

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

Volume 54

New York, Saturday, July 19, 1919

Number 3

Cutting Service Is a Dangerous Economy

DESPERATE diseases often need desperate remedies, but the medicine ought not be powerful enough to kill the patient. A few drops of "Cut Service Mixture" if well shaken before taken may enable the patient, Mr. Car Earnings, to hobble along; but a drop too much and he will never travel again. Whenever we read that this or that railway is going to run cars every twenty minutes instead of every ten and inaugurate a little curfew of its own by stopping owl service, we pray sincerely that it will not kill the riding habit. Any measure of that nature is a sad sort of economy. We may not be able to make every car-hour pay with a 5-cent or even a 7-cent fare, but with too deep a cut in service we can bring even the present profitable hours to the wrong side of the ledger. Another factor in cutting down service, particularly night service, is the loss of good-will at a period when good-will is needed more than ever. The traffic which the steam railroads are driving off to-day will have to come back—it has no remedy—but a lot of the traffic which an electric railway drives off can stay at home or walk.

Off Again, On Again, In Denver

PITY the poor traction manager! Developments in Denver in the past year remind a person of one of those up-and-down rides at Coney Island or the adventures of our old friend "off again, on again, Finnegan."

The news columns of the JOURNAL have recorded the vicissitudes of the Denver Tramway Company—the struggle under a 5-cent fare; the move upward to 6 cents and then to 7 cents; the quick slump downward to 6 cents, and then back to its former place in the 5-cent class. When the people of that city approved a 6-cent rate last September, Denver stood forth as an exceptional community because there were few instances where the car riders voluntarily assumed a share in the growing burdens of the transportation company. But the idea that it is a popular move on the part of politicians to bait the corporation will not down; and they were not long in forcing lower fares. The action of the Mayor in giving free rein to jitneys was a sample of what the company management has to contend with. It did not seem to matter that business houses reported a loss of 50 per cent in trade. It is perhaps just as well, however, that the public should have had an opportunity of experiencing what it is to live in a "trolleyless" town.

Later reports indicate that the people of Denver have learned that a railway is really a necessity. They found they could not get along without the cars and that the jitney in many ways was a "fair-weather

friend." It is now announced that a 6-cent fare will be restored as quickly as possible, and that a cost-of-service plan will probably be adopted. Meanwhile the trainmen have had the War Labor Board scale of wages restored, with prospects of a further increase later on. We sympathise with the Denver Tramway management and trust that the experimental stage with lower fares is past for ever. Perhaps the people and the politicians have learned something in the past few months.

The Federal Hearings Are At Last Under Way

THE hearings on the electric railway situation begun in Washington on Tuesday, we hope, mark the turning point in a most anomalous situation. Properties organized to provide an essential service for the public are being prevented from furnishing that service and are being driven into bankruptcy because the war has changed the status of values. Profiteering, or the use of the peculiar conditions brought on by the world's conflict to extort unusual and unfair gains from others, a practice rightly condemned both morally and legally, is being brazenly followed in many cities to compel the electric railway companies to furnish transportation at a loss. The unity in aims which should exist between the electric railway companies and the communities which they serve, as regards the provision of the proper transportation facilities on tracks already in existence and the construction of new lines into sections needing such facilities, has disappeared.

The fact that the President has appointed the present commission shows that he recognizes the seriousness of the situation. Just what the commission can do and will recommend remains yet, of course, to be determined. But the electric railways at last have an opportunity to put before a national commission evidence of an impending disaster which is nation-wide and to impress on a governmental body the necessity of doing what is possible to avoid the threatened débâcle.

The hearings during the early part of this week show that the American Electric Railway Association has a well-prepared case, in spite of the short time available since the announcement of the appointment of the commission to collect and collate the facts. It will work under this disadvantage as regards statistics of past years that many of the factors which increase railway operating expenses are of comparatively recent date, while the latest government figures for the electric railways of the country are for the year ended June 30, 1917. It will be necessary, therefore, as the association expects to do, to prove by witnesses not only what has happened, but what the present condition of the electric railways is and what the immediate future has in store unless remedial action is taken.

The evidence being presented at Washington is of great educational value not only to those for whose use it has been primarily compiled but also for the railway men in attendance. There was a good representation of operators at the early sessions this week, but there should have been more. We realize that with conditions as they are at present it is hard for a manager to get away from his property for any great length of time. But there has never been an electric railway rate case in which the testimony has been so extended and of such a high order, and a trip to Washington for a day or more by any railway man, operator or investor who can get away will be well worth while, not only for the individual benefit to be derived but to indicate to the commission the vital interest which the industry is feeling in the hearings and their outcome.

New Capital Cannot Be Coerced, Whatever Is Done to Old

IS CAPITAL entitled to a higher emolument when the present return is no longer sufficient to attract investors? This is the interesting question arising from the recent labor difficulties of the Cleveland Railway Company, wherein the employees were granted their wage demands and the request for increase in the stock dividend rate from 6 to 7 per cent was left subject to arbitration. President Stanley has set a great many persons to thinking over his proposal. Officials of the Chamber of Commerce in Cleveland have expressed the opinion that his demands on behalf of the stockholders are entitled to consideration.

When the late Judge Tayler wrote the Cleveland ordinance in 1908 he foresaw that prices would not be constant and wisely arranged that the rate of fare should fluctuate with the cost of service. One defect in the franchise provisions—which did not become embarrassing until some years later—was the fixing of a maximum in the schedule of fares. This was temporarily cured in a recent amendment to the ordinance by raising the maximum rate of fare. Recent events, however, have proved the contentions of the management that the franchise will never be satisfactory while a maximum rate is fixed in the schedule. In this particular the Boston trustee plan and the Cincinnati franchise have an evident advantage.

But the framers of the Cleveland ordinance—an admirable document in many ways—would have done well to incorporate in its provisions, as well, a sliding scale for the return on new securities. Cost of capital fluctuates as it does for labor and materials, and while it is important to assure an adequate return on securities already outstanding, it is no less essential that the franchise guarantee the market price on future issues of bonds and stock so that when new capital is needed for transportation improvements it will find the utility company as good a customer as any competitor. The people who insist on improved transportation facilities should appreciate this as readily as the company officials. When a million dollars is required and the company's new issue of stock will not sell at par the amount that can be raised is lessened to just the extent that a premium has to be paid.

The Cleveland car strike was as much a strike of capital as it was of labor. Money will not work on unattractive terms any more than the platform men will do so, and when the latter can gain their point by showing that other industries offer a better wage,

the investor should get an attentive ear from the public by his threat of going elsewhere to find kindlier treatment.

It might be contended that there is little element of risk in the investment in Cleveland Railway Company stock because the good faith of the municipality is involved in the keeping of its written agreement. It is perhaps true that securities are safest when protected by service-at-cost provisions in a grant, but the fact remains that the Cleveland Railway stock has been selling below par while many other securities, apparently no more sound, attract a higher price.

Interest from bonds and dividends from stock help many a family to meet the cost of living, and if their holdings have depreciated to such an extent that the future is jeopardized it would seem only the part of equity to give a fair hearing to their petition for relief. Capital once invested may have no choice but to remain where it is. But no railway in a growing city can stand still. It must make extensions and improvements, and these means additions to its capital account. And this new capital will not be forthcoming unless the conditions are right. It can be as coy as labor. A community such as Cleveland will not suffer by establishing such a precedent as that proposed and by acquiring a reputation of being liberal to capital and labor alike. The outcome of arbitration proceedings in this unique "strike of capital" will be awaited with interest.

Conserving the Technical Lessons Taught by the War

ON JUNE 25 bills were introduced in Congress with the intent to consolidate the governmental departments having to do with technical matters. The situation was covered in a news item on page 38 of the issue of this paper for July 5. Whether these bills become law or not, the fact that they were introduced suggests the need for capitalizing the successful efforts put forth during the war to increase the productive efficiency of the country's industrial plants and utilities.

The war has taught many vital lessons. Among other things we are learning that science and the scientific spirit in the broad sense are fundamental if we are to make ends meet in the future, that investigation and analysis are the foundation of national prosperity. Our wonderful country is so bountiful in supplying raw materials, and we have such a capacity for getting results somehow in spite of obstacles, that we have not always appreciated the necessity for conservation and effective utilization of our resources.

There are, of course, many instrumentalities at work along scientific lines, some doing research work themselves, some utilizing and applying the work of others. Great industrial establishments have their development departments; the government has its Bureau of Standards and many other scientific bureaus; there is the National Research Council; college and university laboratories are almost numberless, etc. It would seem, however, as if there is need for co-ordination of all of this machinery. In fact, one important lesson of the war will have been lost if such co-ordination is not brought about promptly. Could not the national technical societies, including the American Electric Railway Association and its satellites, get this movement started? The most immediately practical plan for doing so would be to memorialize Congress as

to the importance of creating some agency, or utilizing some existing one, to study the problem and prepare a plan for its solution. If a governmental engineering department is erected, such agitation would help it. If not, the agitation might lead to constructive legislation of some other kind.

There Is an Equilateral Triangle of Obligation

THE fundamental object in electric railway operation is now recognized as service, something which can be secured only by co-operative action among the three factors in electric railway operation, namely, the public, the company and the men. In the old days the interests of each of these three were considered opposed to those of the others. It was thought that the public would gain most when it got as much out of the company in the way of taxes and other imposts as it could and at the same time paid a minimum fare, while the object of the company was to give as little service as it might for the revenue received. In the same way, it was believed to be in the company's interest to pay its men the lowest possible wage, while the men, it was thought, could most profit by forcing the company either by strike or otherwise continually to advance their wages.

Actually, the real interests of all are identical. Thus the city will most benefit if it permits the company to earn a reasonable return on the investment made and the company will gain most if it gives as good a service as it is able to do for the fare paid. In like manner, the employees should receive a wage equal to that which they could earn in any outside industry calling for the exercise of an equal amount of skill, while the company can best profit if it pays such a wage. Finally, to complete the triangle of mutual dependence and co-operation, the employees can best serve their own interests if they co-operate with the company in giving the public as good a service as is warranted by the fare charged. If these mutual obligations were generally accepted, strikes and the payment of inadequate wages and fares would disappear.

Strikes are an economic waste, and while they or the payment of inadequate wages may seem at times to be of advantage respectively to the men or the company, yet if the ability of the railway to give good service is thereby impaired the results to both are unfortunate. In the same way, an inadequate fare will retard the proper development of the utility and too high a fare will injure the growth of the community which it serves, so that in either way the interests of both company and community suffer.

Co-operation and a unity of purpose among the three elements of society, the wage earner, the investor and the public, should take the place of that antagonism which is now being recognized as detrimental to the best interests of all. Some advance has already been made in establishing this principle of co-operation between the companies and the men, and the public should be brought in closer touch with the practical workings of our public utility properties, the first duty of which is to give service to the public. It is only through co-operation, under a cost-of-service plan, among the wage earner, the investor and the general public, that the transportation problem can be successfully solved.

Cars Should Be Still Lighter Not Heavier

NOW that the war is over and the metal market has become more normal, the builder of street railway cars will be able to get the higher-grade steels and other light-weight materials like aluminum alloys, that have been almost unobtainable. It is a matter for congratulation that this is the case because of recent tendencies to ask for heavier rather than lighter safety cars.

It is a fact that in a number of places, the safety car has been obliged to carry loads much greater than contemplated, and, in some instances weakness of structural members has also been a factor. The easiest way, seemingly, is to make these parts heavier. But this is not the easiest way in reality because the safety car is practically a unit for which certain motors, compressors, etc., have been especially designed on the basis that the weight would not exceed 15,000 to 16,000 lb. If we exceed this weight, we disturb the entire balance. Greater weight will in turn demand heavier and more costly equipment throughout, while the power will jump back, considering the present increase in fuel cost, to where it was with the old time car that broke the backs of so many street railways.

