The steam railroad report stated that (1) the pre-war plan of railroad regulation was a demonstrated failure; (2) the steam railroads should not be returned to their pre-war status without providing release from the burdensome conditions under which they have therefore operated; (3) any plan of future government control should eliminate the conflict of control between state and federal bodies; (4) the Sherman anti-trust law and state anti-trust laws in their application to transportation should be repealed in the interests of efficiency and economy, because such laws are unnecessary under proper governmental regulation, and (5) any plan of government control which increases operating expense and regulates income should assume responsibility for adequate earnings and sustained credit.

The steam railroad report added that the alternative of government ownership, which is being proposed by some as the best solution for the difficulties presented, does not offer the measure of relief demanded. The committee finds nothing in the experience of other countries in government ownership of transportation which warrants the assumption that such an experiment in this country will be successful. According to reliable authorities, it says, the records of government ownership the world over show decreased efficiency, increased expense, lessened initiative, political interference and economic waste.

RESOLUTIONS ADOPTED BY BANKERS

The following resolution, proposed by O. B. Wilcox, of Bonbright & Company, New York, chairman of the public service securities committee, was unanimously adopted by the association:

Resolved, That the capital necessary for the development and expansion of adequate and efficient public service can be secured, in competition with opportunities for safe and profitable investments in unregulated enterprises, only if the state and municipal bodies regulating public utilities by just valuations of property devoted to public use and by fair rates for public service provide for the payment of all costs of operation, permit the replacement out of earnings of property worn out or no longer useful, and allow the accumulation of funds sufficient to assure the credit of public utility companies and the continued payment of fair returns on the capital invested.

An analogous resolution in regard to steam railroads was adopted, as follows:

Resolved, That the association put itself squarely on record at this time as opposed to public ownership of rail-

roads or permanent public operation, and emphatically in favor of an early return to private ownership under such altered methods of regulation as will insure sound railroad credit and an adequate transportation system.

ELECTRICAL RAILWAY SITUATION UNJUST TO INVESTORS

Addresses touching upon the electric railway situation were delivered by Travis H. Whitney, of the Public Service Commission for the First District of New York, and by William H. Taft, co-chairman National War Labor Board.

Mr. Whitney outlined the general requirements as to the revenue sufficient to cover operating expenses, obsolescence and depreciation, fixed charges and a reasonable return on the investment that is necessary to keep utilities in first-class condition. He said that while commissions have been criticised for the inability of the utilities to secure such revenue, the regulatory bodies have been hampered in many states by the lack of complete power on account of the limitations imposed by maximum rate statutes or franchise provisions. Investors should be interested in the character of all new utility legislation because of the relation of this to the soundness of their investment.

Mr. Taft spoke in the main on the subject of a league of nations, but in his introductory remarks he drew upon his experience with the War Labor Board for the following:

In my official capacity, I have examined the balance sheet of most of the electric railways of the country. I do not think you are going to rush forward for that class of securities as an investment. The lines had my sympathy, but that could not affect my judicial view. Your clients have my profound sympathy.

The outlook is not a good one. The electric railways of this country are dealing with a public educated to rates of fare and methods of fixing fares which are most unjust to investors. Whether you can overcome this situation I do not know. I am well aware that generalizations do not pay dividends.

Conclusion of Chamber of Commerce Meeting

THE War Emergency and Reconstruction Congress of the War Service Committees of the Chamber of Commerce of the United States, which met in Atlantic City last week, concluded its session on Dec. 6. The principal feature of the final meeting, from an electric railway standpoint, was the adoption of a resolution calling for the appointment of a committee to investigate and study the question of local transportation as it relates to the control of rates and service, franchise, taxes, the attraction of capital into the business and such other questions as the committee may find pertinent, and for the committee to report its recommendations to the board of directors of the national chamber, the board then to deal with the matter in accordance with established procedure.

This resolution was suggested by the Committee on Readjustment of the American Electric Railway Association, through its chairman, Mr. Gadsden. It was one of some thirty resolutions approved by the Clearance Committee out of perhaps three times or more that number which were submitted to the committee. The full text of the resolution adopted by the congress is published on the first page of this issue.

During the sessions of the chamber a daily paper to report the meetings was issued at Atlantic City by the Associated Business Papers, of which the ELECTRIC RAILWAY JOURNAL is a member.

Utilizing Gas Welding at Salt Lake City

Steel Rails Placed Upside Down and Welded to the
Main Rails Were Used to Connect New
With Old Construction

BY JULIAN M. BAMBERGER

President and General Manager Bamberger Electric Railroad,
Salt Lake City, Utah

IN THE SPRING of 1915 the Salt Lake Terminal Company, under the direction of the writer, made an installation of concrete track, consisting primarily of 7-in. 80-lb. T-rails, Pennsylvania Section No. 227, and International Steel Tie Company's box-girder ties, 32 in. over all, spaced 5 ft. on centers. Two classes of concrete were used, top concrete laid to a depth of 2½ in. on a screen of American Steel & Wire Company mesh No. 7, and the foundation concrete was 6 in., with a beam under each rail varying from 8 in. to 11 in., in



CUTTING OUT CONCRETE AT SALT LAKE CITY, PREPARATORY TO INSTALLING SPUR

accordance with subsoil conditions. Nose and plain blocks of sandstone were laid alongside each rail, and a drain tile was laid in cinders between the two tracks, so as to keep the entire subsoil in good condition. Further details and photographs of this type of construction were given in an article by the writer in the Jan. 23, 1915, issue of this paper, page 189.

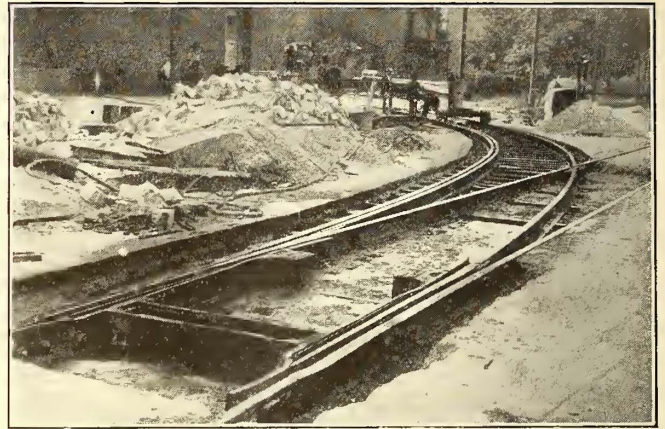
Recently a number of large wholesale warehouses desired to have a spur track, and it therefore became necessary to tear up a portion of this trackage for the installation of a turnout. The accompanying photographs will give some idea as to methods employed in this new installation. One photograph shows the method of tearing up the concrete, which was done with the aid of air-operated Sullivan hammers, the air being supplied from an electrically-operated Ingersoll-Rand compressor. The concrete wearing surface was in perfect condition, and was of flint-like hardness. It was found necessary to drill it into small pieces, seldom as large as a man's fist.

It was considered inadvisable to interfere with the old construction except where absolutely necessary, and for this reason no excavation was made below the top of the ties, except that four trenches were constructed for the installation of ties to hold the turnout track to the main line rail. In this way the only parts of the main line which were interfered with were portions of rail where the actual switch points and frog were installed. For the connecting ties, mentioned above, 60-lb.

steel rails placed upside down were used, and they were welded with the oxy-acetylene flame to the main line rail, thus forming a complete tie between the old and the new construction. The turnout rails were also welded to the steel ties of the original construction, so that the entire structure is securely tied together. Instead of copper bonds, the joint plates were installed upside-down, the flange being placed uppermost, and were welded at each end to the underside of the head of the rail, thus forming the bond. On the curved portion of the track, wooden ties were used, with 1½ in. of well-tamped pea gravel, on heavy concrete base. Sandstone blocks, well grouted with rich cement, were used as wearing surface throughout the entire installation.

The special work used was made by the Buda Company, and consisted of the insert frog and solid manganese double-tongue switches.

It is very interesting to note that the claims for the original construction have been borne out, in that after



SPECIAL WORK IN WHICH OLD STEEL RAIL IS UTILIZED FOR TIES WITH THE AID OF GAS WELDING

three years of use under very heavy freight traffic there was no sign whatsoever of deterioration of steel tie or joints. Further there was no indication that water had affected the structure, the original blocks being still in proper position, and the original concrete clinging to the rail. This showed that very little, if any, vertical motion had developed, especially at the joints, which had purposely been so placed as to come over the center of the steel tie, and thus to rest firmly on the steel plate.

In this connection, it appears to me one of the absolutely essential requirements of good concrete track construction is that traffic be absolutely discontinued from such installation until the concrete has had a number of days to set. In addition, in case of double-track construction, a longitudinal expansion joint should be left between the two tracks and, as cracks develop from time to time, some tar preparation should be used to prevent moisture from entering the structure.

Questionnaire to Public Representatives

To aid electric railway officials in their study of reconstruction problems, the ELECTRIC RAILWAY JOURNAL has sent out to various classes of public officials and other leading men a questionnaire asking their opinions as to what should be the relations between electric railways and the communities served. From the replies received an analysis will be made for publication in this journal.

Various Systems Used for Welding*

The Chief Methods of Welding Are Described Based on Blowpipe, Thermite and Electrical Methods

WELDING, strictly speaking, is the art of uniting parts of similar metal by pressure at a temperature short of the fusing point, but to-day a broader interpretation must be accepted. The modern extension of the term "welding" to other than the ferrous metals includes processes which are in the nature of autogenous soldering. Practically the distinction between the two processes has disappeared.

Pure smith welding, the original and only practical method until recently, consists in heating the parts (of wrought iron or steel) to a temperature at which they are plastic, bringing together the surfaces to be united and applying pressure by hammering or equivalent means. The cleanliness of the surface is secured by putting thereon some substance which will fuse, thus protecting the metal from oxidation. This flux must subsequently be removed.

Such welding is dependent upon the skill and conscientiousness of the operator. Even a good operator cannot be certain that every weld he makes is a good one. Smithy welding is restricted to comparatively simple shapes, and to articles of comparatively small cross-section, except in certain cases where welding is or was performed under steam hammers, *e.g.*, in the manufacture of iron guns.

The use of water gas in a development of fire or smith welding, and has been largely used for making large tubes. The gas, being composed of a mixture of hydrogen and carbon monoxide produced by passing steam over red-hot coke, is comparatively cheap, and when burnt with oxygen or air gives a very clean flame. By means of a blowpipe or combination of tuyeres, the edges to be joined are raised to a welding heat, and the weld is completed by following up this heating with rollers or a pneumatic hammer. The system is obviously suitable for long welds, such as tubes and shells, in place of fire heating. Water gas is also used in blowpipes for fusion processes.

FUSION WELDING

In the fusion method the edges or surfaces of the pieces to be joined are raised to the fusing point. Very generally fused metal of composition similar to the work is added, so that new and old metal are amalgamated to an approximately homogeneous mass. Both flame and electric methods of heating are employed. Fusion welding should properly be classed as autogenous soldering.

All of the flame blowpipes in practical use consist of arrangements for producing a jet of flame of regular form and size and directing it upon the work. These arrangements include means for regulating the proportions of a combustible gas and oxygen (or air), mixing the two gases and projecting them as a flame upon the work to be heated. For welding, the flame and the products of combustion in contact with the heated metal

should have a chemical reducing or neutral character. By far the most extensively used welding blowpipe method is oxy-acetylene. Acetylene and oxygen in equal volumes (in practice a little more oxygen than acetylene is always used) produce a flame with an inner core which has a temperature of about 4000 deg. Fahr. This core is white, and consists of hydrogen and carbon monoxide, both of which are reducing gases.

Generally the oxygen is supplied in cylinders in a highly compressed form (120 atmospheres) and, after passing through a governor which keeps the pressure constant, it provides the mechanical energy for the mixing of the gases and the projection of the flame. The blowpipe is a form of ejector, the oxygen pressure providing the propulsive force.

Dissolved acetylene has the advantage of purity, whereas acetylene as locally generated always contains impurities. Of these sulphuretted and phosphoretted hydrogen are the most objectionable. A purifier capable of removing these impurities is, therefore, necessary for good welding.

The oxy-hydrogen blowpipe has been used for more than a century, but it has been applied to welding on a large scale only since 1901, about the same time that oxy-acetylene was first used for this purpose. The best-known use of the oxy-hydrogen blowpipe before that time was for producing limelight. It had, however, several important industrial applications, especially for the fusion of platinum and for laboratory work. The hydrogen process has been used for a considerable time for lead "burning" or autogenous soldering.

A disadvantage of oxy-hydrogen for welding work is that the water vapor produced by combustion oxidizes some fused metals, especially iron. It is, therefore, necessary to use an excess of hydrogen over the proportion required for complete combustion, in order to mitigate this oxidation, and in practice about twice the theoretical quantity of hydrogen, *e.g.*, four times the volume of oxygen, has to be used. Nevertheless, the oxy-hydrogen blowpipe has its advocates, and for work with the more fusible metals the advantages in comfort and ease of observing the work may outweigh the disadvantages. Certainly it is best for lead burning and metal cutting.

Coal gas and oxygen produce a blowpipe flame which has considerable resemblance to the hydrogen flame. The products of complete combustion are carbon dioxide and water vapor, both of which are oxidizing gases. Oxy-coal-gas welding has been very little used, acetylene having proved easily superior, and coal gas practice has not developed.

Thermit welding is a fusion process applicable to ferrous metals. A mixture of aluminum and ferric oxide (Fe_2O_3) when ignited burns, or deflagrates, with the formation of metallic iron and alumina. The temperature of the reaction is very high, much above the melting temperature of iron and alumina. Essentially the process is carried out by fixing the parts to be joined in their proper positions and surrounding them with a mold of refractory material in which the space to receive the metal coincides with the jointing line.

This process is analogous to the old method of "burning" for repairing broken cast-iron articles by making a stream of molten cast iron flow over the joint, but the

*From paper by Capt. James Caldwell read before the Institution of Engineers and Shipbuilders (Glasgow). This is the first of a series of articles to be published in the ELECTRIC RAILWAY JOURNAL dealing with welding methods and equipment.

thermit metal is far hotter, the reaction temperature being over 5000 deg. Fahr. This welding method has been extensively applied to the joining of tramway rails and for repair work of various kinds.

SEVERAL METHODS OF RESISTANCE WELDING ARE USED

Resistance welding is a form of electric welding which is the closest approach to original smith welding. The surfaces to be united are approximately fitted, brought into close contact, and an electric current of sufficient strength is passed to bring the surfaces to welding heat. Then pressure is applied to force them into contact and to extrude oxide, etc., as far as possible. The heat produced by the passage of the current is greater at the contact surfaces than in the solid metal. The heat is further localized by using clamping electrodes of low resistance which hold the work as near as possible to the weld. Owing to the rapidity of the heating and the very small amount of air between the opposed surfaces, very little oxidation can occur. The earliest resistance welding was performed on iron and steel, but it was also found that other metals could be welded together. For resistance welding a large current at a low voltage is necessary. The several methods of resistance welding are as follows:

Butt Welding, which is applicable to the welding of rods, bars, etc., transverse to the length of the pieces.

Butt welding was first used on a large scale for jointing tramway rails and steel tires. It is also used for the jointing of wire and tubing in manufacture, cable making and windings of electrical machinery.

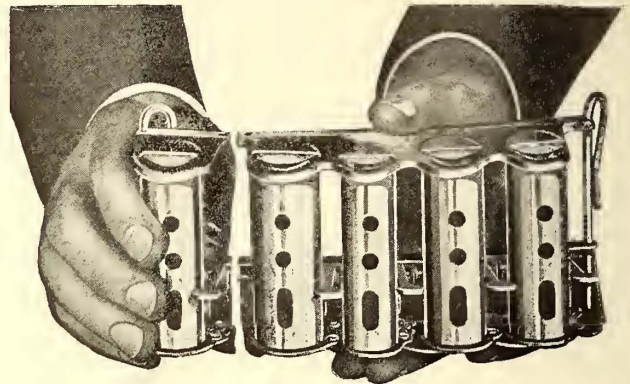
Spot Welding, which is most commonly used for uniting sheets or thin plates where a continuous weld or joint is not required. The two sheets are placed between electrode clamps which press them together, current is then switched on, the surfaces in contact are brought up to welding heat, and the pressure is maintained after current is off until sufficient cooling occurs. The sheets are then moved on to the next spot to be welded, and the operation repeated. Work so welded is therefore united by a line of small welds and may be compared to flush riveted work.

