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Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

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Possible Reforms Are Denied to Private Companies

DEVELOPMENTS in Seattle since the municipality took over the transportation system give a somewhat amusing illustration of the difference that a point of view makes. For years the privately operated company in that city struggled along against adverse circumstances, getting no substantial help from the local authorities. Conditions there were practically the same as with other railway properties in all sections of the country. Immediately upon securing possession of the system, the city, under the direction of the superintendent of public utilities, quickly found ways to put into effect methods of economy which would have been thought improper concessions when the system was privately owned. Among the changes which have either been made effective or are contemplated are: Abolishing of all free rides, including city officials, firemen and policemen; inauguration of skip stops; prohibition of the parking of automobiles in the business district, and abandonment of non-productive feeder lines. Here we have a repetition of the policy of the federal government after it had taken over the steam roads and suddenly found it necessary and practicable to advance passenger and freight rates, although the Interstate Commerce Commission could not see its way clear to do this before. The changes made in Seattle are only part of what could be done for public utilities elsewhere. When the public has the whip hand, however, it does not believe in making concessions to the privately owned or operated companies. The people do not seem to realize that the betterment of their communities is bound up in the transportation systems. Perhaps a few more cases like that of Seattle will help to convince them that these companies have been seeking only justice, and what is fair for one is fair for another. These instances may not be without beneficial results.

New York Law Makes Employment of Women Impracticable

THE welfare workers of New York have had their way and there is now on the statute books of that State a law which provides that women employees of transportation companies cannot work more than nine consecutive hours a day, fifty-four hours each week, six days each week, or before 6 a.m. or after 10 p.m. The result of this must be the practical disappearance in New York of women from a field which afforded higher pay and less arduous conditions than many other lines of work open to them. The exigencies of city traffic absolutely necessitate "swing" runs and as long as there is a morning and an evening peak the employee who is not permitted to work more than nine consecutive hours cannot fit into schedules which such circumstances require. A possible alternative would be to give them short runs as morning or evening trippers, but as these runs would amount to not more than from three to five hours a day, it is hardly possible that this plan would afford at the hourly rate sufficient remuneration to the employee to make these runs worth while. An especially unfortunate feature of

Federal Commission Authorized

WE WELCOME the news of the approval by the President of a federal commission to take up the problems of the electric railways and to be composed of representatives of the departments of Commerce, Labor and the Treasury, the municipalities, the commissions, the bankers, the operators and the operatives. The matter is of national importance for general reasons. One of these is because any general impairment of the country's local transportation systems is bound to have a serious effect on all business and commerce. A second reason is that the securities of these companies are very widely held by individuals and institutions throughout the country and form the basis for credit which is being imperiled by the present situation. A third incentive to federal action is found in the interests of the three hundred thousand employees of these properties. We hope the proposed investigation will speedily remove the obstacles which in various municipal and commission jurisdictions have prevented electric railways from securing rate justice.

the situation is that the law applies not only to women conductors but to women ticket choppers and ticket sellers as well. While the use of female help on the cars is of recent introduction, many of the ticket sellers have been in the employ of the Brooklyn Rapid Transit Company for years, and they suddenly find themselves deprived of remunerative employment through no wish of their own or of that of the employing company.

While the field for women in railway service has its limitations, it is undoubtedly true that the women have made good in this line of work in New York to the extent that they have been employed. According to all accounts man labor will continue scarce, and for this reason the transportation companies would

probably have kept its women employees in service as well as because it felt gratitude to them for having helped out in an emergency. But now that the law has made this impossible the best they can do is to wish the women good luck and the speedy acquisition of other remunerative work.

Retain Policy of Stop Omissions

AN OPERATING company in the East, in service improvement news prepared for the local dailies, announced recently that it had restored many of the stops discontinued during the height of the war for the purpose of fuel saving. Granting that the addition of stopping points is sometimes a local convenience, it seems unfortunate, none the less, to be obliged to restore these unless a company finds it impossible to continue to operate at a profit on the limited service plan.

We believe that emphasis should be laid upon the improvement to the service as a whole and to that of particular neighborhoods resulting from curtailment of stops, and that the restoration of stops should never be taken as publicity material for illustrating service betterments. In countless instances the lengthening of space between stops results in faster transit even for the patrons of a company who walk a greater distance to or from their cars. No sensible manager would advocate utterly unreasonable distances between stops, but it is easy to demonstrate that before the war stops on many systems were far too close together, and now that the public has become used to the change, it seems a great pity to attempt to revert to the old practice. The public, as well as the company, is the gainer by the operation of a plan of restricted stopping points.

Bigness Brings Its Own Problems

THE Toledo joint company section of the American Electric Railway and other national associations contains practically 1000 electric railway members. The very magnitude of this membership must impose heavy burdens upon the local management because the interests of the members are so diversified. The same situation is facing other company sections on a smaller scale, and will confront more as the membership expands under the relief from war-time pressure. A good salesman can get people into a company section, or into any worthy organization for that matter, but it takes an administrator of experience and judgment to maintain the interest of the members and continue to benefit them after they have joined. A few thoughts along this line may prove suggestive.

Section meeting programs should combine instruction and entertainment, each in such measure that the average attendant goes home feeling more kindly toward his associates and with a thought in his head which he can apply in his daily work. During the war the tendency seems to have been to run largely to entertainment, presumably as an offset to the depressing conditions of every-day life, but the company section will fail of its main purpose if it does no more than entertain its members. On the other hand, heavy lectures are out of place at the meetings because the men are tired after a long day's work and instruction for them must be put into tabloid form, sugar-coated. Entertainment of large groups is easier than instruction,

hence the danger of overdoing the amusement features. To simplify the instruction work it may be wise to divide very large sections into departmental groups for various discussions, with general gatherings for social purposes.

We hope and believe that the company section movement will soon take a spurt. But a spurt is only a means to an end. Long-run success depends upon the thought that is put upon the devising of programs of real merit.

Is the Trolley in Danger of Becoming Extinct?

IN ITS ISSUE for May 17 the *Literary Digest* presents a rather miscellaneous collection of clippings relating to the present electric railway situation under the heading "Is the Trolley in Danger of Becoming Extinct." While the general impression given by the article is a fair picture of the electric railway business at the moment, the reader is left somewhat in the air as to whether the country is soon to be deprived of its electric railway service, some other transportation agency displacing it.

The thoughtful railway man asks himself frequently: "How long can we continue to give service under the present conditions?", but he hopes and believes that conditions are going to be ameliorated soon. The *Digest* says: "The vanishing trolley car may disappear completely if present tendencies continue." Quotations show that this conclusion is based in part at least upon a statistical article in one of the New York daily papers, in which the writer intended to demonstrate the urgent need of the utility for help in the present crisis, rather than to suggest its possible doom.

The *Digest* was undoubtedly influenced also by an erroneous report that "Five hundred members of the American Railways Association" (whatever that is) "recently got together and passed resolutions urging the traction managers everywhere to lend all possible aid in the promotion of legislation to bring about the public ownership of all electric railway lines."

Now with all due appreciation of the gravity of the present situation, we cannot overlook certain facts bearing upon the situation. We feel, in fact, as did Mark Twain when he said that certain reports of his death were greatly exaggerated. As for the "vanishing" characteristic of the trolley car, statistics fail to disclose it. The Census Bureau figures just issued show a total of nearly 103,000 cars in use in 1917 as compared with slightly more than 94,000 in 1912. A canvass made by this paper a few months ago checked closely with the above as to total and showed that more than 2400 cars were ordered in 1918. These numbers are not as large as the public and railway managers would like to see, but they do not indicate that the electric railway is a vanishing quantity. It is safe to say that there is more demand for electric railway transportation, taking the country by and large, than ever before. The only trouble is that the public does not realize fully yet that the railways are subject to the higher cost of operation which affects every other industry and that they must have more money. Higher net earnings, based on a system of higher fares, would cure all the railways' present ills. Until they are secured, the electric railways cannot give the service which the public needs. Some will pass into the hands of receivers and a few of the weaker lines may be abandoned, not in favor of any

substitute but because they are prevented from charging an adequate fare. It is this very permanence of the electric railway as a whole which is an added reason for its fair treatment by the public.

Track Spiral Standardization Deserves Further Consideration

ABOUT one year ago the columns of this paper contained a number of communications relating to the securing of greater uniformity in track spirals. The subject is still before the committee on way matters of the American Electric Railway Engineering Association, and it may not be out of place to comment upon the sentiments so far expressed. In the first place, we are inclined to the view that in the general consideration of this subject the main object has been partly overlooked, and that there has been much criticism with but little of helpful suggestion. While it is interesting to consider reasons why it would be impracticable to adopt a set of track spiral standards it is more important to point the way to ultimate adoption of such standards.

We take it to be the object of the committee's investigation, first, to determine whether it is possible to find or develop a suitable system of spirals. Since there are three principal manufacturers' spirals now largely used, it may safely be said that it is possible. Second, the fact that most railways use some of these three spirals indicates that standards are not only possible but also very desirable.

If we are to get anywhere there must also be an agreement in effect that some sacrifices are necessary in obtaining the object sought; hence the problem should be approached with an open mind and in the spirit of compromise. Perhaps the system of spirals proposed by E. M. T. Ryder was, to some extent, too radical in outlining a comparatively new system throughout. In view of the discussion thereon we think it very likely that the committee should abandon the attempt to produce something entirely new, particularly because the system proposed by Mr. Ryder does not vary much in final results from existing systems. Would it not be better to take a census of the use of the three manufacturers' spirals and, with the most popular one as a basis, to settle upon the few modifications needed to provide for American Electric Railway Engineering Association switch pieces and then adopt it as a standard? It would thus be possible to utilize existing patterns, which practically every manufacturer already has, for the several manufacturers' spirals in current use. In the meantime it must be taken for granted that no single standard can be put in effect universally overnight.

In connection with the foregoing suggestion that one of the existing manufacturer's standards be selected it is to be remembered that one contributor to the discussion last year made the suggestion that the railway companies should use exclusively the spirals of the largest three steel companies. We feel sure that most companies already use those of one of the three, although a few large railway systems have adopted their own spirals, which may or may not be the same as any one of the manufacturers' spirals. Meanwhile it is well known that the manufacturers want a standard but have been unable quite to agree as to which one of their own to select. Here, then, is the chance for the way committee to accomplish results, particularly

in view of the fact that the manufacturers have stated more than once that they would be willing to adopt, as standard, any one of the three principal spirals if the Engineering Association would only make the selection. Why not take them at their word?

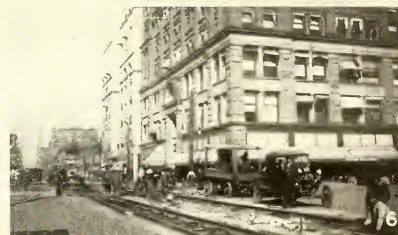
In making the selection the committee should not lose sight of the fact that the manufacturers' spirals do not provide sufficient length to permit the insertion of A. E. R. E. A. switch pieces in plain ends. There should be a sufficiency in range to meet average conditions and perhaps the plain ends may need some revision in any case. All data should be figured to the inside gage line and, if possible, the system of rotation should be made to conform with that of the American Railway Engineering Association. Meanwhile, Victor Angerer's suggestions in regard to using fewer and longer chords and cutting out unnecessary refinements should be borne in mind.

Electric Railways Can Profit by N. E. L. A. Committee Work

ELECTRIC railway engineers who have anything to do with the generation or distribution of electric power appreciate the thorough work done each year by the committees of the National Electric Light Association which study this part of the field of that society. At least they appreciate this work if they are familiar with it. The power end of the electrical business is so large, so technical and so vital to the welfare of that industry that we may properly look to the N. E. L. A. for the most thorough and comprehensive studies in the power field. The results of the activities of the prime movers, electrical apparatus, underground construction and other committees are particularly valuable this year and we are, therefore, giving considerable space to abstracts of them in this issue. The reports themselves are very voluminous and they should be studied in detail by specialists.

War-time conditions have imposed unforeseen difficulties upon both the manufacturers and users of electrical apparatus of all kinds. This situation is clearly evident in the reports. There have been notable improvements in turbines, boilers and their furnaces, electric generators, cables, etc., but the difficulties of obtaining good material and first-class workmanship have been reflected in the operating records. Turbine trouble has been all too prevalent, due not to faulty design but to the impossibility of getting into a finished machine what the designers intended. A considerable number of generator fires were reported, due presumably to the difficulty of securing first-class operation, combined, no doubt, with the same shortcomings as appeared in turbines. In power distribution, war industries have superimposed high load-factor loads on distribution cables, reducing their carrying capacity as judged by pre-war standards.

All in all, the war period has been a hard one for the producer of electric power, but he has, to speak broadly, risen marvellously to the emergency. Power generation was considered so vital to the prosecution of the war that the industry was highly favored by the government. Such limitations as surrounded it were necessities of the time. The manufacturers and operators who devoted their energies during the war period to the insuring of an adequate and reliable power supply performed a patriotic duty of no mean magnitude.



Utilizing Modern Track Construction Apparatus on an Important Reconstruction Job in Denver, Col.

No. 1. Placing temporary track to permit shunting of cars around intersection. No. 2, "Shoo-fly" in position across corner of Civic Center. No. 3. Cars operating over temporary

track. No. 4. Cutting out asphalt paving. No. 5. Breaking up paving foundation. No. 6. Track in place ready for concreting. No. 7. Construction work at intersection in full

swing. No. 8. Concrete train pouring the mix. No. 9. Concreting-in the special work. Other views of this track construction job are shown on the following pages.

Using Modern Appliances in Track Construction

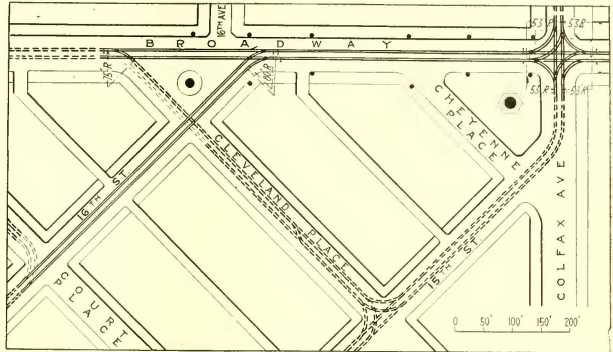
A Recent Contract Job in Denver Furnishes an Illustration of How Up-to-Date Equipment Gives Speed and Economy in Construction

By W. L. WHITLOCK
Office Engineer Denver (Col.) Tramway

IN A RECENT track construction job the Denver Tramway departed from its usual practice in that it let the track construction end of the job by contract, something that had not been done on this system for fifteen years. The contract was let on account of the scarcity of labor and the necessity for completing the work within a specified time. All of the rail, ties and special trackwork had been purchased and delivered, and as the Public Utilities Commission had ordered the work done there was only the labor shortage to prevent its speedy completion. The Tramway allowed the contractor the use of its track construction tools and equipment in order to facilitate the work.

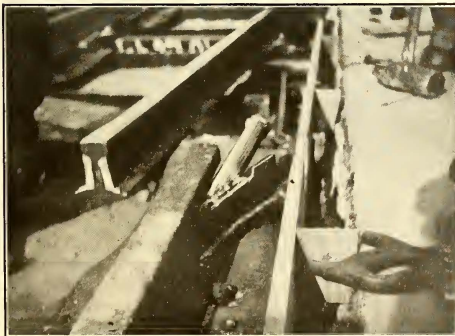
The equipment mentioned is listed below, and the list is interesting as an indication of the advance made during the past fifteen years in the art of track construction. It comprised one 5-ton, one 3-ton and one 1-ton auto truck of the self-dumping type; pneumatic paving and concrete cutters; 3-ton crane car (see issue of this paper for April 20, 1918); oxy-acetylene cutting outfit; reciprocating and Atlas rail-grinders; Indianapolis arc welder; concrete tram as described in this paper on Oct. 6, 1918; mechanical pusher for unloading dirt from flat cars; portable rock crusher and conveyor; Lincoln bonding machine; pneumatic tie tampers; portable crossovers; temporary lamp clusters, and camera for making progress records.

The largest layout of special work, located at Broad-

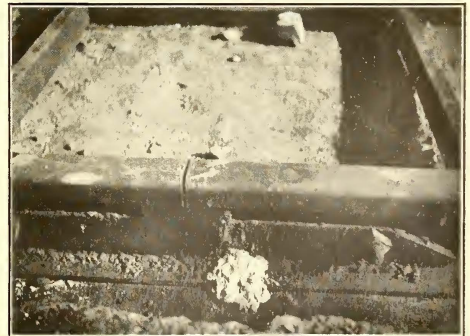


SITE OF THE TRACK RECONSTRUCTION JOB IN BUSY SECTION OF DENVER

way and Colfax Street intersection, was of 100-lb. A. R. A. rail, cast-manganese construction. The special work at the other three locations was likewise of cast manganese but of 80-lb. rail section. All of the special work was built by William Wharton, Jr., & Company. The tangent track construction consisted of 80-lb. A. S. C. E. rail, with Apex-welded joints and International twin steel ties. The entire track structure was imbedded in concrete of a 1:2:3 mix, using crushed rock as the aggregate. The cast-manganese layouts already mentioned were supported on 9 in. of crushed rock ballast and long-leaf Texas pine treated ties. The paving was 1:2:3 concrete also with crushed rock



WELDED JOINT SAWED THROUGH, PART OF PLATE BEING REMOVED WITH AID OF WEDGE



JOINT BROKEN BY RAIL CONTRACTION AND REPAIRED BY ELECTRIC WELDING

aggregate. All of the construction was in streets paved with asphalt.

The several parts of the job were done in the following order with a view to utilizing to the maximum extent the several labor-saving devices.

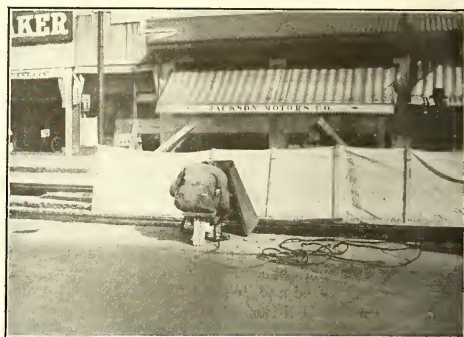
First the field engineers marked the trench lines and the asphalt paving was cut out both by the pneumatic tools and manual labor. The paving was loaded direct

first track was hauled to the job by means of the auto truck and dolly, and was distributed along the trench. This truck also brought up the steel ties and small material from the yard.

Before the track construction was commenced the trench was flooded with water for two nights to test for holes or sumps. After this test had shown the foundation to be satisfactory the steel ties were placed



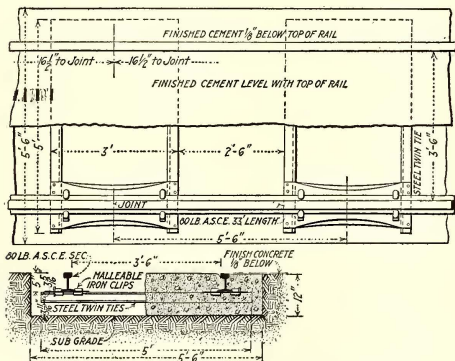
THE NOW FAMILIAR GAS CUTTING TORCH IN OPERATION



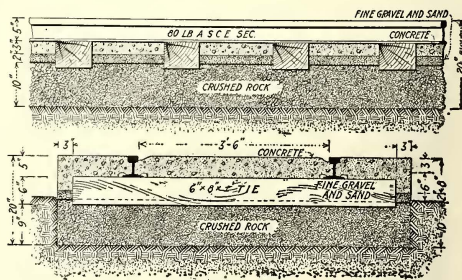
PROTECTION FOR EYES OF PASSERSBY FROM WELDING ARC ON RAIL BASE

to the auto trucks and hauled to a near-by dump. The men with the pneumatic tools dropped back after a stretch of asphalt had been cut out and broke up the concrete paving base. The broken concrete was stored for the time in the devil strip between the tracks. Later it was loaded on flat cars and taken to the materials yard where it was broken up in the portable rock crusher for use as ballast or street surfacing as required. There was but little dirt excavation, and such

on 4-ft. centers and the rail was laid. It was originally intended to clip the rail to the steel ties, bolt up the joints, surface and align the track temporarily and then weld the joints. A small section of track was laid according to this plan, but when it was examined prior to welding the joints were found to be not absolutely tight as is necessary in this type of construction. The base of the rail made a tight joint but at the ball the rails were slightly open. After several suggestions had been tried out the rails were finally unclipped from the ties and two track jacks were used to bring the joint up square. One jack was used under each rail after the joint had been bolted up temporarily. The joint was



TRACK CONSTRUCTION WITH STEEL TIES



TRACK CONSTRUCTION WITH WOOD TIES

dirt as was removed was placed in the devil strip and loaded on flat cars after a temporary track had been laid. It was then hauled to the dump where the mechanical pusher, operated by the crew of the work car, was utilized in unloading it quickly.

Only one track was constructed at a time, and work on the second track was not begun until a temporary track had been laid in the first trench. The rail for the

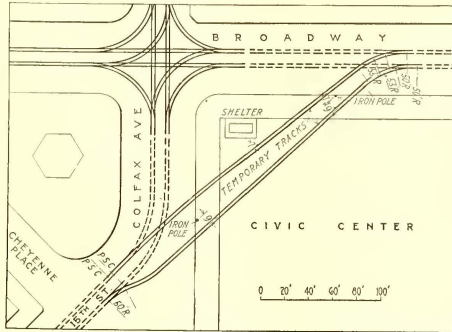
then welded. After this experience all of the track was welded before the rail was clipped to the ties.

After the track was welded it was surfaced for temporary operation, being blocked up between steel ties by means of wood blocks in order to keep the weight off the steel ties.

The paving material and dirt removed from the second trench were loaded direct to flat cars operating on

this temporary track. After the second track trench was completed and the ties and rails for this track were delivered by means of work trains the materials removed from the first trench (broken concrete and dirt stored in the devil strip) were loaded on flat cars and removed. The crushed rock ballast for the special work was delivered by means of auto trucks and dumped directly into the trench as needed with the exception of the Broadway-Colfax layout.

The oxy-acetylene cutting equipment was used to cut the rails of track at connecting points to avoid the necessity for removing the track back to the joints and thus to save the expense of additional track and paving removal. In the construction of the last-mentioned layout it was necessary to divert the cars from this location to facilitate the work. This was done by means of a temporary or "shoo-fly" track laid across one corner of the Civic Center. Temporary cross-overs with shop-built 65-lb. curved rails were used as turnouts and laid directly on the paving, tie rods being used to hold the curves to gage. Sixty-five-pound rail and second-hand ties were used on the lawn portion of the Civic Center in a shallow trench. As this location is a heavy transfer point a temporary platform of 3-in. x 12-in. x 16-ft. planks was laid and suitable lights were provided as a matter of public safety. No trouble developed from the operation of the "shoo-fly" although



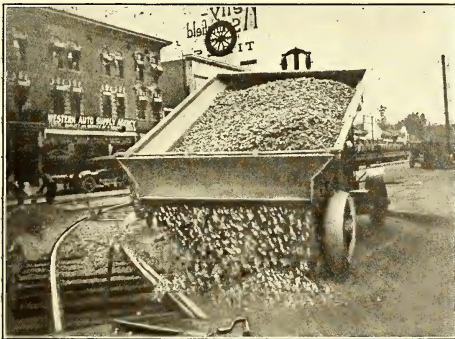
TEMPORARY "SHOO-FLY" TRACK ACROSS ONE CORNER OF THE CIVIC CENTER

section through the middle of the joint and indicated a satisfactory character of weld. On the remaining half of the joint the plates had to be removed to make place for another pair. For this purpose a heavy sledging steel point was inserted between the plates and the rail and a laborer with a heavy sledge was told to "knock 'em off." The plates finally came off but the steel plates bent before the weld would break. This test satisfied us as to the holding power of the weld.

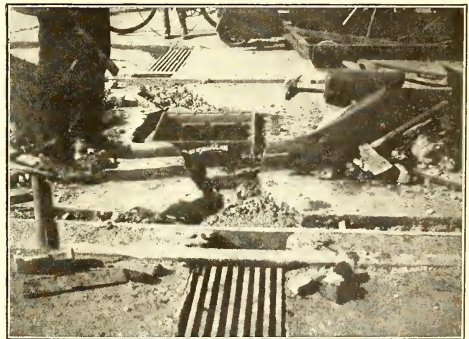
The second test was caused by a sudden drop in temperature. Despite the fact that the track was opened at each end, sixteen joints broke from contraction. The break in each case was in the plate and not in the weld, indicating that the welds were stronger than the plates. On the following day the temperature rose and as the rails expanded the cracked plates came together again until only a very small seam was visible. The arc welders used carbon rods and burned these cracked places out until there was space large enough to furnish a holding place for new metal. The places were then rewelded, with entirely satisfactory results.

No trouble was experienced with the joints other than those mentioned and as far as can be observed the joints that broke and were rewelded are holding as well as those originally good.

We selected two joints, one that had broken and had



DISTRIBUTING BALLAST ALONG THE TRACK BY MOTOR TRUCK



TRACK DRAIN FOR PREVENTING FLOODING OF SWITCH BOXES

there were several heavy snowstorms and some cold weather during the short time of the service.

We had two tests of the holding power of the welded joints; one premeditated, the other accidental. As we had had no experience with the welded joint we desired to know just how strong the welds were. One joint, selected without knowledge of the welders, was cut through several days after welding by means of a hacksaw, and one rail was removed. This gave a cross-

section through the middle of the joint and indicated a satisfactory character of weld. On the remaining half of the joint the plates had to be removed to make place for another pair. For this purpose a heavy sledging steel point was inserted between the plates and the rail and a laborer with a heavy sledge was told to "knock 'em off." The plates finally came off but the steel plates bent before the weld would break. This test satisfied us as to the holding power of the weld.

Several additional items in regard to this work may be mentioned for purpose of completeness. One which is illustrated in an accompanying picture shows the

canvas strips set opposite the welding work to supplement the box used regularly by welders to protect the eyes of passers-by from the light of the arc. This box did not give sufficient protection because the welding was along the base of the rail as well as under the ball and the boxes rested on the ball only. The canvas strips did away with the objection made by people on the street that the arc shone out under the boxes.

Electric track switches of both the Cheatham and Kitt types were used and track drains consisting of open gratings were placed ahead of all switches. These drains were connected to near-by catch basins by means of 6-in. tile pipe. All electric switches were connected to the drains by tile pipe to insure proper drainage, and suitable clean-out boxes were provided to facilitate the cleaning of the tile drainage line to the catch basins. This cleaning is usually done by means of a 1½-in. hose connected to a fire plug.

The Lincoln bonding machine was used in bonding all joints of both tangent track and special work, using No. 0000 U-bonds. In addition all special work was "jumped out" by using four No. 0000 annealed trolley wires for each rail. Cross bonding on tangent track was accomplished by arc welding the steel ties to the base of the rail with spot welds, thus utilizing the steel ties as bonds.

The overhead line construction on this work consisted of tubular steel poles set in concrete with No. 00 iron trolley wire over all special work and No. 00 copper trolley wire over tangent track. The steel poles will also be used to carry the street lighting equipment owned by the city, which bore a portion of the cost of the construction. These poles form a part of the general layout of the street lighting systems in use in the business district.

Standard Electric Railway Specifications Printed in Spanish

IN ORDER to facilitate commerce between the United States and foreign countries by gathering together and making available standards for materials of various kinds, commercially acceptable and representing good American practice, the Bureau of Foreign and Domestic Commerce, of the United States Department of Commerce, has started the publication of a series of bulletins covering industrial standards for materials. Industrial Standard No. 32 presents the text of the standard specifications for quenched carbon steel track bolts as adopted by the American Society for Testing Materials, and Industrial Standard No. 41 contains standard specifications for wrought solid carbon steel wheels for electric railway service. These are printed in Spanish and English on facing pages.

This series of publications will include standards prepared by the government and by technical societies and other organizations, which will be translated into various foreign languages. Publication in this series indicates that the standards are working standards, subject, however, to amendment as new scientific data are obtained. The standards referred to are drafted by committees of the American Society for Testing Materials, on which both the consuming and producing interests are represented. Editions of these standards are sold by the superintendent of documents, Government Printing Office, Washington, D. C., at 5 cents per copy.

Belgium Looks Forward to Railway Electrification

All Through the Long Period of Conflict the Little Country Continued to Plan for Its Post-War Development

IN REVIEWING the transportation plans of the Belgian government, the *Engineer*, London, says that in 1916 Mr. Seghers, the then Belgian Minister of Railways, whose offices were at Havre, appointed a commission to report to the Belgian government on the advisability of electrifying the Belgian State Railways after the war. This commission was composed of several important Belgian business men, engineers, and of the heads of the railway department then in France. In addition, the chief engineers of the French State Railways and of the Midi Railway, and Philip Dawson, were asked by the Belgian government to allow their names to be added to the commission.