Actually the easiest way of meeting this situation is to put into the construction of a street car better metal than ever before. This has become practicable now not only because of the better condition of the metal market, and the release of tools for making special shapes, but also by the standardization of the safety car itself. No car builder could be asked to keep special alloys on hand if only a fraction of the non-standard cars ordered would make use of such steels. With the quantity production of cars, the builder will feel at greater liberty to make use of the same high-grade metals and special light-weight materials as the automobile builder. We agree, for example, with the suggestion of J. M. Bosenbury of the Illinois Traction System, that serious attention be given to vanadium steel. This steel is far superior to ordinary steel in withstanding shocks and stresses incident to city railway operation. Put into a truck, it would give say 25 per cent increase in strength with no increase over the weight of the first safety car trucks. For sheathing, ingot iron (or coppered steel) is also an excellent material because of its greater resistance to corrosion. Furthermore, if this sheathing is covered with the cork-like balsa wood, and the latter in turn lined with a little veneer, the safety car will approach more closely the ideal of the noiseless car for all climates in addition to being much easier to heat when used in cold climates.

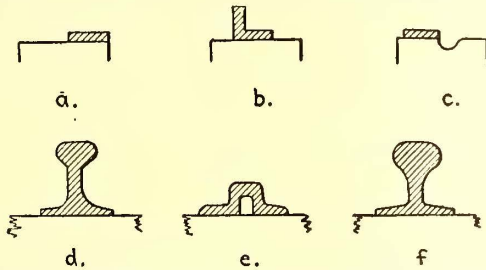
But no matter how anxious the railway car builder may be to take advantage of these special materials, he can do little without the co-operation of the customers who must be willing to buy the best possible combination available even if they are tempted to ask for something just a bit different or cheaper here or there.

The car builder may also have to charge more money for special steels than for ordinary commercial steel, but the operator will be justified in paying this higher price because of the many savings that he will be able to retain in other directions. In the long run, both the manufacturers and the operators will benefit because the very life of both depends upon the continued ability to conduct electric railway transportation cheaper and better than any other means of carrying people in public vehicles.

steam road rails used in this country were imported from England. Some of the very early types are shown in the drawing reproduced on page 108.

The street railway is distinctly an American idea and the first use of rails and flanged wheels in streets is credited to this country.

The New York & Haarlem Railroad, built in 1832, was the first street railway ever built. It was not a financial success at first and the opposition to the early street railways was quite similar to the opposition that



SOME EARLY TYPES OF RAILS (From Willard's "Maintenance of Way and Structure")

a, b, c, earliest types. d, first T-rail. e, U-shaped rail of 1834. f, pear-shaped rail.

appeared, many years later, against the construction of electric street railways. In both cases, this great factor in community life and development had to fight great odds for its birthright. How singular it is that to-day it is still fighting for even a bare existence, and against even greater odds!

Strap or stringer rails were used by the steam roads and by the early horse tramways in this country up to about 1840, when the T-rail began to be used as a substitute by steam roads because the increasing engine weights caused the rails to turn up at the ends. This by the way, was the beginning of our troubles with joints. The first rail approximating a T-rail was invented in America, in 1830, by Robert L. Stevens.

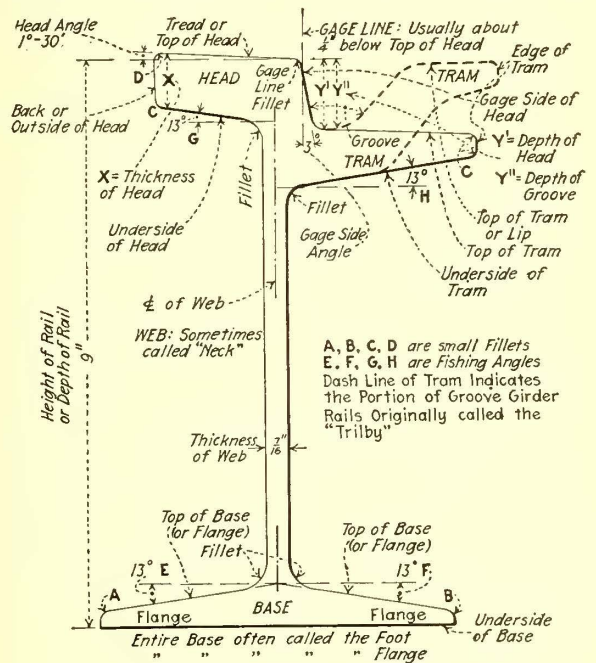
The period between 1840 and 1850 marks the parting of the ways between the steam railroad and the street railway or tramway. The latter continued to use strap rails or flat tram stringer rails from the first real development period of 1852-1855 until the advent of the electrical development period, about 1890. Meanwhile, steam roads had progressed far in the use and development of the T-rail under the far-reaching influence of the American Society of Civil Engineers.

The electrification of street railways, by the use of heavier equipment, virtually forced the tramways to develop and use other rails, just as the steam roads had to do many years before. However, street traffic and pavements tended to cause the development of the tram-rail idea from the flat tram or stringer-rail to the 4½-in., 6-in. and later to 7-in. and 9-in. tram and groove girder rails. The 9-in. tram girder, or Philadelphia rail, was designed by William Wharton, Jr. in 1890 although the general features were proposed by Jos. Quinn, of the Wharton Company about two years earlier. The tram part of the rail was distinctly a concession to, and continuation of, the use of rails by wagons in streets even though the cars had come to use flanged wheels entirely. A few railways went to the steam roads for their designs and developed the deep 6-in., 7-in. and even 8-in. and 9-in. "high-T" rails or plain girder rails, as they are more properly designated. The depth was, like that of the tram girders, largely to provide paving accommodations.

There were several peculiar rail ~~types~~ ~~at~~ ~~that~~ ~~time~~ which may now seem absurd but they had considerable vogue. One of them, the "Lewis and Fowler" box girder may still be found in sidings and in little-used or abandoned track in a few of our large cities. Some of these early sections are shown in an accompanying figure. It is of interest to note that the modern cross-sections of manganese rails used in crossings in special work have several features (particularly the double-web) in common with the Lewis and Fowler section, and the use of a rather similar double-web for modern heavy T-rails has been suggested by Gustave Lindenthal in his paper read before the New York Railroad Club on May 21, 1915.

As noted in a preceding paragraph, rails were first designed to carry wagon wheels having flat tires. Some of the rails had an upturned flange which acted as a guard in keeping the flat tires upon the track and presented the appearance of equal-legged angle-iron bars. A sample of this kind of construction was until recently found in the colliery at Coalbrookdale, England. It was built in 1767 and was, when dismantled, probably the oldest tramway in existence. It was taken up only a year or two ago.

The advent of the flanged wheel, an American invention, created the need for flangeways. These were provided for in American tram rails by raising a part of the section to form the "head," as the running surface is called. Such a rail was known as a strepail or side-bearing tram rail. Another reason for raising the head was to keep the bearing surface above the general level of the pavement, thus avoiding trouble from accumulation of dirt, snow and ice. The center-bearing



NOMENCLATURE OF DIFFERENT PARTS OF A TRAM GIRDER RAIL

ing stringer rail and the later center-bearing girder rail were distinctly designed with that point in view. This rail also kept the loose paving stones of cobble and similar pavements, then prevalent, from interfering with the path of the wheel. The center-bearing rail became objectionable to teamsters in the large cities and it was legislated out of existence by the State of New York in 1892.

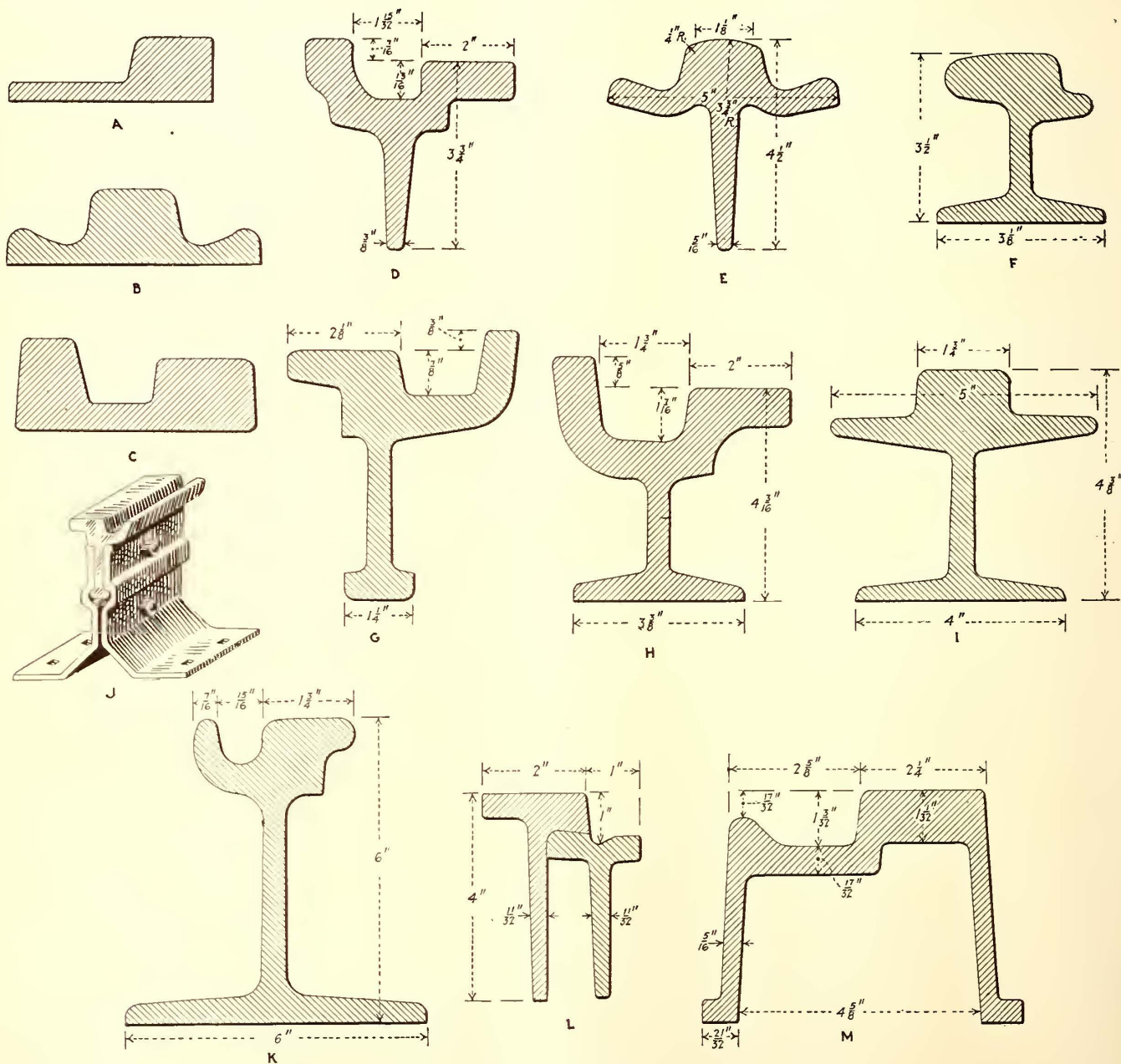
The idea of placing the flange on the rail, instead of on the wheel, as it was in the early days was revived by C. B. Voynow in a paper read before the American Street and Interurban Railway Engineering Association in 1908. While Mr. Voynow presented an ingenious exposition of the subject, the practical impossibility of changing the entire street railway track system, to say nothing of finance, prevented any serious consideration of the scheme. Mr. Voynow's proposed rail section is reproduced on page 109.