Seam Welding, which is an extension of spot welding, applicable to comparatively thin sheetwork. The electrodes are rollers through which the two sheets are passed when current is applied and the rollers revolved. The electric current heats up the sheets to welding point as they pass between the rollers, and they are thus united along the whole of the roller path. This continuous seam joint is stronger than spot welding, is fluid tight, and is comparatively rapid, as it is continuous. The surfaces to be joined must be absolutely clean, either sand blasted or pickled with acid.

Apropos of the article by W. G. Gordon in the issue of this paper for Nov. 30, describing the Canadian Northern Railway terminal electrification at Montreal, Quebec, the following information will be of interest. Regular operation of passenger traffic through the tunnel to and from the new terminal began over a month ago. Regular through trains now leave the terminal. In addition electric suburban service is being furnished, for the present, by means of electric locomotives pulling regular steam coaches.

New Development in Coin Changers

TO MEET the requirement growing out of the establishment of 6, 7, and 8-cent fares and the adoption of metal tickets, the McGill Ticket Punch Company, Chicago, Ill., has developed an improved lever-operated coin changer which will eject not only single quarters, dimes, nickels and pennies, but combinations such as four pennies, or four nickels at a time. In fact, the changer can be made up to fill practically any requirement desired, including the use of metal tokens. In order to obtain greater flexibility and more combinations when desired, the redesigning of the former four-barrel machine manufactured by this company has



ADJUSTABLE COIN CHANGER WITH FOUR OR FIVE BARRELS

been such that a fifth barrel may be added by the adjustment of one of the belt hooks as shown in the accompanying illustration.

Perhaps the greatest improvement over the former four-barrel machine is the change from a cam to a gear movement for the ejection of coins. This greatly reduces the wear on the moving parts. Another important feature is the absence of solder, all parts being securely riveted. The springs are made of heavy music wire. The ejectors can be quickly and easily locked by pressing a small lever at the side of the machine.

There are two main parts to the completed machine, the top and barrel forming one and the base, including the ejectors and auxiliary apparatus, the other. The two parts are quickly and simply assembled or disassembled for cleaning or repairing by the adjustment of a small nut on the end of each of the two belt hooks. This machine can be used as a means of fare collection or as a change maker in connection with fare boxes.

Long Transmission Line Span Over Maumee River

The Toledo Railways & Light Company has recently installed a 1500-ft. span across the Maumee River at Toledo, Ohio, as the initial step in the construction of a 30-mile 66,000-volt belt-line transmission system around the west side of the city.

The long span is located near the new Acme Power Company's plant which supplies power to the railway company, reinforcing the supply previously available from the company's older stations. On the banks of the river are steel towers, 190 ft. high, which were erected at a cost of \$30,000. There are twelve cables in the span, the combined tension being 30 tons.

LETTER TO THE EDITORS

Nation-Wide Publicity and a Fighting Spirit Urged

Nov. 27, 1918.

To the Editors:

Now is not the time for commiseration among electric railway operators over the present critical situation. The spirit needed is one of "over the top and at 'em" if the industry is to be brought on a par with that high standard of American efficiency which is a marvel to the world.

Whether the industry will be a victim of adverse public sentiment and thereby become a political football, or will seek to lead vigorously and intelligently in the solution of its problems, at the same time creating the favorable public relations that are so essential in this work, depends upon how soon this fighting spirit materializes.

What can we do? We can get together and get busy. We can organize a nation-wide publicity campaign, under the direction of a main publicity board in New York with regional publicity boards in various sections of the country. Each company can subsidize itself to the extent of enlisting its ablest men in the work. Publicity material outlining the situation in general and for each particular company can be prepared, distributed and posted in every trolley car in the country. Men can be picked from each company or furnished by the regional boards to speak before various societies, federations, clubs, etc., and obtain from such organizations resolutions upholding the industry in its just demands.

PUBLIC DOES NOT KNOW

The public is not informed as to the present situation. It is stated by the War Board that public men, such as are represented in some of the boards controlling industry in Washington, do not know the situation. The work of the War Board has been primarily publicity work to bring the situation to the attention of those in authority. But why does not the electric railway industry go directly to the public, which is the source of all authority?

In our form of government those in office are the representatives of the people, and they are guided in their actions by public opinion. You can't put anything across these days with commissions or legislatures or any other public bodies unless you first line up the people they represent. Why did the public utility commissioners in conference at Washington say that they realized the situation but desired federal support before taking action? Simply because they knew that public opinion would be adverse to action on their part. We would not be playing politics if we went to the people and demanded justice, so that the representatives might know they were truly acting according to the wishes of their constituents when asked to change our franchises. We would be playing politics if we went to the legislators first.

People are not so perverse that they are unjust in their attitude toward public utilities and just in everything else. They do not know the facts. They do not

realize our mutuality of interest, and they do not see that their own individual and community welfare is being jeopardized. The electric railway industry created adverse public opinion, and this has been left to ferment for many years. We have talked a good deal about publicity, but we have never done it right. The usual attitude has been: "It can't be done." Of course it can't unless the industry takes it up in the spirit that won't take "no" for an answer.

In 1914 a sub-committee on public relations of the American Electric Railway Association drew up a code of principles and recommended the establishment of a bureau of publicity. This was rightly hailed as one of the most important steps ever taken by representatives of the electric railway industry. Frank, fair and just public relations through publicity were acknowledged to be the fundamental factor in success. A swing around the circle was made by able men to spread the gospel in important cities. A good deal of talk among us followed; some companies hired press agents, and others advertised extensively. Never has this movement, however, been carried through in a nation-wide way.

Furthermore, seldom have the men of the industry gotten down and rubbed elbows with the public, talked with them in a frank, friendly way at their gatherings. The establishment of a real personal relationship between operators and the public might take a good deal of time day and night, but are there not some men willing to do real work for the industry?

As one gives, so he receives. This is a universal law of nature. If we can prove that we should receive more for the service we give, the public will give more. As for the desire of the public for the service, it is our job to sell it to them, to make them want it, to market our product in the manner of other industries.

INEFFICIENCY MUST BE REMOVED

One of the greatest reasons for the lack of public co-operation and support has been inefficiency, particularly in operation. In some branches of the industry the work is carried out through scientific study, but the end of business where the most is to be lost or gained is still run by rule of thumb methods.

The organization and operation of almost any railway suffers in contrast with that of a large modern industry such as the automobile industry, where competition is keen and manufacturing costs must be minimized by the greatest efficiency possible. In the latter case we find continuous scientific study and analysis of operations, records and cost systems which make possible these studies, rewards to employees by bonuses, etc., careful selection and training of employees, welfare work and so on.

But the railway man will probably say: "This is all very fine, but are the results warranted by the cost of doing these things, and anyway how are we going to get the money now?" There is plenty of proof that these things are warranted. As for the money—while the results will pay—it must first be secured from the public by convincing them that these things are necessary in order that they in turn may receive the most efficient service. And the public will not be convinced the more readily if the railways refuse to admit their

mistakes in not having kept pace when money was available.

It is a sad reflection on the electric railway industry that a state of bankruptcy had to be reached before sufficient spur was given to do things which should have been done before, the lack of money making it now doubly difficult. It is also a sad reflection that owing to the lack of understanding between the industry and the public it was felt necessary to stand behind the skirts of the federal administration in instituting those methods which have meant increased efficiency in service rendered.

The association, with the intensive co-operation of all its members, should immediately take up the study of these questions and work out practical methods for the prompt establishment of better public relations and a speedy increase of operating efficiency.

RAILWAY BOOSTER.

Identification Check Assists Fare Collection

**A Simple Ticket Enables Use of a Prepayment Area
With Peter Witt Cars and Makes Fare
Collection Certain**

THE Mahoning & Shenango Railway & Light Company has had several Peter Witt cars in service on the Youngstown, Ohio, city lines for nearly a year. During this time a study of their operation has been made under the supervision of C. D. Smith, superintendent of transportation, which has proved their suitability for heavy traffic service. The use of this type of car in connection with prepayment areas was a question with which the company was not troubled until the opening of the season at Idora Park, which is located at the terminal of one of the city lines. On holidays this line carries about 45,000 patrons who are loaded from a prepayment area at the park. This loading platform is independent of the unloading platform and admission is gained from entrances at which conductors with fare boxes are stationed. Passengers board the cars from this platform and receive their transfers from the conductors in the cars.

The equipment used on this park line is not uniform, but consists of Peter Witt, low-platform center-entrance, and double-end types of cars. The present season is the first during which the Peter Witt cars have been used. The collection of fares from passengers boarding the center-entrance and double-end cars after the cars have left the park never has presented any difficulty since, in these types of cars, the conductor controls the only entrance. However, during the present season passengers who boarded the Peter Witt car after it had left the park could not be distinguished from those who boarded at the park, and therefore could pass out at the center of the car without paying their fares. In order to avoid this condition an identification ticket, reproduced herewith, was devised. Tickets are carried

IDENTIFICATION CHECK

This Check Issued for Identification Purposes Only, and is to be dropped into fare box when Passenger Leaves Car.

IDENTIFICATION TICKET
USED ON FRONT-ENTRANCE
CENTER-EXIT CARS

by all conductors on the park line, and when they are working upon the Peter Witt cars with the prepayment area in operation the tickets are distributed to those passengers in the front of the car after the car leaves the park. These passengers are thereby distinguished from those who board the car between the park and the other terminal of the line, and as all the passengers in the front section of the car pass the conductor in leaving, they either must drop one of these identification tickets or a cash fare into the fare box. With this system there is no possibility of passengers leaving the car with their fares unpaid, and it interferes in no way with the operation of the prepayment area.

A further use has also been made of these tickets. Frequently passengers who have paid their fares and are standing in the rear of the cars discover front-end seats made vacant by passengers leaving the car. Ordinarily conductors could not permit such passengers to pass to the front inasmuch as the rear section is supposed to contain paid passengers only, and the moving forward of passengers from rear to front would cause confusion. By giving identification tickets to such passengers, uncertainty as to whether or not they have paid their fares is removed.

Experts Consider Transportation Reconstruction

ABOUT forty representatives of transportation and other interests, including the railroad committee of the Chamber of Commerce of the United States, met in Washington on Dec. 12 and 13 to formulate a statement of fundamental transportation principles for public discussion and possible legislation. J. N. Shannahan, Newport News, Va., member of the firm of Peck, Shannahan & Cherry, appeared in behalf of the electric railway interests of the country. J. H. Pardee, president of the American Electric Railway Association, had intended to be present but was unable to do so.

At the time this report was filed by the Washington representative of the ELECTRIC RAILWAY JOURNAL no question directly affecting electric railway interests had come up for discussion. Much of the discussion by the conference, which was held behind closed doors, was devoted to the subject of how long the government should retain control of the steam railroads. This was stimulated by the fact that on the opening day of the conference Director General McAdoo had sent a report to congressional committees urging the extension of the period of government control of railroads for five years.

Representatives of financial, commercial and industrial, agricultural, civic and social, labor, economic and all forms of transportation interests, as well as of the federal and state governments, were present to take part in the discussion. Authorization for the conference, which was held under the auspices of the Chamber of Commerce of the United States, was voted at the annual meeting of the National Chamber in Chicago last April.

It was suggested in Washington during the conference that it may become desirable to create an organization for educational purposes to convey to the public any suggestions which the conference may bring forth, although it is not intended that any report or resolutions attempting to bind all parties present shall be adopted.

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Cleveland Strike Settled

All Women Conductors Will Be Replaced by March 1—Company Will Employ Them Elsewhere

An agreement reached on Dec. 5 between the local branch of the Amalgamated Association of Street & Electric Railway employees and the Cleveland (Ohio) Railway ended the strike of the platform employees on that road. This agreement was as follows:

"It is hereby agreed by and between the undersigned that on and after this date no more women will be employed as conductors; that the Cleveland Railway will remove and displace the women that are now in its service as rapidly as possible.

"It is further agreed and understood that on and after March 1, 1919, no women will be in the employ of the Cleveland Railway as conductors."

This instrument was signed by President John J. Stanley, for the company; W. D. Mahon, president of the Amalgamated Association, and Fred Telschow, president; Fred J. Schulz, business agent, and W. M. Rea, secretary of the local branch of the Amalgamated Association.

The vote stood 595 for the settlement and 538 against it. About 800 members refused to vote. The plan that was accepted was the second one which had been formulated. The other one was somewhat similar, but provided for the retirement of the women on Jan. 1, 1919. Some of the features of the measure fixing Jan. 1 as the date for the women to go were not as acceptable to the men as those of the one finally adopted. Mr. Stanley said he had promised when the women were employed to take care of them, and that he proposed to live up to his promise by permitting them to take other places in the organization as soon as such places became vacant or the company needed additional help for which the women were qualified. The matter of uniforms will be adjusted by the company to the satisfaction of such women as had placed orders for them.

At a meeting at the Superior Ave-

nue carhouse on Dec. 6 the women conductors voted to end their careers as conductors on March 1, 1919, in accordance with the contract signed by the company and the union. They placed themselves on record, however, as regarding this agreement as a boycott under the laws of Ohio and the United States and the case will be presented to the Women's National Trade Union League, with the recommendation that it be taken to the War Labor Board for settlement as a national issue of feminine freedom in the matter of labor. The women are ably represented.

Service at Cost

Transit Commissioner of Pittsburgh Recommends City Study Boston Public Control Act

In the opinion of E. K. Morse, transit commissioner of Pittsburgh, Pa., as expressed in his annual report for 1918, just presented to the Mayor, the Boston public-control act should receive careful consideration with regard to the features applicable to the problem in Pittsburgh. In conjunction with the rapid-transit ordinances in Chicago and the Cincinnati ordinance, the Boston act should be used as a basis for the development of an agreement with the Pittsburgh Railways whereby all interested may realize their aims and desires. The service-at-cost plan, Mr. Morse says, has been incorporated in the more progressive actions taken to restore the electric railway transportation business to a normal condition. In this connection he says:

The abnormal conditions brought about by the war, resulting in radical advances in operating costs and maintenance expenses, render the rates of fare prevailing before the war inadequate. The cost-of-service plan meets the situation admirably and undoubtedly results in so stabilizing the electric railway transportation business that it will be more generally adopted and remain in force indefinitely. It is thoroughly equitable, guaranteeing a fair return to the electric railway on its investment and guaranteeing equality to the patrons that service to which they are entitled for the fare paid. In instances where it has been adopted provision is made for co-operation between the municipality and the operating company in such a manner that the possibility of inefficient operation and financial mismanagement will be reduced to a minimum, if not entirely eliminated.

Mr. Morse states that the trend of events and publications during the last year has advanced the position taken by the advocates of municipal ownership. He believes that the public generally is willing to pay for what it gets. Any fare over 5 cents, however, is unfortunate, and any fare over 6 cents is "excessive and unsound," but there must be a limit to the length of haul for a 5-cent fare. If it requires municipal ownership and operation to bring about adequate rapid transit in Pittsburgh, this should come at once.



Copyright by the American Red Cross

The Goal

The aim of the Red Cross roll call from Dec. 16 to Dec. 23 is to recruit under the banner of the organization every loyal American. The membership fee is \$1. The work of the Red Cross is not ended; indeed, the peak of its achievement will probably be reached in 1919. Let the Red Cross rollcall be the Christmas gift of every American man, woman and child to the nation and the world. Do your part to make the list complete.

Atlanta Wages Increased

War Labor Board Also Decides Union Button and Reinstatement Questions

The decision of the War Labor Board in the case of the Georgia Railway & Power Company, Atlanta, Ga., handed down on Dec. 6, closes the controversy between the men and the company as far as the War Labor Board is concerned, at least, until peace is declared. The trainmen struck some time ago because the company refused to reinstate certain employees who were associated with the disorderly element in the 1916 strike, which was followed by a large number of indictments for dynamiting. Among the issues in the 1918 strike were recognition of the union and the right to wear the union button on duty. Both sides agreed to submit these differences to the War Labor Board. During the hearings, however, the men brought forward many new claims that were not an issue in the 1918 strike, such as demands for substantial increases in wages for motormen, conductors and other employees.