Several sittings of the commission were held at Paris, and as a result recommendations were sent to the Belgian government advocating the electrification of considerable portions of the Belgian State Railways. In view of the absence of accurate data, owing to the occupation of Belgium by the enemy, this report could only be considered an interim one, and it was obvious that the final report could only be sent in after the Germans had been driven out of Belgium. This end having been achieved, a new commission was appointed to study and report not only on the question as to the advisability of electrifying a part or the whole of the Belgian railway system, but also to investigate and report on the problem of unifying the supply of electricity for all purposes all over the country, having regard to the important position which the railways, if electrified, would occupy as consumers of electrical energy.

This commission held its first meeting on April 10, 1919, at the Ministry of Railways in Brussels, being presided over by Mr. Renkin, the minister who called the meeting. Baron Ancion was again appointed president of the commission, and Philip Dawson and Mr. Mazen, chief mechanical and electrical engineer French State Railways, were appointed the two vice-presidents.

As a result of the Brussels meetings, this commission has unanimously recommended that it will be of public utility to prepare immediately a scheme for the electrification of the Brussels-Antwerp line and of the lines in the immediate neighborhood of Brussels. It has also recommended that a definite scheme for this electrification should immediately be prepared by the engineers of the Belgian State Railways, and that as soon as it is ready a further meeting of the commission should be called to advise on the carrying out of the scheme.

The commission has also unanimously recommended that the first scheme should be prepared on the understanding that all the railways within, say, 40 miles of Brussels must, of necessity, be very shortly electrified, and that eventually electrifying the Brussels-Arlon line is advisable. As soon as the preliminaries in connection with these projects have been prepared, the commission will investigate the means for co-ordinating existing electric supply undertakings and erecting new super-power stations.

N. E. L. A. Epitomizes Electric Power Situation

Reports of Prime Movers, Electrical Apparatus and Underground Distribution Committees Presented at Atlantic City Convention This Week Are Abstracted

AS THIS issue of the ELECTRIC RAILWAY JOURNAL goes to press the National Electric Light Association is meeting in annual convention at Atlantic City, N. J. Abstracts of committee reports dealing with power matters are given this week. In a later issue a summary of the convention as a whole will be given.

Status of the Steam Turbine and Tendencies in Design

The report of the committee on prime movers discusses various phases of the problem of selecting turbines with proper regard to the size of the system as a whole, and includes information as to the operating records of large-sized turbines, together with statements submitted by manufacturers reviewing progress during the past year. The development of condensers, boilers, superheaters, stokers, economizers and power-station auxiliaries is covered in detail, and the wider use of boiler and turbine-room instruments is recommended as a means of checking operating conditions. Storage and handling of coal are discussed and several of the newest installations are described. Mention is made of the possibilities of the use of pulverized fuel and lignites. Further discussion of the advantages and disadvantages of higher steam pressures is included and brief reference is made to the proposed scheme of extracting by-products from raw fuel before firing under boilers.

On the subject of water power there is a general discussion of development in this line during the past year and the tendency to go to fewer and larger units is noted. Improvements in details of general design are listed and the record of progress as submitted by manufacturers is included.

In the gas field the production of fuel oil from various fields in the United States is shown in tabulated form and attention is directed to the fact that, while the development of Diesel engines has been mainly in the field of marine engineering, improved design features are being incorporated in engines of this type for land plants. Reference is made to the Bureau of Mines Bulletin No. 156 for exhaustive investigation and reports on the Diesel engine.

WHAT IS THE LIMIT IN TURBINE SIZE?

With the above outline of the prime movers' committee report as a whole in mind a few details may be taken up for elaboration. During the past two years there has been a marked increase in the number of large turbine units in operation, particularly the horizontal, single-shaft type of approximately 30,000-kw. capacity. It would appear that with the present constructional problems of prevailing frequencies and speeds and the recognized factors of safety, efficiency and cost, the size of systems to-day will hardly warrant units of this type larger than 30,000-kw. capacity.

Among the very large electric railway power plants the Interborough Rapid Transit Company, New York City, heads the list with a generating capacity of 389,000 kva. and a single unit of 70,000-kva. capacity. The Boston Elevated Railway has 122,500-kva. capacity and 35,000 kva. in a single unit. The corresponding figures for the Brooklyn Rapid Transit Company are 139,850 kva. and 30,000 kva.; those for the Pennsylvania Railroad, Long Island City, N. Y., are 78,000 kva. and 21,000 kva., and those for the New York Central Railroad, New York City and Yonkers, are 60,000 kva. and 20,000 kva. The Twin City Rapid Transit Company has a total capacity of 65,000 kva., with 20,000 kva. as the capacity of the largest unit. These examples are cited simply to show the present trend in generator capacity.

Continuity of service is an essential in the modern power plant and each company must decide for itself as to how far it is safe to go in the installation of large generating units. The fact is to be remembered, however, that certain of the large machines have records of continuous performance and output which surpass anything previously considered possible. For example, one 25,000-kw. unit operated at 67 per cent load factor during a fifty-one-day run without shutdown; another machine of the same size has completed two seventy-seven-day runs at 67 per cent load factor in one instance and 70 per cent in the other, while one of the 35,000-kw. units operated at 65 per cent load factor for a seventy-day run without shutdowns.

WAR CONDITIONS WERE REFLECTED IN TURBINE TROUBLES

Some troubles have occurred in the operation of horizontal-type single units of 20,000-kw. capacity and above during the three years of experience with these machines. During this period, however, both manufacture and operation have been carried on under most adverse conditions as affecting labor and materials.

In analyzing the causes of trouble indicated by the operating records of these machines, it appears that labyrinth packings and thrust bearings have probably contributed to the major part of large turbine operating difficulties. While these troubles in themselves have caused a considerable loss in operating time, they have also been responsible in a number of instances for the development of more serious troubles, such as excessive vibration of parts, breaking of buckets, and dangerous rubbing of stationary and moving elements which in extreme cases have resulted in permanent deflection of shafts.

The most serious situation that has developed in the types and sizes of units under consideration, however, has been the number of quite recent turbine-wheel failures. In several instances these accidents have resulted in the complete wrecking of the units concerned. The situation is now a critical one and while any statement at this time would be premature the

committee wishes to indicate the necessity for early action both in safeguarding against further possible failure of machines now in operation and in definitely reaching solutions of those problems which involve important features of design and construction.

In general, however, the records of operating performances of these larger-sized units, while too incomplete for definite conclusions, do indicate that there is every reason to expect as high a standard of performance for the recent types of large-capacity single-shaft units as the standard which had been attained in the operation of machines of earlier designs and smaller capacities.

STAND-BY CAPACITY IS LESS NECESSARY THAN FORMERLY

The subject of "stand-by" or "floating" operation of a turbine, i.e., running it at or near zero load, is of special interest to companies having steam plants connected to transmission systems normally fed by hydroelectric power. It appears that the operation of steam turbines with no load in parallel with hydroelectric systems is tending to become less frequent, not only on account of the necessity for rigid economy, but because hydroelectric plants and transmission lines are becoming more and more reliable. It is, in general, only for the most important load and with inferior

In an appendix to the section of the report dealing with steam turbines considerable attention is given to the small machine for driving power plant auxiliaries. The impulse principle is said to be used exclusively for all small machines, as the reaction or Parsons type is commercially impracticable below, say, 500 hp.

Four distinct types of machines are now extensively used, the principles of which are shown diagrammatically in Fig. 1. These are: (A) The helical flow

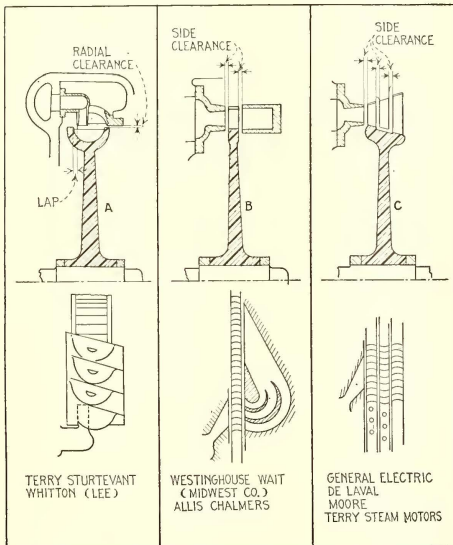


FIG. 1—DESIGN FEATURES OF VARIOUS CLASSES OF SMALL STEAM TURBINES

hydroelectric system operation that this stand-by operation is advisable.

When the floating service becomes necessary, great care and skill should be exercised in keeping steam plant costs at a minimum; this is especially necessary with steam plants not specially designed for economy during stand-by operation, but even in stations planned specifically for such service, a considerable saving can usually be made by careful study of operating methods.

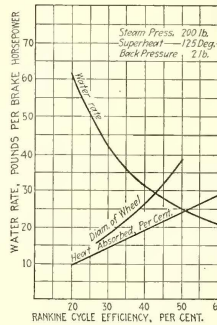


FIG. 2—OPERATING CHARACTERISTICS OF SMALL STEAM TURBINES

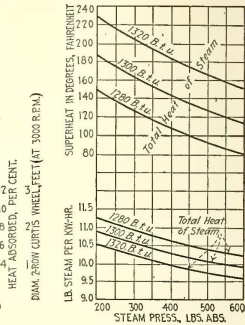


FIG. 3—WATER RATE OF 60,000-KW. TURBINE AS AFFECTED BY STEAM PRESSURE

type; (B) the single-wheel re-entering type; (C) the multi-wheel velocity stage type, and (D) a group which consists of multi-stage machines made up of several pressure stages incorporating one or more of the principles enumerated above, or using the straight Rateau principle having only one velocity stage per pressure stage. The operating characteristics of small turbines are illustrated in Fig. 2.

CONDENSER IMPROVEMENTS WERE LARGELY MECHANICAL

While the necessities of war have constrained condenser development to a certain extent there has, during the war period, been developed the steam air ejector.¹ The unqualified success of this device at sea has shown that it will occupy a prominent place in future condenser installations. Several firms are manufacturing air ejectors applicable to replace the present reciprocating or hydraulic air pumps.

In the installation of ejectors some caution must be used because the exhaust contains all of the air that has been pumped out of the condenser. It is not safe to discharge the steam and air from these ejectors into heaters of the present type. There should be installed a large surge tank into which the make-up and the discharge from the air ejectors is carried. The tank should have a free atmospheric vent for the discharge of the air, allowing the water from the tank to overflow into the heaters.

During the last two years a number of the larger condensers installed on General Electric turbines in power stations have been put on spring supports without expansion joints, and this method appears to be very satisfactory. The Westinghouse Company recommends hanging the condenser from the turbine foundation, which is also satisfactory as it accomplishes practically the same results as the springs. In one

¹A typical ejector was described in the issue of the ELECTRIC RAILWAY JOURNAL for March 16, 1918, page 533.

case where the condenser was located 50 ft. below the turbine, and there was an unusual amount of expansion in the exhaust piping, the expansion joint was of the mercury type.

Boiler Room and Fuel Practice from the Conservation Standpoint

AMONG the topics considered by the committee most important for attention this year were some recent tendencies in connection (a) with boiler-setting design and baffle material, (b) with cleaning and other routine operations on boilers, (c) with superheater operation and (d) with feed-water regulator application.

In the use of insulating brick in boiler settings the limitations, if evident at all, occur in that portion of the setting which is nearest the furnace or subject to the highest furnace temperatures and consequently the greatest expansion and contraction strains. Operators feel that the furnace walls should be solid, well bonded and homogeneous.

There is a recent tendency toward building the furnace walls of solid firebrick. Until some more satisfactory refractory material is developed than those now available it may be necessary to depend to a certain extent on the radiation of heat through the furnace walls to cool and preserve the furnace lining. There has been some experimental work in progress regarding the materials used for baffles, and there seems to be a demand for a baffle which, compared with the usual type, is tighter and more readily renewable or repairable; one which can be placed at any desired angle with the tubes.

The problem of how to design the side and bridge walls of the boiler furnace so as to necessitate a satisfactory minimum of brickwork maintenance and boiler outages is one on which considerable progress has been made. The present-day demand is for a furnace lining which will withstand the high furnace temperatures and blow-torch action, the constant heating and cooling effects, and the abrasive action of the fuel bed.

Among the diversified means in use for preserving furnace linings the following may be mentioned: The use of ventilated walls; the use of special refractory materials; the application of steam jets along the grate at the side walls; the water cooling of ledge plates and water backs; the use of high-temperature cements.

WHEN IS A BOILER OVERLOADED?

In recent large central station designs maximum boiler ratings of from 250 per cent to 400 per cent have been used. The tendency toward higher boiler ratings has led operators to feel that boilers in general should be operated at much higher ratings than in the past. This is a justifiable conclusion if not carried too far.

A boiler is often spoken of as being overloaded when in reality it is the stoker which is being forced beyond its proper limits. Generally speaking, the capacity which can be developed by a boiler and stoker unit is limited only by the amount of coal which can be burned by the stoker equipment. The capacity of the boiler is mainly a question of how high a flue temperature may be tolerated. A restraining influence on the maximum possible rating is the fact that the boiler and stoker must be designed to operate at maximum efficiency over as wide a range as possible.

The problem of draft loss at high boiler rating is an important one. Sometimes users of underfeed stokers are disappointed in the capacity of their boiler installations due to the fact that the stack or fan does not provide sufficient draft to take away the gases from the furnace. The character of the boiler feed water also may readily become a limiting factor in the boiler rating developed. As a general proposition extremely high boiler ratings are desirable only in connection with plants equipped with surface condensers.

From information received by the committee from some of the largest stations in the country, it appears that the normal and maximum forcing rates for boilers average 140 per cent and 200 per cent respectively. The highest boiler ratings available are used in the estimates for steaming capacity during the annual peak load periods which may be of limited duration.

SOOT BLOWERS ARE INCREASINGLY POPULAR

There is a general movement toward the use of mechanical soot blowers in cleaning external heating surfaces in boilers. Properly selected soot-blowing equipment makes a highly profitable investment notwithstanding the fact that this apparatus is not regarded as being wholly satisfactory under severe operating conditions. Where fairly high boiler ratings are developed some trouble is encountered in maintaining the soot-blower elements located nearest the furnace, regardless of type of construction used, and care is necessary to locate these elements so that they will not be subjected to a destructive heat.

Recent labor conditions have turned the attention of operators toward the subject of feed-water regulators with the result that for average boiler plant conditions and for plants containing more than three or four boiler units, a wise selection of feed-water regulators may now be regarded as standard practice. Generally speaking, the most satisfactory type is one which does not aim at a constant water level but which takes advantage of permissible variations to aid in caring for fluctuating steam demands on the boiler. With the advent of modern boiler plant improvements and the higher grade of labor necessary to maintain and use them properly, operators do not regard the necessary care and maintenance of feed-water regulators as being as much of a burden as heretofore.

THE SUPERHEATER NEEDS REGULAR ATTENTION

The matter of relative attention given to boilers and superheaters is one which deserves mention. The superheater is frequently overlooked by the boiler-cleaning and repair crew because it seldom needs cleaning or repairs. It should be as carefully inspected and watched as any other portion of the boiler.

The question of pressure drop through superheaters is one which frequently causes operators some little concern. A superheater is necessarily designed to produce a certain amount of pressure loss at low rating, otherwise the steam might short-circuit through the nearest tubes and permit the farthest ones to become burned. Superheaters are usually designed to operate at rated boiler capacity with from $\frac{1}{2}$ to $1\frac{1}{2}$ lb. pressure loss. Since the pressure loss increases as the square of the velocity a 1-lb. loss at rating would mean a 4-lb. loss at 200 per cent rating and a 9-lb. loss at 300 per cent rating.

A superheater as such is a very efficient piece of apparatus, but as a boiler or evaporator it not only becomes a source of loss through loss of superheat but may be the cause of high maintenance cost as well. At 200 lb. pressure and 100 deg. superheat 1 per cent of moisture in the steam entering the superheater causes a loss of 17 deg. of superheat. As a result of a questionnaire on superheater practice it appears that the superheater continues to be an adjunct fitted to a more or less inflexible design of boiler and there should be a closer co-ordination of superheater design with boiler design.

GETTING RID OF ASHES AND CLINKER

On the matter of stokers and grates the committee feels that the most important developments in the underfeed type of stokers are the power dump grates and the clinker grinders. Of these the latter is more important.

Besides the grinder developed by the manufacturers several companies have installed grinders of more or less special design. It is essential in these installations to provide sufficient depth of ash above the grinder to protect it from the hot clinkers, and so to proportion the opening leading down to the grinder that clinkers will not bridge across this opening and prevent the ash from getting down to the grinder.

The forced-draft type of chain grate is being used more extensively than heretofore and has been successfully used in burning low-grade fuels high in ash.

There is an increasing tendency to sectionalize stoker drive on underfeed stokers. On some recent installations consisting of thirteen retort stokers the stoker was divided into four sections each driven by its own motor. By sectionalizing the stoker drive the operating force can maintain a more uniform thickness of fire across the stoker.

A PASSING WORD ON THE ECONOMIZER

In the economizer field progress has been made during the past three years in the development of types for pressures of 300 lb. or higher, using extra heavy cast-iron or "semi-steel" tubes and improved designs for headers, joints and other details. A few high-pressure steel economizers are in use in this country and a large number abroad. With the higher cost of fuel, economizers will doubtless come into much wider use. It is impossible to make any general statement concerning the advisability of installing economizers in connection with a boiler plant; each case has to be considered by itself, taking into account all factors, such as cost of fuel, cost of economizers and especially the load factor under which the boiler plant is to operate.

ECONOMICS OF POWER STATION AUXILIARY SELECTION

The increasing price of fuel and the determined conservation drive during the war have been responsible for considerable improvement in the application of basic underlying principles to power station auxiliaries. After due consideration has been given to required reliability and reserve capacity the auxiliary problem resolves itself into one of maintaining steam balance on varying load with the maximum possible auxiliary brake-horsepower from exhaust steam discharging to heater.

The smallest thermal cost for auxiliary power is

expended when steam auxiliaries having a minimum consumption per brake-horsepower are used up to the limit of feed water and absorption capacity and the balance of auxiliary power required is taken from the main busbars.

The fundamental principles have been applied according to the following general scheme: (1) Dual system, which is part steam and part electric, with duplicate circulating-water equipment, or pumps equipped with induction-motor drive on one end and steam turbine with variable-speed governor on opposite end to control proportion of power by steam. (2) Straight electric drive from the main unit, bleeding the intermediate stages of the main prime mover for steam to heat the feed water. (3) Straight steam drive, using all steam possible to heat feed water, the balance being fed to the low-pressure stages of the main prime mover. (4) Straight electric drive with house turbines, as much of the auxiliary load as possible being carried on a comparatively large turbine exhausting to the condenser heater, the balance being carried on the main prime mover.

Among other topics taken up by the committee with respect to the operation of the power plant proper, the following particularly deserve mention:

First as to exciter drive, the larger units are generally equipped with direct-connected exciters, whereas the smaller plants employ motor drive for use in connection with voltage regulators. Steam-driven exciters are very generally used for stand-by only.

The majority of plants still prefer the open type of heater on account of the better elimination of entrained air and gas in the condensate and make-up. However, the elimination of oil seems to be the deciding factor in favor of closed heaters where used.

In stoker fans a decided improvement has recently been made in the efficiency of fans over a wide range of loads, and they are well adapted for either motor or steam drive. The selection of type of drive is largely a matter of heat balance.

Boiler feed pumps are generally made turbine-driven, with the differential pressure governor to maintain a predetermined relation between the water and steam pressures. It is generally found necessary or desirable to maintain some automatically controlled differential pressure, particularly when used on a system with automatic feed-water regulators.

In general steam auxiliary specifications call for operation at full capacity with a maximum drop of about 50 lb. in steam pressure. Electric auxiliaries are usually specified to operate on 10 per cent voltage variation in either direction.

SAFEGUARDING COAL IN STORAGE

Coal storage is given careful attention in the committee report this year. With reference to storage it is pointed out that coal does not deteriorate seriously unless it heats sufficiently to fire in some part of the pile. Furthermore, if a pile fires in one or more places all of the coal in the immediate neighborhood of the fire is absolutely ruined as far as gas and coke-making is concerned, although it can still be used as fuel for boilers.

For the prevention of spontaneous combustion the following remedies have been successfully tried: (1) The exclusion of air, which can be attained by storing under water, storing in airtight bunkers or storing

a mixture of sizes so proportioned that the air spaces between the lumps are completely filled, successive layers of coal being further tamped to eliminate air spaces; (2) storage in piles small enough in size to allow the heat to be radiated as fast as formed; (3) provision of sufficient ventilation to carry away the heat of combustion by storing only lump coal which offers sufficient air passage through the pile to cool the coal, or by installing a system of ventilating ducts carrying air to all parts of the pile to remove the heat as formed.

OPERATING THE BOILER PLANT FOR HIGH EFFICIENCY

In the last two or three years great advance has been made in the development of CO₂ recording machines, but these are still far from ideal for firemen's use.

The principle of the CO₂ recorder is excellent in that it gives a direct measure of air required to utilize the utmost heat value of the fuel, and gives therefore an indication of the most efficient combustion. But good over-all efficiency does not necessarily follow from good combustion efficiency, since it is affected by the condition of the surfaces of the boiler. As an indication of this condition it is necessary to use a flue thermometer in conjunction with the CO₂ recorder.

In boiler operation it is desired to have information in regard to the flow of air, and many methods have been devised for measuring this. In some cases it has been determined by means of pitot tubes and in some cases by orifices in the pass to the air chamber, and in still others by using the boiler setting as an orifice. The method of boiler operation utilizing steam-flow and air-flow meters and flue thermometers offers a most promising solution to the question of boiler operation at the present time. If it is perfected to a greater degree it will develop the principle of the remote control of boilers. We are entering into a period when one man will operate all the boilers from a central point.

The steam-flow meter has progressed greatly since the last report of the committee, and its accuracy as now designed can be maintained within 2 per cent. These meters may be depended upon for a perfect indication for the boiler room and may also be used in many cases for the sale of steam.

SOME THINGS A WELL-EQUIPPED BOILER ROOM CONTAINS

Coming now to a discussion of the over-all efficiency of the boiler plant, it may be noted that the instruments used have progressed in proportion with those used for individual boiler operation. Very suitable meters have been designed for measuring the feed water supplied to the boiler; also meters for measuring water that is drawn from the boiler in the form of blow down. Furthermore, recording automatic scales have been developed for recording the weight of coal passing over belt conveyors or through hoppers, so that it is possible to run continuous over-all boiler-room tests.

Automatic instruments for measuring coal, however, have not reached the stage of perfection which could be desired, as in order to keep them reasonably accurate they must be continually adjusted. For this reason many plants equipped with the modern boiler of in-

creased size are using the coal larry with the well-known platform scales.

Recording thermometers are coming into more extensive use in various parts of the plant. The installation of economizers calls for the employment of these and they have proved accurate and essential for efficient operation at this point.

As a matter of fact, regarding all turbine and boiler instruments, the recording type is becoming popular and shows good results from the point of view of decreased cost of operation of the plant.

Progress in Producing and Transmitting Electric Power

The report of the committee on electrical apparatus this year covers particularly the control of fires in generators, some special phases of switchboard and transformer practice, substations with special reference to outdoor substations and automatic substations, power factor correction, and apparatus for special fields, including electric furnaces, welding and the mining field.

The committee points out that the rapid increase in the use of very large generator units brings with it the necessity for satisfactory means for protecting them from the effects of external trouble and for provisions to minimize the effects of internal troubles. Increased attention is now being given to relay protection of a nature promptly to disconnect a unit which has failed, and also to fire extinguishing equipment which will minimize the damage from a generator breakdown, if this results in burning.

In connection with fires originating within the generator shell of turbo-generators of the inclosed type, the problems are to determine means of minimizing the occurrence of such fires, to limit the extent of the damage, and to provide effective fire-fighting equipment.

CLEANLINESS IS ESSENTIAL IN THE OPERATION OF GENERATORS

In preventing fires, the inspection and cleaning of generators at more frequent intervals seem to be very desirable, and every precaution should be taken to limit the amount of dirt and oil which may enter the generator. Many companies have standardized on the installation of air washers. As to frequency of inspection and cleaning it would appear to be desirable to clean machines at least once a year. The use of additional insulation on armature coils of generators is reported as having reduced fire hazard, and the grounding of the neutral of the three-phase system solidly or through resistance is rapidly becoming standard practice.

In the line of protective equipment it is also becoming standard practice for manufacturers to bring out both ends of each phase winding of an armature to the generator terminal board so as to permit the installation of current transformers to operate protective relays. Many companies approve the installation of balanced relay protection and have adopted it as standard practice on all new generator installations and on older generators where the expense involved is not too great. The field switch is usually opened by means of an auxiliary switch on the main oil switch or by an auxiliary relay, so that there will be no chance of the field being opened before the armature has been dis-

connected from the system. Balanced relay protection is preferred to reverse power protection because the installation of reverse power relays is somewhat complicated in comparison with the very simple connections for balanced relay protection.

PUTTING OUT A GENERATOR FIRE

In the methods thus far adopted for extinguishing electrical fires, water, steam and carbon tetrachloride have been used. Water and steam are looked upon at present with favor.

For the ready application of water to the generator winding the usual practice is to provide pipe rings which are fastened at each end of the generator inside the end bells. Perforations are located in these pipes so as to throw a fine spray of water over the entire windings and over the air gaps.

In applying steam to generator windings two plans are used: (1) Steam pipe is arranged inside the end bells, perforated so that numerous jets will impinge directly on the end portion of the windings and into the air gap as in the case of water. (2) Perforated steam pipe is located in the air inlet of the generator.

It will be necessary after applying water to the generator windings to dry them out before placing them in operation again. Experience has demonstrated that generators may be sprayed with water for some time with no serious damage if they are thoroughly dried out before being again placed in commission.

The practice of installing some form of permanent fire-extinguishing equipment is gaining headway.

OTHER HIGH SPOTS IN ELECTRICAL POWER PLANT EQUIPMENT PROGRESS

The sub-committee on switchboards reported that active steps have been taken during the past few years to put the matter of capacity rating of switches on a more logical and uniform basis. It pointed out that air break switches should be rated very liberally with regard to current-carrying capacity on account of their rapid deterioration resulting from high temperatures.

The sub-committee showed pictures of an automatic air disconnective switch for use with oil circuit breakers. This opens slightly after the contacts in oil have opened and on closing makes contacts slightly in advance of the contacts in oil. The development was prompted by a desire to obviate the accidents such as have occurred all over the country with the manually-operated disconnective switches.

The sub-committee on transformers this year revised its booklet on transformer standards. It has worked in co-operation with a similar committee of the Electric Power Club, representing the manufacturers, with resulting co-ordination in efforts of operating companies and manufacturers toward perfecting standards acceptable to all interests involved.

POSSIBILITIES OF AUTOMATIC CONTROL ARE RECOGNIZED

While the report of the sub-committee on substations is largely taken up with substations of the industrial type, automatic control also received attention.

With respect to overload protection it is stated that practice varies widely. Many companies protect the entire substation with oil circuit breakers and some with fuses, with no selective overload protection for individual units; while others in addition use fuses

with individual transformers. One company uses an automatic high-voltage air circuit breaker with overload trip coils on each pole of the switch to protect the entire substation. One company uses no overload protection of any description on the high-voltage side of 11,000-volt, 22,000-volt or higher-voltage substations, treating the transformer as part of the line. The overload protection is provided usually in the form of an automatic oil circuit breaker on the low-tension side.

The sub-committee calls attention to the fact that while seven direct-current railway substations of 1000-kw. capacity and above, and more than thirty between 300-kw. and 600-kw. capacity, have been in automatic operation for some time (not including one 3000-kva. synchronous condenser and one 1500-kw. hydroelectric generating plant which operate entirely automatically) only one lighting company reports substations operating semi-automatically on 115- to 230-volt direct-current networks. However, in reply to a questionnaire query "If you have no alternating-current or direct-current substations in operation do you consider the idea practicable as applied to modern capacity substations?" almost without exception the answers were in the affirmative.

Two companies report that they are experimenting with an automatic reclosing oil circuit-breaker arrangement on feeder circuits. A third company has a small capacity transformer indoor type distributing substation with induction feeder regulators and automatic reclosing oil circuit breakers. These breakers are provided with special control relay equipment designed to reclose the circuit breaker immediately after it opens on overload. Should the circuit breaker reopen it will be again closed for a total of three operations all within a few seconds. After three such operations the main control relay opens the circuit of the closing coil of the circuit breaker and thereafter it is necessary to close it by hand. There have been no complaints from consumers on account of the rapidity with which the circuit is reclosed.