The introduction of the groove in the stringer rail was probably the earliest means of providing room for the wheel flanges. It is understood that its invention in 1852 is credited to M. Loubat, a French engineer who was interested in American street railways. Fred

Bland, in his paper on tramway track¹, states that with the exception of one or two of the earliest street railways, the English street railways have rigidly adhered to the groove rail and the use of any other form is now prohibited by the Board of Trade, which has jurisdiction in such matters. Incidentally, the better pavements which prevailed in England in the early days permitted a wide use of the groove rail.

The first girder guard rail similar to section "D" on this page was rolled in Birmingham, Ala., at a little mill with which A. J. Moxham, later president of the Lorain Steel Company, was connected. This was prior

¹Journal of Permanent Way Institution, Inc., of Great Britain, Dec. 1918, page 113, abstract in ELECTRIC RAILWAY JOURNAL, Dec. 28, 1918, page 1144.

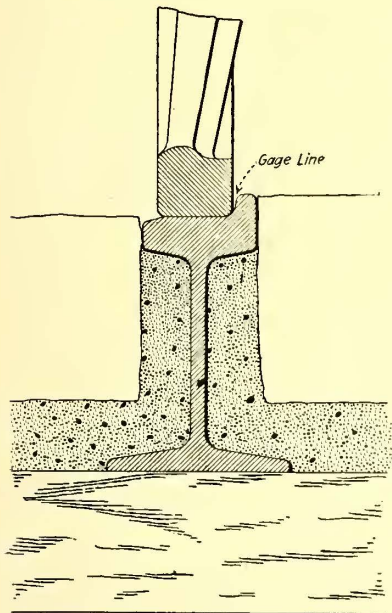


SOME EARLY RAILS OF THE ELECTRIC DEVELOPMENT PERIOD

A—Side-bearing stringer rail. B—Center-bearing stringer rail. C—Stringer guard rail. D—One of the first girder guard rails (1883). A similar design was first rolled in Birmingham, Ala., prior to that date. E—Early center-bearing rail (1888), "butterfly" section. F—C. A. Richard's girder section (1885). G—Early girder guard rail, "bulb" section (1885). H—One of the earliest girder guards, having a base similar to modern sections. About 1889. I—Center-bearing girder rail. About 1889. J—Angle chair support for "bulb" section. K—Very early full-groove girder rail, patented 1883. Used in Washington, D. C., about 1889. This design was originated in England. L—Duplex composite section, about 1891. These parts were held together in cast-iron chairs; the chairs in turn were held to gage by tie rods. The chairs rested on the soil or were embedded in concrete. M—Lewis and Fowler box girder, or double-webbed rail. About 1890.

to 1880. In 1883 the Johnson Company rolled the guard "D." The early girders had no bases at first, and were generally held in some form of chairs. Even when the "bulb" began to appear as a sort of base the chair still prevailed and when the shallow girders having bases came forth, they also were carried on cast-iron chairs to provide for paving depth. A very low girder, about 4 in. high, was rolled by the Cambria Steel Company in 1877.

When we come to the full-groove girders, Washington and Cincinnati both claim priority of use, but the Wash-



MR. VOYNOW'S PROPOSED FLANGED RAIL SECTION

ington design, imported from England, seems to have the preference. It certainly was patented in this country in 1883, with later patents in 1889.

The grooved girder was an outgrowth of the tram girder, being formed at first by simply changing the rolls so as to bend the tram upward to form the groove. It was first developed in England as a means of bettering paving conditions near the gage line, to offset the ruts which tend to

form as a result of heavy wagon traffic. Its increased use in America has followed the general betterment of paving conditions. Right here a digression may be made to note that the wagon makers are wiseacres. Originally, it is believed the rail gage was made the standard gage of 4 ft. 8½ in. because it was wagon gage also, and wagons were first used on rails. However that may be, the writer has observed that in cities where the gage of the tracks is 5 ft. 2 in., the wagon gage is the same, and that in all cities the wagons generally will readily follow in the tracks whatever the gage may be. We can be thankful that the steel-tired era for wagons is passing in favor of the rubber-tired automobile truck, which generally will transport far heavier loads with comparatively little damage to most track pavements.

FAR TOO MANY RAIL SECTIONS ARE IN USE

In the early days of electric operation, and down to a very recent period, each street railway engineer had his own ideas on rail design which resulted in a multiplicity of sections. In some cases franchises also permitted city engineers to specify what sections should be used and these engineers also exercised their "ability to design" in multiplying the number of sections. The result of all this is realized more fully when we remember that the manufacturers have catalogued over 400 different sections. On page 106 are shown a half hundred different sections which have been used on one large property alone.

The Massachusetts Street Railway Association considered the matter of standard rails as long ago as

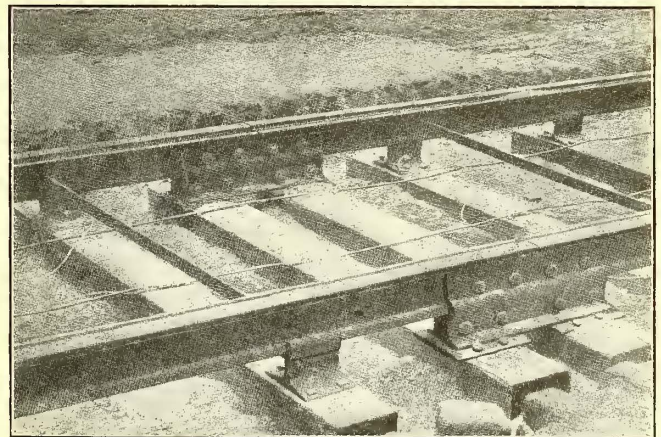
1892 when George W. Mansfield suggested six standard rails in a paper read before that body at its annual convention. The subject was also discussed before the American Street Railway Association in 1892, in a paper by John F. Ostrom entitled "Is a Standard Rail-Head Possible?" Those papers influenced the width of head and some other features to a considerable degree. Then followed a long interval of independent or "personal" designing and it has taken about twenty-three years for the industry actually to settle upon six standard girder rails.

About 1907, the committee on way matters of the American Electric Railway Engineering Association commenced the study of rail sections with the view to standardization. It was not until 1913 that the work reached a conclusion and the association succeeded in adopting two standard groove girder and two girder guard rails to match. Similarly two plain girder (high-T) rails were adopted and a series of low T-rails ("standard section rails") were settled upon. The latter are all American Railway Engineering Association standards.

It will be noted that the tram girder was dropped entirely, but there recently has been an attempt in some quarters to revive it. (See article in ELECTRIC RAILWAY JOURNAL for Dec. 1, 1917, page 997.) While two depths of groove girders were adopted, a 7-in. and a 9-in., the writer believes that the 9-in. section has been used but little, as the tendency has been toward a very general adoption of the 7-in. depth, which seems to meet all requirements.

Martin Schreiber discussed these standard rails in an interesting article which appeared in the issue of this paper for April 11, 1914, page 812, giving a historical resumé of the work of the way committee on the subject of standard girder rails.

At first considerable objection was made to the new

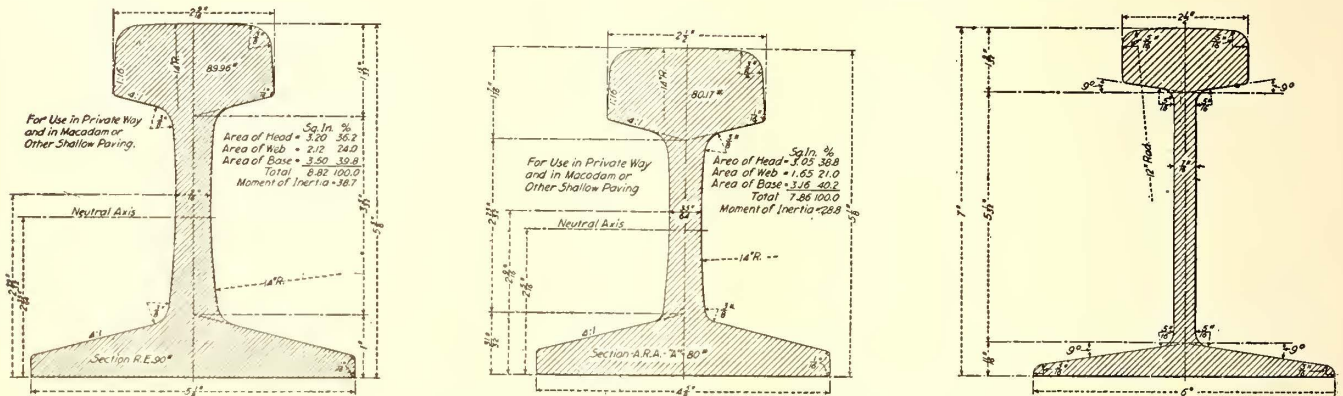


EARLY TRACK CONSTRUCTION IN BOSTON WITH ELECTRICALLY WELDED CHAIRS

standard groove girder sections on account of their increased weights. The writer has held, however, that the increase was warranted by the requirements of good design and observations covering over four years of comparative performance of 105-lb. and 122-lb. groove girders has confirmed this view. Weight well distributed gives that very desirable factor of stability which is an essential, particularly in connection with electric railways in view of "deferred maintenance" which in many cases has meant no maintenance whatever until the cars

would no longer stay on the rails. The presence of pavement often causes needed maintenance work to be "deferred." Under such conditions an 80-lb. rail, for instance, will give a track of fair riding qualities when it would be almost impossible to run a car safely over a 60-lb rail. It is quite obvious that for a given car weight and service there is a limit below which we should not go in selecting rails. As between 60-lb. and 80-lb. sections, the latter will require far less maintenance under the same traffic; so much so that the difference in first cost is more than made up in lesser maintenance expense. In more than one instance a difference of 20 lb. in the weight of rail prevailing on a railway has decided the question as to whether a banking firm would finance new enterprises on old roads.

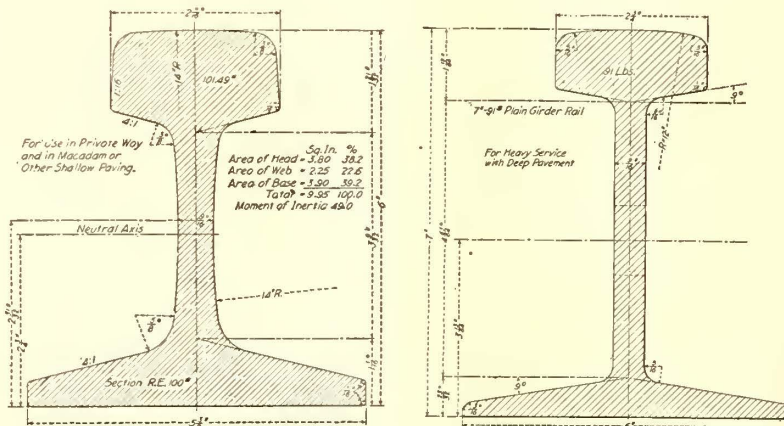
- (b) Outline of tread. (c) Top fillet of head. (d) Side of head. (e) Depth of groove. (f) Width and angle of groove. (g) Tractive contact and electrical contact.
- 2. *Vertical Stability*: (a) Depth of section. (b) Location of web. (c) Width of base.
- 3. *Permanency of Joints*: (a) Depth of section. (b) Outline for splicing. (c) Electrical bonding.
- 4. *Horizontal Stability*: (a) Location of web. (b) Thickness of web. (c) Fillets at web. (d) Width of base. (e) Width of tram. (f) Depth of section.
- 5. *Distribution of Loads on Foundation*: (a) Width of base. (b) Depth of section.
- 6. *Accommodation for Paving*: (a) Depth of section (b) Tram of rail.
- 7. *Accommodation for Vehicular Traffic*: (a) Dis-



AMERICAN ELECTRIC RAILWAY ASSOCIATION T-RAIL STANDARDS

Left—90-lb. low T-rail; center—80-lb. low T-rail; right—7-in., 80-lb. plain girder (high T-rail)

In spite of the apparent simplicity of outline, there are a large number of factors which have an influence upon girder-rail design. Rails for use in paved streets present several added features which are not required in standard section (low-T) rails. While some of the general requisites of design were outlined by earlier committees, it remained for the 1911 way committee to present an analysis of section or design, which is a landmark in such committee work. That analysis presents a reason for every feature of a groove girder rail.