WAGES UP 25 TO 40 PER CENT

The decision of the War Labor Board increases wages from 25 to 40 per cent retroactive to Sept. 23. The War Labor Board has recommended an increase in fare for the company, but the city has not as yet permitted a 6-cent fare as recommended by the Railroad Commission of Georgia. While it is expected that the War Labor Board's recommendation to the City Council will carry considerable weight, the fact remains that the Council has already voted down such a measure of relief for the company and is contesting an increase in fares in the courts. The Mayor-elect, J. L. Key, was elected on a municipal ownership ticket. He represented the railway men as attorney before the War Labor Board.

The board fixed wages as follows: First three months, 36 cents an hour; next nine months, 38 cents an hour; thereafter, 40 cents an hour. The wages of employees other than motormen and conductors are to be increased by the same percentage that the maximum of the wage scale paid to motormen and conductors is increased except that for all employees other than those under twenty-one years of age the minimum wage is to be 36 cents an hour, and with the further limitation that none of these increases is to operate to carry the rate per hour for journeymen to a figure in excess of the present union-craft rates in Atlanta.

UNION BUTTON TABOO

The company had issued an order forbidding its employees to wear the union buttons while on duty. The War Labor Board says that it can see no objection under ordinary circumstances to workers wearing a modest button of the ordinary size and design, worn presumably not for any objectionable purpose, but as men wear Red

Cross buttons or fraternal emblems. The board points out, however, that it already ruled, in the Columbus case, that "should this button-wearing stimulate angry feeling or lack of co-operation between union and non-union employees, the company might reasonably forbid the practice." It holds that in the Atlanta case the wearing of buttons seems to have had such results. The hope is expressed by the board that this feeling may abate, but it found that for the present the company is justified in forbidding the wearing of buttons while men are on duty. The order is not, however, to be construed to limit in any way the rights of men to wear union buttons while off duty.

The board holds that the company is under no obligation to recognize the union or to deal with representatives of the union who are not employees, but says that the company should continue its announced policy of permitting the organization of its employees and receiving committees representing them as an organization.

In regard to reinstating the so-called 1916 men the board said that it was of the opinion that it had no jurisdiction to pass on their cases, as the time of their discharge occurred before the date of the creation of the board and before the nation entered the war. In the case of the so-called 1918 men the board ruled that two should be reinstated and that the company should not be required to reinstate five other men as it was perfectly clear that they were incompetent and inefficient.

PRESIDENT ARKWRIGHT'S EXPLANATION

P. S. Arkwright, president of the company, said in part:

"The increased wages awarded by the National War Labor Board to motormen and conductors of this company amount to approximately \$316,358 per annum. This is in addition to the increase already voluntarily granted by the company since the war began. There will also be considerable increases to other employees. The War Labor Board finds that unless the company is permitted to increase its fares it will not be able to pay the increased wages and continue the present railway service. It therefore recommends that the City Council should permit an increase in fares in order to pay the wages awarded to the men. We hope that the City Council will permit this necessary increase in fares."

In a letter dated Dec. 5 from the War Labor Board to the Mayor and Council of the city the board said in part:

"We have felt that the men are entitled to higher wages awarded to enable them to meet increased living expenses. We are equally convinced of the necessity and justice of increased income to this company through increased fares to meet the cost of the

service. We have been urged to make the award of increased wages conditioned on increased fare. The fixing of street railway fares is, however, outside our province and we have felt sure that the local authorities having control of the fares would see that the increase necessary to meet the award is allowed. The board urgently recommended that justice requires an increase in the fares of this company."

Arrests for Accident

Mayor of New York Orders Five B. R. T. Officials Arrested, Charging them With Manslaughter

Timothy S. Williams, president of the Brooklyn (N. Y.) Rapid Transit Company; John J. Dempsey, vice-president; William S. Menden, chief engineer; John H. Hallock, of the New York Consolidated Railroad; Thomas F. Blewett, division superintendent, and Edward Luciano, motorman, were held for the grand jury on Dec. 11 in connection with the wreck on Nov. 1, on the Brighton Beach line in which more than ninety persons were killed and more than 150 injured. Mayor Hylan, sitting as a magistrate in Brooklyn, signed warrants charging the six men with manslaughter.

Luciano was the only one of the six in court when the Mayor announced his decision. Bail for the five officials was fixed at \$10,000 each. Luciano's bail was continued at \$5,000.

The Mayor said that the hearing seemed to have brought out another fact—that of the failure and neglect of the Public Service Commission for the First District properly to inspect the construction and equipment of the road. The Public Service Commission, according to the Mayor, had been flagrantly derelict and willfully negligent of the duties imposed by law. He continued by saying that he considered it his duty to direct Harry E. Lewis, district attorney, to endeavor to find out whether the penal law had been violated by the commission, by reason of the apparent neglect of obvious duties.

Charles Bulkley Hubbell, chairman of the Public Service Commission, made a statement concerning Mayor Hylan's allusions to that body, in which he declared:

"The facts as to the change in the grade of the curve at Malbone Street (the point at which the accident occurred) will be developed in due season before the proper tribunal. For the present it may be sufficient to say that the original plans were filed and approved, and the amending plans were filed and became effective before any member of the present commission was in office. Mayor Hylan did not have the courage to say that the only evidence before him showed that the change was made by the engineering experts in the interests of greater safety, and that a greater elevation on this curve would have made disaster more likely and more serious."

I. T. S. Interurban Strike

Employees Not Amenable to Reasoning of Union Officials, Company Officers or Members of War Labor Board

Unexpected to the company and to officials of the Brotherhood of Interurban Trainmen, the trainmen on the St. Louis division of the Illinois Traction System, Peoria, Ill., walked out at midnight on Dec. 5. In sympathy the men on all the other divisions also walked out and 450 miles of interurban railway were idle for a whole week up to Dec. 11. The strike was still on at that time.

More than 300 men are involved. They include the men on all the interurban divisions and the bridge car trainmen employed by the St. Louis Electric Terminal Railway. The company had made no attempt to operate up to Dec. 11, the time that the telegram was filed upon which this account of the matter is based.

NEGOTIATIONS REVIEWED

The strike was called after failure to reach an agreement on the wage scale, but it was not authorized by the officers and committee of the Brotherhood of Interurban Trainmen, who were negotiating with the company at the time the men went out. The president of the brotherhood notified the men to return to work, but they refused.

The contract which the company had with the men expired on Dec. 1. Instead of taking up the matter with the company as usual, the trainmen went to the War Labor Board in August with a request for 65 cents an hour for motormen and conductors, passenger and freight. The board held up the hearing in the case until Nov. 21. It then told the men the case was similar to the Birmingham controversy, referred to in the *ELECTRIC RAILWAY JOURNAL* for Oct. 12, page 667, in which the board refused to intervene because the agreement between the company and the union representing the men specifically provided a means of settlement which the employees had not invoked. In the Birmingham case the board would not take jurisdiction.

QUIT WHILE NEGOTIATIONS WERE PENDING

Negotiations with the company were then started with a conference on Dec. 3. On top of this came an ultimatum from the men that they must have a satisfactory answer by Dec. 5 under penalty of a strike. The committee of the brotherhood and the officers of the company in conference on Dec. 5, however, agreed that more time was necessary. The men were informed that the conference would be continued on Dec. 6 and were told to stay at work. Over the instructions of their officers the men walked out.

The company agreed from the start to arbitrate the differences if the men would return to work, but the men refused. They finally decreased their demands to 55 cents an hour, but held to this arbitrary figure.

Since Dec. 9 conferences have been held in Springfield with business men from the communities affected in an endeavor to secure a settlement, but the trainmen have refused all efforts toward arbitration or conciliation. The company contends that the 55-cent wage is prohibitive. It has expressed a willingness to increase wages, but says that its revenues will not permit it to comply with the men's demands.

This is the first strike in the history of the interurban lines of the Illinois Traction System.

Kansas City Men Strike

Late on the night of Tuesday, Dec. 10, the local union of electric railway employees at Kansas City, Mo., voted to quit work at 4 a.m. the following morning pending an increase in their wages. Tuesday was pay day. Frank O'Shea of the International Union and the local union officials had previously called on Philip J. Kealy, president of the Kansas City Railways, and being told that wages could not be raised until fares were increased they indicated that they would wait for court or commission action.

Union officials had publicly indicated that they were standing by the agreement with the company under which the wage matter was submitted to the War Labor Board. This agreement made any increase awarded to the men dependent upon the ability to the company to secure additional revenue to meet any wage advance that might be recommended by the wage board.

One hundred trainmen reported for work on Dec. 11, but no effort was made to give service. Police protection is promised, and cars may be brought out later in the week. Most of the power plant workmen quit also, causing a suspension of the service on the interurban railways that are supplied with current by the Kansas City Railways. Trainmen on the Leavenworth line struck at the time the city men went out.

Fearing that the local authorities would deny an increase in fares to the railway, the company after the wage award sought to establish the authority of the War Labor Board over fares as well as wages in an action in the Federal Court at Kansas City in which it asked for an injunction to restrain State and municipal bodies from interfering with it in complying with the War Labor Board's findings with reference to wages and fares.

The court held that the award of the War Labor Board expressly negated any requirement of the increase in wages specified therein, and that with rate cases pending before the commissions and in the absence of any threat of violation of law, it was not the premise or duty of the court to raise rates to put the award into effect. This decision was reviewed in the *ELECTRIC RAILWAY JOURNAL* for Dec. 7, page 1025. More recent developments in connection with the matter are referred to elsewhere in this issue.

Commission Storm Brewing

New York Said to Be Likely to See Changes in First District Commission by New Governor

Prospects seem to point to the internal affairs of the Public Service Commission for the First District of New York again being exhibited to public view. Errors of omission are charged against the commission in the conduct of its affairs that have caused a demand for action by the incoming State administration.

All these things preceding the session of the Legislature, it seems quite likely that the commission will again become the football at Albany this winter. Under the Moreland act the Governor can appoint a commission to investigate the actions of the Public Service Commission, and from the report of this commission could prepare charges against the individual members of the utility board. All this could be done without going to the Legislature.

In the last few days the storm has broken out afresh between one corporation and the commission, with statements and counter statements flying fast in the public press and with considerable careless use of the words Bolshevik and Socialist as terms of derision. In this connection counsel for the commission for the first district felt called upon to say: "The public service company which defies the law, disregards the courts and brings private ownership and management into disrepute is the chief ally of those who wish to usher in state socialism."

With all this in progress the Public Service Commission and the city administration through the Comptroller are each blaming the other for delay in rapid transit construction work which is absolutely necessary as a real measure of relief from transit conditions fast becoming intolerable and for which many riders are inclined to blame the operating companies. On the other hand, one of the companies has brought suit to compel the commission to hasten its compliance with the terms of the new rapid transit contracts in so far as they relate to the construction work under the commission's direction.

Merchants' Association Will Study Utilities

A special committee of the Merchants' Association of New York City, to study the operation of public utilities, has been appointed by William Fellowes Morgan, the association's president. In a letter asking the members to serve Mr. Morgan outlined the reasons for such a committee, saying: "Whether the public utilities of this country shall be acquired and operated by federal, state, or municipal governments, or whether they shall remain in private hands under suitable government regulation, is one of the vital questions now before the public.

"Although the Merchants' Associa-

tion has hitherto contended that government ownership and operation are economically, politically, and socially unwise and harmful, the changed conditions resulting from the war make desirable a re-examination of the subject to determine whether the association shall continue its previous policy, or whether, because of changed conditions, it shall modify its previous policy, and, if so, in what manner and to what extent."

The members of the committee are Frank R. Chambers, chairman; Prof. Joseph French Johnson, dean of the School of Commerce, Finance and Accounts, New York University; Otto H. Kahn, H. H. Porter, Francis H. Sisson, and James G. White.

Another Referendum

On March 25 Buffalo Will Again Vote on Question of Aiding International Railway

Residents of Buffalo, N. Y., must vote again whether they will pay a 6 or 7-cent fare to the International Railway, for the City Council on Dec. 9 re-enacted a previous resolution which allows the company to charge a 6-cent fare with 1-cent rebate slips until the determination of a just and reasonable rate by the Public Service Commission for the Second District.

This action on the part of the Council was made necessary by the filing of a referendum petition containing the names of more than 12,000 voters checked by the City Clerk and representatives of the International Railway.

March 25 has been fixed by the City Council as the date for the next referendum. The question to be voted upon will be the same as before, namely, whether or not the action of the City Council shall be repealed. By voting "yes" a voter opposes a higher rate of fare, and by voting "no" the voter favors the 6 or 7-cent fare. At the last referendum the vote was five to one against higher fares.

Although an agreement was reached on Nov. 13 between the municipal authorities and representatives of the railway whereby all pending litigation would be dropped and the so-called service-at-cost plan put into effect, no effort has been made by the Council to enact a resolution toward accomplishing the plan. Such a resolution would also be subject to a referendum. No resolution can be enacted by the City Council giving the railway the right to raise its fares, without a referendum vote of the people, if the proper referendum petitions are filed.

Fair at Lyons, France

The annual fair at Lyons, France, will be held next year from March 1 to 15. It is intended to replace the fair formerly held at Leipzig. Previous fairs were held in Lyons in 1916, 1917 and 1918. Invitations to American manufacturers to be represented are being sent out by the Mayor of Lyons.

Labor Board Limits Action

In order to meet the changed conditions resulting from the signing of the armistice, and the withdrawal of the federal government's control over the industries of the country, the National War Labor Board, after conference with the Secretary of Labor, has made an order providing that in the future it will act only in such cases as are jointly submitted to it for arbitration.

All complaints filed after Dec. 5, setting forth industrial controversies, will, therefore, be referred to the Labor Department for action by its mediation and conciliation bureau. Failing settlement in such cases, the Secretary of Labor will refer back to the War Labor Board only the cases in which both parties voluntarily submit the issues to the jurisdiction of the National War Labor Board and agree to abide by its decision. All cases which were before the board prior to Dec. 5 will be handled as they have been in the past.

This action was concurred in by all the members of the National War Labor Board, and is approved by the Secretary of Labor.



News Notes

New Time Zones Officially Fixed.—The Interstate Commerce Commission, in accordance with the provisions of the daylight saving law passed last March, has determined the proper limits of the time zones in the United States. On Jan. 1, 1919, the official boundaries will be substituted for the unofficial unsystematic ones that have heretofore existed.

Cincinnati Ordinance Attacked.—A taxpayer of Cincinnati, Ohio, on Nov. 13 filed suit in the Superior Court at Cincinnati against the city, the Cincinnati Street Railway and the Cincinnati Traction Company, attacking the validity and constitutionality of the ordinance passed by the City Council on Aug. 23 last, which provides for service at cost.

Amalgamated Hard Hit.—On account of the enormous increase in deaths, due to Spanish influenza, the Amalgamated Association of Street & Electric Railway Employees of America found it necessary, in order to pay the funeral benefits provided for under its by-laws, to levy an assessment of \$1 per member, for the month of November.

St. Louis Company Will Reinstate Men.—The United Railways, St. Louis, Mo., has announced that every man who left the employ of that company to join the armed forces of the United States, will be given his place back

when he returns to civilian life if he desires to return to the employ of the company and is physically qualified to discharge the duties as he did before he left.

City Authorities to Consider Municipal Ownership.—The first step in the readjustment of municipal activities in New York State as the result of the cessation of the war came on Dec. 3 when a call was issued for municipal authorities from all over the State to convene at Albany on Jan. 22. The three principal problems to be taken up will be municipal revenues, municipal ownership and hydroelectric power.

Bridge Municipal Line Nearly Ready.—Director of Public Utilities Hooke of St. Louis, Mo., announced on Nov. 28 that the municipal railway across the free bridge would be in operation probably by Feb. 1. Two one-man cars, each having a seating capacity of thirty-four persons, will be used in making the run from Seventh and Gratiot Streets, St. Louis, to East St. Louis and back. The fare will be 5 cents.

Bay State Wages Announced.—Wage increases for employees of the Bay State Street Railway, Boston, Mass., were awarded on Dec. 5 by the War Labor Board. The award fixes a scale varying from 41 to 45 cents an hour for motormen and conductors, with an approximate increase of 10 per cent to other employees, and is retroactive to Oct. 22. The finding of the board held that the higher cost of operation will call for adjustment of passenger fares.