The sub-committee gives careful attention to the subject of power factor correction which is becoming increasingly important on account of the growth of certain kinds of central station loads which have inherently low power factor. As most electric railway load on the alternating-current side consists of synchronous converters it will not be necessary to go into details of this phase of the report.

LABOR-SAVING DEVICES IN CONDUIT CONSTRUCTION

In the field of underground distribution the committee on this subject finds that a marked change has occurred in the load curve of central station companies due to their taking on large blocks of load to serve industries working on a 24-hour basis. All classes of equipment have therefore been obliged to operate as a higher load factor than before. The result has been an unusually large number of cable failures, with the resulting necessity for careful attention to the matter of rating cable capacity.

In the line of artificial cooling of ducts little development work appears to have been done, although it is usually possible to obtain relief in case local hot spots develop by means of some sort of artificial cooling. More attention is being given to dielectric losses in cables with a view to minimizing this loss.

The Zone Fare in Practice

BY WALTER JACKSON

BELFAST—Part II

How Two Successful Fare Increases Were Worked Out on Scientific Basis and the Net Surplus Was More Than Quadrupled—Fares Are Easily Collected and Accounted For with Zone-Numbered Tickets

THE first half of this article, published in the ELECTRIC RAILWAY JOURNAL of May 10, 1919, alluded to successful fare increases made by the Belfast City Tramways. How these were accomplished will now be indicated. Prior to May, 1917, the penny fare was almost universal in Belfast, and only a few long rides cost 2d. Beginning April 7, 1917, J. S. D. Moffet, general manager, presented to the city a series of reports covering a graded-fare plan. Eventually a schedule was accepted whereby about $\frac{1}{2}$ mile was cut off the original penny stages and 1½d., 2d. and 2½d. stages were introduced. The first series of changes, on May 21, 1917, proved a great success, particularly the 1½d. stage, as the accounts for the fiscal year ended March 31, 1918, prove. Further heavy burdens, however, in the shape of increased war bonuses and greatly inflated prices of materials made it necessary in May, 1918, to consider a second revision of fares in which it was imperative to aim at the general principle of giving not more than a 1-mile ride for 1d. Additional reports, therefore, were presented about the end of that month. These reports furnished fuel for heated discussion and eventually (July 1, 1918) resulted in the adoption of an "end-on" 1d. per mile (actually 1½-mile on the average) scheme, with one 1½d. stage from Castle Junction (the central point) on each section.



BELFAST CITY HALL

This revision also has been remarkably successful, as the following comparative figures for the nine months ended Dec. 31, 1917 and 1918, show:

	Dec. 31, 1918	Dec. 31, 1917
Revenue	£324,000	£260,000
Expenditure	203,000	164,000
Net surplus	32,000	7,000

The table on page 1010 shows the division of passengers, according to fares paid, for the weeks ended Nov. 17, 1916, Nov. 16, 1917 and Nov. 15, 1918. The figures given certainly indicate that the fares were increased without decreasing the riding. It will be observed,

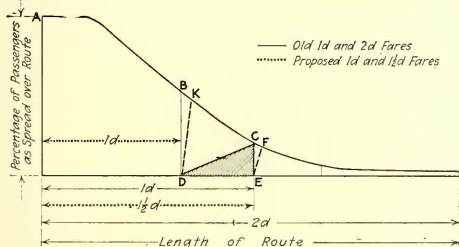


FIG. 1—THE EFFECT OF INCREASING FARES AND REDUCING STAGES IN BELFAST

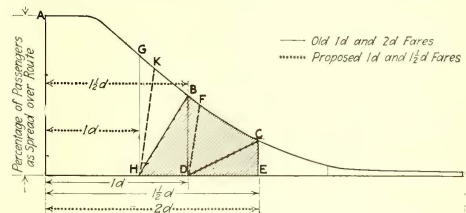


FIG. 2—THE EFFECT OF A FURTHER REDUCTION IN LENGTH OF 1D. STAGE AS SHOWN IN FIG. 1

1. Hatched triangle C D E shows portion of penny passengers converted to 2d. passengers if 1d. stage were reduced in length from E to D.
2. Triangle K C D shows portion of penny passengers from which extra revenue might be derived if 1½d. stage were introduced. Area C F E D shows the portion of 2d. passengers from which revenue would be lost if a 1½d. stage were introduced.

3. Area B H D E C shows portion of 1d. and 1½d. fares converted to 2d. passengers if 1d. stage were still further reduced in length from D to H and 1½d. stage abolished.
4. Triangle K B H shows portion of penny passengers from which extra revenue might be derived and area B F D H the portion of 2d. passengers from which revenue would be lost if a 1½d. stage were introduced.

especially, that 20.6 per cent of the travel is made up of 1½d. passengers who formerly paid 1d., and that enough old 1d. passengers are now paying 2d. to raise the ratio of 2d. passengers from 6 per cent to 16.3 per cent of the total passengers carried. Had it been possible to give all the car-mileage desired, the travel would have been still better.

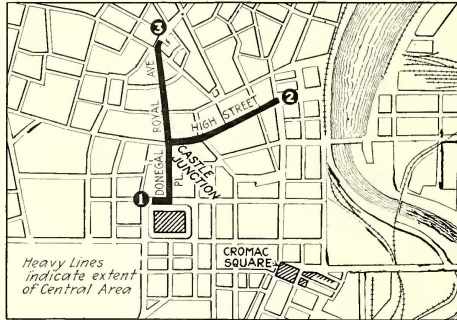
Preliminary to introducing the 1½d. Mr. Moffet made graphical studies such as those shown in Figs. 1 and 2, which are reproduced merely to suggest his general plan without going into details. In these he determined (1) the effect of converting a given number of penny passengers to 2d. passengers if the penny stage were shortened in the proportion shown; (2) the effect of converting a given number of penny passengers into 1½d. passengers as compared with the number of the 2d. passengers that would be lost thereby; (3) the portion of 1d. and 1½d. passengers converted to 2d. passengers if the 1d. stage were still further shortened and the 1½d. fare abolished, and (4) the portion of 1d. passengers from which extra revenue might be derived compared with the portion of 2d. passengers from which revenue would be lost if a 1½d. stage were introduced.

In general, Fig. 1 was made to prove that people will

not pay more for a ride—when it is not a necessity but a convenience—if they think it is cheaper to walk. Fig. 2 shows the dangerous condition that might arise if the losses exceeded the gains. As in the case of the American passenger, psychology must be reckoned with. The long rider who is asked to pay 4d. instead of 3d. is less disturbed than the short rider who is asked to pay 2d. instead of 1d., because the latter sees riding as a convenience or even a "luxury" (to use Mr. Moffet's

term) with which he can dispense if he so desires. Although Mr. Moffet, when dealing with the second revision of fares, gave a detailed list of stages and their lengths, he also prepared a diagram to show any inequalities. This diagram, as reproduced in Fig. 3, calls for no lengthy explanation. Along the top line are set out distances up to 5½ miles, with the ½-mile points also shown. Down the left-hand margin the various routes are tabulated together with the stages.

The stages from the city center appear at the top in every instance, and the others follow consecutively. From left to right there are six columns. Those containing solid lines (black in original), namely, the first, third, fifth and six (half-size) columns, represent 1d., 2d., 3d. and 4d. stages respectively. Those containing



CENTRAL OVERLAP AREA IN BELFAST

	1d	1½d	2d	2½d	3d	3½d	4d	4½d	5d	5½d
BALMORAL	1d	1½d	2d	2½d	3d	3½d	4d	4½d	5d	5½d
DONEGALL RP	1d	1½d	2d	2½d	3d	3½d	4d	4½d	5d	5½d
SPRINGFIELD RP	1d	1½d	2d	2½d	3d	3½d	4d	4½d	5d	5½d
FALLS RP	1d	1½d	2d	2½d	3d	3½d	4d	4½d	5d	5½d
SHANKILL RP	1d	1½d	2d	2½d	3d	3½d	4d	4½d	5d	5½d
CRUMLIN RP	1d	1½d	2d	2½d	3d	3½d	4d	4½d	5d	5½d
DLOPARK	1d	1½d	2d	2½d	3d	3½d	4d	4½d	5d	5½d
CLIFFONVILLE	1d	1½d	2d	2½d	3d	3½d	4d	4½d	5d	5½d
ANTHUS RP	1d	1½d	2d	2½d	3d	3½d	4d	4½d	5d	5½d
CLENCEGHEWLEY	1d	1½d	2d	2½d	3d	3½d	4d	4½d	5d	5½d
DUNCAIRN CD	1d	1½d	2d	2½d	3d	3½d	4d	4½d	5d	5½d
SHORE RP	1d	1½d	2d	2½d	3d	3½d	4d	4½d	5d	5½d
QUEEN'S RP	1d	1½d	2d	2½d	3d	3½d	4d	4½d	5d	5½d
BELMONT	1d	1½d	2d	2½d	3d	3½d	4d	4½d	5d	5½d
KINDCK	1d	1½d	2d	2½d	3d	3½d	4d	4½d	5d	5½d
BLOOMFIELD	1d	1½d	2d	2½d	3d	3½d	4d	4½d	5d	5½d
CASTLEREACH	1d	1½d	2d	2½d	3d	3½d	4d	4½d	5d	5½d
CRECACH	1d	1½d	2d	2½d	3d	3½d	4d	4½d	5d	5½d
RAVENHILL RP	1d	1½d	2d	2½d	3d	3½d	4d	4½d	5d	5½d
DRAHEAU RP	1d	1½d	2d	2½d	3d	3½d	4d	4½d	5d	5½d
STRANMILLIS	1d	1½d	2d	2½d	3d	3½d	4d	4½d	5d	5½d
MALDENE RP	1d	1½d	2d	2½d	3d	3½d	4d	4½d	5d	5½d

FIG. 3—RELATIVE LENGTHS OF STAGES IN BELFAST

broken lines (red in original), namely the second and fourth columns, represent 1 $\frac{1}{2}$ d. and 2 $\frac{1}{2}$ d. stages. The dotted lines show the difference in length of stage common to alternative routes, the full lines showing the length via the more direct route and the dotted line that via the longer route.

Of the group of 1d. routes between the mile (5280 ft.) and 7200 ft., the majority are well within 6000 ft. The 1 $\frac{1}{2}$ d. stages run between 7200 ft. and 9480 ft.; the 2d. stages, between 9480 ft. and 13,680 ft.; the 2 $\frac{1}{2}$ d. stages, between 13,680 ft. and 18,000 ft. and the 3d. stages between 18,000 ft. and 24,000 ft.; the only 4d. stage is 28,880 ft. long.

In one of the 1918 reports on the fare question, Mr. Moffet concluded with the following significant statement showing that electric railway men in the United Kingdom do not look upon the zone system as a hard and fast proposition but as something that must be worked out in accordance with the conditions peculiar to a given community:

It has been suggested that stages should be fixed upon an exact mathematical basis of 1 mile for 1d., but such a proposition . . . is not a practical one, and therefore not one that I could recommend, as it would debar or prohibit my bringing to bear on the subject any skill, knowledge or experience which I may possess in such matters.

side of the city are permitted to board or leave the cars before or after they pass through Castle Junction. This gives an overlap area through the business section of the city. In order to enable the conductor to collect all his fares within so small an area and to avoid congestion, the railway has established three loading points besides Castle Junction at the following places (see accompanying map): (1) City Hall; (2) Albert Memorial, and (3) North Street. The central area shown on the accompanying map covers the triple-armed section, about 960 ft. along Donegall Place, 1140 ft. along Royal Avenue and 1320 ft. along High Street.

SPECIAL FARES AND DISTRIBUTION OF RIDERS

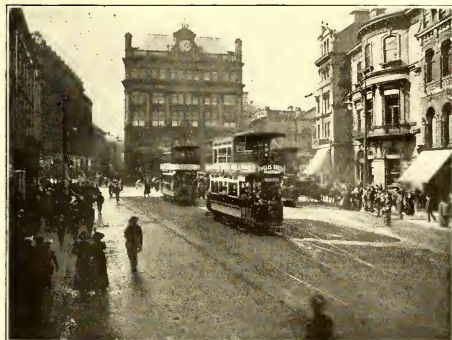
In addition to the standard fares, the following special low-rate fares are in vogue for children and workmen:

CHILDREN'S FARES

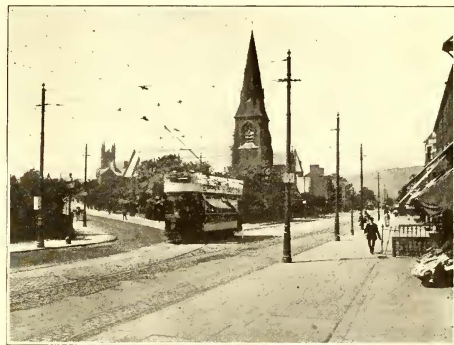
1d. stage for 1 $\frac{1}{2}$ d. through special ticket.
1 $\frac{1}{2}$ d. and 2d. stages through purchase of regular 1d. ticket, which is punched for the permissible additional number of stages.
2 $\frac{1}{2}$ d. and 3d. stages through purchase of regular 1 $\frac{1}{2}$ d. ticket, which is punched for the permissible additional number of stages.
4d. stages through purchase of regular 2d. ticket, which is punched for the permissible additional number of stages.

WORKPEOPLE'S FARES

1d., 1 $\frac{1}{2}$ d. and 2d. tickets are obtainable for 1d., 1 $\frac{1}{2}$ d. and 2d. stages, for 2 $\frac{1}{2}$ d. and 3d. stages and for 4d. stages respectively, with a minimum fare of 1 $\frac{1}{2}$ d. across the city center on special through cars.



LOOKING ACROSS CASTLE JUNCTION, THE BUSIEST SECTION OF BELFAST



JUNCTION OF CLIFTONVILLE AND ANTRIM ROAD SECTIONS NEAR CENTER OF CITY

Moreover, in connection with a proposal to make a traffic point at Cromac Square $\frac{3}{4}$ mile or less than 2100 ft. from the center, the general manager reported:

Cromac Square is too near the city center. During the rush hours and meal times cars arrive at this point with practically as many passengers as they can hold, and they leave quite full. Consequently, there would be no advantage in fixing a stage there to encourage additional traffic which could not be accommodated. The fact that the cars still leave this point at such times loaded up to their fullest extent proves that the new fares have not stopped the ware-room and shop girls, or at least those who did ride, from traveling as before.

Penny stages cannot be made from Cromac Square without reducing the fares below what they were before the Council decided to raise them. Moreover, corresponding overlapping stages which could not be refused would be demanded on all other routes, with the result that the whole business would be reduced to a huge farce.

With regard to overlapping stages generally, I am of the opinion from my experience with such stages that in no case should they be fixed nearer than $\frac{3}{8}$ to $\frac{1}{2}$ mile from the center.

There is now established in Belfast a central area of approximately 1140 ft. radius in which riders from one

Workmen's roundtrip tickets are not used at Belfast. Workpeople's fares in theory are available, for example between 5 and 8 a.m. on cars labeled "For Workmen Only" but not different from standard cars in equipment or upholstery. As a matter of fact the actual workmen's morning traffic is from 5 a.m. to 6.30 a.m. during which period anyone who boards the cars buys a regular ticket and gets the additional riding as in the case of children's tickets. These early cars go direct to the shippards via Castle Junction, as explained in Part I in the issue of May 10 in connection with rush-hour through-routing in Belfast. Between 6.30 and 7 a.m. no workmen's cars at all are run, as the cars are returned to the depots immediately after being unloaded at the yards. This class of riding, naturally, is too costly to be encouraged. At present, it is about 7.8 per cent of the traffic, and with the shorter workday may disappear altogether.

On the Glengormley line the management is trying to reserve the through cars for through passengers during rush hours by charging a minimum fare of 2d., some-

what as the Jacksonville (Fla.) Traction Company tried to keep short riders off the cars to Camp Johnston. The result of the Belfast experiment to date has been contrary to the expectation that there would be an increase in the revenue from this plan. A recent week-day showed that while the 2d. fares had increased from 517 to 768—a gain of 502d.—the penny passengers had dropped from 1138 to 567—a loss of 571d.—making a net loss of 69d. The increase in 2d. passengers was caused, of course, by the reservation of accommodation for this class of passenger, while the decrease in penny riders might be due to a greater choice of cars from the city than to the city.

There is little free riding in Belfast. At one time city employees rode at very low rates, but Mr. Moffet

the maximum number of stages on a ticket of given denomination, the railway can use the same ticket on all lines where the given rate of fare prevails. The management, after many years' experience with this system in London and the Provinces, finds that the great mass of riders soon become familiar with the stage numbers on their every-day routes, while the stranger suffers no special inconvenience because it would be only a matter of chance that his destination was a stage boundary. In any event, there is no reason why the stage numbers, with the cheapest ticket numbering most prominent, could not be put on the poles if such identification was considered to be desirable. The tickets, two of which are illustrated, are similar to those which Mr. Moffet and his special traffic assistant, W. T. Young, introduced when they were operating the West Ham Corporation Tramways. In addition to the usual serial number the tickets have so-called "service" numbers which identify the conductors more readily than would otherwise be possible.

The method of fare collection is that usual with the ticket system.

The punches now being introduced are the latest type of the Ticket Punch & Register Company, Ltd., London, and these are rented at about \$2.75 a year. With these

punches, no registration can be effected without a standard thickness of ticket. To get at the punches, it would be necessary for the conductor to destroy a tiny seal. Dishonest conductors are prosecuted but are fined rather than imprisoned. Compared

with the citizens of other cities, those of Belfast appear to be well supplied with silver—too well supplied—as not more than 40 per cent of the passengers tender the exact copper fare. Disputes concerning the fare to be paid are not likely, for the rates are plainly displayed on posters, such as one for workmen's fares reproduced herewith. The traffic by-laws and regulations are also printed in a tiny red book carried in every car—more, however, as a matter of compliance with the law than as a matter of necessity.

Ten ticket inspectors are employed. With the coming of the present management, the work of these men was systematized and definite report forms were introduced. This raised the number of checkings from less than 2000 to 10,000 per month. The inspector makes his report on the "Return of Inspections" sheet illustrated in Fig. 4, each report as to car boarded being initiated by the conductor. From these reports, the traffic department prepares two abstracts (daily and monthly), one showing the number of inspections per car and the other the number of inspections per conductor. These reports show from one to nine checks a day with an average of three to four for the system as a whole.

The work of the ten ticket inspectors is laid out ac-

BELFAST CITY TRAMWAYS.

FARES ON CARS LABELLED
"FOR WORKMEN ONLY"
TRAVELLING BETWEEN
QUEEN'S ROAD
AND THE FOLLOWING POINTS

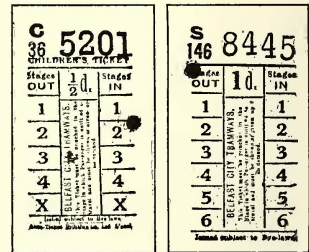
Antrim Road Section		Knock Section	
STAGE	FARE	STAGE	FARE
NEW LODGE ROAD	1 1/2	DEVON STREET	1
CHANCELLER PARK	2	NEW DEVON	1 1/2
		BANK ROAD	2
		TERMINUS	3
Via Duncairn Gardens			
	1 1/2	Ligoniel Section (Shankill Rd.)	
		BRINSFORD STREET	1 1/2
		ANTRIM	2
		TERMINUS	3
Balmoral Section			
GLADSTONE STREET	1 1/2	Ligoniel Section (Crumlin Rd.)	
WALSHWOOD PARK	2	ANTRIM STREET	1 1/2
TERMINUS	3	ANTRIM	2
Belmont Section			
BURTON STREET	1 1/2	Malone Road Section	
ROXBOROUGH AVENUE	2	WINDYBENT STREET	1 1/2
TERMINUS	3	WALSHWOOD PARK	2
Bloomfield Section			
BELFIELD STREET	1 1/2	Oldpark Section	
WINDYBENT STREET	2	ANTRIM STREET	1 1/2
TERMINUS	3	TERMINUS	2
Castlereagh Section			
CASTLEBAY STREET	1 1/2	Ormeau Road Section	
LOPESIDE	2	DONOGALL PARK	1 1/2
TERMINUS	3	WINDYBENT STREET	2
Cliftonville Section			
NEW LODGE ROAD	1 1/2	Ravenhill Road Section	
TERMINUS	3	DUBLIN STREET	1 1/2
Cregagh Section			
RENSHAW ROAD JUNCTION	1 1/2	Shore Road Section	
NEW STREET	2	LALFORD ROAD	1 1/2
TERMINUS	3	WINDYBENT PARK	2
Donegal Road Section			
DUBLIN STREET	1 1/2	Springfield Road Section	
TERMINUS	3	WINDYBENT STREET	1 1/2
Falls Road Section			
DUBLIN STREET	1 1/2	Stranmillis Section	
TERMINUS	3	WINDYBENT STREET	1 1/2
		TERMINUS	2

MINIMUM FARE across the City Centre on any Car for Workpeople, 1 1/2d.
June, 1918. J. S. D. MOFFET, General Manager

TELLING WHAT TRAVEL ON "WORKMEN ONLY" CARS WILL COST

argued successfully that it was no more logical for the tramways department to carry these employees practically free than it would be for the electricity department to give electricity to the street railway. Except for some charity concessions, as to the blind, free riding on the Belfast lines is confined to tramway employees "to and from work or when on duty." For this purpose, they are furnished with a vivid red porcelain disk, dully numbered, which is worn like a wrist watch! Colored tokens of celluloid are sold for postmen and others at full price in lots of say £5.

Unlike the usual fare receipt, the Belfast tickets show the stages by numbers instead of names. By printing



SPECIMENS OF STAGE-NUMBERED AND SERVICE-NUMBERED TICKETS USED IN BELFAST

according to Fig. 4 and the accompanying table, from which it will be seen that their duties or shifts are varied according to traffic conditions:

TIMETABLE OF TICKET INSPECTORS

Between 5 and 8 a. m., three are on duty.
 Between 8 and 10 a. m., five are on duty.
 Between 10 a. m. and 12 noon, three are on duty.
 Between 12 noon and 2 p. m., ten are on duty.
 Between 2 and 3 p. m., seven are on duty.
 Between 3 and 3.30 p. m., two are on duty.
 Between 3.30 and 5 p. m., five are on duty.
 Between 5 and 6 p. m., ten are on duty.
 Between 6 and 7 p. m., eight are on duty.
 Between 7 and 10.30-11 p. m., five are on duty.

At the start of the day's work, each inspector (identified by duty number) is assigned a certain starting point, one group working around on an inner radius and the other group working around on an outer radius as shown in Fig. 4. There is considerable rivalry among the ticket inspectors, for it is possible to compare their output under like conditions and the figures are posted on the bulletin boards, although without comment. Thus the report for Jan. 19, 1919, showed inspections as follows: Maximum, 48.5; minimum, 25.8, and average, 33.5.

HANDLING CONDUCTORS' RETURNS AND ACCOUNTING FOR TICKETS

All cash and ticket transactions between the conductors and the traffic department are carried on through eight depot cash clerks. These clerks, who are discharged soldiers, handle everything—the punch, bag, money and tickets—and also carry stocks of tickets as drawn from the main ticket storeroom.

A conductor desiring a supply of tickets makes

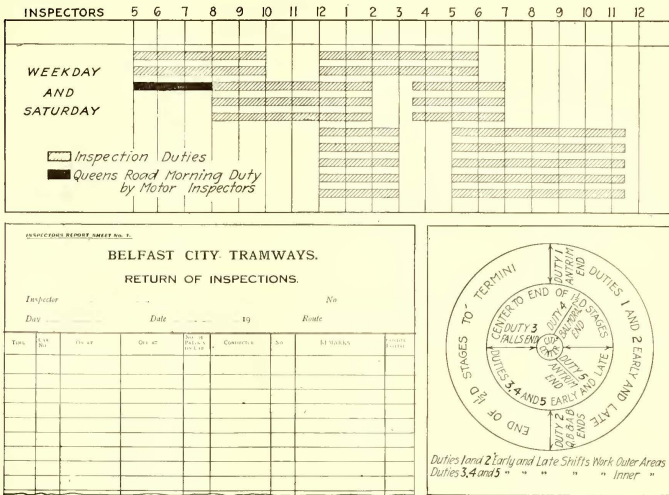


FIG. 4—TEN TICKET INSPECTORS MAKE 10,000 CHECKINGS A MONTH. At top, chart showing hours inspectors are on duty. At left, ticket inspector's report sheet. At right, chart used to assign duties to traffic inspectors.

out a "Ticket Requisition Note" as shown in Fig. 5 and presents it to the depot clerk. The latter draws the supplies from a bin reserved for this particular conductor's stock. Belfast uses the 10,000 ticket-of-each-class system, each conductor receiving his tickets in serial order until the supply is exhausted. The practice is to keep 2000 tickets ahead at the divisional car-house, while the remaining tickets stay at the main ticket storeroom to be drawn upon by requisition from the depot clerks. Evidence that the local stocks need replenishment is afforded by sending on the conductors' requisitions as filled.

Each conductor on beginning his day's work receives from his depot clerk a way-bill which shows the terminal times for the entire day. The conductor himself writes in the starting numbers of his tickets in the

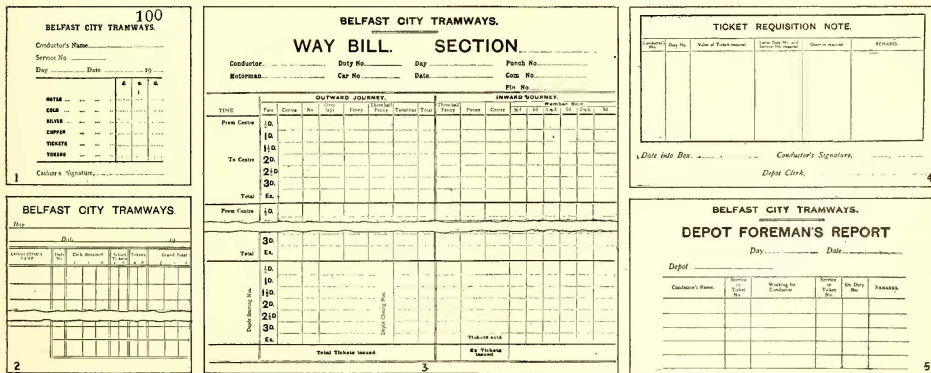


FIG. 5—FORMS USED IN BELFAST CITY TICKET ACCOUNTING

- No. 1—Receipt for money and ticket returns.
- No. 3—Way-bill for day's work.
- No. 2—Depot clerk's summary of daily receipts.
- No. 4—Conductor's ticket requisition.
- No. 5—Depot foreman's report of ticket issues.

space provided at the lower left-hand corner and also the closing numbers in the space opposite. At the top of the waybill are the identifications relative to the crew, the tickets, the duty (run) and the punch numbers. The remainder of the page and the three pages following are available for the sales report of each of the various trips.

Conductors are supposed to make blind returns, but it is fairly certain that they count their returns. At one time, it was customary for the men to drop their canvas money and ticket bags into a safe with a zig-zag entrance. This was superseded by the present conductor-to-clerk arrangement because too many complaints about shorts resulted. Sometimes the conductor forgot to deposit anything! Now all returns are counted in the presence of the conductor. On accepting the return, the clerk gives the conductor a receipt (see illustration) for all the money, tickets and tokens received. The duplicate of this receipt stays in the receipt book, which is sent to the traffic department headquarters the following morning together with a summary of all cash, tickets and tokens received from the individual conductors. This summary sheet is also illustrated in Fig. 5.

The punches are opened and resealed by the depot clerks. It is not considered necessary to count the punchings, except in cases of suspected dishonesty, as the check of tickets sold compared with the opening and closing numbers of the punch is sufficient. As a matter of fact, the reports of the ticket inspectors indicate that it scarcely pays to have a checking system for other than the moral effect, because the losses due to dishonest conductors are so small.

In addition to the eight depot clerks, whose duties are by no means confined to the handling of the conductors' returns, there are three girls at headquarters (ticket dispatching department) engaged in issuing tickets to the divisional car depots and also in checking the reports of the traffic inspectors, etc. Five male clerks in the audit department are also employed from 9 a. m. till 12 noon on the cash returns and certain traffic sheets, after which they are engaged in general accounting duties. Thus both the tickets and the returns for a traffic of about 250,000 passengers a day are handled through the part-time service of three girls in the ticket department, five male clerks of the audit department and eight depot clerks, or sixteen people in all.

ORDERING, STORING AND DISTRIBUTING TICKETS

Tickets are ordered from the Auto-Ticket Printing Company, Ltd., Liverpool, in lots of 3,300,000, numbered from 1 to 330 inclusive, thus giving 10,000 per "service" for a given denomination. The following lots are numbered A1 to A330 and so on through the alphabet so that by the time the alphabet is completed all the earlier letters will have been worked off. As the tickets are often delivered irregularly, a book is kept of all the numbers on order, arranged vertically. As a given group is received a blue line is drawn alongside, while a red line is drawn alongside the gaps to serve as a reminder that the tickets are not arriving in order of use.