AMERICAN ELECTRIC RAILWAY ASSOCIATION T-RAIL STANDARDS

Left—100-lb. low T-rail; right—7-in., 91-lb. plain girder (high T-rail)

The more general principles which control design of girder rails are: (1) Performance of existing sections in use with the view of retaining the good features and eliminating defects. (2) Redistribution of metal to give maximum strength at critical points. (3) Use of an outline of section and distribution of metal which will permit ease of rolling without sacrifice of essential characteristics. (4) Possibility of combining all the features that are necessary in a standard.

The analysis of section must consider the following items:

- 1. *Accommodation for Wheels*: (a) Width of head.

tance of tram below head. (b) Width and thickness of tram. (c) Width of groove.

- 8. *Life in Service*: (a) Depth of head. (b) Depth of groove. (c) Thickness of tram. (d) Possible life of substructure. (e) Thickness of base.

- 9. *Weight*: (a) Economical distribution of metal.

- 10. *Manufacture*: (a) Distribution of metal for rolling.

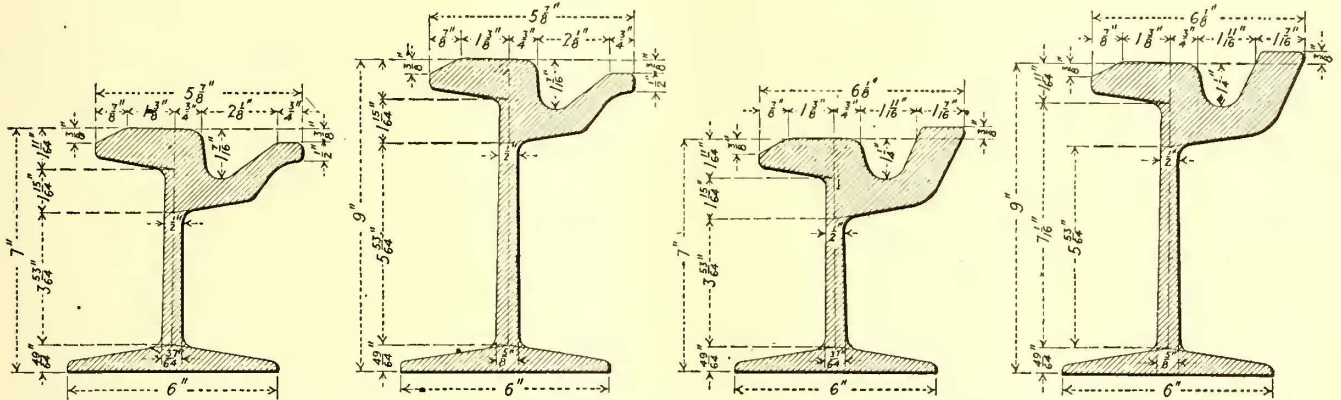
(b) Various angles and fillet details. From the foregoing it is evident that the design of a girder rail is far from being a matter of rule of thumb and should only be undertaken after the most careful investigation of available sections, of which there are now far too many.

COMPOSITE RAILS

The fact that head wear usually determines the life of the rail and a loss of not over 20 per cent of the total amount of metal in the rail will cause its renewal has led to numerous attempts by inventors to devise some form of composite or renewable-head rails. A few of these sections are shown on page 111. The latest of these, the "Romapac" or continuous rail has been tested in service in Chicago. When the writer last saw it the de-

fects in the scheme were becoming very noticeable and there does not seem to be much chance of its being given further consideration. The scheme is by far the most practical of the many renewable head designs which have appeared. The head section is "crimped" cold onto the base section by an ingenious machine and a similar machine is designed to remove worn heads. The Chicago test seems to have proved that the idea is fallacious in that the renewable feature introduces other conditions, not found in connection with the use of ordinary rails,

and specifications were generally accepted without question. Nevertheless, the subjects of specifications and the need for them were discussed in a paper read before the American Street Railway Association at its meeting in Cleveland in 1892. The tendency in manufacture to put tonnage output ahead of quality led the railways into the field of specifications with beneficial results and both the American Railway Engineering Association and the American Electric Railway Engineering Association now have standard specifications for rails in their man-



AMERICAN ELECTRIC RAILWAY ASSOCIATION GROOVE GIRDER RAIL STANDARDS

From left to right—7-in., 122-lb. rail; 9-in., 134-lb. rail; 7-in., 140-lb. guard rail; 9-in., 152-lb. guard rail

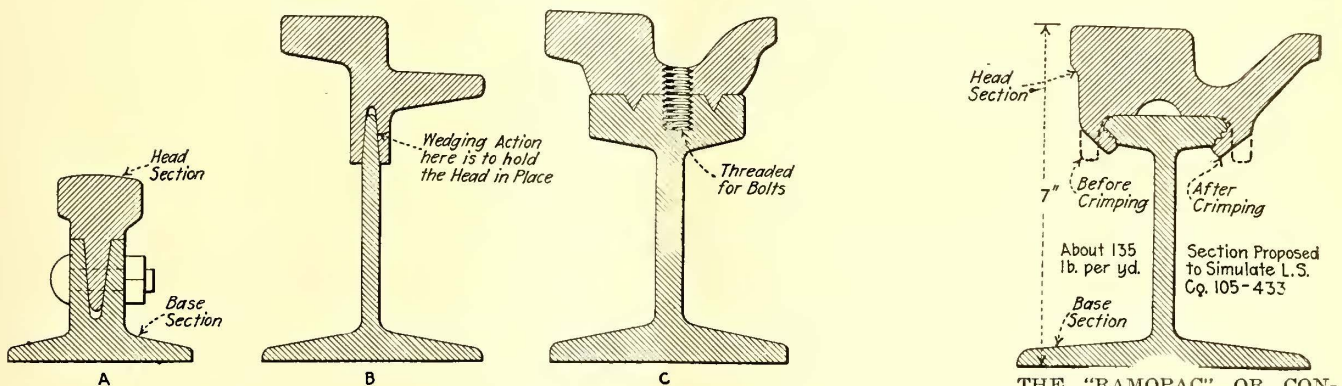
which far outweigh whatever advantage may attach to the proposition.

COMPOSITION OF RAILS

Early stringer rails were made of iron, some of them being cast to shape. About 1860, Bessemer steel came into use and held sway until about 1903, when the open-hearth steel process began to supersede it and there is but a very small tonnage of Bessemer now produced in this country as compared with open hearth. In 1913 the tonnage of Bessemer was only one-third that of

uals. The specifications of the latter association cover girder rails only. For low T-rails, the specifications of the American Railway Engineering Association or of the American Society for Testing Materials are largely used. The American Society for Testing Materials also approved the electric railway association specifications.

Aside from iron, which constitutes approximately 98 per cent of the metal, the five most important elements in rail-steel are carbon, manganese, phosphorus, silicon and sulphur. Steel containing these elements with carbon predominating is called carbon-steel. Car-



SOME RENEWABLE RAIL-HEAD SCHEMES

A—A. E. Smith's proposed compound rail. B—James Keaton's proposed compound rail. C—Bartheld's proposed compound rail

THE "RAMOPAC" OR CONTINUOUS RAIL DESIGN, HAVING THE RENEWABLE-HEAD FEATURE

open-hearth and in 1918 about one-fifth. This change has been largely due to the increasing scarcity of low-phosphorus ores suitable for the Bessemer process. Furthermore, the chemistry and quality of open-hearth steel is said to be under better control than in the Bessemer process, which tends to production of more reliable steel.

Neither the steam nor the electric railways paid much attention to the composition of rail steel until within the last ten or fifteen years and the manufacturers' analyses

bon has the quality of adding hardness to the steel, but too much of it tends to make steel brittle. Early Bessemer rails were low in this element, while recent rails contain three times as much as did the early rails. (See comparative analyses in Table I). The increase has been made in order to obtain greater wearing qualities. Another reason for the increase in carbon, in girder rails at least, was the desire to overcome the corrugation evil. Here it may be said that no very marked effect has been discovered.

An increase in carbon content for street railway rails as a means of increasing resistance to wear was suggested by A. J. Moxham in his paper on Rails read before the American Street Railway Association at its annual meeting in 1898. The late Dr. F. S. Pearson had also experimented along the same lines about that time when he was connected with the old West End Street Railway of Boston. Mr. Moxham's experiments were conducted in Brooklyn and a study of the condition of the experimental rails, including some of Dr. Pearson's rails, as found late in 1917 appeared in the issue of this journal for Jan. 26, 1918.

In recent years several special alloy-steels have been used in experiments with rails with the view of producing such qualities as high resistance to shock, high elastic limit and great resistance to wear. The alloys used principally are manganese, titanium, nickel, chromium and vanadium. In England, a rail having a high percentage of silicon, called the Sandberg rail, has been used with a large degree of success. As a general proposition alloy-steel rails are very expensive and of doubtful value. The addition of ferro-titanium, however, has become a fixed practice on the part of many electric railways. It has been called "rail insurance" and its addition to the steel tends to overcome impurities and prevent segregation. On this page is a reproduction of a sulphur print of a titanium-treated groove-girder rail. In exceptional cases manganese-steel rails have proven of value in sharp curves, having extremely heavy wear. Similarly, experiments with manganese and other alloy-steel rails in steam road curves have led to widely different opinions as to the ultimate economy, with the weight of the evidence somewhat against them. Incidentally, in carbon-steel girder guard rails, it has been found desirable to keep the carbon within the limits of the class A analysis (0.60 to 0.75 per cent carbon) of the American Electric Railway Engineering Association specifications in order to render the rails more suitable for bending to the sharp radii of street railway curves. The specifications of the same association covering materials for use in manufacture of special track work definitely provide the Class A analysis. Even this degree of hardness gives the special work manufacturers considerable trouble.

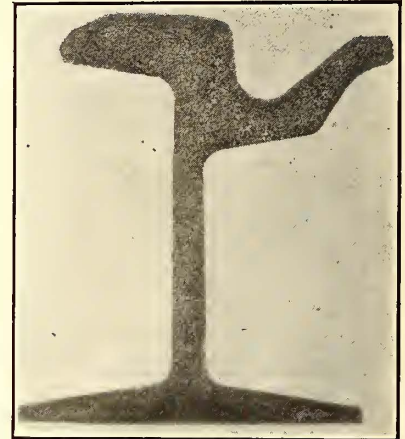
LENGTH OF RAILS HAS GRADUALLY INCREASED

It has been stated that early strap rails were about 15 ft. long. Some of the early cast iron rails of this type were as short as 5 ft. Think of that! Twelve times as many joints as would be needed for a modern girder rail. The desire to reduce joint troubles as much as possible, by eliminating the sources, mainly has been responsible for the increase in length of rails. For many years 30 ft. was the standard length on both steam and street railways. Experiments with welded joints in street work undoubtedly contributed to the increase from the 30 ft. to the 62 ft. length which is now the

standard for street railway rails. The necessity of providing for expansion is not present where rails are buried in pavements. This was proven by Moxham's experiments. (See his paper, "Experiments on the Expansion of Continuous Rails," in the 1892 Proceedings of American Street Railway Association.)