Women Refused Union Cards.—Fifteen women, constituting the most recent class of women in training for work as conductors on the city cars of the Detroit (Mich.) United Railway, recently completed their educational period under the instructor, and under the terms of the company's agreement with the union all applied for the customary permits in order that they might begin work. Shortly after the applications were made the women notified the operating department that officials of the union refused to issue the necessary permits. The company will call the attention of the War Labor Board to the matter and ask for a decision.

Will Frame Objections to Depot Ordinance.—President Gahn of the City Council of Cleveland, Ohio, has appointed a committee to frame objections to the franchise ordinance drafted for the new union station to be erected by the Cleveland Union Terminals Company. O. P. Van Sweringen, president, and John L. Cannon, secretary of the company, recently appeared before the Council and discussed with members the points to which they object. They also stated that they would reply to the objections of the Civic League through the newspapers within a short time. These objections, they said, would prove to be unfounded when the ordinance was considered as a whole.

Financial and Corporate

Higher Fares No Solution

Jersey Commission Says Studies of Other Methods of Relief Might Have Been More Advantageous

In the opinion accompanying its order permitting the Northampton, Easton & Washington Traction Company, Easton, Pa., to increase fares, as referred to elsewhere in this issue, the Board of Public Utility Commissioners of New Jersey points out that increased rates evidently do not afford the real solution of the problems now confronting electric railways. The board says that there is apparently a maximum to the price that the public will pay for service, and it is suggested that a study of traffic conditions might reveal the necessity of a rearrangement of zones, and encouragement rather than discouragement of the profitable short-haul traffic.

The board, in discussing the conditions confronting the public utility companies in general as a result of the war, says:

The operating results of increased rates have become so unsatisfactory to many of the utilities, that it becomes pertinent to discuss the policy of meeting the emergency, which still exists; whether it should be met by increasing rates or whether some other method should not be studied and presented and, at least, tried. It is a singular commentary that almost without exception applications by utilities for increased rates in the present abnormal times have been opposed strenuously by the public affected. Most of the utilities in New Jersey have made application to the board for increased rates. They were opposed in most cases by representatives of municipalities in which they sold their product or furnished service, as well as inhabitants thereof, and civic bodies. This opposition is not peculiar to this State but has been manifested in every other State. Every increase in rate permitted has been unpopularly received by a part of the public and has been the subject matter of bitter and hostile denunciation.

To what extent this feeling of the public is involved in the reduction in traffic which always results from an increase in rates no one can fairly estimate. It is established, however, that increasing the unit of fare invariably results in reduced traffic. Necessity is one of the chief factors in determining the volume of traffic, so that it is fair to assume that the traffic lost is the short-haul traffic.

It has also been demonstrated that the percentage of decrease in traffic is affected considerably by the amount of the increase. Each additional increase in rates makes the percentage decrease in passengers larger.

Traction officials concede that every increase in rates diminishes traffic. They differ, however, as to the percentage in loss of the number of passengers, and it is doubtful if any average percentage could be ascertained, as so many elements enter into the calculation.

Numerous applications have been made to the board for further increased rates in cases where it had previously allowed increases. The results of the operation under the rates allowed were disappointing because of the continued mounting of operating costs and the shrinkage in business. How long the emergency is likely to continue now that the armistice has been declared, and that peace is likely to ensue, no one can determine. How long the period will last before the prices of materials will become normal and to what extent the wages of labor will be adjusted is problematical. Presumably many utilities operating under the increased rates heretofore allowed will not obtain the result anticipated.

We desire to point out, therefore, that the policy of increasing fares and rates does not solve the existing difficulty. While utilities have centralized their efforts in solving their respective difficulties by increasing rates, studies of other methods might have been of greater advantage. Particularly is this true of the interurban and electric railways. There is a maximum to the price the public will pay for the service.

Northern Electric Wound Up

An increase of more than \$200,000 a year in the earnings of the Northern Electric Railway system of California was shown in the final accounting made on Dec. 3, by John P. Coghlan, receiver of the properties since Oct. 5, 1914. During Mr. Coghlan's management, \$467,572 was put into new construction and betterments. Funds totaling more than \$4,500,000 have been handled during the receivership and all bills incurred during that time have been paid. In addition \$105,584 in indebtedness has been disposed of that was incurred before the receivership. Cash on hand amounted to \$128,231. This sum Federal Judge M. T. Dooling ordered Mr. Coghlan to turn over to the Sacramento Northern Railroad, a reorganized company which bought the road at foreclosure on May 28, as noted in the ELECTRIC RAILWAY JOURNAL of June 15, page 1161.

Mr. Blair Is Pittsburgh Referee

William R. Blair, referee in bankruptcy, has been appointed master in the Pittsburgh Railways' receivership proceeding by Judges Charles P. Orr and W. H. S. Thomson, in the United States District Court. The order of the court empowers him to investigate the questions involving the payments of fixed charges, rentals, bond interest, improvements, and the keeping of separate accounts of receipts and disbursements of underlying companies.

Mr. Blair's duties will be strictly those of an investigator for the court. Mr. Blair's appointment was made upon a petition filed on Nov. 20 by Charles A. Fagan, one of the receivers. One of the first things to be accomplished, it is understood, is the investigation of the payment of fixed charges, bond interest and rentals.

The court further empowered the master to investigate and ascertain the reasonable requirements of the receivers and of the various municipalities through which the Pittsburgh Railways system operates, with respect to street repairs and improvements, which may be required or contemplated during the year of 1919, with a view to harmonizing relations among all persons interested in this phase of the case in order that the court may be advised what should be done by the receivers to comply with franchise obligations of the lines now operated by the receivers.

Asks for Receiver

Mortgage Trustee Acts for Bondholders of Buffalo & Lackawanna Traction Company in Default Case

Application for the appointment of a receiver for the Buffalo & Lackawanna Traction Company, Buffalo, N. Y., was made in the Supreme Court of Erie County at Buffalo on Dec. 9 by counsel for the City Trust Company, Buffalo, trustee of the mortgage under which the first 5's of the railway are secured. The action was forced by the petition of George Bullock, receiver for the Buffalo & Lake Erie Traction Company, for permission to abandon its lease of the Buffalo & Lackawanna Traction Company's line between Main and Clinton Streets, Buffalo, and the Lackawanna city line. The Buffalo & Lake Erie Traction Company was unable to pay the interest due on Dec. 1 on the \$1,600,000 of 5 per cent Buffalo & Lackawanna Traction Company bonds and a committee was formed to represent the bondholders.

ROAD OPERATED UNDER LEASE

The Buffalo & Lackawanna Traction Company's line was leased to the Buffalo & Lake Erie Traction Company soon after it was built. Recently the receiver for the Buffalo & Lake Erie applied to the city for permission to appeal to the Public Service Commission for the Second District, for determination of a just and reasonable rate of fare to be charged within the city of Buffalo. The City Council denied this right to the company and then Mr. Bullock reported to the bondholders' committee of the Buffalo & Lake Erie Traction Company, of which Alvin C. Krech, president of the Equitable Trust Company, New York, is chairman, to the effect that the company was losing money on its lines in New York State.

The application of Mr. Bullock for authority to abandon the lease of the Buffalo & Lackawanna line was heard on Dec. 3 before Justice Louis W. Marcus in the Supreme Court of Erie County. The petition was opposed by representatives of the Buffalo & Lackawanna Traction Company. They asked the court to adjourn the hearing until Dec. 31 so that the bondholders could make their plans. This was agreeable to Mr. Bullock.

STRIKE INCREASES TROUBLES

The difficulties of Mr. Bullock as receiver for the Buffalo & Lake Erie Traction Company increased at the time of the strike on the lines of the International Railway, Buffalo. The trainmen of the Buffalo & Lake Erie Company also went on strike, but returned when they received a 40-cent wage, with the promise that their case would be presented to the War Labor Board for adjustment. This board recently awarded the men a wage scale of 41, 43 and 45 cents an hour. The award is retroactive to Sept. 11. The War Labor Board recommends that the company be allowed a higher fare.

Glasgow Not Immune

Municipal Railway System That Has Paid for Itself Is Affected by Present High Costs

Although the Glasgow (Scotland) Corporation Tramways for the fiscal year ended May 31, 1918, had a net profit of £177,552 to be turned over to the common good, as compared to £160,984 in the preceding year, when all records were broken, the system shows signs of having felt the present-day burdens of higher operating costs.

TOTAL INCOME UP 12.1 PER CENT

The total income of the system for the last fiscal year represented a gain of £152,520 or 12.1 per cent, the increase in traffic receipts being cut to this figure by the decrease in other receipts. The interest on investments, however, declined from £78,637 to £8,579, with the result that the total income for the last year represented a gain of £82,462 when compared with that in the preceding year.

INCOME ACCOUNT OF GLASGOW CORPORATION TRAMWAYS FOR YEARS ENDED MAY 31, 1917 AND 1918

	1918	1917
Traffic receipts	£1,404,110	£1,245,507
Sundry receipts	8,525	14,607
Total revenue.....	£1,412,635	£1,260,114
Traffic expenses.....	£527,152	£395,736
General expenses.....	156,949	137,816
Maintenance and repairs..	179,812	143,758
Power expenses.....	86,029	67,231
Clydebank bridges.....	1,131	879
European war.....	£951,063	£745,420
	93,120	92,645
Total expenditure.....	£1,044,183	£838,065
Balance carried to net revenue account.....	£368,452	£422,049
Interest on investments.....	8,579	78,637
Total.....	£377,031	£500,686
Deductions.....	199,479	339,702
Surplus to common good	£177,552	£160,984

On the other hand, the operating expenses, excluding expenditures incurred on account of the war, showed an increase of £205,643 or 27.6 per cent. The balance before income deductions, therefore, was only £377,031 in the last year as compared to £500,687 in the year preceding, a falling off of £123,656.

INCOME DEDUCTIONS LESS

That this decrease was not reflected in the net profit was due to the fact that £78,846 for interest and £114,377 for sinking fund were not duplicated in the last year. It will be recalled that the Glasgow tramways department has in the last twenty years paid off out of revenue the capital cost of the undertaking. The payments were completed last year, and the tramways, with all their buildings and plant, now stand on the books of the municipal corporation without any corresponding capital liability.

The amount to the credit of the depreciation and permanent way renewals funds on May 31, 1917, was £181,200. The sum of £7,681 was expended during the following year and

£123,894 added, so that the balance on May 31, 1918, was £297,412. During the year £85,957 was expended for ordinary track repairs, and £78,510 was reserved at the rate of £400 per mile of single track.

The passengers carried in 1917-1918 numbered 430,946,566 as compared to 388,294,876 in 1916-1917 and the average fare per passenger was 0.782d. and 0.769d. respectively. The car-mile totals in the two years were 26,261,231 and 25,786,047 respectively, and the car-hours operated amounted to 3,500,415 and 3,466,732 respectively.

8,000,000 Fewer Passengers in Month

According to the monthly report filed by the Public Service Railway, Newark, N. J., with the Board of Public Utility Commissioners of New Jersey as required by the order allowing increased rates, the company carried 31,971,373 passengers in October, of whom 25,917,057 were revenue passengers. The company carried 8,000,000 fewer passengers in October, 1918, than during the same month of 1917.

The total passenger revenue for October, 1918, was \$1,608,983, as against \$1,551,941 for October, 1917. The total operating revenue of the company increased from \$1,589,105 for October, 1917, to \$1,654,392 for October, 1918. For the same period operating deductions increased from \$1,030,970 to \$1,349,007. The total operating income of the company decreased from \$559,129 in October, 1917, to \$305,453 in October, 1918. The gross income for October showed a decrease from \$569,204 to \$309,958 and the net income fell from \$136,947 to \$124,832.

The 7-cent fare was not made operative until Oct. 15. The company's report of course includes the first fourteen days of October, during which time there was a 5-cent fare with 1 cent for a transfer. The figures for October, 1918, show the net increase in passenger revenue to have been \$54,606, or 3.5 per cent over October of 1917.

Latest Montreal Report

The income statement of the Montreal (Que.) Tramways for the year ended June 30, 1918, follows:

Gross earnings from July 1, 1917, to Feb. 9, 1918.....	\$4,652,747
Allowance under new contract and other earnings from Feb. 10, to June 30, 1918.....	874,048
Total	\$5,526,796
Surplus from preceding year.....	856,449
Total	\$6,383,245
Operating expenses from July 1, 1917, to Feb. 9, 1918.....	\$8,148,004
Taxes from July 1, 1917, to Feb. 9, 1918.....	92,474
City percentage on earnings from July 1, 1917, to Feb. 9, 1918.....	250,509
Interest on bonds and loans for year.....	840,242
Interest on debenture stock for year.....	800,000
Dividends paid to April 30, 1918.....	254,633
Discount on bonds.....	223,112
Expenditure on renewals over amount carried forward from last year.....	106,808
Amount paid on account of first Tramways Commission up to June 30, 1918.....	15,000
Total	\$5,830,787
General surplus	\$552,458

In the accompanying table the gross earnings to Feb. 9, 1918, the date of the termination of the old franchise, are shown separately from the allowance under the terms of the new ordinance. The credit surplus balance at the end of the year was \$552,458, a reduction of \$303,991 from the surplus as it stood at the close of the fiscal year 1917.

The general financial provisions of the new franchise are known to the industry, but it is doubtless worth while to reproduce here the company's summary of the details:

The fares are to be fixed by the Tramways Commission, appointed by the Lieutenant-Governor in Council to administer the contract, and must be sufficient to produce a revenue that will meet the allowances provided for under the contract, viz: Operating expenses and taxes, operating profit, maintenance and renewals, 6 per cent per annum on the amount of \$36,286,295, as established by the contract; 7 per cent per annum on additional capital supplied during the continuance of the present world war and for two years after its close, to be received over a period not exceeding five years beyond the close of the war; 6 per cent per annum on working capital furnished by the company for the operation of its system; one-half of 1 per cent per annum on the sum of \$36,286,295, or \$181,431, for the purpose of covering the expenses incurred by the company in procuring additional capital. A rental of \$500,000 per annum is to be paid to the city during the period of the contract. A sum equal to 1 per cent per annum of the gross revenue is to be paid annually into a contingent reserve fund, until such fund shall amount to \$500,000. All the portion of the gross revenues remaining after the payment of the charges above described shall constitute the divisible surplus, and shall at the end of each year be distributed as follows: To the city, 30 per cent; to the company 20 per cent, and to the tolls reduction fund, 50 per cent. The tolls reduction fund shall be held in trust for the patrons of the company for the reduction of fares and shall be administered by the commission as provided for under the contract. Whenever at the end of any year the amount in this fund shall exceed \$1,000,000, the commission may, and whenever the amount in the fund shall exceed \$2,500,000, the commission shall, reduce the fares.

London Tramway Seeks Relief

Legislation to permit the London (England) United Tramways undertaking to be carried out without loss is before the select committee of the House of Lords. The system includes 50 miles of lines in receiver's hands. The company asks for the abolition of certain abnormal fares and for powers to revise fares and to carry out financial reorganization and reconstruction. It is proposed to jettison £1,500,000 of capital and to provide £400,000 for reconstruction and as a reserve and for renewals.

Financial News Notes

New Receiver for Pittsburgh.—George S. Davison has been named by Judge Orr as one of the three receivers of the Pittsburgh Railways to succeed James D. Callery, resigned.

Changes in Personnel.—The following changes have been made in the personnel of the Kensington & Eastern Railroad, Chicago, Ill.: C. A. Peabody to succeed C. H. Markham as president; A. S. Baldwin, formerly chief engineer of the company, to succeed C. M. Kittle as vice-president; L. A. Harkness to succeed O. F. Nau as treasurer, and E. L. Thompson to succeed A. S. Baldwin as chief engineer.

Tiffin Line May Be Saved.—After a citizens' committee had audited the Tiffin, Fostoria & Eastern Railway Company's books and found a deficit of \$400 for November, the City Council at Tiffin, Ohio, granted the company a fare of 7½ cents. The company agreed to give this rate a test of sixty days. If this does not produce sufficient revenue to pay operating expenses, the company may suspend operation in the city.

Another Road Abandoned.—Service on the Norfolk & Bristol Street Railway, Foxboro, Mass., which operates from the Holbrook station in Randolph to the town of Stoughton, was discontinued on Dec. 2 by the present owners of the road, H. Cohen & Sons, junk merchants, Chelsea. The firm has been operating the road for the past two months on a 10-cent fare basis. Even this fare proved to be insufficient and the owners decided that they would shut down the road.