The tickets are stored in individual bins for each conductor according to his service number and issued in the order of the serial numbers. A stock sheet in each bin shows what tickets of this 10,000 group per denomination have gone out and what tickets are still

CLASSIFICATION OF BELFAST PASSENGERS ACCORDING TO FARES PAID

Fare, Pence	Week Ended Nov. 17, 1916	Per Cent	Week Ended Nov. 16, 1917	Per Cent	Week Ended Nov. 15, 1918	Per Cent
1	144,811	10.60	111,226	7.63	85,408	5.8
1 1/2	1,135,342	83.00	1,016,361	69.75	736,063	49.6
1 1/4	.....	.....	220,332	15.12	304,764	20.6
2	82,332	6.00	82,596	5.67	242,611	16.3
2 1/2	.....	.....	19,276	1.32	80,932	5.5
3	4,717	0.40	7,406	0.51	23,793	1.6
4	.....	.....	.....	.....	9,005	0.6
	1,367,202	100.00	1,457,197	100.00	1,482,576	100.00

NOTE—First revision of fares, May 21, 1917; second revision, July 1, 1918.

in. A continuous inventory is thus secured from the data shown by the conductors' requisitions to the car-house clerks or depot foremen and by the latters' daily reports of tickets issued to regular conductors or their substitutes (see Fig. 5). Of the 330 ticket-service numbers, 284 are permanently assigned to regular conductors, grouped largely according to depots, and the remaining numbers are spare for extras.

Although the individual bin system is the basis of the ticket distribution, it is not rigidly adhered to as it may sometimes be desirable for the conductor of a busy line to work off some of the tickets of a less busy man. Due entry of such exceptions is made not only on the individual stock sheets but also in a ledger. Consultation of this stock ledger shows immediately what ticket-service number and serial numbers were used by a given conductor on a given day. It is enough to have a ticket to find out quickly by what conductor it was issued and on what day. In fact, it is possible almost to identify the individual trip without recourse to the waybill statistics.

CONDITIONS OF EMPLOYMENT

Besides the three traffic regulators and ten ticket inspectors the supervisory staff includes four motormen's inspectors. The present platform staff numbers 650. About 260 men who volunteered are still waiting demobilization. Upon their return they will be restored to their old positions as far as practicable, and then the tramways will be in position to give more service. There are no women conductors.

Aside from the 30s. weekly war bonus, the scale of pay is as follows:

First twelve months.....	4d. per hour
After twelve months.....	5d. per hour
After two years.....	5d. per hour
After three years.....	6d. per hour
After five years, long-service bonus of.....	3d. per hour

It is evident from the foregoing figures that, upon the basis of the maximum sixty-hour week, a man in service more than two years and less than three actually gets more war bonus (6d. an hour) than regular pay, which is 5 1/2d. an hour. This comparison will give some idea of how the wages account has risen in Ireland as elsewhere.

Regular working hours are fifty-four to sixty a week, but time on Sundays is counted as 25 per cent extra. Each regular service man, according to an agreement with the union, must be paid for a minimum of nine hours for every day on duty. Working hours are figured from fifteen minutes before a man leaves the depot to fifteen minutes after he returns to the depot. In all cases this non-platform time must be spent at the carhouse. A material portion of fifteen minutes is also counted as a quarter of an hour. If a man is relieved at any place other than his relief point, he is paid for the time

taken by his car to reach his relief point. Conductors who commence or complete their day's work at a point on any car route away from their depot are credited with the time taken in proceeding between that point and the depot for the purpose of personally obtaining or depositing their punches.

The men are divided into three classes according to seniority, namely gold-band men, letter men and red-band men. The gold-band men, who are the oldest, are assigned to morning and afternoon shifts, the meal relief and night shift being taken by the letter men. The red-band men take out extras during the morning,

noon and evening rushes, working from two to three hours each period. Under normal conditions, every man has one day off in seven.

Mr. Moffet is a strong believer in telephone control, having worked out such a system while general manager of the West Ham Corporation Tramways. He hopes to get one for Belfast when the outlook for both expenditures and deliveries is better than now. The same viewpoint applies to the installation of car-checking devices, which he advocated and used for nearly a decade when he was connected with the Rochdale Corporation Tramways.

Railways Are Agents of the Public*

The Main Task which Confronts Both Operating Men and Manufacturers
Is to Sell This Idea of "Agency" to the Car-Riding Public

BY HARLOW C. CLARK

American Electric Railway Association

WHAT is the matter with the American electric railways? This question can be answered in three words—it is broke. But electric railways should not act broke. I cannot convince myself that the great business of furnishing local transportation offers so few possibilities that there is nothing in its future except bankruptcy and abandonment. I believe that with determination, with courage and with intelligence, the problem can be solved. I believe that in the readjustment of income and outgo, these methods are possible and should be followed—first, that the outgo should be reduced to its lowest possible level, and, second, that the income should be increased so as to cover the necessary expense of doing business. I believe that to accomplish this result a survey of the field is necessary to determine just what service the public now requires of electric railways, and I believe that this survey should be made in disregard of the kind of service electric railways have in the past furnished.

New factors have entered into the situation. Recent statistics show that there is one automobile for every eighteen persons in the United States. This method of transportation has pre-empted a part of the field that was formerly occupied by the electric railways, and although the electric railway riding habit, which increased twenty-five rides per inhabitant between 1902 and 1907, and fifteen rides per inhabitant between 1907 and 1912, increased but three rides per inhabitant between 1912 and 1917, and it is perfectly well known that the deceleration is continuing, I have failed to find anywhere an investigation, or a statement, or an opinion, as to how, if at all, the service formerly furnished communities by electric railways should be modified in view of this feature of the situation. It is obvious that there is nothing that we can do to prevent in any degree the competition the privately owned automobile furnishes. It is equally obvious that if our riders are being taken away from us by this method of transportation, we cannot afford to give the service formerly furnished. What, then, is the function that we should perform?

To-day the job before the electric railway man is a job of merchandising, a job of finding out what the people want and giving it to them. I have read many statistics and have listened to many comments as to the effect of increased fares upon the riding habit. In most discussions of this subject, figures play a principal part. In very few of them has there been any attempt to study the underlying reason for this falling off in travel when fares are increased.

There is in the United States to-day, as far as I know, no street car fare which in terms of the individual's income is larger than was the 5-cent fare when it was willingly and freely paid by the inhabitants of the United States ten or even five years ago. Hence—as any merchant or any manufacturer would do under similar circumstances—one of the first things that should be done is to ascertain the causes for the falling off in income under those increased fares, if such a falling off is found to be a fact, and when these causes are determined to fit the service to the needs of the community and the habits of the people so that it can be furnished under rates of fare which they will pay.

ALLIANCE WITH THE CAR RIDERS

If the electric railway industry is to be put on a stable and firm foundation, it must form an alliance, offensive and defensive, with the car rider and not the man who uses the automobile. In one form or another, service-at-cost is here. The owners of electric railways securities can no longer expect, if they ever expected, to receive a return upon their investment greater than will attract money into the enterprise. Capital's return being thus limited to the minimum that will keep private enterprise in public service, it is evident that it is to the car rider's interest that every impost, tax, license charge or cost of operation be reduced to its minimum.

There are not a few gentlemen, both in and out of the industry, who advocate the public subsidization of electric railway transportation. It is, perhaps, possible that this in the end may be necessary, but it would seem a measure of common sense that before such a radical step is resorted to, the charges levied against the cost

*Abstract of address delivered before New England Street Railway Club, May 22, 1919.

of transportation for the benefit of others than those persons using the transportation should be eliminated. There may have been a time when such taxes and imposts were levied against the owners of the property and taken out of the profits that would have otherwise accrued to these owners, and under those circumstances it may have been possible to defend them as proper charges. Under existing circumstances, however, there is no such defense.

If the alliance of which I have spoken is formed, if the car rider can be persuaded that his interest and that of the company which furnishes him street car service are identical, the battle which we are waging in behalf of the industry is half won. We are then approaching the firm foundation for the structure of public relations which we hope to erect, for what electric railways as corporations cannot do, electric railways acting as the agents of their patrons can do.

That is the first big idea that must be "sold" to the public, or that portion of the public which constitute the body of car riders. It is not such an extremely difficult task. It has been done in the city of Cleveland, where under the original cost-of-service plan the car rider has come to recognize the fact that his street-car service cannot be loaded up with charges that should properly be borne by the community as a whole or some particular part of the community without directly affecting the car fare.

I presume that the average street railway pays out in taxes, licenses, paving and other charges at least 8 per cent of its gross receipts, and I should estimate from the statements of a large number of companies that I have examined that at least 6 of this 8 per cent is paid because these companies are street railway companies and would not be paid were they engaged in any other business than that of furnishing public service. In addition, there is each year paid in fixed charges a very considerable item, necessitated by capitalization of the cost of paving and other construction incurred entirely for the benefit of the community and not of the car rider.

Now it is a matter which very closely concerns the man who uses the street car, whether he shall be compelled to pay through increased car fare these charges from which he reaps no benefit. It equally concerns him whether the city authorities co-operate in every measure that will make for economy and efficiency in the operation of the system.

FOUR PARTNERS IN PUBLIC SERVICE

It has been said that there are four partners in the furnishing of public service by private corporations:

First—The public, which receives the service;

Second—The employees, who receive wages;

Third—The government, which receives taxes and license fees;

Fourth—The owners, who receive a return upon their investment.

Although it is necessary because of the magnitude of the operations which electric railways carry on, to talk in large figures, the proposition is after all, when reduced to its lowest terms, a very simple one. It is, in the end, a question of a fair division of the fare received—how it shall be apportioned. It is apparent that if one of the so-called partners secures an undue share, it is at the expense of the other partners, and

this is an idea that should be driven home with all the force at our command. There can be to-day no contention that the owner-partner is receiving an undue share. In most instances, this partner is receiving nothing!

Before one can in any way indicate how either railway men or manufacturers can assist in putting the electric railway industry upon a firmer basis, he must in some general way, at least, indicate what this firmer basis is and how it can be approached. I am going to suggest these general heads:

1. That a determination be made of just what functions street railways—in view of the changing conditions in transportation, brought about by the development of the automobile—should continue to perform in their communities.

2. That, these functions having been determined, it be decided what of the service now being performed can be abandoned if such abandonment is indicated as necessary.

3. That the relations between the companies and the communities be readjusted upon a basis which will give to the private operators of the property a fair and just and assured return upon their investment, with additional incentive for economy and initiative in management.

4. That the corporations performing these services be considered and treated as agents of the car-riding public, and every form of tax, license and impost which is now levied against them upon the plea that it is being paid from the profit of the owners be removed.

5. That public co-operation be sought in securing the most efficient and economical operation possible through the speeding up of schedules, use of one-man cars, proper traffic regulations and such public privileges as may be justified upon the ground that the street car is performing a transportation service for the largest portion of the community.

6. That with these conditions assured, the service to be performed be prescribed by the car-riding public through public authorities and that the fare to be charged be automatically regulated by the cost of furnishing the service so prescribed.

This is, of course, a very general program. I have not attempted to go into details. I have not discussed the zone or the flat-rate system of fares, or the policy of charging for transfers. The experience in this country as to zone fares is limited. Some interesting experiments are being undertaken, and it is hoped that before long the country will have the benefit of the trial in New Jersey of a unique system of charges based on a stand-by charge plus a distance charge.

This question of a method of levying street car fares, however, is in my opinion very largely a social question. I believe it so closely affects the civic and social life of every community that the primary consideration in the determination of the method of charging, whether by zones or by flat rates, is a social question and not entirely one of expediency for the street railway. Moreover, I am not convinced that conditions in all communities of the country are so nearly similar that what is advisable as to fares in one would be advisable in all others. There are "local conditions," but underneath these "local conditions" there are certain general conditions which apply universally, and so I believe it is possible to arrive at certain general principles that will apply equally wherever street railways are operated.

These principles, as I see them, I have just stated. They are based entirely upon the theory—and I believe it to be more than a theory, I believe it to be a fact—that the furnishing of local transportation is a public function which for purposes of convenience and economy and efficiency can best be furnished by private enterprise and private initiative. In the development of the electric railway industry, this basic fact has been lost sight of by the owners and operators to a very large

extent and to a very much greater extent lost sight of by the public itself, which has come to regard the corporations furnishing this service as private enterprises engaged not in a public business, but in a private business whose main purpose is the making of undue and exorbitant profits.

AGENCY THEORY MUST BE RECOGNIZED

It is evident that there can be no satisfactory adjustment of conditions until this impression or belief—for it is more than an impression—has been removed and the local transportation companies are looked upon by the public as their agents receiving a reasonable and just compensation for their services, but acting for the public in the performance of the duties imposed upon them. As long as the public holds any other view the settlement of electric railway problems is going to be impossible, and I conceive it to be the main task which confronts both railway men and manufacturers to exert their efforts towards "selling" this idea of agency.

How can it be done? It can be done, as every other idea that has captured the public mind has been put over, by the printed and spoken word. It can be done if the man at the head of each property thinks it is the thing to do, and if he in turn convinces the men under him that it is the thing to do, and they in turn convince the people with whom they come in contact that it is the thing to do, and they in turn convince other people that it is the thing to do.

SERVICE TO THE FORE!

It can be done if, in every written or spoken utterance of the owners and operators of electric railways and of the manufacturers interested in electric railways, the idea is kept clearly in mind and the thought of service is kept prominently to the fore. For, after all, what the car riding people of the United States want is "SERVICE." People use street cars for two reasons, because they have to, and because they want to. It would be interesting to know how the division of street car riders on American electric railways stands as between those who have to ride and those who want to ride. It is probably true that companies will always get the riders who have to ride, or at least until some other mode of transportation comes to relieve them of the necessity of riding on the electric lines. It is equally true that unless the electric railways make people want to ride, they will not secure or retain the second class of riders.

The job of making people want to ride seems to be a job of making the service such as will make it easier to ride than to walk or to use another sort of vehicle. That means frequency, it means comfort, it means convenience, it means speed and it means uninterrupted schedules. A very large part of this program cannot be carried out without the co-operation and active assistance of the public who patronize the service.

I have no fear of the ultimate effect of such fares as are necessary to cover the cost of service. I know that for years people have willingly and cheerfully paid the unit fare of 5 cents. I am equally certain that any fare necessitated by the cost of service in the immediate future will not, in terms of income, be in excess of the nickel. I believe that if it is possible for other industries to educate people to the higher price level that

now maintains and is to maintain, it is possible for the electric railway industry to do so.

I believe that once the public is impressed with the fact that electric railway companies are its agents and are deriving from this agency no unjust or undue compensation and are performing the task to the best of their ability, the friction which now exists will be removed. Then the public will unite and co-operate in an effort to readjust its relations with the companies so that the end which we all seek—a just return for the owners and efficient service for the communities—will be achieved.

Southwestern Association Starts Up

Meetings of the Association Are Resumed with a Lively Discussion in Galveston of Current Operating Problems

THE fifteenth annual convention of the Southwestern Electrical & Gas Association was held in Galveston, Texas, on May 12-14. The convention in general was organized in the form of separate section meetings for electric light and power, for gas and for electric railway groups in the mornings and a general session later in the day. Burr Martin, vice-president and general manager Texas Electric Railway, Dallas, and vice-president of the association, was acting president in the absence of President W. A. Sullivan, general manager Shreveport Railways.

The opening address at the first session was given by I. H. Kempner, Mayor of Galveston. Mr. Kempner said that the present city administration had been criticized because it permitted an increase in lighting rates and street car fares, but that the increases were allowed because the city officials were shown that the demands of labor for increased wages were justified on account of the increased cost of living. He was convinced that the right thing had been done, although the officials might suffer for it.

Acting-President Martin spoke in part as follows:

Public utilities have the right to expect to prosper, and we should work to educate the public to realize that rate increases have to be made if the efficiency of the utilities is to be maintained. Public confidence is the greatest asset which the public utilities can have. Without it the managers are fighting a losing fight. They may go against public opinion for a while, but they will suffer sooner or later. It has been the policy of too many to care little for public opinion, and then they wonder why better results are not obtained.

Before changes are made or a new system installed you must try to view it from the point of view of the public and strengthen public opinion in your favor. There can be no success without the managers keeping in touch with the public. Impress upon the public that its welfare is dependent upon your success. There are a few who realize this fact, but the rank and file must be educated. The attitude of the managers of utilities has been too impersonal."

H. S. Cooper, secretary of the association, stated that the membership had decreased during the last year. There are seventy-five or eighty utilities in Texas which are not represented, and Mr. Cooper urged that efforts be redoubled to increase the membership.

ONE-MAN CAR SUCCESS

David Daly, manager Houston Electric Company, presided at the first meeting of the electric railway section on May 13. Practically the entire session was devoted to discussion of the practicability and the efficiency of the one-man car. Mr. Daly said that the economy which

was obtained through this type of car was great and that the profit should be split among the public, the employees and the company itself. In his opinion the day is gone by when the public will let any company get the big end of the profit resulting from an innovation, and more cars and service first should be uppermost in the minds of utility operators.

G. S. Brush, of the Houston Electric Company; A. F. Townsend, manager Eastern Texas Electric Company, and W. T. Montgomery, of Monterey, Mexico, described the service given by their respective companies. Mr. Montgomery, in relating his experience in Mexico, said that the government had taken over the roads in 1914 with the result that the cars were almost worn out. It was in this condition that the railways were given back to private operation in 1917. Mr. Montgomery then introduced a makeshift Birney car by closing the back end of the ordinary street car, and he put these cars on the better lines of the company in the section occupied by foreigners.

OPERATING PRACTICES DISCUSSED

Skip stops, flagging over steam railroad tracks, transfers and collection of fares were discussed at the second section meeting for electric railways. C. I. Plummer, of Dallas, told of the savings which had resulted through the introduction of the skip-stop in that city. The average rate of speed had been increased from 8.75 to 9.85 m.p.h., and there had been a 20 per cent saving in the wear on the brakeshoes. The skip stop is in effect except on rainy days, and it is used until 10 o'clock at night. Mr. Daly declared that he favored the skip-stop practice and hoped the public would become educated as to its benefits.

In regard to flagging Mr. Daly stated that street cars have as much right to the street as steam railroad trains, if not more. Electric railways have been too much inclined to give the railroad trains the right-of-way because they are heavier and can smash the cars to bits. H. M. Smith of Port Arthur and Mr. Martin discussed the adoption of means for placing the responsibility for accidents at steam railroad crossings more on the motor-man instead of partly on the conductor.

F. O. Greyson, of St. Louis, told of the introduction of metal tickets in many cities as a result of the increase of fares above 5 cents. These tickets eliminate the inconvenience caused by the making of change in pennies. They can be registered in a specially prepared box register.

The elimination of transfers was discussed, but it was declared that such action would be an injustice to some patrons, particularly factory employees who often live at considerable distances from their places of employment. It was stated that it would be sure to result in public agitation, which would be unpleasant for the railway companies.

"Standardization" was the subject of an address by Milton H. Wagner, representing the United States Bureau of Standards, Washington, D. C. Mr. Wagner declared that there should be a universal safety code throughout the country in order to prevent many unfortunate accidents. He said that safety first should be at all times uppermost in the minds of not only the general public but also all the employees of public service corporations.

E. P. Schoch, head of the department of chemistry of

the University of Texas, gave an address on Texas lignite. Mr. Schoch said Texas has one-third of the total lignite supply of the entire nation. In his estimation a capital of \$250,000 will be necessary to finance a trial plant to determine the fuel value of lignite. The United States government has promised \$100,000 for this purpose, the University of Texas has set aside \$20,000 for the plant, and approximately \$50,000 is expected to be contributed by the lignite miners. He thought that utility organizations should be sufficiently interested in the project to appoint a committee to consider the question of contributing. The suggestion was not acted upon.

TEXAS' MOST URGENT NEED

First prize for the best-written answer to the following question—"What is the most urgent present need of the public utilities of Texas, and how can it be best and most quickly fulfilled?"—was given to G. H. Cushman of San Antonio. Mr. Cushman declared that a public service commission which would give stable rulings on rates and remove the question from politics was the most urgent present need.

The following officers were elected: Burr Martin, Dallas, president; A. Hardgrave, Dallas, first vice-president; C. E. Calder, Dallas, second vice-president; A. H. Warren, El Paso, third vice-president; H. S. Cooper, secretary, and T. B. Walker, Dallas, treasurer. Mr. Hardgrave was chosen chairman for the electric railway section for the ensuing year. The following executive committee was chosen: Burr Martin, Dallas; A. Hardgrave, Dallas; B. E. Calder, Dallas; A. H. Warren, El Paso; H. C. Morris, Dallas; R. Meriwether, Dallas; S. R. Bertron, Jr., Houston; F. D. Murphy, Houston; W. B. Tuttle, San Antonio; G. H. Clifford, Fort Worth; A. F. Townsend, Beaumont; C. H. Couser, Houston, and Howard Smith, Port Arthur.

Country's Coal Supply Not Inexhaustible

THE coal resources of western Pennsylvania will have been practically exhausted sixty years from now if the present rate of increase in consumption is maintained, E. M. Herr, president of the Westinghouse Electric & Manufacturing Company, declared in an address before the Purchasing Agents' Association of Pittsburgh at its annual banquet on the evening of May 9.

"Generation of electricity at the mines would decrease transportation waste 35 per cent," Mr. Herr asserted. "A corollary benefit would be the release of much rolling stock for other uses and a consequent reduction of investment demands for railroad equipment."

Not only the Pennsylvania fields but even the newer coal territories are measurably near exhaustion, according to Mr. Herr. Unexpected inroads have resulted from war demands, he explained.

"I am referring, however, only to the present available supply," he qualified. "The world contains a coal reserve that under pressure of greater and greater necessity could be utilized and would last probably 1500 years. That is no excuse for waste, though. We must not, through prodigality, force coming generations to use the power of the sun and the ocean if less expensive energy can be left available to them for their use."

President Acts to Aid Car Lines

Cables Approval of a Federal Commission to Investigate Problems of Electric Railways After Situation Is Presented by Secretaries—Members of Commission Not Yet Named

ON MAY 20 announcement was made at Washington that President Wilson had cabled his approval of the plan of Secretaries Redfield and Wilson for the creation of a Federal Commission to investigate the problems of the electric railway systems of the country. It is well known that the burdens under which the electric railways are suffering, through no act of their own, but brought on entirely as the result of the war, have been thoroughly understood and appreciated at Washington since the present condition of affairs began. As long ago as Feb. 19, 1918, President Wilson, in replying to a letter from the Secretary of the Treasury on the subject, expressed the belief that everything reasonably possible should be done to maintain the public utilities at their maximum efficiency and the hope that the state and local authorities would respond promptly to the necessities of the situation. The National War Labor Board also, in practically all of its decisions, urged that adequate relief, in the way of increased rates, be allowed to the railways to compensate for the increases in wages awarded.

Recent receiverships of a number of important electric railway companies with the inevitable impairment of service possible to be rendered by them, coupled with evidences of further probable cases of insolvency on the part of important systems, have emphasized in the minds of the administration the need for prompt action. In consequence, the secretaries of the Departments of Commerce and Labor recently cabled to the President at Paris the accompanying letter, reciting the situation, referring to the national aspect of the situation and recommending the appointment of a federal investigating committee. The secretaries point out that the committee will not be considered an intrusion upon the functions of either state or municipal governments as both the National Association of Railway and Utility Commissioners and the Conference of Governors and Mayors had requested federal aid and federal consideration of the problem of preventing the financial disaster threatening the industry.

The President's approval of the plan establishing this commission insures its appointment, and it is expected that its composition will be announced at an early date.

It was stated at Washington on May 22 that Secretaries Redfield and Wilson are now considering the personnel of the commission, and as soon as a list of suitable names is decided upon they will be cabled to the President as suggestions to aid him in making the appointments.

POWERS OF SUCH A COMMISSION

The powers which such a commission may actually exercise are, of course, limited. There seems to be some confusion in the daily press on this point, perhaps because of the earlier notices of a proposed Federal Public Utilities Commission which was to have power to regulate and determine local rates as a war measure. What-

Letter to President from Secretaries Redfield and Wilson

DEPARTMENT OF COMMERCE

Washington, D. C., May 15, 1919.

Dear Mr. President:

The Electric Railway problem to which your attention has been called on several occasions has recently assumed such serious national proportions as to warrant the prompt attention of the Federal Government. Already fifty or more urban systems, representing a considerable percentage of the total electric railway mileage of the country are in the hands of receivers. The communities affected are among the most important—New York, Providence, Buffalo, New Orleans, Denver, St. Louis, Birmingham, Montgomery, Pittsburgh, Memphis, Ft. Wayne, Des Moines, St. Paul, Spokane, Chattanooga.

Other large systems are on the verge of insolvency, for the industry as a whole is virtually bankrupt. The continued shrinkage in the value of hundreds of millions of electric railway securities held by savings banks, national banks, life insurance companies and by the public at large threatens to embarrass the nation's financial operations. Furthermore, the withdrawal of this industry's buying power, which is said to rank third in magnitude, involves the unsettlement of collateral industries, naturally entailing labor dislocation that will affect hundreds of thousands of employees.

The return to normal conditions is being hampered and the efforts of the Government to avert strained conditions in finance, labor and commerce are being less fruitful of satisfactory results than should be expected, if some solution of the electric railway problem were in view.

What the solution is, may, we believe, be evolved by a thorough investigation of general franchise and operating conditions in their relation to rates, including service-at-cost plans, state and municipal taxation, local paving requirements, and internal economies that may be effected.

We, therefore, propose and recommend the appointment by you of a Federal Board or Commission, whose duty it shall be to study and report upon the entire problem, in order that the State and Municipal authorities and others concerned may have the benefit of full information and of any conclusions or recommendations that may be formulated. Such a study will, in our opinion, exert a helpful and constructive force in this critical period of the industry's existence, and will aid in the readjustment. If you would make such an appointment before June 30th, your Contingency Fund could be used to defray the expenses, which would be about \$10,000.

The National Association of State Commissioners has always invited Federal aid in this matter and the recent Conference of Governors and Mayors adopted a resolution recommending Federal consideration of the problem of preventing the financial disaster threatening this industry.

We propose that such a commission shall be made up of one representative of each of the following groups:

Treasury Department or War Finance Corporation; Department of Commerce; Department of Labor; National Association of State Commissioners; American Cities League of Mayors; Amalgamated Association of Street and Electric Railway Employees; American Electric Railway Association; Investment Bankers Association of America.

We respectfully urge your authorization for such a Commission, to be followed by your formal proclamation upon the selection of personnel.

Cordially yours,

[Sgd.] WILLIAM C. REDFIELD,
Secretary of Commerce.

[Sgd.] W. B. WILSON,
Secretary of Labor.

ever powers of this nature might have been possessed during the war, it is generally expected in Washington that the present commission will have no such power, but that it will be created for the sole purpose of making an economical study of the electric railway situation. Undoubtedly questionnaires will be issued to the various roads, asking for information with reference to their financial and operative conditions, the burdens imposed upon them by local regulation and franchise requirements, the amount of their outstanding stocks and bonds, etc. The replies received from companies will then be tabulated with a view to determine the conditions of the industry to-day, the causes of its failing revenues and the remedies which will be applied. It is possible also that hearings may be conducted. An outline of the possible work of such a commission is contained in a report recently rendered to the Investment Bankers' Association of America by its Committee on Public Service Securities, of which O. B. Wilcox is chairman. This report will be found in abstract below.

REPORT OF INVESTMENT BANKERS' COMMITTEE

"There has been a good deal of discussion relative to the establishment of a federal board or commission on street railways. It has been proposed that such a board might have the same advisory powers with respect to street railway fares, franchises, etc., as the War Labor Board had with respect to wages. The Federal Government would have no power over street railway affairs, except in cases of interstate railways which are now under the Interstate Commerce Commission, and at most advisory. While a Federal Board might be influential in acting in the rôle of arbiter in specific cases, it could not be expected that it would deal promptly or in time to be of much value in the hundreds of cases in which the street railways find their revenues inadequate for payment of operating expenses and a fair return on capital. On the other hand, an investigation of all the facts and a statement of principles by a board with the prestige of appointment by the President as a federal agency would undoubtedly be of great help in reaching a solution of the street railway problem.

"At a meeting of the committee on Public Service Securities held in New York on April 10, 1919, after a discussion of the whole subject, the chairman was instructed to send the following letter to Roger W. Babson of the Department of Labor.