In open tracks on both steam and electric railways the practice is confined principally to the use of 33-ft. lengths as standard because of the necessity for provision against expansion and contraction of the steel with changes in temperature.

However, 60-ft. rails have been used in some cases on interurban roads in open tracks without any particular trouble and with no special provision for expansion and contraction by means of slip joints. There is probably no very good reason why 45-ft. lengths could not be used on most electric railways, particularly



REPRODUCTION OF SULPHUR PRINT OF A TITANIUM-TREATED, 7-IN. GROOVE GIRDER RAIL

in view of the fact that European railroads use lengths up to 59 ft., and 45-ft. lengths are standard on steam roads in England.

Mill equipment has probably had more influence than any other factor in keeping rail lengths at the 33-ft. standard because comparatively few mills could roll longer rails without considerable change in equipment. The question of shipping and handling has also entered but electric railways have little trouble on this score. Some manufacturers have claimed that it is impossible to give as good a surface finish to long rails as to short rails, but electric railway use of long rails has not indicated that this is true, unless the tendency of long girder groove rails to corrugate may be taken as an indication. Besides, long plain girder rails (high-T) seldom, if ever, suffer from corrugation. Of course, recognition must be given to the point that the factor which ultimately limits the length of rail in open tracks is the maximum expansion spacing which can be safely used at the joints.

In his annual report, President John D. Ryan of the Montana Power Company, says that aside from the completion of the Holter development and some substations and transmission lines under way at the beginning of the year, very little new construction was done. For the purpose of supplying the development with additional power outlet a new 100,000-volt standard bridge type underhung transmission line was constructed from Holter to the East Helena switching station, thirty-one miles. By means of a complete arrangement of air-brake switches this line affords duplicate service from Holter to the Butte and Great Falls districts, and also a direct feeder line from Holter to the Milwaukee Railway at Josephine, and allows for many combinations of transmission in case of line trouble.

TABLE I—COMPARATIVE CHEMICAL ANALYSES OF STEEL FOR STREET RAILWAY RAILS, SHOWING INCREASES IN CARBON CONTENT

Approximate Periods	Bessemer Steel, and Open-Hearth		Open-Hearth Steel, Am. El. Ry. Assn.	
	Prior to 1898, Per Cent	Bessemer, 1898-1910, Per Cent	Class A, Per Cent	Class B, Per Cent
Carbon.....	0.280	0.59	0.60-0.75	0.70-0.85
Silicon.....	0.026	0.056	0.20	0.20
Phosphorus.....	0.106	0.097	0.04 Not over	0.04 Not over
Sulphur.....	0.066	0.059	See Note	See Note
Manganese.....	0.790	0.830	0.60-0.90	0.60-0.90

NOTE—Sulphur runs under 0.05 per cent in basic open-hearth pigiron.

Making Over Open Cars for Repayment Fare Collection

Shore Line Electric Railway Is Rehabilitating
Rolling Stock Not Suited to Modern
Methods of Collecting Fares

THE Shore Line Electric Railway, Norwich, Conn., has found it desirable to remodel fifteen open cars primarily to simplify the problem of fare collection. At first it was thought that all that would be necessary would be to sheath the sides, provide sash and cut aisles down the center, in order to accomplish the work at a minimum of cost. It was found, however, that a more thorough overhauling would be necessary and the result is as seen in the accompanying illustrations. About a dozen of the cars are now completed and a number have been in operation, very satisfactorily, for some months.

Some of the cars were provided with stationary sash, the remainder with sliding sash. The cost of the work in the latter case was about \$1,250 per car, in the other case slightly less. No changes were made in the equipment of the cars.

The first step was to build out the lower portion of the side posts so that ½-in. poplar sheathing could be applied in a vertical plane. On this No. 16 gage sheet steel was screwed, steel strips about 2 in. wide being used to cover the joints. In the cars with stationary sash the sash were held in place by means of screwed vertical strips; for sliding sash the side posts were built out in the manner shown in the illustrations. The car dashers were not disturbed but a stool was fitted on the top of each to furnish a sill for the vestibule sash. To provide ventilation with the cars closed in, the old fixed sash in the monitor were taken out and mounted on pivots so that they could be opened.

Meanwhile the bulkheads were removed. To stiffen the body ends against racking sidewise flat steel carlines 2 in. wide and ½ in. thick, curved to conform to the archways were bolted over the archways, one to each.

The seating arrangement decided upon was a combination of cross and longitudinal seats, Hale & Kilburn "Walkover" seats being used for the former. In what was originally a fifteen-bench open car this arrangement permitted the use of seven cross seats on each side and two 7-ft. longitudinal seats at each end.

To support the outside end of the cross seat the seat panel was blocked out in the manner clearly visible in the foreground in the car interior view. The old sheet-steel panels were allowed to remain. The seating arrangement provides an aisle 22½ in. wide. Folding steps and doors, with operating mechanism, were purchased from the Wason Manufacturing Company, which also furnished the window sash.

The canvas curtains used in the open car were retained, so that they serve as shades in all seasons and as storm protectors when the sash are removed as they are in summer. When the sash are out a heavy screen, 18 in. wide, is attached to the car side from end to end.

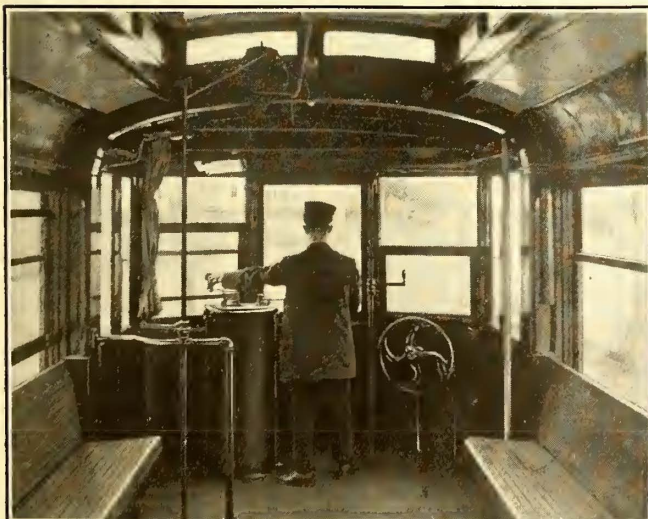
The above covers the principal items in the remodeling, others of which, such as the sliding curtains provided behind the motorman, can be noticed in the illustrations.

The weight of the remodeled car is approximately 39,000 lb. All of this work was carried out under the direction of John Mellor, master mechanic of the railway company.

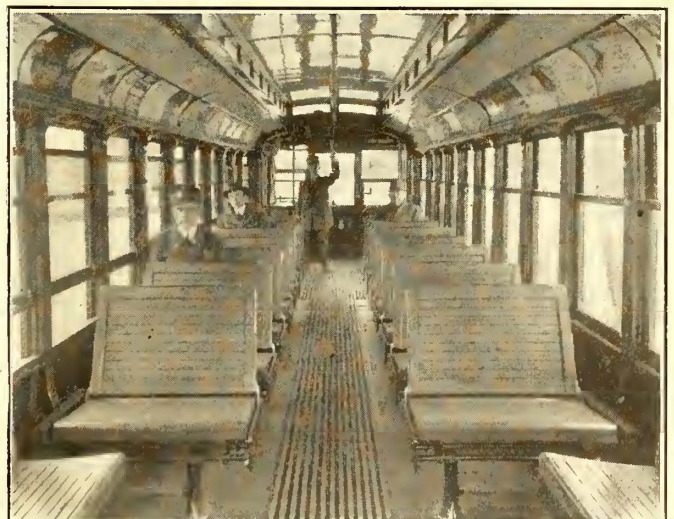
The remodeling of these cars is part of the general program of making the equipment available for modern fare collection, and to decrease the accident hazard to the lowest limit.



SUMMER CAR REMODELED FOR YEAR-ROUND USE AND
PREPAYMENT FARE COLLECTION



LOOKING OUT THROUGH THE VESTIBULE OF SHORE
LINE REMODELED CAR



INTERIOR OF REMODELED SHORE LINE OPEN CAR—
SHOWING CONSTRUCTION DETAILS

Bonds for Temporary and Permanent Track Construction

In This Article the Author Takes Up Various Types of Rail Bonds and Discusses Their Advantages and Disadvantages from a Practical Standpoint

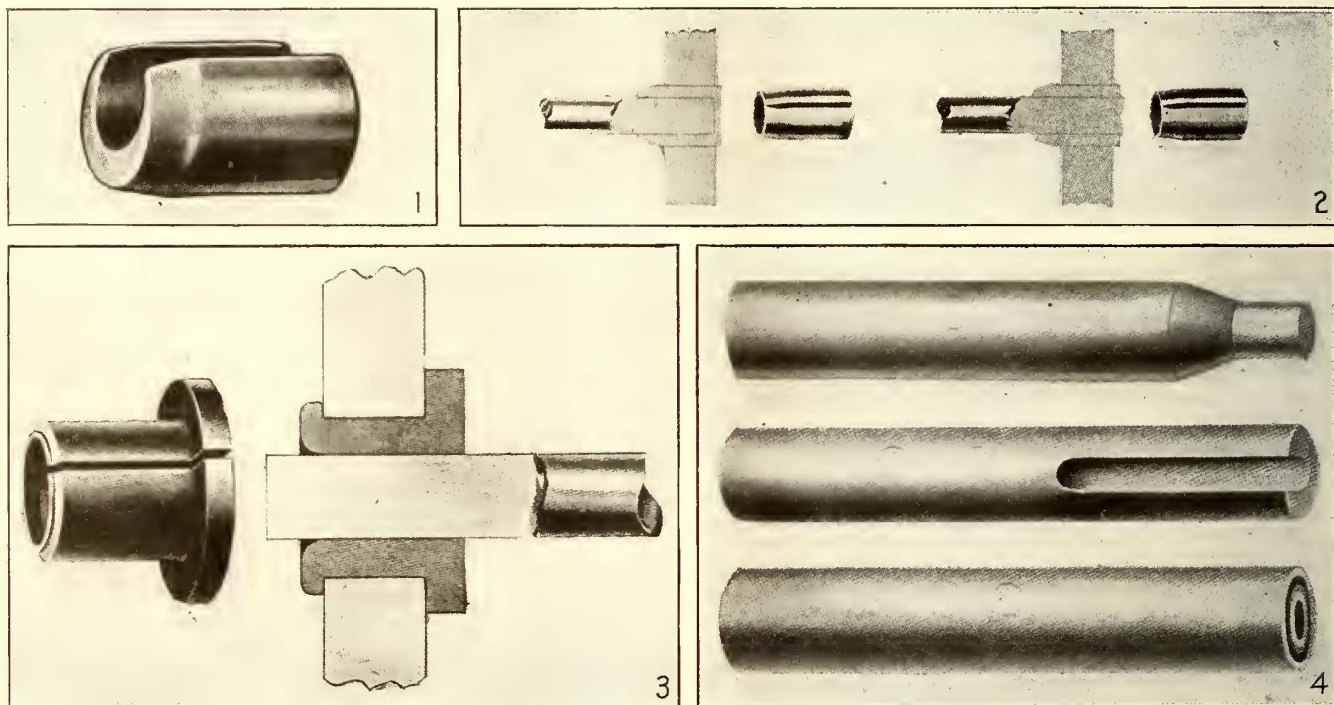
By G. H. MCKELWAY

Engineer of Distribution, Brooklyn Rapid Transit System

THE most common types of bonds are those in which the terminals are driven into or expanded in holes drilled or punched in a portion of the rail, usually the web but sometimes either the head or the foot. The earliest bonds were of this type and there has never been a time when any other type of bond has been more generally used.