Initial Dividends Under Public Control.—The trustees of the Boston (Mass.) Elevated Railway have declared a dividend of \$2.04 1-6 on the preferred stock and \$2.50 on the common stock, payable on Jan. 2, 1919. These are initial dividends under public control and call for \$658,235. The odd amount declared on 7 per cent preferred is due to the fact that the stock was not fully paid on July 1, the first subscription payment of \$35 being made at that time and other payments later.

Would Abandon Branch.—The Empire State Railroad Corporation, Syracuse, N. Y., has applied to the Public Service Commission for the Second District, for approval of the proposed abandonment of its line from the Riverside Cemetery in Scriba running southerly along the River Road and private right-of-way to the Oswego River bridge at Minetto. The proposed abandoned section, it is claimed, is being operated at a continuous and considerable loss to the company without corresponding benefit to the public.

Influenza Affects Portland Earnings.—The Portland Railway, Light & Power Company, Portland, Ore., in a recently prepared report, shows that in decreased fares the company lost approximately \$80,000 in the three weeks of October covered by the quarantine against influenza. Losses in lighting revenues in the twenty-one embargoed days of last month amounted to about \$5,000, but this decrease will be accentuated in the meter readings on which November bills will be paid.

Massachusetts Electric Meeting Postponed.—Inasmuch as it will probably be necessary to hold a special meeting of the stockholders of the Massachusetts Electric Companies, Boston, Mass., in the near future to consider the terms of a reorganization plan now being formulated by the committees representing the share and security holders, the regular meeting will not be held on the third Wednesday in December, which is the usual date, but the shareholders will be called in special meeting when the occasion arises. This postponement has the approval of the committees representing deposited preferred and common shares.

One Per Cent Twin City Common Dividend.—The Twin City Rapid Transit Company, Minneapolis, Minn., has decided to pay a dividend of 1 per cent on the common stock. In a letter addressed to stockholders Horace Lowry, president of the company, explains that gross revenues for the current year decreased 5 per cent, compared with 1916, while operating expenses have increased 16 per cent. The stock of the company has been on a 6 per cent basis since 1909. Last March the quarterly disbursement on the common stock was cut to 1 per cent, and in June the dividend was passed. The payment of a 1 per cent dividend at this time makes a total of 2 per cent paid on the common for 1918.

Salt Lake & Utah Bonds Offered.—Wilson, Crammer & Company, the International Trust Company and E. H. Rollins & Sons are offering at 98½ and interest, netting about 7½ per cent, \$562,500 of first mortgage bond-secured three-year 7 per cent notes of the Salt Lake & Utah Railroad, Salt Lake City, Utah, dated Aug. 1, 1918, and due on Aug. 1, 1921. The bonds are in denominations of \$100, \$500 and \$1,000. The Northern Trust Company, Chicago, Ill., is the trustee. The 6 per cent bonds deposited at 75 per cent of their face value to secure the present issue are a first mortgage on all the property. The purpose of the issue is to fund indebtedness incurred for permanent extensions and improvements to the property.

Washington Short-Term Bonds Offered.—J. S. Wilson, Jr., & Company, Robert Garrett & Sons and the Mercantile Trust & Deposit Company, Baltimore, Md., are offering for subscription at 96 and interest, to yield approximately 7 per cent, \$1,000,000 of Washington Railway & Electric Company, Washington, D. C., five-year 6 per cent general mortgage gold bonds dated Dec. 2, 1918, and due Dec. 1, 1923, interest payable June 1 and Dec. 1. The bonds are in the denominations of \$1,000 and \$500, with the privilege of registration as to principal. They are a direct mortgage on the entire property, subject to underlying liens which cannot be increased during the life of the present issue and none of which mature until two years after the maturity of the present bonds. The purpose of the issue is to provide for the purchase of fifty double-truck prepayment cars and to reimburse the company for other capital expenditures to meet heavy demands of traffic. The Public Utility Commission of the District of Columbia has authorized the company to construct a double-track connection on Seventeenth Street, Northwest, between its tracks at Seventeenth and Eighth Street and those of the Capital Traction Company at Seventeenth Street and Pennsylvania Avenue, and in this connection has further authorized the company to issue \$150,000, face value, of general improvements 6 per cent debenture bonds to be dated Jan. 2, 1919, and payable Jan. 1, 1925, and to pledge the bonds as collateral for a loan of \$125,000 from the United States Housing Corporation, the latter sum being the estimated present cost of the track extension just mentioned.

Electric Railway Monthly Earnings

ATLANTIC SHORE RAILWAY, SANFORD, ME.						NEW YORK (N. Y.) RAILWAYS					
Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income	Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Oct., '18	\$9,961	\$9,542	\$419	\$388	\$31	1m., Aug., '18	\$926,929	*\$766,031	\$160,898	\$277,101	†\$173,522
1m., Oct., '17	11,804	11,187	617	431	186	1m., Aug., '17	1,136,769	*800,598	336,171	282,942	†102,379
AURORA, ELGIN & CHICAGO RAILROAD, WHEATON, ILL.						2m., Aug., '18	1,832,759	*1,524,558	308,201	558,032	†163,662
1m., Sept., '18	\$210,299	*\$165,455	\$44,844	\$37,177	\$7,667	2m., Aug., '17	2,237,000	*1,599,577	637,423	565,552	†169,191
1m., Sept., '17	202,865	*138,015	64,850	35,574	29,276	PHILADELPHIA (PA.) RAPID TRANSIT COMPANY					
9m., Sept., '18	1,602,068	*1,360,933	241,135	323,928	†82,793	1m., Oct., '18	\$2,462,188	*\$1,780,709	\$681,479	\$820,404	†\$138,925
9m., Sept., '17	1,638,859	*1,165,943	472,916	321,659	151,257	1m., Oct., '17	2,602,140	1,514,809	1,087,331	810,889	276,442
						4m., Oct., '18	10,642,529	6,976,882	3,665,647	3,271,930	393,717
						4m., Oct., '17	9,895,799	5,738,589	4,157,210	3,245,825	911,385

* Includes taxes. † Deficit. ‡ Includes non-operating income.

Traffic and Transportation

Kansas City Case Appeal

Railway Will Continue Its Effort to Secure Revenue to Permit It to Increase Wages

The Kansas City (Mo.) Railways will seek to secure higher fares, with the backing of the decision of the Federal Court, referred to in the *ELECTRIC RAILWAY JOURNAL* for Dec. 7, page 1025, and the award of the War Labor Board, through the State commissions, and the City Council.

COMMISSION DECISION EXPECTED SOON

A decision is expected shortly from the Missouri Supreme Court, which will pass on the authority of the Public Service Commission of Missouri to order 6-cent fares on the Kansas City Railway lines in Missouri.

The Public Utilities Commission of Kansas possibly will hold a session (postponed until "after Nov. 7") to take up the matter of fares on the Kansas side. Both of these bodies, it is understood, had been withholding their conclusions pending decision by the Federal Court on the War Labor Board's award.

The Kansas City Railways will also appeal to the United States Supreme Court from the decision rendered on Dec. 2 by the federal judges, in a further effort to secure a federal finding more specifically establishing the jurisdiction of the War Labor Board over wages and fares.

The Kansas City Railways has issued a clear and forceful statement of the fare situation. The company said:

COMPANY STATES ITS ATTITUDE

"The court decides, first, that the company is financially unable, and its general financial conditions will not permit it under present fares to pay the wages awarded; second, that the War Labor Board did not hold, or intend to hold, that the company should be required, or expected, to pay the advanced wages until an increase of fares was obtained; third, that this is a condition precedent to taking effect of the award and until increased fares are granted by either the State Commission or the City Council, the company cannot be required to pay the increased wages.

"The company will continue to make every effort to obtain increased fares and thus enable it to pay the awarded wages. To this end an appeal will be taken to the Supreme Court of the United States and, the law providing for such hearings being expedited, that court will be asked to act immediately. In addition the Public Utilities Commission and the City Council may be asked to act if there is hope that they will give relief.

"The public must realize, however,

that the court, utilities commission and the labor board have all decided, and it is true, that without greater fares no greater wages can be paid."

In order to further its interests as stated in the announcement to the public just quoted, the company has filed an appeal from the decision of the federal judges at Kansas City, Mo. The company has also asked the public service commissions of Kansas and Missouri to make inquiry, and to authorize such increased fares as will permit of payment of the increased wages mentioned in the War Labor Board's report.

The petition to the state commissions contains the following paragraph:

Therefore, without waiving its right to appeal said cause, applicant prays that the commission shall immediately inquire into and ascertain what should in addition to the duly regular fare be collected from passengers in order that the wages, as fixed by the National War Labor Board, can be paid, and when so ascertained, that the company be authorized to make such additional collections for the period during which such award is effective, which collections shall be held and kept separate and apart from its general fares than other funds of the company and for the sole purpose of carrying out the terms of said award. If the commission will but permit this to be done, the men may at once receive the increased wages as awarded, and not be compelled to wait the action of the Appellate Court.

Commission Urged to Act

War Labor Board Directs Attention of South Carolina Railroad Commission to the Shrinking Nickel

The War Labor Board has decided that the wages of motormen and conductors in the service of the Charleston Consolidated Railway & Lighting Company of Charleston, S. C., shall be increased to the following: For the first three months, 36 cents an hour; for the next nine months, 38 cents an hour; thereafter, 40 cents an hour.

This award the board has called to the attention of the State Railroad Commission in an appeal in part as follows:

"The board is informed that the railway is now operating at a 5-cent fare and that this fare is not sufficient to pay for the service rendered the public under present conditions and will be still more insufficient when the company pays the wages found by this board to be fair and just.

"The board respectfully calls your attention that at the time the 5-cent fare was fixed costs were far below what they are now. According to very careful figures collected by departments of the federal government the 5-cent fare in 1913 was about equivalent to a 7-cent fare at present, and although certain economies have been possible in the war of reduction of service, if the public desires to retain its street railways to a reasonable de-

gree of efficiency it must expect to pay more for the service rendered.

"The board further respectfully calls to your attention the financial recommendation in the last paragraph of the inclosed award."

Suggest Des Moines Raise

Conciliation Board Finds that Company There Is Properly Entitled to Seven-Cent Fare

The Iowa Board of Conciliation has ruled for the Des Moines City Railway in its fight for 7-cent fares. The decision of the board is only advisory and has no legal bearing on the controversy, but it is a complete victory for the railway in so far as substantiating its claim that the 7-cent fare is necessary if the company is to remain solvent. The decision of the board was announced by Mayor Truman A. Potter of Mason City, its president. It will be used by the railway as a basis for starting legal action to increase the rates. The ruling is the most important decision so far made affecting the Iowa utilities and their disputes with the municipalities.

The decision as announced gives a straight fare of 7 cents for individual payment, but the board recommends that all conductors be required to sell tickets at four for a quarter. The present rate of 2½ cents for school children is recommended for continuance.

Just previous to the decision by the board the District Court of Polk County, in which Des Moines is located, sustained the demurrer filed by the Des Moines City Railway in the injunction suit brought by the city of Des Moines to prevent the Board of Conciliation from hearing the case. The city of Des Moines refused to take any part in the hearing before the board, but the case of the company was submitted in detail by its attorneys.

Counsel for the city has announced that any attempt to raise rates will be fought to the limit. Emil Schmidt, president of the railway, in turn has announced that the company will make no effort to increase the rate without due process of law. Mr. Schmidt admits openly that the board's decision is without legal force, but he thinks that it will be of unusual importance in showing both the courts and the people the result of opinion arrived at by an unprejudiced body of trained men.

City-Interurban Transfers Stopped

Under the ruling the Public Service Commission of Oregon that it is unfair for the city service of the Portland Railway, Light & Power Company to furnish with free city transportation the passengers using the interurban trains, the issuing of transfers between the city and interurban lines has been discontinued. The opinion under which this change was brought about was reviewed briefly in the Dec. 7 issue of this paper.

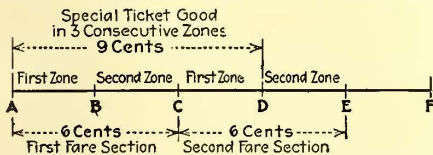
Six-Cent Zones

Massachusetts Northeastern Street Railway to Try New Fare for Six Months

A 6-cent fare unit with a modified zone plan went into effect on Nov. 14 on the Massachusetts Northeastern Street Railway, with the approval of the Public Service Commission for a six months' trial. The commission issued a short memorandum stating that the company's need for additional earnings was so urgent that the tariff should be experimentally allowed. By the new schedule the former 5-cent fare unit is abandoned, but the arrangement of fare sections and zones remains substantially as before. The accompanying diagram illustrates the application of the tariff to typical zones and sections.

RESEMBLES COPPER ZONE PLAN

The fare plan resembles in many respects the so-called copper zone system and differs from it only to the extent that



ARRANGEMENT OF FARE ZONES

Each fare section (except shore lines and section from Hudson Center to Nashua, N. H.) is 2 to 3 miles long; each zone is 1 to 5 miles long.

that a passenger may not ride through any two zones upon the payment of two zone fares. Thus, A to C is one fare section, A to B being the first zone and B to C the second zone; C to E is one fare section, C to D being the first zone and D to E the second zone. A passenger may ride through two zones, A to C for 6 cents, or from C to E for 6 cents, but he cannot ride from B to D for 6 cents, as he would be passing through two sections and would be obliged to pay 12 cents cash or to use a reduced rate ticket sold at 9 cents (ten for 90 cents) and good in any three consecutive zones.

The sections have been so arranged that where the greatest density of traffic is found, as at Lawrence, Haverhill, Newburyport and Amesbury, this rule does not apply, and passengers may ride through one-half of the two sections, or between B and D, for one unit of fare, 6 cents. This system was adopted mainly because it allows the use of the overhead register on fare collections. When the management decided that a rearrangement of its fare plan was necessary, its first aim was to adopt a plan practical on open cars, by far the greatest volume of business being handled on open cars during the summer months.

COPPER ZONES IMPRACTICABLE

Much time and attention were given to the copper-zone plan, but no satisfactory means was found of applying it on open cars of the company. Therefore the present modified zone

plan was adopted, with fare collections in every section but not in every zone. Workingmen's commutation tickets and excursion tickets are abolished in the new schedule.

The company found that the adoption of the 5-cent fare unit in the preceding schedule, with shortened zones, did not yield any material increase in recovered short-haul travel. The loss of regular riders to the extent of about 18,000 young men taken into the national service through enlistment or draft, and the increasing popularity of the private automobile, enhanced as it has been by high wages, are the principal factors in the loss of revenue from which the company is suffering.

I. U. T. Wants Quarter Cent More

The Union Traction Company, Indianapolis, Ind., filed a petition with the Public Service Commission on Nov. 27 asking for an increase in passenger rates from 2½ cents to 2¾ cents a mile. The petition includes all the interurban lines in the State operated by the company, but does not ask for an increase for the Indianapolis-Broad Ripple line.

It is generally understood that requests for similar increases will be made by other Indiana interurban lines. All the interurbans obtained a 2½-cent rate from the commission about five months ago, shortly after the United States railroad administration instituted a 3-cent rate on steam roads.

The petition refers to the increase to 2½ cents which the company put into effect on June 10 of this year. It says that "despite this increased rate the expenses have continued to advance at a greater rate than gross revenues have increased."

City Opposes Transfer Charge

The city of New York, by Corporation Counsel Burr, has filed with the Public Service Commission for the First District a brief in opposition to the application of the New York Railways for permission to charge 2 cents for transfers. It is also a reply to a statement made by James L. Quackenbush, counsel for the company, that "the charge for transfers, if permitted, would probably only delay the approaching time when receivership proceedings would have to be instituted because of the company's desperate financial condition." When this occurs, Mr. Quackenbush pointed out, the various lines composing the company would be separated into independent lines and then the public would have to pay as much as 15 cents in some instances for a ride that now costs only 5 cents.

Mr. Burr denies the jurisdiction of the commission in permitting any charge of more than 5 cents on the company's lines and states that even if the lines are separated the commission will have the power to order through routes, and joint rates and to direct that transfers be given from one line to another as was done in the receivership proceedings ten years ago.