At a meeting of the committee on public service securities of the Investment Bankers' Association of America, held to-day, the chairman was instructed to advise you that the committee has welcomed your statement that the United States Department of Labor is addressing its efforts toward finding some method by which the relations between the street railways, the car riders and the public authorities will be put on a more satisfactory basis.

It is common knowledge that the abnormal increases caused by the war, in wages, costs of fuel and materials, and taxes, without corresponding increases in revenue, have resulted in such decreases in the net earnings of local transportation companies that they are unable to pay their operating expenses, taxes, and a fair return on the investment, and that while other industries have advanced their charges to offset increased costs, the revenues of the transportation companies have not been increased in the same proportion, and that the street railways of the country are in a perilous condition, many of them facing bankruptcy.

For example, a special commission for an investigation of problems relating to the street railways appointed pursuant to an Act of the General Assembly of Connecticut has just reported that: "A summing up of the evidence presented to this commission shows that with the exception

of 12.8 miles of street railway in the state out of a total of 828 miles all of the lines are either in the hands of receivers or are insolvent, and must have their service to the public either partially or completely discontinued and portions of their lines abandoned and sold for junk unless substantial temporary relief is furnished through adequate legislation by the General Assembly of 1919. If proper action is not taken by this assembly it will be too late to remedy the neglect in 1921 and an irreparable injury will be done to the vital transportation arteries of the state, causing suffering, personal loss, depreciation and discontent to a large and most valued portion of the population of the state who have as a result of street railway facilities purchased, built or rented their homes along the street railway lines or near them and are dependent upon these lines for getting to and from their daily work, obtaining provisions and supplies, as well as being in many cases investors in the securities of the street railway lines passing their properties."

The whole country is interested in adequate local transportation at fair rates and the expansion of that service to meet the growing demands of increasing population and expanding industry. The difficulties of the local transportation systems are not confined to one section of the country, but are general all over the United States, and are therefore of national interest, and in all parts of the country these difficulties seem to be due to the same general causes and should be susceptible to common remedies, and remedies must be found promptly to prevent enormous losses to investors, to industry, and to the nation.

These difficulties appear to require a readjustment of the relations between the street railways, their employees, the car riders, and the public, which can hardly be accomplished piecemeal, but only by a general knowledge of all the facts and a general recognition of the principles which should govern those relations.

There is nobody nor authority either competent to make a thorough and impartial investigation of the facts or of sufficient dignity and importance to give such weight to its findings and recommendations as would promise acceptance throughout the country.

This committee therefore recommends the early appointment by the President of a federal board on street railway conditions, on which there would be representatives of the United States Department of Labor and other interested departments of the Government, of the street railway companies, of the American Bankers' Association, the Investment Bankers' Association of America, and the Chamber of Commerce of the United States, and of the National Association of Public Utility Commissioners, with adequate statistical and clerical assistants, for the investigation of the facts concerning street railways and the reasons for their present condition, and with instructions to state the principles which should govern the proper relations between the street railways, their employees, the car riders, and the public generally; in order that the people may have adequate transportation at fair rates, the rights of the public may be fully protected, the investors in street railways may be protected against loss, and new capital may be provided to meet the increasing demands upon the transportation systems in the interests of industry, the growth of the communities served and the health and welfare of urban populations.

This committee will ask William G. Baker, Jr., the president of this association, to appoint a member of the association to confer with you on the subject.

"Mr. Babson has acknowledged the letter with the statement that it has his approval and that he is in hearty sympathy with the efforts of the association for settlement of the street railway problem."

Apparatus for Loosening Storage-Battery Plates

A special steam generator has been developed by the Hauck Manufacturing Company, Brooklyn, N. Y., for use in unsealing and cleaning storage batteries. It is provided with six jets, three of which are controlled by a valve. Steam is forced from the jets through the vents direct into the cells. The generator can be operated either by kerosene or gas. The complete equipment comprises also a 1-gal. wax-melting vessel, a 35-lb. lead-melting pot and a lead mold.

Sidelights on the Zone Fare—Home Owning by British Workmen

Lower Wages and Difficulty of Securing Freehold Land More Potent Reasons for Lesser Development of Home Proprietorship Than Street Railway Fare

BY WALTER JACKSON

THE writer would never have thought of preparing this particular article had not some street railway managers who have grown up with the universal fare expressed to him their firm opinion that home-owning by workmen in the United States was largely the result of the 5-cent fare and, conversely, that lack of such ownership in Great Britain was due largely to the graduated fare. Such an assertion might be expected from a real estate operator fearful of losing that "unearned increment." Street railway men will serve their industry but poorly by falling for the land dealer's point of view.

It is true that home ownership is more common here than in Great Britain. Yet why should we jump to the conclusion that the difference is due to the principle of charging by distance for a car ride? May not such vital things as wages and the availability of land and capital have something to do with the case? To own his home the workman must first save enough money. Then he must see if the house that he wants to build can be put up within a reasonable distance from his work. Finally, he wants the land to belong to him outright to avoid giving the building and other improvements to a landowner after the expiration of the leasehold. All of these steps are harder in Britain than America.

Most of the houses owned by American workmen have been located within 5-cent fare territory, but it is safe to assert that the buyers paid a good bit more for the land if they bought after the tracks were down than before. If anyone believes that the real estate operator failed to capitalize on the rate of fare, let him compare the difference in the cost of a lot in any district of suburban New York one hour out by the one-fare trolley with a similar lot in a district one hour out by the distance-fare railroad. This difference can best be expressed in the rental values of two houses exactly alike. The city house will rent for \$40 and the country duplicate for say \$30 a month. The city dweller will pay out probably \$3 a month for car fare to and from work. Hence, if the country dweller pays three times \$3 for his monthly commutation ticket he will still be \$1 a month to the good, with fresher air thrown in for good measure. While there are other factors that lead to one choice or the other, we may be sure that the real estate operator thoroughly understands the game of capitalizing for his benefit any improvement in the quality, quantity and cost of transportation.

The accessibility of freehold land is another important factor in promoting home building by individuals. In the United States one may readily buy land outright instead of leasing it. Furthermore, suburban land which may be cut up into building lots is more readily available. In an old country like England much of the land is held by great estates or the municipality. Hence it is not so easy for a land company to stake out new suburbs. A contumacious owner or some ancient law relating to the inviolable "common" or public land are

British hindrances to suburban growth that have no relation whatever to rates of fare. It is worthy of note also, that municipal house-building projects contemplate only the renting of houses because the cities do not want to give up freehold rights.

Yet in spite of the double handicap of lower wages and land-holding difficulties, the Britisher's innate desire to possess a "castle" all his own cannot be utterly stifled. Timely proof of this comes to hand through the final report (1919) of the Housing Financial Assistance Committee of the Ministry of Reconstruction, such aid being necessary because private construction is financially impracticable.

This statement notes that for the year 1916 there reported to the Registrar of Friendly Societies 1467 building societies whose total membership was 628,285, whose total assets in mortgages were £58,000,000 and in other securities £80,000,000, and whose total liabilities to shareholders and depositors were £61,500,000. During 1916 these societies advanced only £5,000,000 on mortgages compared with £9,000,000 during 1913, the year preceding the war. Over one-half of the total amount outstanding on mortgage consisted of sums of £500 or less advanced on the security of small house property. For such societies the committee recommends:

That local authorities should be empowered . . . to guarantee the repayment of mortgages made by approved building societies upon houses built hereafter, where the advance made exceeds two-thirds of the value of such houses; such guarantee not to exceed 80 per cent of the cost thereof, and to remain operative only so long as the outstanding loan is in excess of two-thirds of the value of the houses for the time being.

In addition to these straight-out building societies, Great Britain has 1300 co-operative distributive societies some of which have undertaken in the past the building of houses or the financing of their purchase for letting and selling on installments to members or through loans to members. These co-operatives now have an investment of £9,000,000, either in house property or on mortgage. It is not likely that these organizations will be able to do much new building unaided. The committee therefore recommends aid under houses value limitations similar to those suggested for the building societies.

A third builder for which aid is recommended is the Lands Improvement Company, a body incorporated under the improvement of lands act of 1864 to assist landowners to build cottages as a part of the equipment of their estates. It is proposed "That the improvements of lands act should be amended so as to permit the Lands Improvement Company to charge a rate of interest on loans not exceeding 6 per cent subject to income tax, or not exceeding 4½ per cent free of income tax."

Under the small dwellings acquisition act of 1899, local (municipal) authorities may "advance to residents or intending residents in their area, in order to enable them to purchase for occupation houses not exceeding £400 in value, a sum not exceeding 80 per cent of the value of such houses. In the case of freeholds and leaseholds for ninety-nine years unexpired, the advance is not to exceed £300 and in other cases £240. For various reasons comparatively small use has been made of the act.

The committee thinks that with the present great shortage of houses the small dwellings acquisition act would be bettered by being amended as follows:

1. In view of the increased cost of building, the present

limit of value of £400 should be increased to £500 in the case of freehold houses and leasehold houses where at least 99 years of the term is unexpired, the present limit of £400 being retained in the case of other leasehold houses.

2. In the case of all future mortgages, loans should be permitted up to 85 per cent of value in place of the present limit of 80 per cent of value.

3. In the special case of new houses built after the war, local authorities should be empowered for a period of seven years after the termination of the war, to advance up to either 85 per cent of the value, or 80 per cent of the cost to the first purchaser, whichever shall be the greater.

4. The maximum loan limit of £300 in the case of freeholds and leaseholds for ninety-nine years unexpired, and of £240 in the case of other houses, should be abolished.

5. Local authorities should be empowered to reconvey a mortgage, made under the act, by a simple receipt indorsed on the mortgage deed, in the same way as building societies may now do.

The committee also discussed the granting of like aid to private builders, but concluded that the danger of exploitation and the difficulties of administration made this impracticable. However, municipal authorities might make certain co-operative arrangements with local builders within the scope of financial aid from the State. It also discountenanced aid to landowners and employers who wish to build cottages, if they insist upon such houses remaining "tied," namely, on lease to the tenant.

Perhaps, the foregoing makes dry reading to an electric railway operator, but it is well for him to be apprised through these official sources that the shortage of houses in Great Britain, whether owned or leased by workmen, certainly is not ascribed to the zone fare by those who are in the position to know.

Devices Used in Conduit Construction

SUPPLEMENTING the abstract of the N.E.L.A. committee report on power distribution given elsewhere in this issue, the following notes regarding devices used in conduit construction are worthy of mention. The sub-committee on this subject says that pneumatic cutting tools for removing pavements preparatory to conduit installation have been used to a slight extent with satisfactory results. It is expected that this class of tools will come into more general favor.

There is practically general use of power-driven concrete mixers, their use being most economical on jobs where more than twenty-five or thirty men are employed.

Kerosene torches and furnaces appear to have passed through the experimental stage and are coming into general use. A number of companies are changing over from gasoline to kerosene.

A satisfactory portable outfit for pumping out manholes has been developed, the apparatus consisting of a well-known rowboat motor with the propeller replaced by a small high-speed pump. The outfit weighs only 125 lb.

The cable grip in one form or another is in general use and attention is called to a cable-pulling eye for use where the bore of the duct is only slightly greater than the cable diameter. The eye is made of $\frac{3}{8}$ -in. round steel and is connected to the cable by stripping back the lead and insulation about 7 in., wrapping the conductors securely around the shaft and soldering them fast. The lead sheath is then bent back into its original position and wiped with solder to make a smooth and moisture-proof joint.

Estimating the Life of Curved Special Work

BY M. BERNARD

IN A STUDY of special work layouts with reference to their most economical design and also in the determination of schedules of future renewals extending over a period of years, it is clearly advantageous if not absolutely necessary to have a knowledge of the probable life of special work. Not finding such information available, the writer while employed by one of the large Eastern electric railways, investigated the age and life records of more than 100 curved special-work layouts from which it appeared that the life of such layouts varied in the following manner:

Special work in which the life is determined by the curved component parts has a life expressed in terms of years approximately equal to the number of the template required for plotting the curve, the standard scale being 1 in. equals 8 ft. Thus with a connecting curve having a radius of 40 ft., as the plotting would require the use of a No. 5 template, the life could be approximately five years under average conditions, say, 100,000 cars per year.

Expressed in more general terms, the life of curved special work in terms of years is equal to the radius in feet divided by eight. From the investigation it was found also that the average life in terms of cars is equal approximately to 12,500 cars for each foot of radius. Local conditions should, of course, be given some weight in deciding on the probable "car-life," such as intensity of traffic, speed of cars, etc.

A comparison of the varying car traffic at a large number of locations disclosed a tendency for special work of the same general type to have a greater car life at a location having a traffic of, say, 50,000 cars annually, than at a location where the car traffic amounted to 150,000 cars. This is analogous to the fact that material which fractures under twenty blows delivered in one minute will withstand more than twenty blows if these are spread out over two minutes. For similar reasons special work over which the maximum speed is 6 m.p.h. will have a greater car life than where the speed limit is 12 m.p.h. As a rule a trailing tongue switch and mate will have less life than a facing tongue switch and mate in the same double-track branch-off. In any study of the relative efficiency of special work the question to be decided should not be the life expressed in terms of years but rather the life expressed in terms of car wheels. The rule described in the foregoing will not apply, of course, where the traffic over the straight is far in excess of that over the curved run.

Manufacturers Prepare Organization Plan

REPRESENTATIVES of the manufacturer members of the American Association met in New York on May 13 and practically completed the first draft of a constitution and set of by-laws for an association of manufacturers to be affiliated with the American Association. This preliminary work will be concluded at a meeting to be held on or about June 2. The proposed constitution will be submitted to the manufacturer members in the near future. Its purpose is to provide machinery by means of which the manufacturer members of the American Association may be able to perform certain definite functions for the benefit of the industry.

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

New York Women Protest

Consider Recent Legislation Fixing Their Hours a Grave Injustice—Companies Do Their Best

Results unexpected, at least in some quarters, followed closely the signing of the Lockwood bill by Governor Smith of New York. This measure, referred to in the ELECTRIC RAILWAY JOURNAL for May 17, page 978, prohibits the employment of females under twenty-one years of age on electric railways and provides that no female shall work before 6 o'clock in the morning or after 10 o'clock at night, nor more than nine hours a day for six days a week and must be allowed one hour for meals.

UNEXPECTED RESULTS FOLLOW

It is said that the sponsors of the bill had in mind the protection of the conductresses. However that may be, the immediate effect of the bill was to militate, more particularly in Brooklyn, against women ticket sellers, many of whom have been in the service of the Brooklyn Rapid Transit Company from ten to more than twenty years. Evidently the Governor was cognizant of the fact that the bill would affect some of the women seriously, for in giving his approval to the measure he said that he regarded it as a matter of State duty to protect the health and provide for the welfare of women and minors who must work.

No sooner had the measure become law than the rumor mongers got busy. In their minds the newspaper reporters in about three days discharged from railway service in Greater New York more women railway employees than had been in the service of the companies since the first woman was put to work. Accounts also appeared in the papers of meetings of protest which if they could be believed would certainly fix forever as a fact the assertion that hell hath no fury like a woman's tongue.

FACTS, NOT FANCIES, IN BROOKLYN

The facts, however, so far as Brooklyn is concerned, are contained in the letter of Lindley M. Garrison, receiver of the Brooklyn Rapid Transit Company, to Lewis Nixon, Public Service Commissioner. This letter, dated May 21, stated that out of a total of 1500 women affected by the new law only fifty-two had actually left the service through resignation induced by the curtailment of their hours of service, and that no women have been discharged. Mr. Garrison said:

The company has endeavored in every way possible to retain all the women employees that it is possible to retain and still comply with the law.

A little consideration will lead to the conclusion that it is impracticable the operation of an electric railway to comply with this act and retain the women in their present employment, shifting them, not in accordance with any rules of seniority, or in any way to fit in with the proper operation of the system, but in a way to discriminate against the men and in favor of the women, which would quickly cause us to lose all of the experienced and long-service men employees of the company.

We could not, as the law requires, work the women during the daytime the consecutive hours required by the law. We have endeavored in every way possible to retain all women employees that it is possible to retain and still comply with the law.

On the elevated and subways the law affected the following number of employees: Guards, 326; car cleaners, 52; ticket agents, 1026, and porters, 38, totalling 1442.

In respect of the 326 women guards, we have not discharged any, but we are only able to afford these women the number of working hours of from three to five hours in length at the hourly rate for such labor, as against an average of nine hours with the ordinary rate, which they have all enjoyed. Of these 326 women guards, fifty do not care to work the shorter hours and have resigned. None have been discharged. Eventually, it seems to me, they will all resign because the number of hours we can give them will not, at the hourly rate, afford them sufficient remuneration to make it worth their while to stay.

The New York Railways, operating in Manhattan and the Bronx, is negotiating with the State Industrial Commission as to what course it must take with its present women employees. In the meantime it has stopped the engagement of any new ones.

Council Approves Chicago Bills

The City Council of Chicago, Ill., on May 19 gave unanimous approval to four bills which had previously been sent to the State Legislature to provide enabling legislation for the solution of the local transportation problem. While it is expected that the Legislature will not be in session many weeks more it is hoped that with all interests united behind the proposed laws the measures will be passed. The City Council will then have time to work out a new ordinance with the companies and the way may be paved soon for unification of the surface and elevated roads and the construction of subways.

One of the bills filed in the Legislature is designed as the basis for a service-at-cost franchise. This seeks to amend section 12 of the State public utilities act as follows:

The charges fixed for the service rendered by it by means of any such public utility by any city shall be high enough to produce a revenue sufficient to bear all cost of maintenance and operation and to meet interest charges on bonds and certificates issued on account thereof and to permit the accumulation of surplus or sinking funds to amortize, in whole or in part, outstanding bonds and certificates, and to provide and maintain special funds for maintenance, repairs, renewals and depreciation and for damages, insurance, emergencies and other similar purposes. Any such city shall have power to contract with the owners of such certificates or with any trustee for the benefit of said holders that it will so fix said charges.

Windsor Strike Settled

Men Decide to Return to Work at Old Rates Until Voters Pass on Fare Increase

After having called for 200 militiamen to quell the strike of trainmen on the Sandwich, Windsor & Amherstburg Railway, Mayor E. B. Winter of Windsor, Ont., and officials of the other border towns were successful in bringing the striking employees and company officials together in negotiations which resulted in the resumption of service on all lines. Troops were called by telegram after the company had made an unsuccessful attempt to run cars manned by strikebreakers. No serious rioting was in evidence, but in many cases the strikebreakers were induced to desert the cars and join the strikers.

SERVICE ORDERED RESUMED

The Dominion Railway Board ordered service resumed. After the men voted to return to their cars at the regular wage scale until the electors voted on a by-law allowing the company an increase in fares, the officials of the railway consented to compromise.

All strikers will be re-employed, including officers and agents of the union discharged just prior to the beginning of the strike. The men will get the increase in wages asked for provided the by-law is passed allowing the company to charge a 5-cent fare with 1 cent for each transfer issued. On the other hand, the men yielded in their demand for recognition of the union and the forced resignation of Superintendent Hayes.

Under the present agreement the railway sells six tickets for a quarter and issues transfers free. If the increased rate of fare is allowed by the voters, the men will be paid a minimum wage of 40 cents an hour during the first six months of service and a maximum of 50 cents.

VOTE ON FARE BY-LAW

Although members of the Councils of the various border municipalities concerned favor allowing the company to charge the increased fares, a difference of legal opinion regarding the right of the Councils to grant the increase led to the decision to submit the by-law to the voters of Windsor, Walkerville and Sandwich on June 14. In municipalities where the company operates without franchise, no action will be taken by the electors on the question of the proposed increase in fares. The railway is controlled by the Detroit United Railway. It operates 41 miles of road.

Buffalo Still Up in the Air

Governor Vetoes Local Service-at-Cost Plan Because He Favors State Commission—Meanwhile City Puts Commission Power Over Rates Up to Court of Appeals

Governor Smith on May 16 vetoed the bill to permit the city of Buffalo, N. Y., and the International Railway to agree upon a service-at-cost plan. He took the position that the bill did away with the control which the State had spent years in establishing. In expressing his disapproval Governor Smith said:

The contract, if this proposed statute be valid, once made, can only be altered by the joint consent of the parties, viz., the city and railway, and the bill provides that all acts or portions of acts not consistent therewith, including the provisions of the railroad law and the public service commission law, shall have no application to said city, or to any company or companies, parties to the contract hereby authorized.

This measure, thus in effect abrogates all authority or control now exercised under the laws of the State over the International Railway, not only in the city of Buffalo, but for that large area of surrounding country in which it operates. Regulatory powers are taken from the Public Service Commission and are allowed to be a matter of contract between the railway and the city, which contract can only be altered or amended by the consent of the railway.

The proposed bill had been passed by the Legislature at Albany, and the taking of evidence by three arbitrators chosen to determine the amount upon which an agreement might be based had been completed. The valuation work done now appears to be useless unless the arbitration commission should go ahead and submit findings for possible future use.

ONE AVENUE MAY BE OPEN

There may still be one means of relief for the International Railway through a revision of fares by the Public Service Commission for the Second District. The opportunity arises through a case before the commission which involves a matter of law that has now been taken by the city to the highest State court, the Court of Appeals. The company had promised that it would make no effort to secure a rate decision from the commission pending the outcome of the arbitration proceedings, but Governor Smith's veto apparently has reopened the company's side of the matter.

The case in question got into the courts through the refusal of the commission to receive the answer of the International Railway to a rate complaint filed with the commission several years ago by the municipal authorities. At that time the city wanted the 5-cent fare reviewed with the aim of getting a 3 or 4-cent fare in Buffalo. The company, however, secured an injunction prohibiting the commission from hearing the case because of the provisions of the Milburn agreement between the city and the company.

For almost four years the case was idle until the company sought to renew the negotiations by seeking to file an answer and inviting the commission to make an investigation to determine an equitable rate of fare. The city sought to withdraw its complaint, and the commission refused to receive the com-

pany's answer. Recently, however, Justice Rudd of the New York Supreme Court granted a writ of *mandamus* directing the commission to receive the company's answer.

The city immediately took an appeal to the Appellate Division of the Supreme Court, which last week handed down a decision sustaining the company. Inasmuch as the proceedings by stipulation were amended so as to treat the case as one of *certiorari* rather than *mandamus*, the Appellate Division an-

nulled the determination of the Public Service Commission and remitted the proceedings to it for consideration. It gave leave for an appeal to the Court of Appeals and certified the following question—Has the commission jurisdiction and power, under the facts shown, to regulate the rate of fare to be charged? The city of Buffalo has made the appeal, and the case will be argued at the present term.

These proceedings have to do with the urban rates of the International Railway. They should not be confused with contemporaneous proceedings regarding interurban rates, over which, as noted elsewhere this week, the commission has just been held by the Supreme Court to have the power of regulation.

Pittsburgh Strikers Return

Receivers Gain Their Point—Pitiless Publicity of Receivership Proceedings in Courts Drives Company's Plight Home to Public

The strike of the platform employees of the Pittsburgh (Pa.) Railways, declared on May 14, came to an end Sunday afternoon, May 18. The demand of the men for a raise of 12 cents an hour from the present scale of 43, 46 and 48 cents is to be heard by the War Labor Board. The decision of that body will be subject to review by the United States District Court, under which the receivers of the railway are operating.

This settlement is almost exactly that proposed by the receivers after the court had declined, on May 13, to consent to arbitration before the War Labor Board, the results of which should be binding on the court. The officials of the union had insisted that before they would enter arbitration they must have assurance that any award made in their favor would be accepted by the receivers and the judges. The court, ruling upon this demand, on receipt of a petition of the receivers for instructions, held that it could not grant the demand as such action would amount to delegating part of its constitutional and statutory authority to a non-judicial agency, the War Labor Board. Whereupon the union officials called the men out, although the receivers again offered to submit the question to the Labor Board, the award to be subject to judicial approval.

LABOR DEPARTMENT CALLED IN

On the afternoon of May 17, after the men had been out two and a half days, the executive committee of the union in a conference with the receivers arranged by representatives of the State labor department, agreed to submit to the men a proposal that the strike be lifted and their demands heard by the War Labor Board. It was to be understood the court would review the decision of the board and that if it should reject the award or fail to act upon it within twenty days after receiving it, the union would have the right to strike again. Any award in favor of the men was to be retroactive to May 1.

The proposal was voted upon at a union meeting on Sunday afternoon. It passed with a shout. Within an hour the first cars were on the streets and by midnight service was about normal.

The demands of the men are now up to the War Labor Board, an application for a hearing having been filed on May 14 by Receiver C. A. Fagan and Attorney George E. Alter, of counsel for the receivers. The outcome of these proceedings is being awaited with intense interest in view of the possible wide effect they may have. The present scale in Pittsburgh is one the War Labor Board established as practically a uniform rate of pay. Now the men ask a 25 per cent increase. In some quarters this is taken to mean that a wave of similar demands will follow all over the country if the Pittsburgh employees are successful in their demands before the board.

MEN SAY THEIR CASE IS DIFFERENT

The Pittsburgh men, however, maintain that they intend to plead a special case before the board, based upon the argument that living costs are so much higher in Pittsburgh than elsewhere that what constitutes a living wage in any other city cannot be so construed in Pittsburgh. In support of this they are collecting cost data among themselves.

The position of the receivers before the board will be that the Pittsburgh Railways cannot pay the men more at the present 5-and-7-cent-areas tariff. They will show that not only has the company defaulted in its bond interest, but that it is indebted for materials bought long ago and altogether unable to meet the demands of local and State authorities for service.

Any mention of an increase in fares in Pittsburgh is a signal for a storm of protest. Not once during the strike did anyone connected with the railway even hint at such a possibility. When this matter was put up to the receivers by newspaper reporters the receivers would simply lift their hands.

The Pittsburgh public never before, however, has been so near an understanding of the difficulties of the railway. Thanks to the publicity attendant upon receivership proceedings, which load the papers with so much traction news that the readers are forced to absorb some of it, a large section of the public realizes how things stand. This probably accounts for the general coolness toward the cause of the strikers, manifested during the suspension of service. Everyone was grimly aware that any raise to the men seemed certain to be paid for directly by the riders.

Business was disarranged much less by this strike than by previous ones. The steam railroads and improvised auto buses did surprisingly well in supplying transportation in the emergency.

Employees Favor Company Participation

At a special election held on May 3 members of the Employees' Benefit Association of the Brooklyn (N. Y.) Rapid Transit Company voted down a number of proposed amendments to the constitution and by-laws of the association, the result of which, if carried, would have been entirely to dissociate the management of the association from the management of the Brooklyn Rapid Transit Company.

The outcome of the election leaves the organization of the Employees' Benefit Association as previously constituted, and continues, for the time being at least, the close relations between the company and the association.

John F. Porter, chairman of the board of departmental trustees, surface transportation department, commenting on the opposition to the amendments developed by the vote, said:

The outcome of the election was not at all surprising to the chief employes and other association members of the surface department, nor was it particularly surprising to association members of upward of a year's standing. The fact is the men were satisfied with the association as it was, and as it is, and they were not disposed to do anything so radical as would be implied in the step of taking the association entirely out from under the jurisdiction of the management of the company and turning it over to purely elective officers.

The association has prospered as it has been conducted during years past and all its benefits have been regularly paid; its restaurant service and other services to employes have been maintained regardless of whether they were actually self-sustaining or not; and a handsome surplus has accumulated in the association treasury. The amendment providing that each member of the association who, in addition to his regular dues, paid the sum of 25 cents a month would be given a life insurance policy for \$1,000 under the company's group insurance plan, of course, constituted a strong attraction, but not, apparently, sufficiently strong to induce the membership to launch forth on a career independent of the company when its past career, under the guidance of, and in friendly co-operation with, the management has proved so successful.

Following the inquiry of the War Labor Board into conditions of employment on the lines in Brooklyn that board reported that the Employees' Benefit Association was dominated by the management. The company later announced that it was prepared to com-

ply with the recommendations of the board to remove all company control over the association. The vote of the members of the association on May 3 puts the employes formally on record as opposed to the plan to make it impossible for the management to take an interest in the affairs of the association.

M. O. Bill Passed

The people living in the communities bordering the route of the Taunton, Norton & Attleboro Street Railway may provide for the maintenance and continuance of the road, according to a bill which has passed the Legislature of Massachusetts.

The bill gives the cities of Taunton and Attleboro and the towns of Mansfield and Norton the right to purchase and hold shares in the road to such an amount as the Public Service Commission may determine or may purchase or take by right of eminent domain the tracks, poles, trolley, feed and stay wires or other property of the company. This they may do either jointly or each may act independently.

It is necessary in the case of the towns of Norton and Mansfield that two-thirds of the residents of each town gathered in special town meeting called for the purpose within five years shall vote in favor of the action. A two-thirds vote of the Council in Taunton and Attleboro is necessary for the action to be legal in those cities.