The title "expanded terminal" bonds does not apply to all of these bonds, as in many of them there is no change in the shape of the terminal, but the close contact is obtained by driving into holes already drilled in the

of channel pins and pieces of old trolley wire. Holes are drilled in the web of the rail, the diameter of the holes varying from $\frac{3}{8}$ in. to $\frac{7}{8}$ in., depending upon the size of the conductor to be used with the channel pins. The diameter of the cylindrical portion of the pins should be $\frac{1}{32}$ in. greater than that of the hole so as to insure sufficient contact and also provide a good grip on the wire. The wire is placed in the hole in the rail and also in the groove of the channel pin, and the latter is then driven into the hole with a hammer. To keep the pins from rusting and to improve the contact with



BONDING SLEEVES, CAPS AND CHANNEL PINS FOR TEMPORARY BONDING

Fig. 1—Channel pin for temporary bonding. Fig. 2—Soft steel bonding caps. Left, regular cap for end connection. Right, cross-connecting cap for through wires. Fig. 3—Copper bonding sleeve and attachment. Fig. 4—Tools for installing copper bonding sleeves. Top, drift punch. Center, driving tool. Bottom, Upsetting tool.

rail. The terminals are tapered and can be wedged tightly in the hole when driven home.

The latter type of bond is seldom used except for temporary work as it will not maintain the close contact and high conductivity of the true expanded terminal bonds. For service where the bonds will be needed for only a comparatively short time or on sidings where the main return circuit will not be affected and where a few high-resistance joints will not materially increase the total drop in voltage, these bonds furnish a cheap and fairly efficient means of connecting the abutting rails electrically.

The cheapest temporary bonding is done by the use

the conductor and the rail the soft steel of the channel pins should be copper plated by the manufacturer.

Another but very similar type of bond uses what is called a bonding cap instead of the channel pin. This, too, is slipped onto the end of the conductor and placed in a hole which has been drilled in the rail. The cap is made of soft steel with a groove extending almost through the top to permit of its being squeezed tightly against the conductor and the rail. Its diameter is $\frac{1}{32}$ in. greater than that of the hole to insure a tight fit between the cap and the sides of the hole. Caps used for cross-bonding have the hole for the conductor extending entirely through them so that the wire can be

run through and connect to one or more rails while making connections between two others.

Another type of connection, very similar to the cross-connecting cap, but made of another metal and installed in a different way, is the copper bonding sleeve. This is shaped as shown in an accompanying illustration and, like the bonding cap and the channel pin, is finished with 1/32 in. greater outside diameter than the hole into which it fits. Owing to the softer metal of which this sleeve is made more care is needed in installing it than where steel terminals are used. To install it a hole is first drilled in the rail and then any burrs that may have been formed around the edge of the hole are smoothed off by driving a drift punch into the hole from the side where the wire is to enter. The next operations are to place the wire in the sleeve, insert the end in the hole in the rail, and then drive them home with a special driving tool which is slotted for about half of its length so as not to interfere with the bonding wire. When driven home the sleeve is clinched with an upsetting tool. This tool has a hole in the end into which the wire can enter but not the bonding sleeve. The result is that when hammered in, the projecting end of the sleeve is rolled back, forming a button or shoulder against the rail.

There is still another type of bond which is used for temporary work, which has the terminals attached to

ferred by many companies. Another reason for its being in favor, especially on electrified steam roads, or on high-speed lines where traffic delays must be avoided, is that there is no compressor or other equipment necessary for its installation, which would project above and be attached to the rail head, and which would require removal before the cars can pass. Another advantage of the hollow terminal bond is that it can be installed entirely

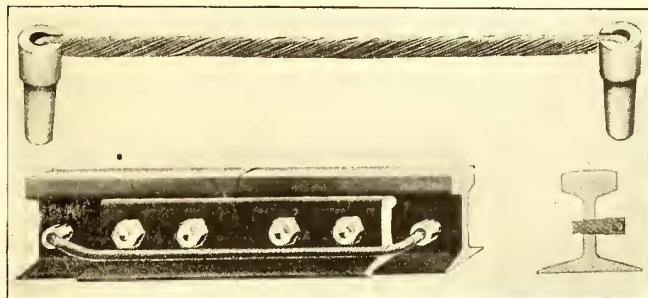


FIG. 5—REMOVABLE MINE BOND FOR TEMPORARY TRACKS

from one side of the rail, which is of great value as it requires that the paving on only one side be opened up and it also makes possible the bonding of joints on curves or at other points where guard rail, which would prevent the use of a compressor, is used.

With the hollow terminal bonds the only tools needed for installation, after the holes have been drilled or punched and perhaps reamed, are a heavy hammer, weighing preferably about 3 lb.; a taper punch, and the little drift pins for plugging up the holes in the bonds. Sometimes a driving tool, to receive the larger end of the taper punch and protect it from the blows of the hammer, is also carried. This adds to the amount of the equipment to be carried around but prevents hardened steel pieces of the taper punch from being chipped off when the punch is struck.

The approved method of installing the bonds, after the holes have been prepared, is to insert the terminal into the hole and then drive the tapered punch entirely through the hole in the terminal, this punch having first been greased or oiled. This punch not only prepares the way for the drift pin which is to follow and insures its being driven straight, but also expands the hole in the terminals 3/2 in., the punch being that much greater in diameter than the hole. The pressure between the terminal and the rail is still further increased, a moment later, by the driving in of the drift pin, which forces the copper out another 1/2 in.

While the above is the approved method it is not the ordinary one, as it requires the use of too many different tools to be followed out carefully, unless more than ordinarily conscientious bonders are employed or the men are carefully watched. A job that will look just as good and which, in many cases, will be just as good, can be done with fewer tools and less labor, so that to the ordinary man there is no use in going to the extra trouble.

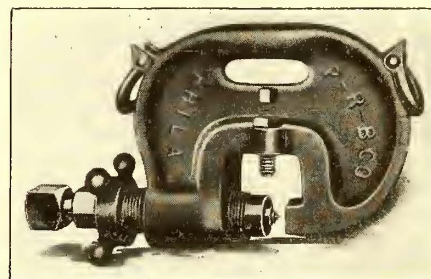


FIG. 8—SCREW WEB TYPE OF RAIL BOND COMPRESSOR

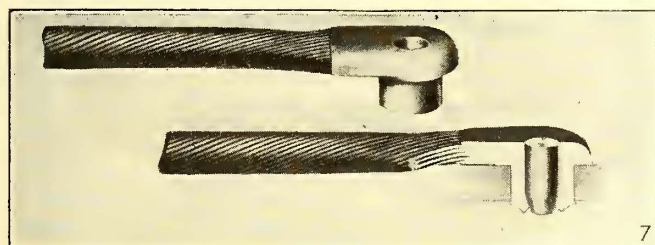
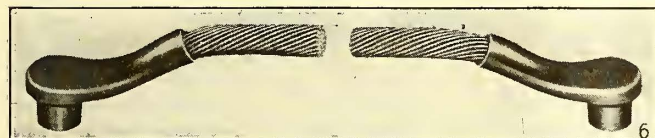


FIG. 6—SOLID TERMINAL PROTECTED RAIL BOND. FIG. 7—HOLLOW TERMINAL RAIL BOND

the conductor so that the bonds do not have to be made up each time that they are installed. This bond is called a removable mine bond and is made up of a piece of stranded wire 22 in. to 28 in. long soldered into tapered steel terminals, the terminals having slots in the top in which the wire can lie and be safe from the blows of the hammer during installation. The terminals are long enough to project well through the web of the rail so that they can be easily knocked out with blows from a hammer as well as being driven in by the same means.

EXPANDED TYPE BONDS SHOULD BE USED FOR LONG LIFE AND PERMANENT CONSTRUCTION

All of the foregoing types of bonds, however, should be considered as of value for temporary work only, and when bonds are to be installed with the hope of their remaining in good condition as long as the track, some other type should be used. The forms most generally used for permanent work are the solid terminal compressed type or the hollow terminal pin expanded type, the former being in more general use.

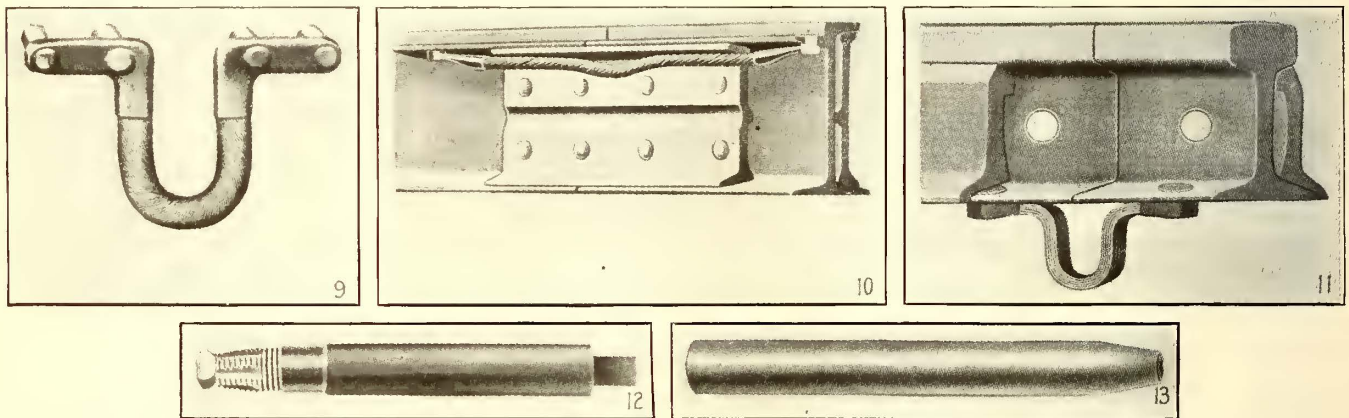
The hollow terminal bond is easily installed without the use of any heavy tools and for that reason is pre-

To install bonds in the simplified way, the terminals are merely pushed into the holes, perhaps tapped with the hammer to make sure that they have gone all of the way home, and then the drift pins are driven in, expanding the terminal by $\frac{1}{2}$ in. at one operation. When this is done, very often the pin will not be driven in straight, and on other occasions, not being lubricated, it will tear the copper. However, while the railway company is the loser if the latter method is used, the men are gainers as they do not have to carry around any tools other than the hammer and a pocketfull of drift pins. No grease, punch, or driving tool is needed. Greasing the punch is a messy job which the men do not like and the punches are liable to be lost, this being especially true where the men are working on bridges or elevated structures without floors. When the punch is driven through the terminal, unless care is taken, it will not be caught but will drop down between the ties and never be recovered again.

For the installation of compressed bonds less equipment is needed, the compressor being the only tool required, but this is so bulky as to weigh many times more than all of the tools used with the hollow terminal bonds. Bond compressors are made in sizes ranging from 25 lb. for use with the very small sizes of T-rail,

terminal and the point of the compressor will be at the right height. This height can be easily altered by sliding the compressor a short distance, one way or the other, along the head of the rail.