Chicago Fare Hearing

Surface Lines Case Goes Over Until Dec. 23 After Considerable Discussion of Valuation Matter

The Chicago Surface Lines made its appeal before the Public Utilities Commission of Illinois on Dec. 10 for emergency relief in the form of a 7-cent fare. The application was resisted by Chester E. Cleveland, the city's special counsel, and over the objections of W. W. Gurley, general counsel for the railway, the hearing was continued until Dec. 23.

The city challenged the company's position in appealing to the Public Utilities Commission when it is contesting in the United States Supreme Court the commission's power over service regulations. Attorney Gurley stated that the companies are willing to abandon the appeal in the service case and that their appeal to the commission for higher rates should be accepted as a waiver of past objections.

Counsel for the city argued that the contractual relations between the municipality and the surface lines presented a situation different from any other which has been heard by the commission. The chairman explained that the views of the commission on contract ordinances were well known, but said it was possible that the Chicago franchises were different. He would like to hear arguments on this later.

VALUATION DISCUSSED

The city also contended that while the valuation of \$156,127,356 might be acceptable as a purchase figure, it should not be considered as a basis for rate fixing. The claim was made that this total is about \$50,000,000 too high. Attorney Gurley asserted that the lines were properly valued at this amount. He was willing that the commission should make its own valuation later when fixing a permanent rate.

Testimony was introduced by Leonard A. Busby, president; John J. Duck, general auditor, and J. V. Sullivan, statistician of the Surface Lines. The various exhibits had to do with the valuation of the properties, the earnings and expenses, the action of the War Board on wages, the increased cost of materials, and outstanding securities and dividends paid. Another exhibit showed 329 cities in which fare increases had been allowed to Dec. 1.

The valuation of the properties in 1906 had taken about nine months when the total was only \$50,000,000, and the time that would be required to revalue the property now would mean disaster to the Surface Lines if relief were to be withheld that long.

One of the commissioners wanted to know whether sufficient relief could be given if the city's 55 per cent of the net receipts were to be commuted under the terms of the ordinance. President Busby stated that there was no longer any net to divide or to commute. The net earnings for the year ending July 31, 1919, are estimated at \$4,426,634 less than for the preceding year.

Soldiers Moved Quickly

Winona Interurban Railway Hauls 830 Men from Winona to Indianapolis on Very Short Notice

In view of the fact that the War Department has not used the traction lines to any considerable extent in the movement of troops and supplies, the routing of 830 men and officers from the Winona Lake Training School to Indianapolis, Ind., on Nov. 23, via traction, possesses exceptional interest. The army officers in charge were inclined to doubt the ability of the Winona Interurban Railway to handle the order and were surprised when a complete schedule was submitted within less than one hour's time and they were informed that the movement could be put under way within five hours.

EIGHTEEN CARS USED

This movement involved the use of sixteen passenger and two freight trail cars, which left Winona Lake between the hours of 7.15 a.m. and 11.15 a.m., the last train arriving in Indianapolis at 3.55 p.m. The troops were loaded at the camp grounds, Winona Lake, and unloaded at Forty-second Street, Indianapolis, only three blocks from the State Fair Grounds, their final destination.

To handle the business it was necessary for the Winona Interurban Railway to secure some equipment from the Union Traction Company of Indiana, which demonstrates the fact that by pooling equipment traction lines can do many things on a large scale that otherwise would be impossible.

To the end that there might be no breaks in the schedule, officials of both the Winona lines and the Union Traction Company were stationed at various points along the route. J. C. Schade, general manager of the Winona lines, personally supervised the loading at Winona Lake; John O. Motto, general freight and passenger agent of the Winona company, looked after the personal comforts of the men as they left Warsaw, and C. S. Keever, superintendent of transportation of the Union Traction Company, took charge of the movement as it passed Peru, the junction point of the two lines.

COMPANY'S LARGEST PARTY TICKET

To the ticket agent at Warsaw belongs the honor of issuing the largest party ticket ever put out in the history of the Winona lines, if not the largest ever issued by any traction line in Indiana. The ticket was for 830 men and the amount was \$2,506.60.

Would Annul Chicago "L" Increase

State's Attorney Hoynes on Dec. 8 instituted court proceedings to annul the 6-cent fare on the Chicago (Ill.) Elevated Railways and to compel it to restore the former 5-cent rate. Mr. Hoynes' court action was an information in chancery filed in the Circuit Court by his assistant, Henry A. Ber-

ger, who will ask for a temporary injunction restraining the companies from collecting the fare advance. The increase in fare was authorized by the State Public Utilities Commission of Illinois.

Mr. Hoynes challenged the right of the Public Utilities Commission to raise rates of fare. He cited in support of his contention excerpts from the State Constitution which prohibit the General Assembly from granting street railroads the right to operate in cities without the consent of local authorities. He denied the right of the Assembly to release or extinguish liabilities or obligations of corporations to municipal corporations.

Attorney Gilbert M. Porter, representing the railway, is reported to have said that the answer to Mr. Hoynes' contentions would be that "every contract is subject to the paramount power of the State."

Los Angeles Fares Reaffirmed

In an opinion handed down by the Railroad Commission of California on Nov. 22 the commission reaffirmed its decision of Sept. 4 fixing the fares to be charged by the Pacific Electric Railway, Los Angeles, Cal., but changed that part of the September order governing the minimum fare. The new order reduces the minimum fare from 10 cents to 5 cents, and directs the carrier to apply a rate fixed on a mileage basis on interurban fares, the mileage to be computed on all distances beyond the street car zone.

The opinion of Nov. 22 was written by Commissioner Harvey D. Loveland on an application for a rehearing of the September order filed by southern California municipalities, who opposed the adjustment of rates made by the commission.

The "blanket rate" fixed in September by the commission is undisturbed by the decision of Nov. 22, the commission holding that the claim of the west coast beaches—Santa Monica, Venice, Ocean Park and Playa Del Rey—for a lower rate was not justified. Pasadena's claim that the percentage of raise allotted that district was too large, urged the commission to hold that the reason it appeared large was because the rates were too low as compared with the others before the September adjustment. The commission announced that its policy was to make the rates equitable and to dispose of fares that apparently gave a preference.

It appearing that through a misunderstanding the carrier had increased its 5-cent fare in some of the municipalities, the commission says in this connection:

"Acting upon instructions from the commission, the 5-cent fares have been restored. These fares, however, covered zones in the different cities and towns and should not be confused with the fares between interurban points where the mileage basis, with a minimum of 5 cents, will be observed."

Another Seven-Cent Road

New Fitchburg & Leominster Street Railway Fare Provides Seven-Cent Units

A 7-cent cash fare for the Fitchburg & Leominster Street Railway was approved by the Public Service Commission of Massachusetts on Nov. 30. The company has had a 5-cent fare unit, with zones of varying lengths, and in two instances workingmen's tickets are provided at a reduced rate during certain morning and evening hours over portions of the road where the regular cash fare is 10 cents. Between Lunenburg and Fitchburg these tickets are sold at the rate of 7½ cents each, and between Shirley and Ayer at the rate of 8½ cents each.

FIVE-CENT UNITS WERE IN USE

The company proposed to substitute for the 5-cent unit a 7-cent unit of cash fare, selling tickets good at all hours in lieu of cash at the rate of eight for 50 cents, or 6¼ cents each. Incidentally, it proposed to abolish the workingmen's tickets. Tickets for school children are to be sold at the rate of eight for 25 cents.

The company operates about 41 miles of track, serves about 70,000 persons, and its operating revenue for the year ended June 30, 1918, was \$456,702. Its total capitalization, including notes, is about \$41,000 per mile. It has paid dividends regularly from the beginning of operation in 1887, and since 1901 has paid 6 per cent yearly.

The commission found that the company needs additional revenue in view of increased cost of operation and the prospect of traffic loss, especially from Camp Devens, one of the national cantonments. The board approved the new rates with the exception of the proposed cancellation of workingmen's tickets, recommending that ten of these tickets be sold for \$1.

SIX-CENT FARE OPPOSED

There was some opposition to an increase in the fare unit above 6 cents, but the commission held that the proposed 6¼-cent tickets are a reasonable charge, and authorized the schedule, after revision of the workingmen's ticket rate, for six months' trial. The commission pointed out in its decision that by encouraging the use of tickets the schedule proposed will facilitate the collection of fares on the cars, remarking that it is quite as easy, probably, to sell a strip of eight tickets for 50 cents as to collect one 7-cent fare.

Bad Fix, All Right

We know a man who got so mad at the street car company when the fare was raised from a nickel to 6 cents that he decided to walk to and from work. Then the shoe man came along and raised the price of his \$5 shoes to \$12, and that made him so mad that he decided to ride on the street cars just to spite the shoe man.—W. P. STRANDBORG in *Watts Watt*.

Transportation News Notes

After Dishonest Conductors.—The Public Service Railway, Newark, N. J., has caused the arrest of seven of its conductors on the various lines in Hudson County on charges of embezzlement.

Six Cents for Bangor.—The Bangor Railway & Electric Company, Bangor, Me., was authorized on Dec. 4 to increase its fare from 5 cents to 6 cents by the Public Utilities Commission, as an emergency measure.

Ashtabula Fare Plea Tabled.—The City Council of Ashtabula, Ohio, has tabled the ordinance to permit the Ashtabula Rapid Transit Company to be allowed to charge a 7-cent fare for the next five years. This is regarded as tantamount to the rejection of the company's plea.

Hog Island Fare Increased.—The Philadelphia (Pa.) Railways on Dec. 3 filed with the Public Service Commission a new tariff to become effective on Dec. 26, increasing the rate of fare between Third and Jackson Streets, or intervening points in Philadelphia, and Hog Island from 8 cents to 10 cents.

New Tariff for Valley Forge Road.—The Public Service Commission of Pennsylvania has announced that the Phoenixville, Valley Forge & Straford Electric Railway had filed a new tariff of rates to become effective on Dec. 20. The new tariff makes numerous omissions, increases and decreases in existing rates.

Elevated Fare Argument Dec. 16.—Circuit Court Judge Jesse A. Baldwin will hear State's Attorney Hoynes' application for an injunction against the Chicago (Ill.) Elevated Railways charging 6-cent fares. Judge Scanlan was to have heard the case, but counsel for the elevated lines asked for a change of venue. Judge Baldwin set Dec. 16 for hearing arguments.

Three Zones Would Replace Two.—The Fishkill (N. Y.) Electric Railway has filed with the Public Service Commission for the Second District, a new schedule of passenger rates which it proposes as effective in Beacon and Fishkill on Jan. 6, 1919. It is proposed to divide the line into three fare zones, two of 5 cents each and one of 6 cents. The line has heretofore been divided into two 6-cent zones.

From Six to Seven Cents.—A 7-cent fare for each of its zones was allowed the Northampton, Easton & Washington Traction Company, Easton, Pa., on Dec. 4 by the State Board of Public Utility Commissioners of New Jersey. This is the second fare increase allowed this company within a few months, the board having permitted the railway to

charge 6 cents, instead of 5 cents, early this year.

Owosso-Corunna Fare Increased.—The City Commission of Owosso, Mich., has voted a fare increase to the Michigan Railway, Kalamazoo, Mich., which operates the Owosso and Corunna line. The city fare remains at 5 cents, but the fare to Corunna is 10 cents, or 15 cents for the round trip. The increase cannot become effective, however, until the Corunna Council and Caledonia township board ratify it.

Connecticut Company Talks Fares.—Advertisements were placed in newspapers on Dec. 10 by the Connecticut Company, New Haven, Conn., calling attention of patrons to the increased costs of maintaining electric railway service. L. S. Storrs, president of the company, says that increased fares will be needed, and that it is probable an effort will be made to secure them in the immediate future.

Brooklyn Service Order Not Met.—F. J. H. Kracke, of the Public Service Commission for the First District of New York has instituted action which will bring the Brooklyn Rapid Transit Company before the board at a hearing to explain why its service in the month of November was 16 per cent short of full compliance with the orders of the commission defining the service which the company should give.

Harrisburg Jitney Men Lose.—The Superior Court of Pennsylvania has *nolle prossed* the appeal of the jitney men of Harrisburg, Pa., from a decision by the Public Service Commission which drove the automobile men off the streets. At one stage of the effort to keep the jitney service alive the operators had the city use the initiative for the first time to pass an ordinance favorable to them.

Cleaner Cars for Boston.—C. D. Emmons, general manager of the Boston (Mass.) Elevated Railway, has been giving special attention to the condition of the cars of the company, and as a result the company announces that very shortly a thorough system of cleaning will be put into operation. The management says it has been greatly handicapped up to date by its inability to get labor for this work.

Jamestown-Lakewood Fare Reduced.—The Chautauqua Traction Company, Jamestown, N. Y., under special permission of the Public Service Commission for the Second District, has reduced from 16 cents to 10 cents the one-way fare in either direction between Jamestown and Lakewood. A twenty-coupon book, each coupon good for one ride in either direction between Jamestown and Lakewood, will be sold for \$1.50.

Sacramento Fare Appeal Withdrawn.—The Pacific Gas & Electric Company will ask the State Railroad Commission of California for the withdrawal of the company's petition asking for an increase from 5 cents to 6 cents in fares in Sacramento. When the petition has been withdrawn the City Commission will readopt the Coulter jitney

franchise ordinance prohibiting the operation of jitneys. This measure was rescinded some time ago.

Status of East St. Louis Fares.—The 7-cent fare case of the East St. Louis & Suburban Railway, East St. Louis, Ill., which has been before the Public Utilities Commission at Springfield, Ill., was continued until Dec. 11. The company, however, made application for an emergency fare of 7 cents in East St. Louis. The Belleville case, covering rates raised between East St. Louis and Belleville, has been taken under advisement by the commission.

Seven Cents on Another Jersey Road.—The Jersey Central Traction Company, Keyport, N. J., was authorized on Dec. 10 by the Board of Public Utility Commissioners to charge a 7-cent instead of a 6-cent fare. The company's application for permission to charge 8 cents was denied. A decrease in traffic because of the explosion in a munitions plant at Morgan, near Perth Amboy, and a consequent reduction of revenue, were responsible for the increased fare, the commission said.

Another Three-Cent Case in Illinois.—Judge Duane J. Carnes of Sycamore has granted an injunction in the Circuit Court at Rockford, Ill., restraining the Attorney General and the State Public Utilities Commission from interfering with the Rockford & Interurban Railway's advance of its passenger rate to 3 cents a mile. This ruling is in line with the decisions in three other similar cases in Illinois reviewed in the ELECTRIC RAILWAY JOURNAL for Dec. 7, page 1026.

Seven Cents for Enid.—The State Corporation Commission of Oklahoma has granted the application of the Enid City Railway for an increase in fares. The new rates will be 7 cents for single fares. Four tickets or coupons will be sold for 25 cents or seventeen for \$1. The increase was granted after indorsement by the Rotary Club and Chamber of Commerce, both of which organizations appointed committees to investigate the physical and financial condition of the company.

No More Flagging.—On recommendation of M. N. Baker, Supervisor of Public Utilities, motormen and conductors of Dallas, Tex., hereafter will not flag railroad crossings for cars to pass. Under the city ordinance it has been necessary for cars to stop at all railroad crossings and for the conductor to walk ahead and flag the car across, even though the crossing was merely a switch track and used infrequently. This has been found to be one of the chief causes of slow service.

New Albany Increase Denied.—A proposal to increase passenger fares from 5 cents to 10 cents between points in southern Indiana and Kentucky by the Louisville & Southern Indiana Traction Company and the Louisville & Northern Railway & Lighting Company, New Albany, Ind., was declared unwarranted on Dec. 10 by Attorney-Examiner Myron A. Pattison in a re-

port to the Interstate Commerce Commission. Mr. Pattison recommended, however, that the application be denied without prejudice to the right to apply for authority to fix rates at 6 cents.

High Costs Hit Municipal Line.—Chairman McLeran of the finance committee of the Board of Supervisors of San Francisco, Cal., has advised the Mayor that there is a possibility that the Municipal Railways will have to resort to a 6-cent fare because of the heavy increase in the cost of operation and the falling off of revenue during the influenza epidemic. The depreciation account and other funds have been drawn upon in order to make up the deficit. Supervisor McLeran said that the city faces having to raise the fares or making good the loss in the next municipal budget.