Each of the communities is authorized under the act to borrow money outside the legal debt limit. The bill has been examined by leading residents of the cities and towns interested and has met with general approval.

Relief Bills Still Under Consideration

Measures looking toward the relief of Massachusetts electric railways along financial lines are still held up in the Legislature, which bids fair to continue its present sitting for at least a month or two more.

The Bauer bill providing for the acquisition and operation of the lines of the Bay State Street Railway in Lynn by that city, and furnishing free transportation therein, has been given leave to withdraw by the committee on street railways.

Attempts to prevent the Boston Elevated Railway from giving the zone fare system a trial have failed in the present session.

The bill sponsored by C. V. Wood, president of the Springfield Street Railway, and providing that cities and towns be enabled to extend financial aid to railways, is still in committee.

A favorable report has been presented on an order requesting the trustees of the Boston Elevated Railway to furnish the Legislature with a statement of the company's financial condition when public management began and on Jan. 1, 1919, together with a valuation of the property of the company as of the latter date.

Random Shots from Seattle

Service on the municipal elevated line in Seattle, Wash., long awaited as a means of expediting transportation to and from the big industrial district in the South End, cannot be inaugurated for at least two months, according to the city engineering department. It is now considered likely that the service will be delayed until Aug. 1. The trestle viaduct, with tracks, overhead wires and all other construction necessary is completed, but the connections with existing tracks at either end of the trestle have not been finished. The postponement is caused by the delay in obtaining material for the special work.

A bill recently introduced in the City Council, and referred to the finance and city utilities committees, provides for a bond issue of \$790,000 for extensions and betterments to the municipal railway system. Two bills were also introduced which provide for limiting the issuance of bonds under two different ordinances for railway extensions. One limits to \$100,000 bonds planned under an ordinance which provides for \$125,000 of bonds. The other limits to \$550,000 a bond issue authorized for \$1,200,000. All these bills were referred to the finance and city utilities committees.

Thomas F. Murphine, superintendent of public utilities, favors the construction of a railway extension up Thirty-fifth Avenue Southwest, if the residents of that district will make a proposition to the city to buy the utility bonds which must be floated to finance the enterprise. The extension is estimated to cost \$60,000. It will serve a large district that is now without adequate railway facilities.

Mr. Murphine has ordered placards placed in all the municipal cars, notifying the public of the ordinance regulating the conduct of passengers. The ordinance makes it a misdemeanor to smoke on cars, enter the car except through the gates, refuse to pay fare, attempt to use a transfer to which one is not entitled, throw refuse on the floor, etc. The penalty is a fine of not more than \$100, or not to exceed thirty days in jail, or both.

The employees of the Seattle (Wash.) Municipal Railway are to be paid time and a half for overtime, providing the Council as a whole passes an ordinance which the chairman of the finance committee has requested the legal department to prepare. If this ordinance is passed, the threatened railway strike will be averted, and the long-drawn-out controversy between the city and the trainmen will be ended. Following repeated failures to induce the City Council to authorize the payment of overtime at the rate of time and a half, a meeting of railway men was called to discuss the question of a walkout, but it is believed the men will accept the proposed ordinance as a guarantee of good faith. The ordinance will become a law in thirty days, but will be effective from May 15.

News Notes

Dallas Supervisor on Traffic Study.—Lynn B. Milam, supervisor of public utilities of Dallas, Tex., has announced that he will visit New Orleans, Cleveland, Detroit, and other cities for the purpose of studying electric railway operation with a view to increasing the efficiency of the Dallas lines and improving the service wherever possible.

Mayor Vetoes Franchise.—Mayor Edward Parks of Warren has vetoed the ordinance granting a twenty-five year franchise to the Mahoning Valley Railway, included in the system of the Mahoning & Shenango Railway & Light Company, Youngstown, Ohio, on the grounds it does not permit the Council to go before the Public Utilities Commission on that and other questions which concern the community in general.

Jail Sentence for Gouging Railway.—On a charge of selling coal to the Richmond Light & Railroad Company, Richmond, Staten Island, N. Y., at a price above the government's fixed figure, a coal operator of Formania, W. Va., was sentenced to sixty days in jail and fined \$2,500 in the United States District Court at Baltimore recently. The indictment recited that the dealer had sold the Richmond company 2643 tons of bituminous coal on Aug. 30, 1917, at \$2.90, when the price, under the Presidential order, should have been \$2.

Buses for Detroit.—Double-deck motorbuses, similar to the Fifth Avenue buses in New York City, will be in operation in Detroit before the end of this summer, according to Richard W. Meade, former president and general manager of the New York Coach Company, now president of the Detroit Motorbus Company. The company will operate under the ordinance of March 26, 1918, licensing motorbuses, and under present plans of the corporation, which will be financed and directed by Detroit men, the first fleet of probably twenty buses will give service in Jefferson Avenue, with one terminal at the Campus Martius and the other near the plants of the Hudson and Chalmers Motor Car Companies, with a later extension to Grosse Pointe.

Rhode Island Employees Wait.—The threatened strike of the employees of the Rhode Island Company, Providence, R. I., unless payment of the back wages due them was made on May 3 did not materialize, owing to the decision of the union officials in conjunction with the receivers of the Rhode Island Company to wait for the expiration of the thirty-day period in which appeals from the decision of the court might be taken. The employees voted over-

whelmingly in favor of the drastic action, but the time of calling the strike was left in the hands of the officers of the union and the latter were convinced of the advisability of deferring positive action until the expiration of the time allowed by law for the filing of appeals. The receivers advised the union leaders that immediately upon the expiration of the thirty-day period the wages, payment of which was ordered by the court, would be promptly distributed.

Wages Before Utility Commission.—Wage demands of the organized employees of the United Railways, St. Louis, Mo., will be submitted to the Public Service Commission of Missouri as a board of arbitration. The men will not suspend work. This was decided by vote of motormen and conductors. The plan is in accordance with the suggestion of Rolla Wells, receiver for the railway, who on May 5, in reply to demands of the employees for an increase, stated the financial conditions of the company would not permit higher wages and suggested the union take the matter up with the Public Service Commission, pointing out that the commission could empower the United Railways to increase its fares and thereby create revenue to provide for an increased wage. After considering the letter from Receiver Wells the executive committee of the union decided to submit the matter to the international body. This was done. Mr. Mahon recommended that the men accept the proposal of the receiver.

Programs of Meetings

Important Hearing in Washington

The public utilities committee of the United States Chamber of Commerce will hold its second electric railway hearing in Washington, D. C., on May 28 and 29. The hearing will be opened at 10 a. m. in the Riggs Building.

Those who are expected to be present to give testimony in regard to various factors in the present electric railway situation include the following: Charles E. Elmquist, president National Association of Railway and Utilities Commissioners; Fielder Sanders, street railway director, Cleveland, Ohio; Halford Erickson, of Hagenah & Erickson, Chicago, Ill.; L. R. Nash, Stone & Webster, Boston, Mass.; W. C. Culkins, street railway director, Cincinnati, Ohio, and Walter A. Draper, vice-president Cincinnati Traction Company.

New York Electric Railway Association

The annual meeting of the New York Electric Railway Association will be held at the Fort William Henry Hotel, Lake George, on Saturday, June 7. The business session will begin at 10 a. m. and two topics will be discussed.

The first will be the fare situation in New York State with particular reference to the extent to which the decision in the South Glens Falls case and the recent decision by Judge Hinman in the International Railway case affect the

rule of practice as laid down in the Quinby case. The subject will be introduced by Morris Cohn, Jr., of Cohn, Chormann & Franchot, attorneys for the International Railway in the rate case mentioned.

The second subject is the attitude of the State Industrial Commission on self-insurance under the workmen's compensation law. The principal speaker on this subject will be O. G. Browne, assistant secretary of the Self-Insurers' Association.

The annual banquet will be held at 7 p. m. The speakers will include Job Hedges, receiver of the New York Railways, Brig. Gen. Frank T. Hines, chief Transportation Service United States Army, and Dr. Frank Buffington Vrooman, who will speak on "Big and Little Bolsheviks."

The entertainment committee of the New York Electric Railway Association has arranged for the use of the Glens Falls Country Club, which is located about 3 miles south of the Fort William Henry Hotel, by the association members on Friday afternoon, June 6, Saturday, June 7, and Sunday, June 8. Association members will be admitted to the club house and grounds by showing their badges.

The Hudson Valley Railway will transport members of the association between Lake George and the Country Club free of charge, the association badge being their means of identification to the conductor in charge of the train.

Motor boats will be provided for the use of the ladies who desire to make a trip on Lake George.

Automobiles will be furnished for a trip on the Bolton Road which runs along the west side of Lake George, from the Fort William Henry Hotel to the Hotel Sagamore grounds.

A victory championship baseball game will take place on the afternoon of June 7 at 2 o'clock on the hotel grounds between the railway and supply men.

Arrangements have also been made with the management of the hotel for dancing on Friday evening, June 6, and after the dinner on Saturday evening, June 7. Card games have been arranged to take place in the hotel in the event of inclement weather on Saturday afternoon.

In addition the association has secured the services of Robert Perkins to sing during the banquet. Other talent will also be provided. A special car from New York direct to the convention will leave Grand Central station at 12.25 a. m. on June 7 and will arrive at the Fort William Henry Hotel in time for the morning session. Those desiring accommodations on this car should make applications promptly to W. G. Kaylor, Westinghouse Traction Brake Company, 165 Broadway, New York. After arrival at Lake George, delegates will make their own arrangements for returning, but the transportation committee states that if there is sufficient demand for a car to leave Lake George Saturday evening after the banquet, one will be run.

Financial and Corporate

Hard Year in Jersey

Public Service Corporation Suffered Further Loss in Net Because of Operating Costs

Serious as were the burdens of utility operation during the calendar year 1917, they were as nothing to those encountered in 1918. Such is the summary of the last year's experiences as given in the 1918 annual report of the Public Service Corporation of New Jersey, Newark, N. J.

The operating revenue of the electric railway, electric light and gas subsidiaries increased \$5,706,496 or 12.1 per cent during 1918. The operating expenses, however, including amortization charges and taxes, rose \$6,399,015 or 20.9 per cent. The non-operating income showed a substantial gain, but the net result for the subsidiaries was

INCOME STATEMENT OF PUBLIC SERVICE CORPORATION OF NEW JERSEY FOR CALENDAR YEAR 1918

Operating revenue of subsidiary companies	\$52,997,838	
Operating expenses and amortization charges	\$33,824,826	36,938,384
Operating income	\$16,059,454	
Non-operating income	472,518	
Gross income	\$16,531,972	
Income deductions of subsidiary companies (bond interest, rentals and miscellaneous interest charges)		12,320,529
Net income of subsidiary companies	\$4,211,443	
Public Service Corporation income from securities pledged (exclusive of dividends on stocks of operating companies) and from miscellaneous sources	\$2,040,242	
Less expenses and taxes	148,575	1,891,667
		\$6,103,110
Public Service Corporation income deductions: Interest on perpetual interest bearing certificates	\$1,203,046	
Interest on Public Service general mortgage 5 per cent bonds	1,875,000	
Interest on 3 per cent collateral notes	375,000	
Interest on miscellaneous obligations	551,214	
Amortization of debt discount and expense	233,050	
Other contractual deductions from income	45,370	4,282,680
Net income of Public Service Corporation and subsidiary companies	\$1,820,430	
Appropriation accounts of subsidiary companies: Amortization of new business expenditures prior to Jan. 1, 1911	\$40,330	
Adjustments of surplus account	376,129	416,459
		\$1,403,971
Appropriation accounts of Public Service Corporation (exclusive of dividends)—credit		1,258,325
Net increase in surplus before payment of dividends		\$2,662,296

a loss of \$638,398 or 13.1 per cent in net income. The final result for the combined 1918 holding company and subsidiary returns was a net income of \$1,820,430 as compared to \$2,377,399 in 1917. Dividends at 6 per cent aggregating \$1,799,976 were paid in 1918 as compared to dividends at 8 per cent aggregating \$2,399,968 in 1917.

In 1918 the operating revenues of the railway subsidiaries increased \$1,437,736 or 7.4 per cent. Full details regarding operating expenses are not given in the annual report. The number of passengers carried dropped from 476,974,983 in 1917 to 451,220,806 in 1918, or 5.4 per cent. The company had a 1-cent charge for transfers which went into effect on Aug. 1, and a 7-cent fare in addition which became effective on Oct. 15.

The increase in railway revenue between Oct. 15 and Dec. 31, 1918, during which period of time the 7-cent fare with a 1-cent charge for a transfer was in operation, was 22 per cent as compared with corresponding period of the previous year. This confirmed almost exactly, it is said, the predictions and estimate of the officers of the company in their testimony before the Board of Public Utility Commissioners in the rate case.

The effects of the fare increases, besides the traffic decline, were an increase in the average fare per passenger from 3.82 cents in 1917 to 4.31 cents in 1918 and an increase in passenger receipts per car mile from 32.44 cents in 1917 to 36 cents in 1918.

Miscellaneous statistics follow:

	1918	1917
Revenue passengers	*353,190,897	361,187,782
Transfers and passes	98,029,909	115,287,201
Total passengers	451,220,806	476,974,983
Percentage of passengers using transfers	20.0	21.9
Average fare per passenger (cents)	4.31	3.82
Car miles	54,039,150	56,087,403
Car hours	5,698,089	6,021,225
Passengers per day	1,236,221	1,206,781
Passenger receipts per car mile (cents)	36.00	32.44
Passenger receipts per car hour (dollars)	3.41	3.02

* Excluding passengers paying for transfers.

There has been an increase in the number of jitneys in the cities served by the Public Service Railway and in the volume of business done by these vehicles. In regard to this matter the annual report says:

No such competing service should be allowed, certainly without being obliged to obtain from the same board that jurisdiction over the railway a certificate of public necessity for its existence. This question sooner or later will have to be determined as a matter of State policy. In almost every other State the question has been fairly met, the State policy decided and the existing electric railway systems protected from the competition of irresponsible jitney traffic. The people of New Jersey must eventually realize that if the jitney traffic is to be fostered and encouraged, the inevitable result will be

higher rates for the public to pay upon existing electric railway systems and a stagnation in their future development.

The railway claim department in 1918 spent \$986,039, amounting to 5.11 per cent of the gross receipts. This was a much larger sum than was expended for similar purposes the year before, but war conditions account for the increase. Steam railroad congestion added immeasurably to street traffic, owing to the more general use of motor trucks; the labor turnover was responsible for an abnormal number of inexperienced men, and mounting costs of labor and material were directly reflected in the expenditures for repairs of vehicles damaged in accidents.

The net expenditure charged to the fixed capital accounts of the various subsidiaries in 1918 amounted to \$4,639,907. Of this amount \$1,403,848 was for the railway department.

Leases Terminated

Rhode Island Contracts Set Aside—Further Hearing to Be Held on May 28

Leases under which the Rhode Island Company, Providence, R. I., operated the electric railways of the State have been declared terminated on April 21 by Presiding Justice Tanner in the Superior Court of Rhode Island, the companies affected being the Rhode Island Suburban Railroad, the Pawtucket Street Railway and the Union Railroad, all of which are owned by the United Traction & Electric Company.

The court also ordered the receivers of the Rhode Island Company to pay \$50,000 on account to the lessor companies, to which upward of \$330,000 is now owed by the Rhode Island Company for rentals. May 28 was set for a further hearing on electric railway affairs and on that date the principal issue will be the appointment of a master to determine what properties belong to the lessor companies and what to the Rhode Island Company.

No desire was expressed by the counsel for the lessor companies actually to take over property leased to the Rhode Island Company, inasmuch as it is to the benefit of the lessors to have their properties operated by the Rhode Island Company receivers rather than not operated at all. The lessors petitioned the court so that the leases by their terms might be formally terminated, enabling the lessors to protect their interests by determining what property belonged to them and arranging for return of such properties in case the Rhode Island Company is reorganized or some other distribution made of the lines.

The Rhode Island Company failed to pay rentals due the lessors between the dates of Jan. 30, when a temporary receiver was appointed, and April 21. Under the terms of the leases this failure to pay forfeited the leases. Meanwhile the receivers will retain possession by consent until May 28 at least, and later on new leases may be drawn.

Jersey Tax Valuations Announced

Utility corporations in New Jersey this year, consisting of 294 corporations and three individuals, will pay municipal franchise taxes amounting to \$2,991,334, an increase of \$722,387 over the assessment levied in 1918.

In the group of utilities there are twenty-nine electric railways, paying a tax of \$960,910; 114 water companies, \$168,974; 100 gas and electric companies, \$1,416,029; thirty-five telegraph and telephone companies, \$429,249; three district telegraph companies, \$3,495, and sixteen sewer and pipe line companies, \$12,674.

Previous to the enactment of Chapter 17 of the laws of 1917, the rate of tax levied against all classes of utility corporations except electric railways was 2 per cent. Electric railway corporations were assessed at the rate of 5 per cent of the gross receipts. Under the 1917 act the rate on utilities, other than electric railways, whose receipts are in excess of \$50,000 was increased by 1 per cent each year, beginning with 1918, until the maximum of 5 per cent is reached. Therefore, the rate this year for this class of utilities was 4 per cent.

New York Franchise Tax Held Valid

In an unanimous decision the Appellate Department of the Supreme Court, Third District, recently held that corporations in New York State subject to the franchise tax of 3 per cent, based upon "the entire net income," are not entitled to deduct the amount of tax paid to the federal government on account of excess profits before computing the amount payable to the State.

With respect to the State statute, the court said:

This is not an income tax; it is a franchise tax. It is a tax for the privilege of doing business in a corporate form in the State of New York, and the only relation of the federal act to the statute of New York is the basis for the computation of the State tax.

The State franchise tax thus assessed bears equally upon every like corporation within New York. It does not constitute a double franchise tax, though the national government makes use of the same foundation in levying an income tax.

The original ruling of the State Tax Commission, that no deduction of federal taxes would be allowed in computing the 3 per cent franchise tax, is thus sustained.

Only Five Legal Investments

Each year the Massachusetts Public Service Commission transmits to the bank commissioner a list of electric railway lines in Massachusetts whose bonds are legal investments for savings banks, they having annually earned and properly paid, without impairment of assets or capital stock, dividends equal to at least 5 per cent on their outstanding capital stock in each of the preceding five years.

This year the list is the smallest on record, containing only five companies, out of a possible fifty-four companies operating in the State. This compares

with seven last year and nine the year before, while in 1913 the number was thirteen. Among the eight companies that have fallen by the wayside in the last half dozen years are the Bay State Street Railway, Worcester Consolidated Street Railway and Springfield Street Railway.

Although the Boston Elevated Railway is paying the dividends prescribed, this is being done under State guaranty. The road is not earning the dividends.

New Officers for Iowa Southern Company

David G. Fisher, head of David G. Fisher & Company, public utility engineers of Davenport, Ia., was elected president of the Iowa Southern Utilities Company at a reorganization meeting of the board of directors on May 15, a meeting which marked the formal change in financial control of the utility.

Mr. Fisher organized his company in 1909 and soon afterward began to purchase and operate public utility plants. The majority of his holdings have been in Iowa. He secured a minority interest in the Iowa Southern when it was organized in 1916 and purchased control a few weeks ago.

The new officers and directors of the Iowa Southern Utilities Company are:

President, David G. Fisher, Davenport, Ia.
Vice-president, John C. Meiners, Milwaukee, Wis.

Secretary, L. C. Bernhard, Milwaukee.
Assistant secretary, G. E. Peck, Centerville, Ia.

Treasurer, J. C. Johnson, Davenport.
General manager, J. C. Johnson.
Directors, David G. Fisher, E. F. Bulmann, Davenport; John C. Meiners, John E. DeWolf, Milwaukee; Frank S. Payne, Centerville.

D. C. Bradley and J. P. Bruckshaw, Centerville, who have been directors of the company for many years, retired. Mr. Bradley was one of the organizers of the company. He and Mr. Payne sold control to the Fisher Company.

Extension of the 200 miles of transmission line was decided on at the reorganization meeting. Two additional towns, Shannon City and Tingley, Ia., are to be added this summer to the thirty towns already furnished with electric power. This extension will be approximately 20 miles long and will be run from Diagonal, Ia.

Wants P. R. T. to Lease Line

As a solution to the trouble between the residents of the northeastern section of Philadelphia and the Frankford, Tacony & Holmesburg Railway, relative to the complaints of inadequate service, antiquated and poorly ventilated cars, the proposition has been made that the line be operated by the Philadelphia Rapid Transit Company. A. Howard Jones, an engineer connected with the commission, said he had conferred with President Mitten and G. A. Richardson, superintendent of transportation of the Philadelphia Rapid Transit Company, regarding leasing the railway and had submitted a proposition to the company, which is now being considered.

Financial News Notes

Receiver for Colorado Road.—George M. Taylor, Colorado Springs, Col., was appointed receiver of the Colorado Springs & Cripple Creek District Railway on May 10 by Judge Robert E. Lewis of the Federal Court, acting at the request of the bondholders' protective committee.

Formal Application Made.—Lindley M. Garrison, receiver for the Brooklyn (N. Y.) Rapid Transit Company, made application before Judge Mayer of the Federal District Court on May 15 to approve an immediate issue of \$15,000,000 of 6 per cent receiver's certificates maturing on June 1, 1920.

New Potomac Electric Power Issue.—The District of Columbia Public Utility Commission has authorized the Potomac Electric Power Company, which is controlled by the Washington Railway & Electric Company, to issue and sell \$1,750,000 of general mortgage 6 per cent five-year gold bonds, dated July 1, 1918.

Bay State Makes Purchase.—The Georgetown, Ipswich & Rowley Street Railway, sold at auction at Salem, Mass., on May 14, became part of the Bay State Railway system for a \$30,000 consideration. I. H. Glidden, Boston, representing the reorganization committee of the Bay State Street Railway, was the only bidder for the road.

Foreclosure Proceedings Started.—Foreclosure proceedings against the New Orleans Railway & Light Company, New Orleans, La., for collection of interest on an issue of \$6,500,000 gold mortgage bonds, payable on May 1, have been filed in the United States District Court at New Orleans by the Empire Trust Company, New York, as trustee for the mortgage.

Sold Under Foreclosure.—The Selma (Ala.) Street Railway was sold under foreclosure recently to the Selma Electric Railway, of which D. L. Gerould, Warren, Pa., will be president. W. E. Nees will remain the superintendent of the company and will have general charge of operation. Hugh Mallory will represent the stock and bond holders and will be managing director.

St. Petersburg Line Reported Sold.—The St. Petersburg & Gulf Railway, St. Petersburg, Fla., in the hands of receivers since May, 1918, is reported to have been sold to a syndicate headed by Messrs. Beeching, Webster and Disston, Philadelphia, Pa. The superintendent of the road is L. J. Wells, the superintendent of construction is J. S. Wilders, and the master mechanic is Edward Morton.

Subsidy Approved.—The Massachusetts Public Service Commission has approved the action of the town of

Swansea in voting to give \$1,825 to the Swansea & Seekonk Street Railway. The sum represents a tax of \$1 for each \$1,000 of assessed valuation. The road was formerly known as the Providence & Fall River Street Railway. It was sold for junk in 1917, but escaped being scrapped when citizens along the route raised \$80,000 for its purchase.

Negotiating for Power Plant.—The Hagerstown & Frederick Railway, Frederick, Md., is reported to be negotiating for the purchase and control of the Northern Virginia Power Company, Winchester, Va. The latter has about 150 miles of transmission lines, the main generating station being at Millville, on the Shenandoah River. The company also has a steam generating plant at Berkeley Springs, W. Va., and a hydro-electric station at Capon Springs, W. Va.

Sale for Taxes.—On June 2 various parcels of real estate and personal property belonging to the Rhode Island Suburban Railway and the Union Railroad, Providence, R. I., will be sold to settle claims of the city for unpaid taxes due on July 29, 1918. The levy upon the property was made by City Treasurer Lee and is one of many made against property upon which assessed taxes remain unpaid. The Rhode Island Suburban Railway owes the city \$6,387 with interest and the Union Railroad is required to pay \$8,391 with interest.

Sale of Lorimer Road June 10.—Attorney John E. Hamlin, master-in-chancery of the St. Clair County Court and attorney for the receivers of the Southern Traction Company, East St. Louis, Ill., has been ordered by Federal Judge George W. English to sell the right-of-way, rails and all other property of the railway at public sale on June 10. Based upon the report of appraisers appointed by the court a minimum price of \$300,000 is fixed on the property. Claims aggregating \$1,500,000 are pending against the company,

and of this amount the principal items are held by the Lorimer-Gallagher Construction Company, Chicago, Ill., of which former Senator Lorimer is the head. The road has been partially completed between East St. Louis and Belleville and right-of-way has been secured beyond Belleville.

Tucson Receiver Reports.—Edwin F. Jones, who was recently appointed receiver of the Tucson (Ariz.) Rapid Transit Company, as noted in the ELECTRIC RAILWAY JOURNAL of March 29, 1919, has reported to the court that when he took possession the outstanding capital stock totaled \$500,000, and the outstanding funded debt \$114,000. The single-track mileage was 4.35 miles. For March, 1919, the gross income showed a gain of \$216 over the same month of last year, while expenses rose \$572. Some time ago the company secured from the State Corporation Commission the right to increase fares from 5 cents to 8 cents, with a small reduction for quantity sales, and the effects of this order are just beginning to be felt. It has manifestly caused a small increase in passenger revenue at the expense of traffic, the passenger total being 13,319 less in March, 1919, than the year before. It still remains to be seen, the receiver says, whether the public will ride at an 8-cent fare.

Common Stock Dividend Passed.—Directors of the Washington Railway & Electric Company, Washington, D. C., on May 15 passed the quarterly dividend of 1 1/2 per cent on the common stock of the company which would have been payable on June 1. The quarterly dividend of 1 1/2 per cent on the preferred stock will be paid on June 1 as usual. There is \$6,500,000 of common stock, the annual dividend on which at 5 per cent has amounted to \$325,000. The company began paying dividends on the common stock in 1909, when 1 per cent annually was paid. The distribution

was increased until in 1913 a dividend of 7 per cent was paid. The 7 per cent distribution was continued until last year, when the rate was reduced to 5 per cent. William F. Ham, president of the company, said: "The board, realizing the extremely serious conditions brought about by the failure to receive adequate or sufficient revenues properly to maintain and operate its properties, has adjourned for one week to consider what further steps should be taken properly to conserve the interests of the company."

Mexico Properties Returned.—Confirmation has been received in Toronto, Ont., the home office of the company, of the report from Mexico that the Mexico Tramways has been returned to its owners and General Manager G. R. G. Conway has again taken control. Mr. Conway holds a like position with the Mexican Light & Power Company, an allied organization which had not been taken over by the government, and he was, therefore, on the scene ready for the change. The period of government possession of the tramways has been an anxious one for the shareholders, as not only have they received nothing, but the bond interest and charges have been accumulating. The company has received none of the money collected by the government from the operations of the tramways during that time, except a small amount to pay the underlying bond interest of the Mexico Electric Tramways, Ltd. In 1916 joint action was taken by the bondholders of the Mexico Tramways, Mexican Light & Power Company, and the Pachuca Light & Power Company and their subsidiaries to protect the whole situation. As yet the company has not received a full report and does not know the present physical condition of the property. No bond interest or dividends have been paid since 1913, and no annual statements issued.