When making a comparison of the efficiency of the solid-terminal compressed bond with the hollow-terminal pin expanded bond, the claim has been made that the surface of the terminal of the latter type is everywhere brought into more intimate contact with the side of the hole than is the case with the compressed bond. The reason given for this is that the pressure from the pin is exerted equally at all points through the hole while the compressor is effective merely at and near the edges of the hole, and so hardens the copper that there is very little outward pressure at the center of the hole. When the copper in the terminals is sufficiently soft, however, and that is almost always the case, this trouble is not experienced in practice. Results of laboratory tests where, of course, greater care than that exercised in the field is taken, seem to indicate that the compressed bond has slightly less contact resistance than the pin-driven one. The difference in resistance of the two types, however, is so small as to be negligible for all practical work if the bonds are installed with the same care in the field as in the laboratory. That this is not



BONDS APPLIED TO VARIOUS PARTS OF THE RAILS AND TOOLS USED IN THEIR APPLICATION

Fig. 9—Twin terminal bond for head of rail. Fig. 10—Bond applied to tram of girder rail. Fig. 11—Rail bond applied to base of T-rail. Fig. 12—Groove cutter tap. Fig. 13—Blunting punch for installing twin terminal bond.

up to 156 lb. which is needed to handle the large girder rails of 9-in. size. Hydraulic compressors often exceed 200 lb. in weight. Some of the compressors on the market are fitted with leveling or adjusting screws by which the vertical distance from the point of the plunger to the top of the rail can be altered and the compressor can rest on the rail directly over the bond hole. The point of the plunger will then be directly opposite the center of the terminal. This refinement, however, is really unnecessary and, if the bond holes have not been drilled at exactly the right height, something which often happens, the point will not compress the terminal at the exact point it should, unless the screws are turned again. This proceeding takes time, especially if the wrench is not handy, which it seldom is, and as a result the change in height is seldom made, as the class of men generally employed as bonders usually are none too careful in doing their work.

The ordinary way is not to make use of the screws but to remove them, if the compressor is fitted with them, and then not to attempt to place the center of the compressor directly over the hole but rather slightly to one side of it, thus when inclined, the jaws will cover the

done is certain, and it is the writer's belief that it is easier to deviate from the correct practice when installing the hollow terminal bonds than when the solid terminal type is used.

BUTTON-HEAD ON TERMINAL GIVES GREATER CONTACT AREA AND SEALS CRACKS

The compressor forms a "button" on the end of the terminal which not only gives a little more contact area by pressing against the web of the rail, but also seals any cracks that there might be between the terminal and the sides of the hole, thereby preventing the entrance of moisture which would form rust and soon greatly increase the contact resistance. To form this button properly the compressed terminal should be approximately $\frac{1}{4}$ in. longer than the thickness of the rail web, or about $\frac{1}{2}$ in. longer than that required for a properly fitting hollow-terminal bond in the same hole.

It was formerly the custom to taper the bond terminals instead of machining them, but the present practice is to make them perfectly cylindrical and to machine them. The latter practice is much to be preferred, as the finished terminal can be made a very close fit in the

hole and yet there can be no danger of its not going all of the way through the hole. The most troublesome form of bond was the old tapered-terminal type, one end of which would easily enter the hole while the other end would be too large, thus forming a shoulder just before the bond was all the way home. The tapered terminal also left too much rope at the small end which had to be filled up with compressed copper.

Compressed bonds have been used both in the base of all types of rail and in the tram of girder rails. Those compressed into the tram of the rails are now very seldom used although at one time they were installed quite extensively. They were made in comparatively short lengths and their installation required the disturbance of very little pavement. It did necessitate, however, the use of a special punch for making the hole in the rail and a special compressor for expanding the terminals in the holes so made.

For bonding under the base of the rail, special compressors and punches are needed of different types from those employed when the bonds are placed in the tram of girder rails. These bonds are still used and in much larger quantities than those in the tram of the rails. Their use, however, is confined mostly to third-rails instead of running rails. The bonds are made of ribbons in the form of a "U," the loop hanging down under the rail. On account of the angle of the base of the rail ordinary terminals cannot be compressed satisfactorily, as much more of the button would be made on the lower edge of the terminal than on the upper. To avoid this the terminals are beveled as shown in the illustration.

For installation on rails imbedded in concrete such bonds would have no flexibility, as they as well as the rails would be fixed firmly in the concrete. In such a situation, however, little flexibility would be needed, but on the other hand it would be almost impossible to get at the bonds in order to make any repairs to them. The U-bonds have been used under the base of the rails in open track and have given fairly good service there although interfered with more or less by the ballast. It is impossible to install the bonds in rail already laid in concrete, and the best way, both there and in open track, is to bond the rails before they are laid and then line up a long section of rail at one time.

BONDS FOR INSTALLATION IN HEAD OF RAIL

There are two types of expanded terminal bonds that have been designed to be installed in the head of the rail. In attaching the bonds, holes are drilled only part way through the head of the rail and then the bond terminals are driven into the holes with a hammer, completely filling them.

In an older type of not more than 250,000 circ.mil section two holes, each $\frac{1}{2}$ in. in diameter and $\frac{1}{2}$ in. depth, are drilled $1\frac{1}{4}$ in. apart in the head of the rail and close to its end. An annular groove or a series of threads is then cut in each hole, either by revolving a tool with cutting teeth in the hole and swinging it slightly so as to make the teeth cut the groove, or by tapping the hole so as to form the threads.

Any burrs around the edge of the hole are then removed by lightly driving in a blunting punch. After this the terminals, which are $\frac{1}{16}$ in. longer than the depth of the holes, are inserted and then driven in with a hammer. The first blows are light ones but more force is used to complete the operation. Directly over each terminal is a boss which receives the hammer blows

and these blows are continued until the bosses are flattened out and until that portion of the terminal connecting the studs has been hammered down somewhat. By that time the soft copper in the studs has flowed into the threads or ring in the sides of the hole so that it is practically impossible to remove the bond after it has been installed, and the close fitting ring of copper effectually seals the hole against the entrance of moisture that would cause the contact to deteriorate.

The use of two terminals gives an unusually large contact surface at each end of the bond, especially so since the stud makes contact with the bottom as well as the cylindrical surface of the hole.

Another advantage in the use of two terminals is that each prevents any twisting strain from reaching the other, thereby helping to keep the studs tight in the holes.

The wires lead straight down out of the terminals so that there is a minimum of danger of wire breakage due to vertical movement of the rails, while the U-shaped loop is well designed to with-

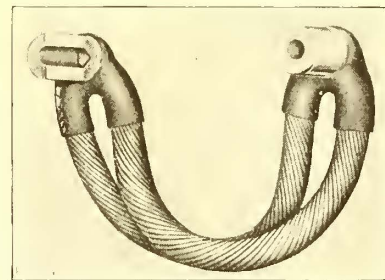


FIG. 14—SINGLE-STUD, DOUBLE-CONDUCTOR RAIL BOND

stand stresses coming from other directions. These precautions are necessary, however, as the extended length of the bonds is ordinarily only 7 in., too short for track which has not a fairly good foundation and which is not well maintained.

Another type of expanded terminal bond which is applied to the rail head is shown in the illustration on this page. This has only one stud at each terminal. To provide greater contact area than that in a hole drilled with the ordinary twist drill, a special milling cutter is used. This cuts an annular hole in the rail $\frac{3}{8}$ in. in diameter and $\frac{5}{8}$ in. deep and leaves a $\frac{1}{4}$ -in. pin in the center of the hole. The stud of the bond is hollow to fit over this pin and into the groove surrounding it. The bond terminal is fitted into the hole and then expanded by blows from a hammer as is done in installing the twin terminal bond. The contact area is provided by the three sides of the annular groove.

Survey of Pole Lines

A letter has been sent to member companies of the National Electric Light Association by William C. L. Eglin, chairman of the committee on safety rules and accident prevention, calling to their attention the survey of existing pole lines throughout the United States and Canada, which the committee's engineers are conducting jointly with those of the Bureau of Standards.

The survey is being made to determine for future aerial line construction the effect of the loading requirements proposed in the new issue of the National Electric Safety Code. It will be conducted, so far as possible through the geographic sections of the N. E. L. A., and it is expected that the work will be sufficiently well organized so that each company to be visited will be notified in advance.

Each company is requested to be prepared to designate immediately the lines to be surveyed in order that all possible speed will be made.

DAILY REPORT OF CAR REPAIR SHOP
DES MOINES CITY RY. CO.
DES MOINES, IOWA

DAILY CAR DAMAGE
Des Moines City Ry. Co.
Des Moines, Iowa

CAR ASSIGNMENT
REGULAR RUNS
DES MOINES CITY RY. CO.
DES MOINES, IOWA

CARS DUE FOR INSPECTION
DES MOINES CITY RY. CO.
DES MOINES, IOWA

DAILY REPORT OF CAR FAILURES
DES MOINES CITY RY. CO.
DES MOINES, IOWA

RECORD OF CAR FAILURES
DES MOINES CITY RY. CO.
CAR NO. 232

DAILY INSPECTION RECORD OF
CAR NUMBER
DES MOINES CITY RY. CO.
DES MOINES, IOWA

ARMATURE RECORD

DAILY REPORT OF CHANGES IN TRUCKS
DES MOINES CITY RY. CO.
DES MOINES, IOWA

TRAINMEN'S REPORT OF CONDITION OF
CAR NUMBER
DES MOINES CITY RY. CO.
DES MOINES, IOWA

DAILY REPORT OF EQUIPMENT FAILURES
DES MOINES CITY RY. CO.
DES MOINES, IOWA

FORMS USED FOR FOLLOWING AND RECORDING MAINTENANCE WORK

defect are listed on this form. At the main shop these are transferred to the form shown as "Record of Car Failures," there being one of these blanks for each car, and by reference to them all the failures made by any particular car can be seen at a glance. It also shows the lines the car was on, and the motorman and conductor running the car at the time, thus giving a chance to check up and find out whether the fault lies with the car or the crew.

From the "Daily Report of Car Failures" the form "Daily Report of Equipment Failures" is also made up. This shows at the end of the month the total number of failures and the exact number from any particular cause. On a large sheet similar information is shown for the full year.

A record is also kept showing the number of cars turned in for defects by each individual motorman, who are all listed by badge numbers. This information is also taken from the "Daily Report of Car Failures" sheet.

Increased Signaling on the York (Pa.) Railways

The Use of the Tracks Signaled by Other Railway Lines Necessitates a Special Layout

THE York (Pa.) Railways has recently increased its equipment of Nachod automatic signals by installing a block of two signals involving novel features required by the track layout.

Referring to the accompanying diagram, the block to be protected is on West College Avenue from South George Street to the College turnout, and is used both ways by the North York-Princess Street line with fifteen minutes headway. At College turnout the layout is standard, with signal *B* near the switch point and facing toward the turnout. Trolley contactors 3 and 4 are located on the siding as shown, 3 being ordinarily used as a signal setting contactor, and 4 as a clearing contactor, though they are both of the "directional" type and function selectively to set or clear the signals according to the direction of the car. The signal *A* at the other end of the block faces north on South George Street.

It is necessary that North York-Princess Street cars set the block *A-B* on South George Street before passing into the single track; and it is this condition that causes the special layout. Of the double track on South George the southbound is also used by two other lines that do not use the block *A-B*; these being the South George-Jackson line with fifteen-minute headway, and the Red Lion-Windsor line with hourly service increased to half-hourly morning and evening. Thus any contactor placed on the south-bound track on South

George would be traversed also by the two lines just mentioned. The trolley contactor for setting the signals, located at point 1, is therefore of the "current selective" type. North York-Princess cars will use two or more points of power on the controller while passing the contactor, which will set the signals, while the other cars mentioned will drift under it and not affect the signals. Neither will these motormen observe the indications.