Must Report Service Interruptions.—The Atlantic Coast Electric Railway, Asbury Park, N. J., has been ordered by the Board of Public Utility Commissioners to maintain the equipment at its power station in proper operating condition and keep in stock such materials and supplies as may be necessary to reasonably assure the maintenance of the equipment and cars in proper operating condition. Beginning Jan. 1 the company must furnish the commission with monthly statements containing information as to condition developing at its power plant which result in interruption of five minutes or more.

Municipal Line Increase Impending.—Mayor Sweet of Attleboro, Mass., reported to the Council on Dec. 4 that the municipally-owned A. B. C. Railway between Attleboro and Briggs Corner, in its first ninety days of operation, shows a slight deficit, and unless conditions change an 8-cent fare will be necessary. The road is all that is left of the old Bristol County Street Railway. It was described briefly in the *ELECTRIC RAILWAY JOURNAL* for Nov. 23, page 933. To purchase the property the city negotiated a loan of \$22,500. If the road cannot be made self-sustaining the taxpayers will be called upon to meet the deficit as one of the general charges against the city.

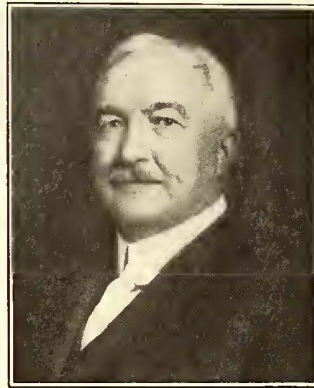
Would Prevent City Interfering.—The San Antonio (Tex.) Public Service Company, which operates the railway system of San Antonio, has filed suit in the United States District Court for the western district of Texas against the city, Mayor Sam C. Bell, the City Commissioners and the City Attorney, asking that a temporary injunction be issued restraining the defendants from interfering with the putting in force of a 7-cent fare. Application was made by the company to the City Commission in August to charge a 6-cent fare. The appeal was denied in October. In November the company asked for a hearing. This plea was also rejected by the City Commission. Up to Dec. 1 the city had not yet filed an answer to the present suit.

Personal Mention

Dean Cooley Heads A.S.M.E.

Is Well Known in Electric Railway Field for His Appraisal and Engineering Work

Mortimer E. Cooley, dean of the colleges of engineering and architecture of the University of Michigan, Ann Arbor, was elected president of the American Society of Mechanical Engineers at the annual meeting held during the week ended Dec. 7. The dean is well known in the utility field as he has for twenty years or more been active in appraisal and other engineering work in many parts of the



M. E. COOLEY

country. He is an investigator whose ability, saneness and fairness appeal to both sides in any controversy in which his professional services are a factor. His friendliness, good humor, and other human qualities have endeared him to hosts of students and have surrounded him with an expansive circle of friendship in the engineering profession. He believes in bringing into the classroom the atmosphere of the engineering world and his college faculties are therefore made up largely of men who have succeeded as practicing engineers.

AN ANNAPOLIS GRADUATE

Dean Cooley was graduated from the U. S. Naval Academy in 1878 at the age of twenty-three. For a few years thereafter he was in the service of the Navy but left, in 1881, to become professor of mechanical engineering at Ann Arbor, where he has been, with slight interruptions, ever since. He was chief engineer on the U. S. S. *Yosemite* during the Spanish-American war. He has served on many important commissions and boards and has received several university degrees, the highest being Eng.D. from the University of Nebraska in 1911.

Uel W. Lamkin has been appointed secretary of the Missouri Public Service Commission, effective on Jan. 13, 1919, to succeed T. M. Bradbury, deceased.

Lee Dennis has been appointed a member of the Railroad and Public Service Commission of Montana, effective in January, 1919, to succeed J. R. Hall.

F. W. Bedard has been appointed superintendent of the Urbana & Champaign Railway, Gas & Electric Company, Champaign, Ill., to succeed H. J. Pepper.

Frank Milholland has been appointed a member of the Board of Railroad Commissioners of North Dakota, effective Jan. 1, 1919, to succeed M. P. Johnson.

E. P. Doyle, master mechanic of the Chicago & Interurban Traction Company, Chicago, Ill., has also been appointed electrical engineer of the company to succeed R. J. Bell.

J. V. Davis, formerly general freight and passenger agent of the Washington & Old Dominion Railway, Washington, D. C., has been appointed general manager of the company.

J. M. Mellor, formerly acting manager of the Hartford & Springfield Street Railway, Warehouse Point, Conn., has been appointed secretary and general manager of the company.

H. E. Dalton has been appointed general manager of the Boise Valley Traction Company, Boise, Idaho, to succeed W. T. Wallace, who still retains his position as vice-president of the company.

Harold W. Clapp, for many years general superintendent of the Columbus Railway, Power & Light Company, Columbus, Ohio, has been made general manager, succeeding E. K. Stewart.

George S. West has been appointed treasurer of the Hartford & Springfield Street Railway, Warehouse Point, Conn., to succeed P. L. Saltonstall, who has been elected president of the company.

F. L. Jackson has been appointed assistant manager of the Humboldt Transit Company, Eureka, Cal., to succeed Mitchell Russell. Mr. Jackson will also succeed E. I. Pike as master mechanic.

C. H. Ragon has been appointed engineer maintenance of way of the Humboldt Transit Company, Eureka, Cal., to succeed J. C. Clark. Mr. Ragon will also succeed E. I. Pike as engineer of overhead construction.

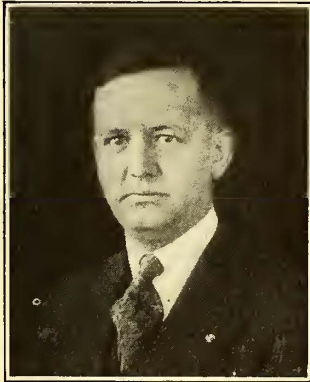
J. A. Bunkley has been appointed claim agent of the City & Suburban Railway, Brunswick, Ga., to succeed J. M. Armstrong, who still retains his po-

sition with the company as superintendent and purchasing agent.

L. L. Newman, vice-president and assistant general manager of the Birmingham Railway, Light & Power Company, Birmingham, Ala., has also been appointed chief engineer of power stations of the company to succeed C. T. Christian.

B. H. Elliott, formerly superintendent of power houses and substations of the Birmingham Railway, Light & Power Company, Birmingham, Ala., has been appointed electrical superintendent of the company to succeed F. V. Underwood.

Earl E. Hoyt who has been superintendent of inspection for the local and interurban lines of the International Railway, Buffalo, N. Y., for six years, has resigned to become vice-president and general manager of the Railway Bonding Company, Buffalo, N. Y.



E. E. HOYT

Previous to becoming superintendent of inspection, Mr. Hoyt was associated with the auditor's office of the International Railway.

E. O. Edgerton, a member of the Railroad Commission of the State of California, has been appointed president of the commission to succeed Max Thelen, who resigned to become supervisor of war contracts under Quartermaster-General Goethals.

B. Jordan has been appointed superintendent of power houses and substations of the Birmingham Railway, Light & Power Company, Birmingham, Ala., to succeed B. H. Elliott, who has been appointed electrical superintendent of the company.

W. C. Campbell has been appointed general superintendent of the Columbus Railway, Power & Light Company, Columbus, Ohio, to succeed Harold W. Clapp, who has been advanced to the position of general manager. Mr. Campbell has been assistant superintendent for some years.

E. K. Stewart has resigned as general manager and treasurer of the Columbus Railway, Power & Light Company, Columbus, Ohio. He will continue as vice-president and remain in

charge of the claims department. Mr. Stewart has been general manager of the road for many years.

Frank G. Frost, formerly the superintendent of the Houston Lighting & Power Company, Houston, Tex., has been transferred to New Orleans, La., to join the organization of the New Orleans Railway & Lighting Company, as superintendent of power. Both properties are controlled by the United Gas & Electric Engineering Corporation.

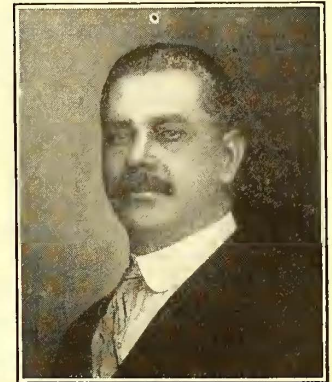
Stirling T. Dow, formerly assistant auditor of the Maine Central Railroad, with headquarters in Portland, has been named as general manager of the Atlantic Shore Line Railway, with headquarters at Kennebunk, Me. Mr. Dow was made acting general manager of the Atlantic Shore Line Railway some time ago to succeed L. H. McCray, who resigned to go into government service.

George S. Davison has been appointed one of the receivers of the Pittsburgh (Pa.) Railways to succeed James D. Callery, whose resignation is noted elsewhere in this column. Mr. Davison will serve in the capacity of receiver with H. S. A. Stewart and Charles A. Fagan. Mr. Davison has had wide experience in electric railway matters. He is a director with Mr. Callery of the Philadelphia Company and Pittsburgh Railways, a director of the Monongahela Street Railway and of the Pittsburgh & Birmingham Traction Company. He is also a director of the Pennsylvania Water Company. He is president and director of the Gulf Refining Company, the Bessie Furnace Company, Cambria Limestone Company, the Gulf Pipe Line Company of Oklahoma, the Gulf Products Company, the Gypsy Oil Company, the Indiana Oil & Gas Company, the Mexican Gulf Oil Company, the Sharpsville Furnace Company and the South American Oil Company, besides being vice-president and director of a number of other industrial concerns.

James D. Callery has resigned as one of the three receivers of the Pittsburgh (Pa.) Railways, giving as his reason his desire to devote his time to private business interests and to his family. Mr. Callery was president of the Pittsburgh Railways for many years. He was made receiver of the company last April when the courts were asked to take over and administer the affairs of the company. He entered the transportation business in Pittsburgh in 1884 as a director of the West End Street Railway. In 1898 he became president and director of the Second Avenue Passenger Railway and was the prime mover in the conversion of the Second Avenue and the West End Traction systems from horse to electric motive power. He was active in the mergers which brought together the isolated transportation systems of the city of Pittsburgh, and in 1901 when the Pittsburgh Railways was formed he was elected president of the company. He retired as president of the company on Jan. 1, 1917, in favor of

S. L. Tone. Mr. Callery retains the presidency of the Duquesne Light Company. He will also continue as vice-president of the Philadelphia Company and associated corporations.

B. C. Amesbury has been appointed assistant superintendent of the New York State Railways, Rochester Lines. Mr. Amesbury entered the employ of the Rochester Railway as a motorman in 1892. He continued in that position until 1897, when he received the appointment of inspector. In 1900 he was appointed general foreman of construction of the Rochester & Sodus Bay Railway, which was then under construction. When the road was opened for operation in the fall of that year Mr. Amesbury was appointed roadmaster of the company and continued in that position until 1906. He was then made superintendent and held that position until the consolidation of the Rochester Railway, Rochester &



B. C. AMESBURY

Eastern Rapid Railway, Rochester & Sodus Bay Railway and other properties into the New York State Railways. At the time of this consolidation he was appointed division superintendent at Rochester, in which capacity he continued up to the present time.

Obituary

Lieut. Harry M. Atkinson, Jr., the son of Col. Harry M. Atkinson, chairman of the board of directors of the Georgia Railway & Power Company, Atlanta, Ga., died on Nov. 2, of pneumonia, in a hospital at Angers. He had been taking his last training at an artillery school in the French town, preparing to go to the front. Lieutenant Atkinson was graduated from Harvard and had supplemented his work there with two years' training at the Massachusetts Institute of Technology. He won his commission at Plattsburg, and was assigned as instructor to several American camps before going abroad.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER,

SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES

BUSINESS ANNOUNCEMENTS

Conditions of Steam Turbine Manufacture

Shops Have Unfilled Orders on Hand That Will Keep Them Busy for Some Months

Steam-turbine business is expected by the producers to fall off. A survey has been made by the **ELECTRIC RAILWAY JOURNAL** of conditions in steam turbine shops, and it is found that these shops have contracts either directly or indirectly with the government which, depending on the plant, it will take all the way to a year to clean up. About 50 per cent of the manufacturing capacity will be absorbed in this work, although one of the smaller concerns finds that this work will take but 25 per cent of its capacity.

CONSIDERABLE STOCKS OF RAW MATERIAL ON HAND

These contracts are protected by prior purchase of raw material on government account. Speaking generally, the manufacturers have considerable stocks of raw materials on hand, which, having been obtained during the war period, are being carried at the high prices at which they were purchased.

Besides the government work there are other unfilled orders which will absorb a large part of the manufacturing capacity for some time. One plant puts this at 90 per cent, another at 75 per cent for the next six to eight months, and a third plant finds that unfilled orders will employ its facilities for the best part of a year to come.

Deliveries on orders now placed must consequently be somewhat delayed. They will depend, apparently, entirely on the volume of unfilled orders. Two companies making only small-size turbines quote one of them two weeks to three months and the other ten months on units under 2500 hp. Companies producing all sizes are quoting up to fourteen months in all sizes, although units apparently can be had in three to four months.

As far as could be learned no quotations are being made as of date of shipment. They are rather firm as of date of order.

NO PRICE CHANGES EXPECTED FOR SEVERAL MONTHS

Prices are expected by the manufacturers to hold for some time. This is concisely put by the sales manager of one concern as follows:

"We can see very little prospect of material price changes in finished apparatus for several months to come, as raw materials, which would naturally

be used in filling orders booked in the near future, will largely be drawn from stock purchased at the highest prices current during the past year. Labor conditions may change some, but probably cannot be greatly changed until living costs come down, and there seems no imminent prospect that commodities of this kind will be materially cheaper for some time. The inevitable trend of prices will be toward lower levels, but it will be vastly to the benefit of us all if these changes can be effected gradually, and we believe this can be accomplished if the business men of the country think calmly and act with care and continuance of the patriotism which was displayed during the war period."

The outlook for the future apparently shows diminished demand. A statement by one of the men prominent in the industry is to the effect that this condition is brought about by the largely increased capacity installed and under manufacture. "We think," says this man, "that when the war started central stations were generally under-powered. We believe that conditions have changed or will change to that of their being pretty generously powered until conditions settle down and the natural increase in demand comes upon them."

Wire Splicer Market Is Fairly Active

Supply on Hand Good Although of Not So Much Variety as Heretofore

Trolley wire trouble, with the advent of winter and its attendant storms of sleet and snow, is about due. Extremely cold weather has the effect of making the wire brittle and breakages are bound to occur. As a result the market for splicers is fairly active now although it is more or less steady at all seasons, owing to the fact that the life of the splicer depends entirely upon the amount of traffic passing over the line. Every time the trolley wheel strikes the splicer a small part of the ear wears off and on busy systems the splicers wear away rapidly.

Supplies of trolley wire splicers on hand are good although perhaps in not such variety as heretofore. Standardization in this line, as well as in many other electric railway equipment appliances, is rapidly taking place, the supply men state, and manufacturers are anticipating the cutting out of many little and uncalled for styles.

On the whole the market conditions are good and no price changes of note have taken place recently.

The Future of Prices

Increasing Volume of Purchases by Traction Systems Everywhere Eagerly Looked For

Speculation with regard to the future of prices and labor is general. Guesses are being made and, generally speaking, the trade is optimistic, almost without knowing why. The general feeling among the supply men is that the electric traction systems will buy and buy plentifully. When pressed for a reason the answer comes that the roads have put off purchasing so long that now the war is over they must buy.

There also seems to be a firm conviction among the sales forces that prices will continue at top notch for some time; this for the reason that stocks of raw materials were purchased at high prices, labor has not come down and the reconstruction demand will be large.

An investigation of the underlying economic conditions of the electric railway industry reveals many interesting facts in this connection.

That the electric roads will at once commence new construction and the rehabilitation of their lines in any considerable volume except where such

work can no longer be delayed has not been confirmed by inquiries. What effect the labor situation with regards to track work would have was outlined in this section two weeks ago. Events since then have only served to further confirm the statements then made.

On the other hand, the volume of purchasing for maintenance and for increasing operating economies must necessarily continue.

Also while the war was going on it was certain that all purchases would be pared to the bone. Now, it is just as certain that every day that passes means that the electric railway big buying market is just so much nearer. Sight must not be lost of the fact, also that for long it has not been possible to procure many items, especially rails. These products are needed and it is reasonable to suppose that as soon as shipments can be made that orders will be more frequent.