Electric Railway Monthly Earnings

BATON ROUGE (LA) ELECTRIC COMPANY					
Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Mar., '19	\$27,408	\$17,537	\$9,871	\$3,459	\$6,412
1m., Mar., '18	20,321	10,962	9,359	3,501	5,858
12m., Mar., '19	293,231	169,753	127,478	41,920	85,558
12m., Mar., '18	236,118	123,837	112,281	38,413	73,868

CAPE BRETON ELECTRIC COMPANY, LTD., SYDNEY, N. S.					
Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Mar., '19	\$42,924	\$32,559	\$10,365	\$5,357	\$5,008
1m., Mar., '18	39,516	\$30,124	9,392	5,254	4,138
12m., Mar., '19	533,843	403,445	130,398	63,575	66,823
12m., Mar., '18	476,976	327,068	149,908	63,240	86,668

COLUMBUS (GA) ELECTRIC COMPANY					
Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Mar., '19	\$95,306	\$54,970	\$40,336	\$30,279	\$10,057
1m., Mar., '18	96,195	41,609	54,586	27,700	26,886
12m., Mar., '19	1,183,546	607,239	576,307	349,882	226,425
12m., Mar., '18	1,139,255	644,655	694,600	315,463	379,137

EASTERN TEXAS ELECTRIC COMPANY, BEAUMONT, TEX.					
Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Mar., '19	\$106,782	\$65,676	\$41,106	\$12,972	\$28,258
1m., Mar., '18	87,459	49,131	38,328	11,851	26,477
12m., Mar., '19	1,200,367	877,750	482,617	152,209	332,307
12m., Mar., '18	961,980	535,977	426,003	130,968	321,104

EL PASO (TEX.) ELECTRIC COMPANY					
Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Mar., '19	\$128,112	\$89,738	\$38,374	\$7,283	\$31,091
1m., Mar., '18	107,532	\$68,350	39,182	6,389	32,793
12m., Mar., '19	1,308,008	926,611	381,397	81,850	299,547
12m., Mar., '18	1,273,511	814,316	459,195	68,571	390,624

JACKSONVILLE (FLA.) TRACTION COMPANY					
Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Mar., '19	\$92,738	\$85,070	\$7,668	\$14,146	\$6,478
1m., Mar., '18	78,899	\$51,080	27,819	14,139	13,680
12m., Mar., '19	992,079	796,993	195,086	177,938	17,148
12m., Mar., '18	735,980	\$501,123	232,857	168,660	64,197

NORTHERN TEXAS ELECTRIC COMPANY, FORT WORTH, TEX.					
Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Mar., '19	\$277,721	\$173,290	\$104,431	\$25,237	\$388,777
1m., Mar., '18	299,172	173,624	126,148	25,274	310,452
12m., Mar., '19	2,894,934	1,904,218	990,716	301,279	804,347
12m., Mar., '18	2,839,727	1,593,416	1,246,311	310,741	993,070

PENSACOLA (FLA.) ELECTRIC COMPANY					
Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Mar., '19	\$46,047	\$39,817	\$6,230	\$7,855	\$1,625
1m., Mar., '18	37,305	23,787	13,248	7,093	6,155
12m., Mar., '19	543,028	406,592	136,436	89,310	47,126
12m., Mar., '18	380,689	229,982	150,707	81,687	69,020

SAVANNAH (GA) ELECTRIC COMPANY					
Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Mar., '19	\$107,843	\$87,298	\$20,545	\$24,911	\$4,636
1m., Mar., '18	94,377	\$64,355	30,022	23,278	6,744
12m., Mar., '19	1,228,299	\$931,915	296,384	286,926	9,458
12m., Mar., '18	1,019,522	683,811	335,711	273,366	62,345

TAMPA (FLA.) ELECTRIC COMPANY					
Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Mar., '19	\$106,694	\$63,502	\$43,192	\$4,547	\$38,645
1m., Mar., '18	92,311	\$50,943	41,368	4,264	37,224
12m., Mar., '19	1,110,354	\$651,856	458,498	52,258	406,240
12m., Mar., '18	995,353	\$573,696	421,657	49,135	372,522

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

Traffic and Transportation

Mayor Opposes Increase

Louisville Official Against Fare Advance—Railway Plans Economies to Avert Disaster

Mayor Smith of Louisville, Ky., has announced that he will oppose any effort on the part of the Louisville Railway to increase its fares. The Mayor has issued a long statement reviewing the affairs of the company. This he concluded in part as follows:

So far as the stockholders of the railway company are concerned, some of the arguments advanced are sentimental rather than sound. For instance, it has been urged that widows and orphans depend on the company's dividends for a livelihood. It is not just to compel the less fortunate, who are in greater numbers, to pay increased fares in order to provide dividends for the few more fortunate. It has been further urged by some of the stockholders that they are entitled to a dividend on their stock, and the citizens of Louisville ought to pay it in the shape of increased fares, because the government has increased their operating expenses. This argument is not sound for several reasons.

There will be sufficient income to pay dividends irrespective of the over-capitalization of the company, as shown below.

The Supreme Court of the United States has established the rule that a corporation is entitled to a reasonable dividend based on a reasonable valuation of its property and the reasonableness of it depends on its reasonable worth and does not depend on some extravagant price that might have been paid for the property nor upon bookkeeping.

It is apparent that originally in 1890, the chief value of the stock was based on the franchise which was given by the citizens of Louisville to the railway, and if it is true that at the present time the railway has so improved its property out of its earnings and so materially added to its assets physically that its present capitalization is fair, it follows that the railway has for many years made enormous profits when based on a reasonable valuation of its property, according to the rule of the Supreme Court of the United States.

During all of these fat years there was no thought of lowering the fare, but on the other hand, whatever profits were made were used either to give a real value to the securities already issued or as a basis for further stock issues. Therefore, if it has had fat years at the expense of the people of Louisville, it ought not to complain when a lean year arrives; that is, lean only when compared with its large profits in times gone by.

Finally, last year the company, in its written memorandum, urged that if the increased fare were allowed, it would only produce an additional revenue of 10 per cent, or about \$532,000, but the company probably would need help only for a year or two. It is apparent that the railway would not need that help, for instead of losing \$287,574, the probability is it will gain \$438,660. It will be better off by \$736,234 than it is at the present time. When it is further considered that its own expert shows it a way to save \$287,300, making a total of \$1,023,334, which is the sum by which it will be better off than expected, it is no longer necessary to raise \$532,000, which the railway urged was all the increased fare would produce.

For the above reasons, I shall oppose any effort to increase fares.

T. J. Minary, president of the railway, when asked what steps the company would now take, said he had not yet read the Mayor's statement and could not say what the company would do. Mr. Minary was quoted as follows:

The entire matter as to the increased fares is in the hands of a committee composed of John W. Barr, Judge Alex

Humphrey, Oscar Fenley and myself, and it is probable we will give out a statement as soon as we have fully digested the Mayor's statement.

Later the railway in a letter to Mayor Smith agreed to his proposal that every effort toward economy and efficiency in management be exhausted before the appeal is renewed for an increase in fares. In a communication to the city railway officials have pointed out many places in the present schedule where duplication of service could be eliminated at a saving, and where service on some of the lines could be reduced. Attention was also called to antiquated provisions of the franchise that require service on some lines that is out of proportion to the need, and co-operation of the city authorities has been asked toward rearranging schedules. The Mayor said:

I shall assist in every way possible to put into effect the reasonable economies proposed by the railway. I appreciate the splendid spirit of co-operation exhibited in the letter from the company. I am sure the people of Louisville will appreciate it and meet these proposals in the same fine spirit in which they are offered.

New Fare Schedule Allowed

The Public Service Commission of Massachusetts, on May 14, decided to allow the new schedule of fares of the Massachusetts Northeastern Street Railway, Haverhill, Mass., to become effective. The new schedule provides for a 10-cent cash fare or a 6-cent ticket fare in lots of five for 30 cents. The present cash fare is 6 cents, so that the new schedule does not represent an increase if tickets are used by the patrons of the road. The commission suspended the new schedule until May 15, but David A. Belden, president of the road, announced on May 15 that the schedule would not be put into operation until May 19.

No changes are made in any of the zones, or in any of the tickets at present in use. The new tickets will be obtainable from conductors on the cars and are good at all times. In case a conductor runs short of tickets a passenger will pay the 10-cent cash fare and will be given a 4-cent rebate check by the conductor. This rebate check will be redeemable.

Because of the question raised at the public hearing on the new schedule regarding school tickets, the schedule has been changed so that tickets for school children will be sold at one-half the ticket fare, or 3 cents. For resort and park riding, special blocks of tickets will be made up at the 6-cent rate and will be obtainable from the company offices and agents, so that a passenger can purchase a strip of tickets good for a round-trip passage to any park or summer resort without having extra tickets left over.

Fare Case Still in Courts

Ottumwa Company Plea for Justice on Fares Before Supreme Court of Iowa

The Supreme Court of Iowa had not at last report rendered a decision concerning the appeal of the Ottumwa Railway & Light Company from the decision of the Circuit Court compelling the company to resume the collection of a 5-cent fare.

DATES BACK TO 1918 STRIKE

In October, 1918, the trainmen of this company appealed to the War Labor Board for an increase in wages. The company joined with the men in the appeal, stipulating that any award of the board should be conditional upon the financial ability of the company to pay the increase decided upon. About the middle of December the War Labor Board handed down a decision increasing the wages of the trainmen about 30 per cent, and stipulating, as the company had requested, that this increase should be conditional upon the financial ability of the company to pay the increased wages. The company was not at that time in a position to pay the increase until an increase in fare was granted.

About one week before Christmas the trainmen notified the company that a strike would be called on Dec. 22 unless an increase in wages in accordance with the findings of the War Labor Board was granted prior to that date. The company appealed to the city commission in a request for a 6-cent fare, but the appeal was refused. The company then stated its case to the Business Men's Association, after which the business men appealed to the City Commission. This request also was refused by the city commission.

STRIKE AS A WEAPON

The trainmen went on strike on the Saturday before Christmas at 9 a.m. At the same time the power-house employees notified the company that they would strike within the next three days. The prospects of an entire shutdown of the railway system caused the City Commission to reconsider the case, and on the following Monday a resolution granting the 6-cent fare was passed by two of the commission against the non-occurrence of the Mayor in the decision. This resolution provided that the 6-cent fare should remain in effect until the peace treaty was ratified.

CASE BEFORE SUPREME COURT

The city election last April resulted in the overwhelming defeat of the three commissioners, and the last act which they performed was to rescind the 6-cent fare resolution. The company then appealed to the Circuit Court, but was refused the petition, and a 5-cent fare was resumed. Appeal was then taken to the Supreme Court of Iowa. Hearings on the appeal began on May 12 at Des Moines.

Buffalo Interurban Fares Can Be Raised

Supreme Court Justice Holds That General Public Policy Makes Restrictions of Quinby Case Inapplicable to Interurban Rates

A decision, important not only because it gives promise of partial rate relief for the International Railway, Buffalo, N. Y., but also because it helps to clarify the general rate-making situation in New York State, was handed down last week by the Albany special term of the New York Supreme Court.

The case arose through efforts of the cities of Tonawanda and North Tonawanda and the village of La Salle to secure writs prohibiting the Public Service Commission for the Second District of New York from investigating the reasonableness of certain interurban rates, the new tariff filed on Jan. 29, 1919, having been suspended pending the investigation. The municipalities contended that the company was bound by the interurban rates fixed in connection with the consents granted for the construction of its lines between Buffalo and Niagara Falls.

PRIOR CASES INVOLVED

In order to understand the situation clearly it is necessary to recall that in the Quinby case in Rochester (223 N. Y. 244) the New York Court of Appeals, the highest court in the State, ruled early in 1918 that for various reasons the New York Legislature could not be deemed to have unmistakably granted to the commissions whatever power it possessed over rates stipulated in local electric railway franchises. In January, 1919, however, the Court of Appeals ruled in the South Glens Falls case (225 N. Y. 216) that under the regulatory law the commissions have power to increase gas rates over those stipulated in grants of location. In the present International Railway case the cities relied in great measure upon the Quinby case and the company upon the Glens Falls case. The present decision by Justice Hinman, therefore, serves to point out the interrelationship of the International Railway and the two former cases.

GLENS FALLS NOT REVERSAL OF QUINBY CASE

In denying that the Glens Falls decision constituted a reversal of the earlier Quinby decision, Justice Hinman referred to the way the Glens Falls decision had pointed out the distinguishing elements of the Quinby case, and he added:

In the latter (Quinby) case, the railroad company had to obtain the consent of the municipal authorities (Constitution, Art. 3, 18); a maximum rate of fare within the city of Rochester was imposed by the consent; this agreement was confirmed by a later contract; the contract was expressly recognized by the Legislature in Section 173 of the railroad law (L. 1910, Chap. 481); in Section 181 of the same law a provision was inserted which prohibits a railroad operating in any incorporated city or village from charging more than a 5-cent fare for a continuous ride within such city or village; and in 1915 the Legislature amended the charter of the city of Rochester and added a new section which provides that all street surface railroads operating

therein should not charge more than 5 cents.

All of these things influenced the judgment of the court in the Quinby case, as interpreted in the Glens Falls case, in reaching the conclusion that the general language of the public service commissions law, Section 49, was not adequate to overcome the fair inference, at least, conveyed from the special provisions of law in the charter and other acts, that such power had not been included in the jurisdiction of the commission.

Thus the court has not said in unequivocal terms that the language of Section 49 cannot be interpreted in a proper case to confer jurisdiction in the Public Service Commission to deal with rates of fare established by agreement with local authorities. The decision in the Glens Falls case indicates, rather, that the rule in the Quinby case is not to be extended, but is to be applied only to those cases which rest upon similar facts in all respects.

INTERNATIONAL CASE STILL DIFFERENT

As for the present case involving commission regulation of interurban rates of the International Railway, Justice Hinman considered that there was no similarity between the Quinby case and this. The municipal charters and State law did not confer upon Tonawanda, North Tonawanda or La Salle the power to fix fares within or without their limits; there was no legislative recognition of the consents or fares involved in such consents, and there was no statute fixing interurban rates of fare.

There remained only the effect of the constitutional provision regarding consents. In regard to this Justice Hinman pointed out that the high-speed line between Buffalo and Niagara Falls had been constructed upon private right-of-way, that the rates of fare involved in the case were interurban only and that the property did not come within the scope of the term "street railroad" as used in the constitutional provision relative to consents. Continuing he said:

The constitutional provision was intended to confer upon the localities power to impose conditions, if at all, pertinent to the grant of such consents so far as the municipality has a city purpose to protect not inconsistent with the public interests of the State at large. The fixing of interurban rates of fare is normally a legislative function to be exercised in the interest of the general public, beyond the control of any city in the absence of clear warrant of authority therefor. It certainly was not intended to permit a city to invade the sovereignty of the State, where, as in the case of interurban rates, the rights of other municipalities and the inhabitants of the State generally are involved, and where thus a State issue rather than a local concern is presented. The correct interpretation that the constitutional provision was not intended to cover such a contingency arises in this connection, that the Legislature has never meant to leave any such unusual power in any municipality under the sanction of the constitutional provision but has reserved full authority in itself for that purpose and has given such power to its own agent, the Public Service Commission.

Surely the Court of Appeals in the Quinby case referred to agreements coming within the purview of the constitutional provision and that to agree that such could not be sustained as coming within its fair and reasonable intent and as to what is clearly the intent of the framers of the State, the police power of the State must have been reserved in the absence of clear constitutional or statutory provision to the contrary. Just as it was intended by

the constitutional provision to protect the city in matters of local concern, so, in the absence of clear warrant to the contrary, the Constitution should be interpreted to protect the State and its inhabitants in all matters of State concern.

Justice Hinman, therefore, was convinced "that the constitutional provision in question was not intended to protect those cities in the making of such agreements as to those interurban fares, that the agreements in question are not dignified by any constitutional local power, as in the Quinby case, and that, as in the Glens Falls gas case, the Public Service Commission has been given jurisdiction to investigate and fix reasonable rates." He therefore denied writs of prohibition against the commission.

Akron Fare Measure Defeated

The Morse-Witwer ordinance providing for a 6-cent fare on the railway lines of the Northern Ohio Traction & Light Company was repealed on May 20 in the referendum at Akron, Ohio. The vote was 10,563 to 2394. Only four precincts out of 114 were in favor of the ordinance. The proposal had the support of only one of three newspapers. One paper opposed the measure and one was non-committal.

The ordinance, revocable after one year, was intended as a temporary measure only to give an opportunity for further study with full examination of the affairs of the Northern Ohio Traction & Light Company looking toward the ultimate framing of a new franchise ordinance.

The winning arguments seemed to be that the light and power departments of the company were highly profitable, that the company had \$2,000,000 surplus available for electric railway improvements; that it had increased dividends last year on the common stock from 5 per cent to 7 per cent, and that the present franchise provided sufficient power to compel extensions and the giving of adequate service.

HOW THE FORCES DIVIDED

The results of the referendum indicate a sharp division along lines not apparent during the campaign. The Car Riders' League, led by Mayor Laub, polled votes in the great Goodrich, Goodyear, Miller, Firestone, Kelly-Springfield and other rubber plants which overwhelmed the Citizens' Progressive Association, which was organized by leading manufacturers, bankers and business men to foster the ordinance as a necessary part of the plans for civic improvement.

It was the first referendum in Akron. The city administration, which is Democratic, favored the ordinance, whereas Mr. Laub was the leader of a faction of Republicans, which now may become formidable. During the week ended May 17, the Citizens' Progressive Association which, as explained previously, represented men in every industry and walk of life, conducted an extensive publicity campaign in favor of the ordinance. In this campaign the railway company took no part.

Interline Express Rates Wanted

Representatives of the ten interurban electric railways in Indiana have appeared before the Public Service Commission of Indiana and requested permission to establish in that State a general system of line and interline express freight rates.

Charles L. Henry, president of the Indianapolis & Cincinnati Traction Company, presented the opening and general statement of the interurban railways and explained that what the electric lines in Indiana wish is authority to establish a system of express business somewhat similar to that formerly operated by old line express companies having contracts with interurban lines and later abandoned by the federalized express companies in so far as shipping over electric lines is concerned.

The plan does not contemplate unified operation by the companies as a whole, but merely the co-operation of each line. The proposed rates, according to Mr. Henry, would be somewhat higher than the present rates which the companies charge, but lower than the federalized rates on steam lines.

The only protest against the proposal was made by the City Council of Shelbyville, Ind., which objects to any increase of rates over those now in effect for the company service of the kind now available to Shelbyville.

The proposed rates are as follows: Rates on all local traffic; that is, single line traffic 150 per cent of the first-class freight rate. Rates for interline traffic; that is, for two or more lines, 120 per cent of the first-class freight rate for the same distance on a local haul.

The companies request a minimum of 40 cents on local business and 50 cents on interline business. The companies also ask to establish certain line and interline commodity rates on such articles as empty ice cream containers, empty bread baskets and the like.

The co-operating lines are the Indianapolis & Cincinnati Traction Company; Union Traction Company of Indiana; Terre Haute, Indianapolis & Eastern; Interstate Public Service Company; Indiana Railways & Light Company; Fort Wayne & Northern Indiana Traction Company; Fort Wayne & Decatur Traction Company; Fort Wayne & Northwestern Traction Company; Winona Interurban Railway and the Marion & Bluffton Traction Company.

Smoking Again an Issue in Chicago

During the epidemic of influenza smoking on both the elevated and surface cars in the city of Chicago was prohibited by the health commissioner. Prior to that time smoking had been permitted on the front platform of all surface cars, and a special smoker was carried on all elevated trains. After the order was issued, the elevated smokers were converted into regular passenger cars by taking down the match scratchers, and painting out the word "smoker" on the cars. Both the

elevated and surface cars immediately became notably cleaner.

One of the Aldermen in the City Council has now initiated a measure to have the anti-smoking order set aside. This has met immediate opposition from the city health commissioner, who has announced that he would muster up supporters to aid him in his fight against the new order.

The opposition to the anti-smoking order contends that the order was issued at the height of the influenza epidemic and that the necessity for it has now passed. They maintain that such an order "is only a step toward taking away more personal liberty, and no one can see how far a thing like this will go."

The newspapers editorially favor a continuance of the anti-smoking order.

Yonkers Case Argued

Thomas J. O'Neill, counsel for Henry Koster, a Yonkers taxpayer, who is suing in the Supreme Court for an injunction to compel the Yonkers Railroad to restore a 5-cent fare, contended that the company is perpetrating a fraud upon the city, in a brief filed with Justice Joseph Morschauer at Poughkeepsie on May 17.

Besides asking the restoration of the 5-cent fare, instead of a dime and 15 cents, Mr. O'Neill in his memorandum asks the court to force Corporation Counsel William A. Walsh to sue the railroad "for the liquidated damages due the city because of the railroad's violation of its franchise." The company is under bond to live up to the 5-cent fare agreement in the ordinance of 1911 granting its franchise, which, plaintiff alleges, it illegally modified with only six instead of eight votes.

The whole legal fight over the carfare hinges on the construction of Section 37 of the second-class cities law. Under this section the company had to get eight votes to get its franchise in 1911, but could muster only six votes recently to amend the franchise to clear the way for a higher fare.

The company sets up the claim that its new contract is valid under Section 30. This, O'Neill claims, covers only legislative and governmental functions, which require but six votes of ten in the Board of Aldermen for enactment, but that all the laws on franchises are contained in Section 37.

In answer to the company's contention that it holds no franchises outside the city of Yonkers, and therefore can collect another fare beyond the city limits, Mr. O'Neill states that Yonkers would not have granted the company a franchise unless it agreed to carry passengers on its cars outside the city. The brief continues:

It must be remembered that, indeed, this special ordinance passed by a vote of 6 to 4 on April 4, 1919, does this same thing. It authorizes a 5-cent fare from 242d Street subway terminal to McLean Avenue, one-half mile within Yonkers city limits.

The special ordinance referred to is the one increasing fares which is now under legal attack.

Jersey Railway Finishes Its Case

The hearing before the Board of Public Utility Commissioners of New Jersey in regard to the proposed establishment of a zone system on the lines of the Public Service Railway was resumed before the commission on May 7. Robert M. Feustel, of Sloan, Huddle, Feustel & Freeman, testifying for the commission, declared it was his opinion that the development cost of \$16,000,000 cited by the railway for the period from 1903 to 1918 was too liberal. On May 8 both R. E. Danforth, general manager of the railway, and Mr. Feustel testified. Mr. Danforth was questioned more particularly about increased costs. On May 9 the railway completed the presentation of its case dealing with the valuation. Prof. Henry C. Anderson was re-examined with respect to appraisal figures.

On May 12 testimony had to do largely with the proposed methods of recording and collecting fares under the zone system. Types of various machines to be installed on the cars were exhibited and their work illustrated. On May 16 Dr. Thomas Conway, Jr., witness for the railway, testified that the conditions under which the company operated in New Jersey were more peculiar than those faced by any other company in the United States due to the diversity of the system, the extensive mileage, the fact that the northern part of the territory is served by a number of steam railroads, the wide diffusion of factories and the proximity of the northern section to New York City and of the southern section to Philadelphia. Dr. Conway explained that more than eight months were devoted to making the check on which the zone system was based and in working out the plan, but that if the requirements of Mr. Sommer, counsel for the municipalities opposed to the zone plan, had been put through it would have taken the same number of years to complete the work.

Not Even Mr. Storrs Knows

When asked recently for some sort of a statement as to what the Connecticut Company, New Haven, Conn., contemplated doing, now that practically all of the bills which were intended to relieve the company during its present financial difficulties had failed of passage in the Legislature, L. S. Storrs, the president of the company, said that he did not consider the time ripe for the company to make any statement as there had been no decision reached as to the future policy of the company, and that he "considered that the public was just about sick of reading indefinite, and many times incorrect, statements with regard to proposed action by the company."

He also stated that there is no chance whatever of the company operating jitneys or motor passenger vehicles over routes of abandoned lines, if such service is discontinued, for he said, "the jitney men cannot make it pay and the company cannot do so."

Transportation News Notes

Eight-Cent Zones on Maine Interurban.—The Atlantic Shore Railway, Sanford, Me., will advance its fare from 7 cents to 8 cents beginning June 1. This new fare will be collected in every zone except that between Sanford and Springvale. Under the new fare arrangement, tickets in strips of seven will be sold for 50 cents, and the price of school children's tickets in books of fifty coupons will be increased from \$2 to \$2.50.

Court Upholds Fare Increase.—The Supreme Court of Louisiana on May 5 affirmed the validity of the ordinance permitting the New Orleans Railway & Light Company to increase fares and gas rates. A petition to enjoin the collection of 6-cent fares was denied. The case of the Board of Public Utilities of Louisiana, in which the board claimed jurisdiction over rate fixing in New Orleans was also dismissed, the Court holding that the act of the General Assembly of 1916, purporting to create the Board of Public Utilities, was unconstitutional.

Hearing on Rainier Valley Fares.—The State Public Service Commission of Washington has started a hearing in Seattle on the proposed increased fares on the Seattle & Rainier Valley lines. The rate proposed amounts to an increase of 2 cents, making virtually a 7-cent fare when transfers are issued. The company proposes a straight 6-cent fare, with an additional cent for transfers, and a charge of 2 cents for every transfer accepted from other lines. The company contends that for five years previous to 1918 its net returns averaged only 0.87 of 1 per cent.

Fare Compromise Likely.—It is believed that a compromise will be reached by the City Council of Martins Ferry and the Wheeling Traction Company in the controversy as to passenger fares to be charged in that community. At a recent meeting of the City Council with C. P. Billings, superintendent of the company, the Council indicated its willingness to agree to rates on the following basis: 7-cent fare from Martins Ferry to Fourteenth Street, Wheeling; 7-cent fare from Martins Ferry to Pinch Run, Bellaire; 7-cent fare from Martins Ferry to Brookside and sixteen tickets for \$1.

Progress on Washington Case.—The hearing before the Public Service Commission of the District of Columbia on the application of the Washington Railway & Electric Company for an increase in fare was continued during the week ended May 17. The principal witness was William F. Ham, president of the company. It was regarded as quite

certain on May 15 that the commission would act in the near future on the company's application for relief. In the event the public did not require much time for presenting its case, the finding of the commission was regarded as likely to be handed down before June 1.

Rates Must Be Fair.—Fair play utilities at Lansing in sight for the company at Lansing, Mich. The conciliatory attitude on the part of the city representatives, however, was brought about in part in a peculiar way. Lansing stood to lose heavily industrially. The Olds Motor Works saw possibilities in locating at Lansing. But it demanded first of all that Lansing play fair with the company's own employees by pledging itself to secure for them adequate electric light, gas and railway facilities. As a result Lansing's new Council has adopted the report of a committee of citizens appointed to work out a solution of the utility problem and the city stands committed to a policy of rates based on findings following an inquiry into public utility production and operating costs.

New Time-Table Folder at Reading.—The Reading Transit & Light Company, Reading, Pa., is distributing a neat vest-pocket time-table in folder form, containing schedules of cars on all of the suburban lines of the company, a map showing their connections with other railway lines reaching surrounding cities and a chart giving the route numbers of cars, which enables patrons to become familiar with the cars they most frequently use. The time-table is revised and published annually on May 1. That it is recognized as one of the fixed and most useful institutions of the company is evidenced from the large number of requests for it that are received even before any notice of the new time-table is published. Very effective distribution is obtained by placing copies with all leading hotels, municipal and county offices, department stores and other business places.

Newark Mayor Loses Fare Protest.—Judge Johnson of the Second District Court at Newark, N. J., has decided that the Public Service Railway has the right to charge a 7-cent fare and that a conductor, representing the company, was justified in demanding that rate from Mayor Gillen, when the latter, on May 5, laid the ground for a test case. Judge Johnson cites the Supreme Court decision in the case of O'Brien vs. the Public Utilities Commission, the opinion having been written by Justice Swayze, in support of his belief that the company is empowered by the public utility act to fix rates so long as they are not questioned as to their justice and reasonableness by the Public Utilities Commission or through the filing of a written complaint against them. City Attorney Kearns has declared that he will prepare papers for an appeal of the case to the Supreme Court.

Seven-Cent Rate Wanted.—The Monongahela Valley Traction Company, Fairmont, W. Va., has applied to the Public Service Commission for a passenger rate increase from 5 cents in the cities it serves and 6 cents in rural communities to a flat rate of 7 cents in each zone. This would mean a 7-cent rate for city cars and a 7-cent rate for suburban cars. Some time ago the company applied for a 6-cent rate on the interurban between Parkersburg and Marietta and for six zones instead of five as at the present time. The application as filed affects all the lines operated by the Monongahela Valley Traction Company, including those in Parkersburg, Clarksburg, Fairmont, Weston and other points. The commission has fixed May 27 as the date for the hearing on the company's application. A separate application has been filed by the railway asking for a 20 per cent increase in power rates.

Receiver's Fare Plea Granted.—The Public Service Commission for the Second District of New York at its regular session on May 8, vacated and set aside the part of its order of Feb. 4 directing George Bullock, receiver of the Buffalo & Lake Erie Traction Company, to resume the sale of strips of seven one-way tickets between South Park Avenue, Lackawanna, and the Lackawanna steel plant for 25 cents. The original order contained the provision on the understanding that the sale of tickets was required by a franchise. Receiver Bullock applied to the commission for relief on the ground that the provision for the sale of the tickets was not contained in any franchise but was a condition in a contract made on June 23, 1903, between the Lackawanna Steel Company and the Hamburg Railway and was to continue in force for three years. Commissioner Barthe, who investigated Mr. Bullock's application, found that the receiver's claim was true.

Fare Rehearing Denied Chicago.—The State Public Utilities Commission of Illinois on May 20 denied the application of the Chicago Surface Lines for a rehearing in the rate case. The original refusal of a 7-cent fare was announced a few weeks ago. The commission took the position then that the war emergency no longer existed and that business was picking up to such an extent on the surface lines that a reasonable return was assured to security holders. To give justification for this finding the commission reduced the valuation of the companies for rate making purposes about 28 per cent. The companies then asked for a rehearing for the purpose of proving up a valuation to the extent of its outstanding capital. This was not done in the original application because the commissioners did not intimate that valuation would be considered in the emergency petition. It is hinted that the next move will be the filing of a new petition asking for the fixing of higher rates based on a complete valuation of the properties.

Personal Mention

New Seattle Manager

D. S. Barnes Transferred by Stone & Webster from Everett to Seattle—Other Organization Changes

Donald C. Barnes, Everett, Wash., manager of the traction and power properties of that city, has been appointed manager of the Seattle Division of the Puget Sound Traction, Light & Power Company, to succeed A. L. Kempster. He will remove from Everett to Seattle and will make his headquarters in the Electric Building at Seventh Avenue and Olive Street.

Mr. Barnes is well known in utility circles. He has been associated with the management of Stone & Webster



D. C. BARNES

companies since 1905. During recent years he has been manager at Everett of the Puget Sound International Railway & Power Company and the Pacific Northwest Traction Company in charge of city railway, light and power operations and of the Seattle-Everett interurban lines.

He was born in Cambridge, Mass., in 1880 and was graduated from Harvard University in 1902 with the degree of A.B., and of B.S. in electrical engineering in 1904. Since his graduation he has served with the Boston (Mass.) Elevated Railway, the Little Rock Railway & Electric Company, Little Rock, Ark.; the Birmingham Railway, Light & Power Company, Birmingham, Ala.; the Electric Light & Power Company of Abington and Rockland, Mass.; the Brockton (Mass.) Edison Company; the Pawtucket (R. I.) Electric Company, and the Everett companies named previously.

Mr. Barnes is an associate member of the American Institute of Electrical Engineers and is a non-resident member of the University Club and of the Rainier Club of Seattle, he is chairman

of the house committee of the Cascade Club of Everett, of the greens committee of the Everett Golf and Country Club and for the past two years has been chairman of the Civilian Relief Committee Everett Chapter of the Red Cross.

The executive offices of the company at Seattle announced other changes effective on May 12. Frank Dabney becomes assistant treasurer of the Renton Coal Company, the Diamond Ice Company and the Washington Auto Bus Company. John Harrisburger becomes general superintendent of power and Mr. Crawford superintendent of distribution.

The removal of Mr. Barnes from Everett makes changes in the offices there. George Newell has been appointed acting manager of that division and W. E. Delano has been appointed superintendent of railways.

Some members of the executive staff now in the Stuart Building, Seattle, will move over to the Electric Building on June 1 and take up the quarters vacated by the electric railway operating department when it goes into its new quarters at the County-City Building.

Mr. Belden in New Field

Head of New Hampshire Electric Railway Becomes Officer in Engineering Company

David A. Belden of Haverhill, Mass., will on June 1 become associated with the Harry M. Hope Engineering Company, Boston, Mass., in the capacity of vice-president.

For nearly fourteen years Mr. Belden has been president of New Hampshire Electric Railways and its subsidiary companies, operating railways and light and power plants in northeastern Massachusetts and southern New Hampshire, the principal offices of which are in Haverhill.

Mr. Belden was born in Aurora, Ill., about fifty years ago. He was educated at Racine College, Wis. From 1892 to 1901 he was general manager of various electric railways in northern Illinois, following which he became general manager of the Georgia Railway & Electric Company, Atlanta, Ga., where he remained until elected vice-president and general manager of the Birmingham Railway, Light & Power Company, Birmingham, Ala., which position he held until called to New England as president of the group of railway, light and power companies controlled by the New Hampshire Electric Railways.

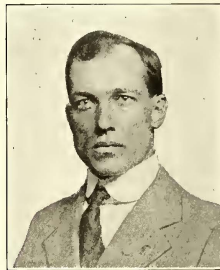
He was president of the Massachusetts Street Railway Association in 1916-1917 and is now the Massachusetts

vice-president of the New England Street Railway Club.

Mr. Belden is to continue as executive head and president of the companies with which he is now connected, but he will be less active in matters of operating detail, all of which work will be delegated to the local officials in Haverhill and Portsmouth. He expects to leave Haverhill in the fall and resume his residence in Boston, where he lived until September, 1917.

J. R. Wilson, formerly traffic manager of the Sacramento Northern Railroad, Chico, Cal., is now actively connected with the Latourette-Fical Company, mechanical contractor, Sacramento, serving as vice-president and assistant manager.

J. O. Penisten on March 1 became superintendent of power distribution of the Union Traction Company of Indiana, Anderson, Ind., assuming the position made vacant by the resignation of G. H. Kelsay, who has become associ-



J. O. PENISTEN

ated with the Cleveland, Southwestern & Columbus Railway. Mr. Penisten joined the Union Traction Company of Indiana in 1907, in the bonding department, and was later made foreman of this department. From this position he was promoted to substation operator, and in May, 1908, he joined the electric construction department in the work of repairing substation equipment and motors. Early in 1913 Mr. Penisten was made division electrician. He continued in that capacity until made superintendent of power distribution on March 1, last.

William S. Murray, for many years chief electrical engineer of the New York, New Haven & Hartford Railroad and recently president of the Hoosatic Power Company, which supplies power to part of the lines of the Connecticut Company, has opened an office as consulting engineer in New York. He will specialize on electrical generation and transmission, railroad electrification and conservation of natural resources. Mr. Murray's connection with the New York, New Haven & Hartford Railroad extended from April,

1905, to December, 1916, during which time the electrification of the railway with the single-phase system took place. For the first part of this time Mr. Murray was directly connected with the electrical engineering department and during the latter part of the time he acted as consulting engineer, as a member of the firm of McHenry & Murray, now dissolved.

J. C. Johnson, recently appointed general manager of the Iowa Southern Utilities Company with offices at Centerville, Ia., has been with David G. Fisher & Company, public utility engineers of Davenport, Ia., for the last two years. During the war with Germany, Mr. Johnson, as representative of the Fisher Company, had charge of the office of the Associated Manufacturers of Davenport at Washington, D. C. This office was the clearing house of Davenport manufacturers and the government on war contracts and was instrumental in having approximately \$25,000,000 war contracts



J. C. JOHNSON

placed with concerns at Davenport. Mr. Johnson was graduated from Lewis Institute in 1909 and soon afterward accepted a position with the Commonwealth Edison Company, Chicago. He was engineer at the Fisk Street station in that city in 1912. Subsequently he went with the Westinghouse company, remaining there until 1917, when he accepted a position with the Fisher Company. At present Mr. Johnson is secretary-treasurer of the Fisher Company. When the Fisher interests bought out the D. C. Bradley and Frank S. Payne holdings in the Iowa Southern Utilities Company recently, Mr. Johnson was selected for the position of general manager to succeed Mr. Payne. His appointment was confirmed at the reorganization meeting of the new board of directors on May 15. He was also elected treasurer of the Iowa Southern Utilities Company, which furnishes thirty-two Iowa towns with electric power.

Dr. William McClellan, who resigned recently as dean of the Wharton School of Finance and Commerce of the University of Pennsylvania, has been

elected vice-president of the Cleveland (Ohio) Electric Illuminating Company. Dr. McClellan is a graduate of the University of Pennsylvania, and his technical experience includes that of engineer in charge of construction of the Philadelphia Rapid Transit Company, supervising engineer with Westinghouse, Church, Kerr & Company, a member of the firm of Campion & McClellan, and chief of the division of light, heat and power of the Public Service Commission for the Second District of New York.

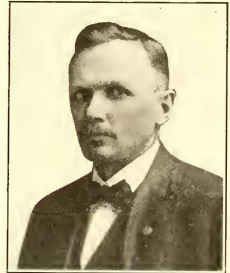
Raymond H. Smith has resigned as vice-president and general manager of the Eastern Wisconsin Electric Company, with headquarters at Sheboygan, Wis., and as president of the Wisconsin Electrical Association and the Wisconsin Gas Association, to become connected with the Electric Bond & Share Company, New York. Mr. Smith entered the utility field in 1897 at Waterbury, Conn. He has been very successful, particularly in dealing with labor and in building up good public relations. A portrait and a biography of Mr. Smith were published in the ELECTRIC RAILWAY JOURNAL of April 5 at the time of his election as president of the Wisconsin Electrical Association.

Frank B. Walker has been appointed superintendent of way and structures of the Bay Street Railway, Boston, Mass., succeeding W. S. Hubbard. Mr. Walker was graduated from the University of Minnesota in 1897 in the civil engineering course. After post-graduate at the Massachusetts Institute of Technology, he entered steam railroad service in the West. He was on the engineering staffs of the Minneapolis & St. Louis, Great Northern and Soo Line roads for various periods until 1914, when he went to Boston and entered the employ of the Bay State Street Railway. In the summer of 1918, Mr. Walker left the Bay State company and was employed by Fay, Spofford & Thorndike, consulting engineers, Boston, on the construction of the Boston Army Base. He recently returned to the Bay State engineering department to take up the duties relinquished by Mr. Hubbard, whose retirement from the electric railway field is noted in these columns.

Cyrus S. Ching has withdrawn from the electric railway industry and been placed in charge of industrial relations of the United States Rubber Company, with headquarters in New York. Mr. Ching is a native of Prince Edward Island. He came to the United States in 1899 and was employed as a surface car motorman on the Boston Elevated Railway, transferring to the rapid transit lines upon their opening in 1901. He soon became an inspector and after a term of service in the rolling stock department he organized a school of instruction for trainmen. Mr. Ching studied law in his spare time and was admitted to the Massachusetts bar in 1912. His work in the transportation department of the company brought him into close relations with M. C.

Brush, at that time vice-president of the Boston system and later president. He became one of Mr. Brush's most valuable staff members and was assigned many important tasks in relation to the company's labor problems, and he became particularly useful in conferences between the management and the union organization. At the time of resigning to enter the industrial field he was in general charge of instruction work for trainmen.

Frederick L. Ray has been appointed superintendent of power plants of the Union Traction Company of Indiana, Anderson, Ind. Mr. Ray has spent the past thirty years in power station work, being last connected with the Merchants Heat & Light Company, Indianapolis, where he had charge of the power plants. For nine years previous to that he was superintendent of steam equipment of the Louisville (Ky.) Railway, during which time a new and modern power station was built. Other companies with which



F. L. RAY

Mr. Ray has been associated are the Stanley Rule & Level Company, New Britain, Conn.; the Brooklyn, (N. Y.) Rapid Transit Company; Westinghouse, Church, Kerr & Company, New York City, and the Terre Haute (Ind.) Electric Railway. Mr. Ray has served as national president of the National Association of Stationary Engineers, an organization with members in every state in the Union.

Major W. W. Nielsen, Hartford, Conn., one of the commanders of the 349th Field Artillery, has been appointed assistant to E. C. Deal, general manager of the Springfield (Mo.) Traction Company and the Springfield Gas & Electric Company. Major Nielsen will assume the duties discharged by N. J. Cunningham, who resigned recently. The major is a graduate of Colgate University, Hamilton, Ohio. W. N. Colgate, whose ancestors founded Colgate University, is one of the directors of the Federal Light & Traction Company, which controls the companies at Springfield. Major Nielsen has been associated with the Federal company in the East.

Manufactures and the Markets

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

ROLLING STOCK PURCHASES

BUSINESS ANNOUNCEMENTS

Car Wheel Market Shows Little Activity

Present Deliveries Are Good—Prices Remain Firm, but Tendency Is for Upward Revision

Regardless of the kind of wheel in use, whether it be the steel, steel tired or chilled iron, the market for car wheels for electric railways is rather quiet at the present time. Some producers are running up to capacity in order to fill back orders, but these are for the most part for steam railroad use. However, some traction lines are finding the wherewithal for purchases and orders are coming through.

There has been practically no price change lately. Due to the amount of labor involved and the very unstable condition of the labor market, there is a tendency toward an upward trend of prices rather than a downward trend. There is no assertion, however, that that condition will be brought about in the very near future.

Deliveries of steel products can be made in about thirty days whereas when the market comes back to normal the time will be nearer sixty to ninety days. The iron wheels can be turned out in a little better time.

In the meantime many railways, manufacturers say, are practicing very economy in regard to wheels, because they cannot afford to purchase new ones. Flats, if not of too large size, are allowed to remain in the tread, and the wheels are being ground or turned down to the limit before being scrapped. Where steel tires have worn down under heavy interurban service the wheels have been changed to cars doing lighter city service until the tires have been used to their limit.

Manufacturers are of the opinion that the present state of the market cannot last very long, and are hoping for some relief through Congressional action and the President's suggestion of federal investigation into electric railway conditions.

Electric Railways Plan Extensions in Argentina

The Buenos Aires Western has electrified a portion of its suburban system. In its recently completed freight tunnel, the original plan was to use only electric locomotives, and an order had been placed with a German firm to supply these, but this order was canceled and at present steam locomotives are being used. The company has also built a tunnel which affords direct connection between its own passenger terminal and a station

of the Anglo subway and has plans for the construction of several branches and feeders.

The Great Southern, which serves suburban Buenos Aires, has not electrified any portion of its line yet, but had made plans to do so prior to the war. It has a large passenger terminal in Buenos Aires, and the largest freight station in South America. An extension is projected from Zepala, where connection will be afforded with a line to be built by the Chilean State railways, thus forming a transcontinental line with easy grades.

Few Orders Being Placed for Special Track Work

Repair and Transfer from One Part of Line to Another Keeps Track in Condition

The market for track specialties is probably no better than that for almost any kind of electric railway material. To be sure there are some bright spots where traction companies have had to purchase new crossings, frogs, switches, etc., to replace parts in such condition as to render their use entirely out of the question. But this is a last resort in the market of to-day.

RAILWAYS SHORT OF STOCKS

From available information the common practice seems to be to transfer from one part of the line to another the worn track parts. A part gone bad on a heavy duty section of track is pulled out and inserted in a section where traffic is light, and the piece in this section may be in such shape that it can be used for heavy duty work. Only in the last analysis is it scrapped and a new one ordered. The stocks kept by the railways are practically used up, and in the case of a bad break it is quite probable that some railways would have to wait for regular deliveries on their special part.

There is considerable repair work being done on the tracks. Building up of worn and broken parts is tiding over many faults until such time as the railways can see their way out of the financial difficulties besetting the paths of almost every one of them. It does not seem to be a question of the cost of the material but of the source from which to secure the investment. It is only too common to find traction companies with layouts already completed for many special pieces of track work. One case recently brought to notice is for 150 layouts planned by one line, to be turned into orders as soon as money for the work can be found.

Transformer Raw Materials Costs Double Those of 1914

Review of Increases with Respect to Selling Price Indicates There Will Be No Further Price Recessions

The approximate percentages of increase in the prices of materials entering into the manufacture of transformers in 1919 over the prices of the same materials for 1914 are set forth in the following table:

Material	Approximate Percentage of Increase
Sheet iron laminations.....	100
Copper wire.....	150
Copper sheets.....	100
Cases and covers.....	125
Cotton tape.....	300
Insulating compounds.....	60
Hardware (iron).....	160
Hardware (copper).....	120
Hardware (brass).....	200
Hardware (porcelain).....	60
Lumber for crating.....	80

It is apparent from this table that the cost of the principal raw materials involved in the manufacture of transformers will average over 100 per cent above the cost of the same materials in 1914. The effective increase in the price of transformers which has taken place during that time amounts to something like 40 per cent. It appears, therefore, that the ability to market transformers at an increase of only 40 per cent as against 100 per cent increase in the cost of material must have been due to some striking increase in efficiency. In most cases it was due to the application of principles of greater efficiency in the factory and to the application of methods involving a lower percentage of overhead in handling the business.

However, it is reasonable to expect that some of the materials listed in the table will go down to some extent in the future, but in the majority of cases the labor is not being reduced in price; moreover, the load factor on transformer orders has fallen off considerably. In view of all these circumstances and after having discussed the matter with some manufacturers of transformers, it does not appear probable that there can be a much further reduction of prices during 1919.

Production of Rails for Electric Roads Shows Decline

In the last six years the production of steel girder and high T-rails for electric and street railways has constantly declined from year to year as shown in the attached table:

1918.....	20,834	Tons
1917.....	21,674	Tons
1916.....	127,410	Tons
1915.....	133,965	Tons
1914.....	136,889	Tons
1913.....	195,659	Tons

Window Curtain Market Shows Improvement

Weavers Are Running on Short Time—The Prevailing Tendency of Prices Is Upward

Although there is a fair market for window curtains it is still far below the demand normally found at this season of the year. The number of new cars in process of construction or about to be ordered is well below the average, but there is still a demand from this quarter. In fact, there is a better demand for curtains for new cars than for repairs and replacements to existing rolling stock. Probably many more curtains which present a worn appearance will keep out sun and rain for one more season than would normally be permitted to remain in service.

The fabric manufacturers and weavers have plenty of raw materials but the demand for the finished product is light. Those plants which have not altogether shut down are running two or three days a week. However, deliveries can be taken care of in a satisfactory manner.

Since the first of the year there has been a price reduction of 7 or 8 per cent. With the present course of cotton it has been predicted that the future price tendencies will be upward rather than downward. Withal, there has been reported a curtain market which is on the increase.

Cedar Pole Market Satisfactory in Mid-West and South

In the Middle West and South the market for cedar poles is holding up well. In the Chicago district one of the larger holding companies has just purchased sufficient poles for a 95-mile line. The Indiana Traction Company has recently bought fourteen carloads, and other concerns are buying in similar quantities. Some pole producers state that they have already done more business this year than they did during the entire year of 1918, excluding the government business.

A satisfactory volume of trade is reported from the South. Drop shipments direct from Western stocks to consumers are prompt and prices are steady.

Rolling Stock

Selma (Ala.) Electric Railway, formerly the Selma Traction Company, expects to repaint and repair its old cars and secure some new rolling stock.

Gary & Interurban Railway, Gary, Ind., has received ten modern full-sized cars which have been placed on the Broadway runs. The cars represent a cost of \$110,000.

Boston (Mass.) Elevated Railway, according to the trustees' report, contemplates the purchase of \$10,500,000 worth of cars within the next five years, provided the Cambridge subway bill goes through. This bill would pro-

vide for the purchase of the subway by the State. The purchase of 600 surface cars would permit the retirement of 625 of the oldest type of box cars, it is said, in 1919, and the remainder in the next year. Besides, it is planned to purchase thirty snow sweepers and a number of auto trucks.

Track and Roadway

Municipal Railway of San Francisco, San Francisco, Cal.—The Board of Supervisors recently authorized the Board of Public Works to receive bids and enter into a contract for relocating the Union Street line of the Municipal Railway of San Francisco from Franklin and Union Streets to Van Ness Avenue and installing trolley poles and wires on Union Street from Franklin Street to Van Ness Avenue at an estimated cost of \$22,000.

Charles City Western Railway, Charles City, Iowa.—A stock company, capitalized at \$300,000, has been formed to construct an extension of the Charles City Western Railway from Colwell to New Haven, a distance of 10 miles. Articles of incorporation are now being drawn up. Surveys and estimates of the cost of different routes will be made at once. E. R. Ernsberger, general manager.

East St. Louis (Ill.) Railway.—The construction of a line to operate between the east approach of the free bridge and the plant of the Monsanto Chemical Company, 2 miles south of East St. Louis, is being planned by the East St. Louis Railway.

Southern Illinois & St. Louis Railway, Harrisburg, Ill.—It is reported that work will soon be resumed on the proposed line of the Southern Illinois & St. Louis Railway to connect Harrisburg, Pittsburg, Marion, Johnston City, West Frankfort, Benton and Herrin, which was interrupted at the outbreak of the war. W. H. Schott, Chicago, president. [Jan. 27, '17.]

Boston (Mass.) Elevated Railway.—A budget system has been established by the Boston Elevated Railway, under which the company plans to expend \$21,500,000 for improvements during the next five years. Among the improvements listed are the reconstruction of 23 miles of trackage every year, in addition to the ordinary repair work; the building of a modern car shop; the installation of new turbine, rotary and stokers at the Lincoln power station; completion of the Somerville substation; installation of two rotaries in the Charlestown station; the provision of necessary conduit and cable construction; additions to the signal system; strengthening of bridges, etc.

New York Municipal Railway, Brooklyn, N. Y.—An order authorizing the New York Municipal Railway Corporation to let a contract under bids recently received from the American Bridge Company and the McClintic-Marshall Company for the structural steel with

which to build a connection between the Culver Line and the Coney Island terminal has been made by Public Service Commissioner Lewis Nixon of the First District of New York. The city's elevated line is completed and in operation to Avenue X, and beyond that point to Sheepshead Bay Road is under construction. It is expected that the portion just referred to will be completed about the end of 1919. The approval of the Commissioner to the letting of the contract for the 600-ft. section from Sheepshead Bay Road to Coney Island terminal is given with the proviso that the work shall be completed about Dec. 31, 1919, or practically simultaneously with the completion of the city work, so that the whole remaining uncompleted section from Avenue X to Coney Island can be placed in operation at one time.

New York State Railways, Syracuse, N. Y.—A report from the New York State Railways states that the company has completed the construction of 700 ft. of single track 7-in. T-rail on East Fayette Street and has under construction 3800 ft. of single track 7-in. T-rail on West Genesee Street.

Trenton & Mercer County Traction Corporation, Trenton, N. J.—Work will be begun at once by the Trenton & Mercer County Traction Corporation on the construction of the Market Street extension from Bridge Street to the new Municipal Dock. Rankin Johnson, president of the company, recently asked the Public Utility Commission to rescind its order of last November providing for an expenditure of \$3,300 for improvements to the property of the corporation and issue an order permitting the company to expend \$55,000 for work contemplated to the trackage, etc., on its various lines. The matter was taken under consideration by the commission.

Brantford (Ont.) Municipal Railway.—Work will be begun at once by the city on the construction of an extension of the Brantford Municipal Railway to connect Terrace Hill and the northeastern industrial section of the city.

Niagara, St. Catharines & Toronto Railway, St. Catharines, Ont.—It is reported that the Niagara, St. Catharines & Toronto Railway plans the reconstruction of several miles of track within the city of St. Catharines, the erection of new overhead work on the line between St. Catharines and Thorold, the enlarging and transforming of the park at Port Dalhousie into a pleasure ground and the provision of a bathing house there.

Allentown & Reading Traction Company, Allentown, Pa.—An extension is being built by the Allentown & Reading Traction Company on Walnut Street.

North Branch Transit Company, Bloomsburg, Pa.—This company reports that it will reconstruct about 2 miles of track, using Dayton steel ties and a 75-lb. girder rail.

Scranton (Pa.) Railway.—The city of Scranton and the Scranton Railway plan

to improve and repair the Lackawanna Avenue bridge at a cost of about \$20,000.

Canadian Pacific Railroad, Montreal, Que.—It is understood that the Canadian Pacific Railroad will soon ask for bids for equipping the branch line from Three Rivers to Shawinigan Falls and Grand Mère for electrical operation. J. M. Fairburn, chief engineer.

Montreal (Que.) Tramways.—Work has been begun by the Montreal Tramways on the reconstruction of its track on the west side of St. Denis Street and the east side of St. Lawrence Street

Power Houses, Shops and Buildings

Chicago, North Shore & Milwaukee Railroad, Highwood, Ill.—Work will soon be begun by the Chicago, North Shore & Milwaukee Railroad on the construction of a station at Sixth Street between Sycamore and Clybourn Streets, Milwaukee, Wis.

Interstate Public Service Company, Indianapolis, Ind.—Plans have been completed by the Interstate Public Service Company for the construction of an interurban freight station at Brook, First, Walnut and Liberty Streets, to be completed by Aug. 1.

St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo.—The St. Joseph Railway, Light, Heat & Power Company has purchased a tract of land running the entire length north and south of its power house and extending from the power house west to the Missouri River. The additional tract will provide for any extension of the plant in the future. The purchase also assures the completion of the company's extensive alterations in its power plant before Sept. 15.

Northwestern Ohio Railway & Power Company, Toledo, Ohio.—A report from the Northwestern Ohio Railway & Power Company states that it will place contracts at once for the construction of a carhouse and repair shops at Oak Harbor, Ohio.

Philadelphia, Pa.—Sealed proposals will be received by William S. Twining, director Department of City Transit, for the following work appurtenant to the Frankford Elevated Railway: Contract No. 564—Erection of brick, steel and reinforced concrete station buildings at the northeast and southwest corners of Kensington and Allegheny Avenues, including the removal of existing buildings on these sites. Contract No. 565—Erection of brick, steel and reinforced concrete station buildings at the southwest and southeast corners of Kensington Avenue and Somerset Street, including the removal of existing buildings from these sites. The plans are modifications of those issued for bids opened April 29 and rejected. Copies of plans and specifications may be obtained upon deposit of \$10, to be refunded upon return of plans.

Trade Notes

Westinghouse Changes

The following changes in the executive sales personnel of the Westinghouse Electric & Manufacturing Company are announced:

E. A. Thornwell, manager of the railway and power division, Atlanta office, returned from government service, has resumed his former duties.

C. E. Smith, of the engineering department, who spent several years in the Pittsburgh office and later was connected with the Robbins & Myers Company of Pittsburgh, has resumed work with the export department of the Westinghouse company.

A. D. Stephanus, after eight years in the export department, East Pittsburgh, Pa., has been transferred to the Westinghouse Norsk Elektrisk Aktieselskap, Christiania, Norway.

Portable Electric Tool Association held its annual meeting in Cincinnati on April 24-25. In the discussions that ensued it was brought out that American manufacturers of portable electric tools would have to cooperate more closely to obtain a fair share of foreign business. Many requests for agency representations were reported, as were visits of European machinery importers with a view to making selling arrangements. That the outlook is good was the consensus of opinion.

Frank B. Cook Company, Chicago, has obtained a license from A. F. Daum to manufacture refillable fuses under Daum patents. Negotiations are under way with other firms for a similar license.

Standard Electric Tool Company of Cincinnati, Ohio, is reported to have completed the removal of its machinery to the new plant at York Street and Western Avenue.

Joseph Myerson, dealer in steam, electrical and power transmission machinery, announces that he has moved to large and more centrally located quarters at 411-413 Atlantic Avenue and 74 Purchase Street, Boston.

H. B. Bush, of the Bush Electric Tool & Manufacturing Works, Redlands, Cal., writes that he is shipping his entire equipment to Cleveland, Ohio, where he is forming a new company to be known as the Bush Electric Manufacturing Company. A rapidly growing volume of sales made it necessary to have large factory space in the East. The company's temporary address is 6616 Morgan Avenue, Cleveland, Ohio.

M. H. Jones, who has been connected with the Westinghouse Electric & Manufacturing Company for the past fifteen years as assistant to manager of Philadelphia district, has resigned to become sales manager of the Standard Electric & Elevator Company of Baltimore.

Black & Decker Manufacturing Company, Baltimore, Md., has just estab-

lished a New York office in Room 2920, Equitable Building, which will be in charge of G. R. Lundane, who will supervise the distribution of Black & Decker products in New York City and surrounding territory, including the State of Connecticut.

R. Sanford Riley, president of the Sanford Riley Stoker Company, Worcester, Mass., and the Murphy Iron Works, has returned to his private interests after having completed the organization of a performance section of the Emergency Fleet Corporation. The performance section has charge of all trial trips and follows up the defects developed in service.

Chicago Pneumatic Tool Company announces the election of Allan E. Goodhue as managing director of its English subsidiary, the Consolidated Pneumatic Tool Company, Ltd., with offices at 170 Piccadilly, London. Mr. Goodhue will also be in charge of European sales for the Chicago Pneumatic Tool Company. Mr. Goodhue is to sail for England May 13.

A firm in Spain (No. 29,179) desires to purchase high-pressure turbines and electrical machinery of all sorts for developing a waterfall power in that country. Quotations should be given f.o.b. New York. Payment, cash against documents. Correspondence may be in English. Further information on request to Bureau of Foreign and Domestic Commerce, Washington, D. C., mentioning number.

Lewis Jalovec has been appointed assistant to the United States Foreign Trade Commissioner to Czecho-Slovakia. He will be stationed at Prague, Bohemia. Information in regard to markets and information of any kind concerning the country where he will be stationed will be gladly furnished upon application. It is interesting that Mr. Jalovec is an engineer—one of the first to be appointed to such a governmental position.

Van Dorn Electric Tool Company, Cleveland, Ohio, announces that the new Chicago office is at 527 South Dearborn Street. William Cottrell, sales manager at the Chicago branch, says that the phenomenal increase in business enjoyed by the company is the result of the insistent demand to-day for mechanical devices of proved efficiency and economy. He emphasized the imperative need of the increased accommodations.

New Advertising Literature

Central Scientific Company, 460 East Ohio Street, Chicago: Bulletin No. 8 explaining the Van Sicken-Elgin chromometric precision tachometer.

Metal & Thermit Corporation, New York: Folder entitled "How Thermit Healed My Broken Jaw." It describes the way in which a 133-ton upper jaw of an alligator shear in the works of Joseph Joseph & Brothers Company at Modena, Pa., was mended.