That lower prices will bring a greater volume of orders seems more than probable. To be sure, for just the moment the market is pretty dull.

This is the period of business readjustment and caution in buying is everywhere being carried out.

No one doubts that lower prices are coming. The only question to-day in the minds of both buyers and sellers, on this point, is how long before the lower prices will come and how they will come. That some commodities will be lower before others is natural. Nevertheless substantial decreases are foreshadowed by conditions.

Early this week the price of rails dropped \$5 a ton and so far as it could be learned from prominent steel concerns this cut is but the forerunner of more to come.

GOVERNMENT REGULATION DISCONTINUED

The government price-fixing program comes to a halt with the first of the new year. The steel men have already shown their hand with this week's substantial reductions. Copper producers now frankly admit that lower prices for copper can be expected after Jan. 1. Large stocks of copper are accumulating, and to dispose of these and the continued output, concessions the producers agree, must be forthcoming.

In other words the sellers' market which has held sway for more than three years is giving way to another buyers' market. To what extent prices will come down it is not possible to forecast. However, with producers staying in their present mind it seems certain that reduction will come gradually. Nevertheless the revision downward must certainly keep pace with the volume of incoming orders in inverse ratio.

On the other hand it would not be surprising to see prices during the next eighteen months fluctuate considerably, but with an unmistakable tendency downward. Copper producers, for instance, expect an immediate slump, but when business quickens prices are expected to harden automatically and then advance.

It is doubtful if buyers will accept this increase for long, so that the natural result will be another drop, etc. In this way it looks at present as though the producers will test out the market.

Imports of Lead and Rattan Permitted

By a bulletin issued on Dec. 9 the War Trade Board announces that the restriction of the importation of lead has been amended to permit the issuance of licenses for the importation of lead bullion, as classified under Paragraph 153 of the Tariff Act of 1913, when originating in Mexico and coming by ocean transportation. The board also announces that W. T. B. R. 176, issued July 26, 1918, restricting the importation of rattans and reeds has been revoked and that henceforth applications for licenses to import rattans and reeds will be considered by the War Trade Board for shipment from any country by any means of transportation.

Rail Prices Lower

Rolling Mills Getting Back to Peace Basis and Are Turning Out Rails on Back Orders

Immediately following the meeting of the American Iron and Steel Institute rail producers offered a reduced schedule on rails, which at once became effective. The meeting was held on Monday of this week at the Waldorf-Astoria, New York City, and was attended by more than 150 representatives of all branches of the iron and steel industry. They had been summoned by the general committee on steel and steel products of the institute for the purpose of expressing views and recommendations as to future policy and prices.

The new schedule on standard T-rails which went into effect on Monday afternoon follows: Open hearth rails 100 to 500 ton lots, \$57, and bessemer rails, \$55. Prices previously quoted were \$65 and \$63 respectively.

This is the first time in many months that any revision has taken place in the price of rails. For several years—1913, 1914 and 1915—the price averaged \$28 per ton. In 1916, the average was \$30 per ton and for 1917 up to November \$33 per ton, when a price of \$38 was reached and remained at this figure until the government fixed the price.

RAILS IMPOSSIBLE TO OBTAIN

It has been next to impossible for electric railways to obtain any rails at all in the past two years. If they were fortunate enough to secure any rails they had to pay in the neighborhood of \$65 or more for them in small lots.

The principal rolling mills are rapidly getting back to a peace basis and are now turning out rails on back orders. Some of these orders have been on the company's books for more than two years and it is understood are now being filled, except for necessary government work, in the order of acceptance. Even after 100 per cent production has been reached the mills will be busy for months to come.

The new schedule of prices does not at this date affect the price of girder rails, which has not changed any during the past nine months but has more than doubled since the war began. The girder rail situation as to deliveries is more difficult to forecast, but, some rails are coming in the market now for domestic use, and much better deliveries may be looked for after the first of the year.

One of the principal mills producing girder rails has been almost wholly engaged in rolling sheet steel for shells, but these contracts have now been filled and its energies will now be devoted to filling back orders on its books which have been accumulating for over two years.

The producers' committee was in Washington on Wednesday, when it asked the War Industries Board to fix

the prices approved at the Monday meeting. This, however, the Board refused to do on the ground that the board was to be disbanded on Dec. 31. It was then announced that the government no longer wished to act as a price-fixing medium.

The rail market, therefore, will be free from government control and supervision after the first of the year. Prices from that time on naturally will depend on the demand. It was hinted this week by more than one prominent man in the rail business that the current reduction is but a forerunner of others. It was learned that producers expect to bring the market price nearer to normal gradually in order not to disturb the market unduly, as would otherwise be the case.

At the same time that rail prices were reduced, cuts in sheets, blooms, billets, bars, etc., were recommended. It was proposed that blooms and billets be reduced from \$47.50 to \$43.50; bessemer pig iron, \$35.20; basic pig iron, \$33, and foundry pig iron, \$34, each to be reduced \$3 a gross ton; heavy shapes, now \$67.20, to be reduced \$4 a net ton; sheared and universal plate, \$72.80, to be reduced \$5 a net ton; merchant bars, now \$64.96, to be reduced \$4 a net ton; black sheets (No. 28), \$112 a gross ton, to be reduced \$6 a net ton; tinplate, \$7.75 per 100 lb. to be reduced 40 cents per 100 lb.

Carbon Brush Stocks Still Low

Demand Now Heavy and Supplies Are
Expected to Reach Normal Level
During January

Carbon brushes are in very heavy demand at present and owing to the country's war activity supplies on hand are in very limited quantity.

Large railway systems usually purchase from 5000 to 10,000 brushes at a time and began placing their orders as far back as six months ago, forecasting the possibility of a serious shortage which might have crippled the full operation of their lines. Fortunately the manufacturers were able to meet the situation and although at times only a small part of an order could be delivered, by parcel post or express, the wheels were kept turning and all lines, whether large or small, were able to operate.

Supplies now are beginning to show signs of improvement and it is expected will continue to do so although this will probably be a slow process. Stocks are not expected to reach normal again until some time during January.

Prices of brushes have advanced about 25 per cent in the past two years.

Track and Roadway

Municipal Railway of San Francisco, San Francisco, Cal.—The Board of Supervisors of San Francisco has authorized the Board of Public Works to prepare plans and specifications for the construction of the extension on Brighton Street between Ocean and Grafton Avenues.

San Jose (Cal.) Railroads.—The Railroad Commission of California has granted extensions of time to the San Jose Railroads, the Peninsular Railway and other companies in which to comply with the provisions of the State law known as the safety act, under which they must reconstruct their overhead lines.

Shore Line Electric Railway, Norwich, Conn.—Work has been begun by the Shore Line Electric Railway on the construction of an extension from the Jefferson Avenue terminal to connect with the tracks on Bank Street and thence to Montauk Avenue and Truman Street, New London.

Georgia Railway & Power Company, Atlanta, Ga.—Work is under way by the Georgia Railway & Power Company on the reconstruction of its tracks at Ridge Avenue and South Pryor Street, where the city made a change in the street grade. The track on the East Point line at Oakland City is also being relaid, a 90-lb. A. R. A. rail being substituted for 50 to 60-lb. T-rails.

St. Joseph, Mo.—Director of Public Utilities Hooke has announced that the municipal car lines across the free bridge would be placed in operation about Feb. 1.

Gloucester City, N. J.—Construction work is well under way on the new traction line of the Emergency Fleet Corporation from Broadway and Warren Street to Yorkship Village, with terminus at the new housing development for employees of the New York Shipbuilding Company. It is understood that the line will be leased to the Public Service Railway.

Trenton & Mercer County Traction Corporation, Trenton, N. J.—The Board of Public Utility Commissioners has ordered the Trenton & Mercer County Traction Corporation to make improvements and betterments in its system, including the completion of a signal system, the installation of new crossarms, insulator pins and insulators, new feeder lines and repairs to its ground system. The work will also include considerable rail construction, as well as the installation of fire protection facilities at the carhouse and shops of the company. It is understood that plans are under way for the construction of an extension from the present Trenton Junction division terminus on Grand Avenue to Ewing Avenue.

International Railway, Buffalo, N. Y.—Plans are being considered by the International Railway for the extension of its line on Franklin Street, Bailey Avenue and Abbott Road. The work is estimated to cost about \$750,000.

Penn Yan & Lake Shore Railroad, Penn Yan, N. Y.—An extension will be built by the Penn Yan & Lake Shore Railroad from Branchport to Hammondsport, about 12 miles.

Levis County Railway, Levis, Que.—Work on the reconstruction of the tracks of the Levis County Railway has been suspended on account of winter conditions. It is expected that work will be resumed next May.

Dallas (Tex.) Railway.—Mayor Joe E. Lawther, of Dallas, has recommended to the City Commission that the Dallas Railway be instructed to begin at once the making of surveys and the preparation of plans for two new street car lines to touch the Oakland Cemetery section. These lines are to be built as the first of the improvements to be made by the traction company under the terms of its franchise. Mayor Lawther asks for a survey and plans for a line extending from Second Avenue southwesterly by way of Harmon Street and passing along the entire southern boundary of the cemetery. The other line is to be surveyed as an extension from the Forest Avenue line in a southeasterly direction, reaching the northern boundary of the cemetery. Either extension would require about 1 mile of new track.

Willapa Electric Company, Raymond, Wash.—The citizens of Willapa have petitioned the Willapa Electric Company to establish an auto line to Willapa temporarily, and later extend its electric line to that city. The company has the matter under consideration.

Charleston (W. Va.) Interurban Railway.—It was expected that operation would be begun the early part of this month on the

new double-track extension of the Charleston Interurban Railway between Charleston and the United States naval ordnance plant at South Charleston. Work will be begun at once by the company double-tracking its line on Virginia Street from Russell Street to Court Street. This will leave only a small stretch of single track in the line between Charleston and the naval plant, that being over the South Charleston bridge. The improvement, when completed, will represent an expenditure of several hundred thousand dollars.

Power Houses, Shops and Buildings

Berkshire (Mass.) Street Railway.—The Berkshire Street Railway has notified the secretary of the Commonwealth of Massachusetts of its intention to petition the incoming legislature for permission to sell electricity and power for commercial and other purposes.

City Light & Traction Company, Sedalia, Mo.—A new 1000-kw. General Electric turbine will be installed by the City Light & Traction Company at its power house, and it is expected that it will be in service by January or February.

Interborough Rapid Transit Company, New York, N. Y.—The Public Service Commission for the First District of New York has awarded a contract to A. W. King, New York, for station finish on the Fifth and Lexington Avenue stations, at \$126,448.

Toronto & York Radial Railway, Toronto, Ont.—Plans have been prepared by the Toronto & York Radial Railway for the construction of a carhouse on Kingston Road, Toronto, for the Scarborough division.

Philadelphia, Pa.—Bids will be received until Dec. 23 by W. S. Twining, Director Department of City Transit, 754 Bourse Building, for furnishing and placing steel frame work and railings, concrete floors and parapets, side inclosures, etc., for four station platforms with connecting passages between platforms and station buildings of the Frankford elevated railway at Orthodox-Margaret Streets and Ruan-Church Streets, together with one over passage bridge and stairs, also altering existing girders at Orthodox-Margaret Streets.

Pennsylvania Railroad, Philadelphia, Pa.—Plans have been prepared by the Pennsylvania Railroad for the construction of a new one-story addition, about 18 ft. x 40 ft., to its power house at Butler Street and Glenwood Avenue, to cost about \$5,000.

West Penn Power Company, Pittsburgh, Pa.—Rapid progress is being made by the West Penn Power Company, which is controlled by the West Penn Railways, on the installation of a new 30,000-kw. unit at its plant at Windsor, to provide for increased capacity. The company is planning for the installation of a similar unit to be ready for operation by March 1.

Virginia Railway & Power Company, Norfolk, Va.—Plans are under consideration by the City Council of Norfolk for the purchase of the local power plant of the Virginia Railway & Power Company with a view of controlling the heat, light and power systems in this section.

New Advertising Literature

Link-Belt Company, Chicago, Ill.: Bulletin No. 353, covering coal and ash handling.

H. W. Johns-Manville Company, New York City: A 152-page book entitled "Service to Power Users" dealing particularly with heat insulating materials, steam packing and fuses.

Quigley Furnace Specialties Company, Inc., New York City: A leaflet which tells about its "Insulbrix," a cellular refractory brick for keeping heat in boilers.

Trumbull Electric Manufacturing Company, Plainville, Conn.: Catalog No. 11 setting forth dimensions and cost data for the company's electrical accessories.

Milliken Brothers Manufacturing Company, Inc., New York City: Pamphlet, "Space and Speed in Steel Buildings," descriptive of the standardized truss unit system of building construction, designed and manufactured by this company. According to the company hundreds of buildings of this type have been erected for the United States government in different parts of the country and they represent low initial cost of material, transportation and erection.

Rolling Stock

Colorado Springs & Interurban Railway, Colorado Springs, Col., as reported in the ELECTRIC RAILWAY JOURNAL of Oct. 26, furnishes the following equipment memorandum on the twenty-four cars to be delivered in December:

Number of cars ordered.....	24
Name of road.....	Colorado Springs & Interurban Ry. Co.
Date order was placed.....	Sept. 1, 1918
Date of delivery.....	December, 1918
Builder of car body.....	Cincinnati Car Co.
Type of car.....	Birney safety
Seating capacity.....	28
Interior trim.....	Cherry
Air brakes.....	Westinghouse
Armature bearings.....	Ball
Car signal system.....	Faraday
Designation signs.....	Hunter
Door operating mechanism.....	Safety Car Devices Co.
Fare boxes.....	Johnson
Fenders or wheelguards.....	H. B. wheelguard
Heater equipment.....	Gold
Headlights.....	Golden Glow
Journal bearings.....	Friction
Lightning arresters.....	Electrolytic
Motors, type and number.....	G. E. 258-2
Registers.....	International
Slack adjuster.....	Gould
Trolley catchers or retrievers.....	Keystone
Trolley base.....	Nuttall
Trucks.....	Cincinnati Car Co.
Ventilators.....	Utility
Wheels.....	24 in.
Special devices, etc.....	15-in. Hunter route signs

Trade Notes

W. F. Keckeisen, formerly advertising manager of the International Filter Company, and previously associated with the Federal Sign Company, has joined the staff of Russell T. Gray, advertising engineer, Chicago.

C. W. Y. Loucks, secretary and sales manager of the McKeen Motor Car Company, Omaha, Neb., resigned recently to enter an Officers' Training Camp at Plattsburg, N. Y. C. B. Matthal of the Union Pacific Corporation legal department, has been elected to succeed Mr. Loucks in the capacity of secretary.

Economy Electric Devices Company, Chicago, announces that the Kyoto (Japan) Traction Company, through its American purchasing agents, has bought an equipment of Economy electric railway meters for power-saving work. These meters are designed to record the energy consumption of the cars on which they will be installed.

Engineering & General Supply Company, Los Angeles, Cal., J. G. Monahan, manager, has been appointed the representative of the Drew Electric & Manufacturing Company for southern California and the State of Arizona. The Drew product consists of overhead trolley line material and a number of electric railway specialties. The Engineering & General Supply Company maintains sales offices at 400 San Fernando Building, Los Angeles.

Edison Storage Battery Company, Orange, N. J., announces a number of important changes in the staff of its sales organization. Bertram Smith, for the past three years district sales manager of the Detroit district has been appointed assistant sales manager, with headquarters at the main office, Orange, N. J. George F. Simons has been appointed district sales manager of the Detroit district. Mr. Simons has been associated with the Edison Storage Battery Company for the past three years. J. K. Mahaffey, who has been representing the company in Washington in connection with government business, has been appointed as sales manager of the Pittsburgh district.

Roller-Smith Company, New York City, announces the promotion of M. Frankel, now manager of its Chicago office, to the position of assistant sales manager. Mr. Frankel's headquarters will remain in Chicago, from which point he will supervise the activities of the company's offices in Cleveland and Detroit as well as in Chicago. His familiarity with the company's products gained through his connection with it for the past six years or more makes him particularly well qualified to handle the duties incident to his new position. The company also announces the appointment of W. A. McCombs & Company, Union Arcade Building, Pittsburgh, Pa., as its agent in the State of Pennsylvania west of Altoona and the entire State of West Virginia, to handle the Roller-Smith lines of instruments, circuit breakers and meters.