The clearing contactor for signal *A* would be placed on the crossover were it not for the fact that the crossover, as well as the north-bound track, is used also by the Prospect cars with 30-minute headway. It is therefore placed at the point 2 on the single track curve and connected "uni-directionally" to clear only, it being inert when traversed westward by the entering car. The arrows on the plan show the direction of cars.

The signals are of the permissive variety, known as type CD. When the block is taken from one end, say *B*, the signal *A* governing opposing movements goes to "Stop", signal *B* showing permissive to allow following movements through the block, while signal *A* at stop prevents opposing movements until the block is again vacant. This protection of a number of cars in the block is accomplished by a counter in the signal relay.

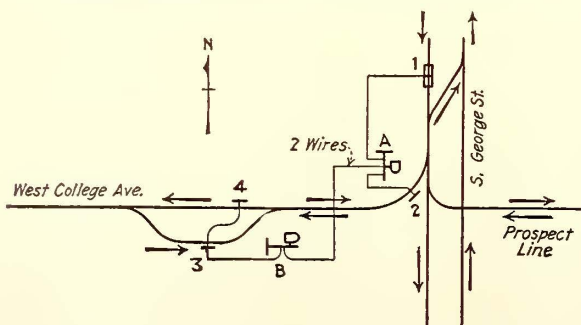
The trolley contactors in the overhead are connected as directional and uni-directional and are of the shunt type, while the current selective contactors are of the series type. All of them are without moving parts and make a soft wiping contact with the flanges of the trolley wheel. The signals (as shown in the accompanying halftone) are in cast-iron cases mounted on reversible iron brackets offset from the pole. They give indications by combined lights and disks simultaneously displayed, and have three positions. The signal relay, including magnet coils, contacts and resistances, is immersed in a tank of oil forming the lower part of the case. A junction box lower on the pole gives convenient access to the circuits for fusing, testing and for manual control. The signal itself may be lowered to the ground without disconnecting the cable. Two line wires through the block connect the signals.

The National Board of Fire Underwriters has issued for members of the National Safety Council a special edition of the list of appliances inspected for accident hazards. Copies may be secured either from the underwriters or the safety council, with offices in Chicago, Ill.

The Indianapolis Traction & Terminal Company is rebuilding its cars for pre-payment operation. One hundred and forty-nine cars had been changed up to May 1, and others will be altered as they come into the shop for overhauling. The cars are single-ended.



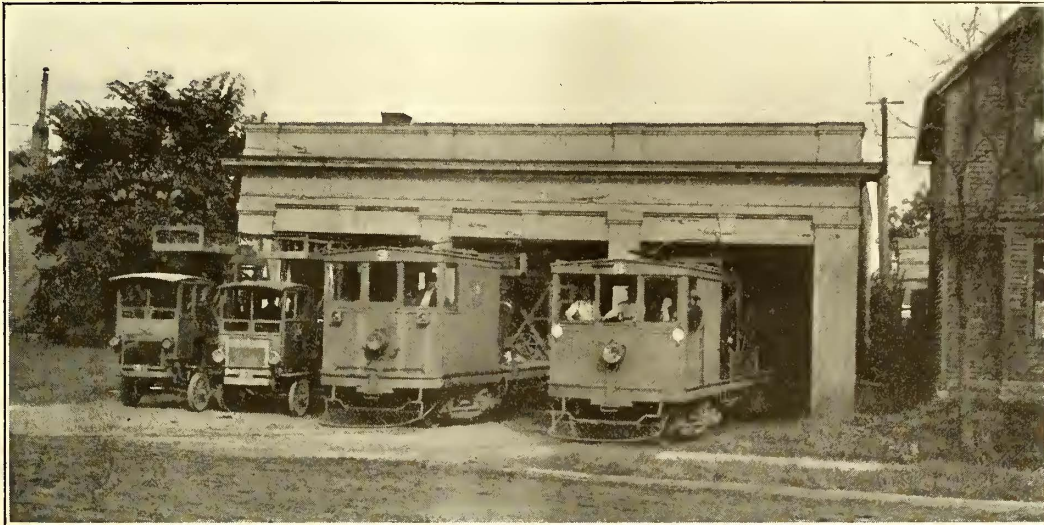
MOUNTING OF SIGNALS AND JUNCTION BOX



CIRCUIT DIAGRAM FOR BLOCK SIGNALS

Tower Trucks and Cars at Minneapolis

The Twin City Company Has Built Four Auto Towers and Four Tower Cars, Which Handle All of the Emergency Work in Minneapolis and St. Paul



THIS EQUIPMENT TAKES CARE OF THE OVERHEAD ON THE MINNEAPOLIS DIVISION

IN THE MAINTENANCE and construction of more than 450 miles of overhead system the Twin City Rapid Transit Company, Minneapolis, uses four automobile tower trucks and four tower cars, half of them in Minneapolis and half in St. Paul. Although the tower equipment used on various railway systems is similar, this equipment is of particular interest in some details because it is standard throughout and because it was all built by the company.

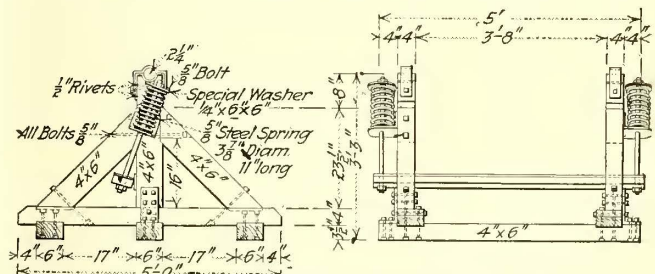
The four automobile tower trucks are each equipped with a 2-ton commercial chassis. Trucks 1, 2 and 3 are each equipped with 35-hp. engines while truck 4 has a 45-hp. engine and weighs about 2000 lb. more than the three other trucks. The towers are built of wood, fir being used in most parts, steel being used only as bracing in the platform and for the sliding surface of the removable section. The vertical members are 3-in. x 3-in., cross-braced by $\frac{3}{4}$ -in. x 3-in. members in the lower section and by 1 $\frac{1}{2}$ -in. x 3-in. members in the upper section. The framework is bolted together with $\frac{3}{4}$ -in. carriage bolts. The truck body has an over-all length of 16 ft. 10 in. About 7ft. at the rear end of this is taken up by the tower. The over-all width of the truck is 6 ft. The tower when lowered stands 12 ft. 1 $\frac{1}{2}$ in. high from the ground and can be raised to a height of 12 ft. 7 $\frac{3}{4}$ in. The height lowered is limited by the low overhead clearance of some viaducts under which the trucks must pass. The tower platform measures 10 ft. x 3 ft. 7 $\frac{1}{2}$ in. with an overhang of 5 ft. 11 $\frac{1}{2}$ in.

MAIN FEATURES OF TOWERS

One of the main features of the towers is that they are designed for complete rotation at the base. The reason for this is the desire for greater stability than usually results with rotation of the platform only. The radius of rotation is 2 ft. 10 in. and the stationary surface is a 3-in. x 3-in. x $\frac{3}{4}$ -in. angle ring, the

bearing surface of the tower corners being steel plates. The tower is revolved by hand and is held in position by cam levers. It is also raised and lowered by hand, an eight-tooth sprocket on the crank operating a forty-tooth sprocket on the drum axis by means of a No. 55 Jeffrey detachable chain. This operation is easily accomplished by one man. Details of the tower equipment are shown in the accompanying illustrations.

A supply of tools and small equipment is carried in boxes at the back of the truck while ropes, tackle, larger equipment, 500 ft. of span wire and 200 ft. of trolley wire are hung conveniently on hooks on the sides of the tower. Signals are transmitted to the driver by a gong located on the tower. The cab is entirely inclosed for cold or inclement weather, although windows on all sides can be lowered when desirable. The trucks are equipped with 4-in. single tires in front and 4-in. dual tires in the rear. These tires give an average of 10,000



RACK WITH BRAKE FOR TROLLEY WIRE REEL ON TOWER CAR

miles. The trucks weigh stripped from 6500 to 7100 lb. and the crew comprises three men.

CAR TOWERS SIMILAR TO THOSE ON TRUCKS

The towers for the cars are very similar in construction to those used on the trucks. The vertical members are the same but the cross-bracing is $\frac{7}{8}$ in. x 3 in. in

the lower section and the same in the upper section. While the auto tower measures about 4 ft. square the tower on the cars is about 4 ft. wide by 6 ft. long. This tower also is not quite as high, either lowered or raised, as is the auto tower and has a little greater overhang. The rotation feature on these towers is the same as that already described, the radius of rotation in this case, however, being 3 ft. 9 in. The arrangement for lowering and raising these towers is similar, with the exception that one tower is equipped with a three-cylinder air motor for air operation.

The capacity for tools on the cars is more extensive than on the trucks. On one side of the cab is a work bench with vise, etc., and on the other a series of pockets or bins containing all kinds of small supplies. The cars are also equipped with a reel of approximately 1 mile of trolley wire mounted on a rack or wench equipped with a brake.

The tower cars were built entirely by the company. The trucks are standard Twin City equipped with 4 GE-57 motors geared for a speed of 45 m.p.h. By means of a series-multiple switch the four motors can be operated on a series in the city and when stringing trolley wire giving a speed of about 4 m.p.h. on the first notch of series. The control is General Electric K-14. The floor framing is 4-in. x 6-in. yellow pine reinforced by 6-in. pine channels for the side sills. The flooring is 2-in. pine. The length over the bumper is 40 ft.,

the width 7 ft. 8 in., the cab is 10 ft. long and the height from top of rail to top of cab is 11 ft. 4 in.

On construction work the trolley wire is strung alive and furnishes energy to the motors of the car by a unique device as shown. The end of the reel is attached

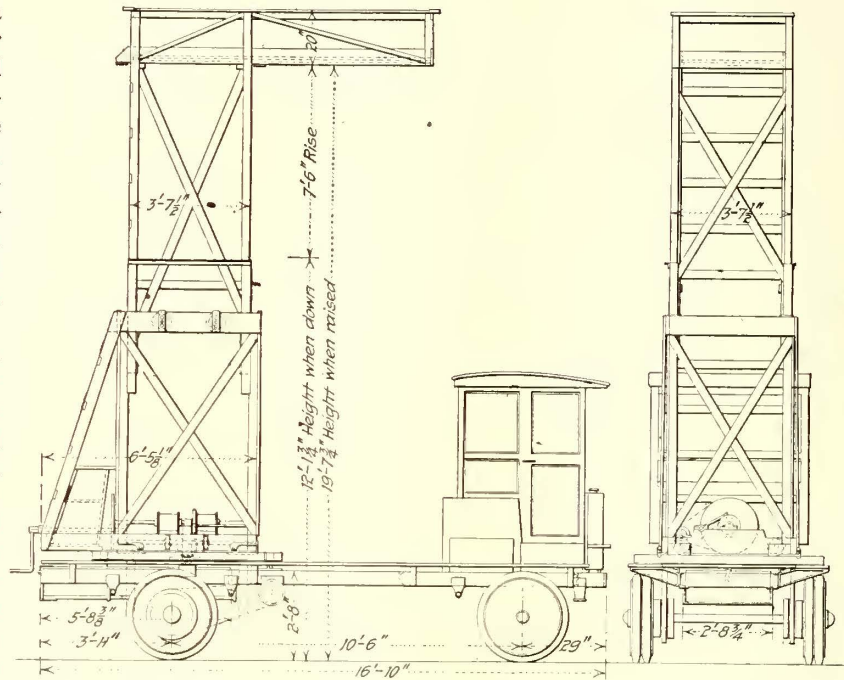
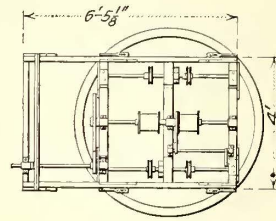


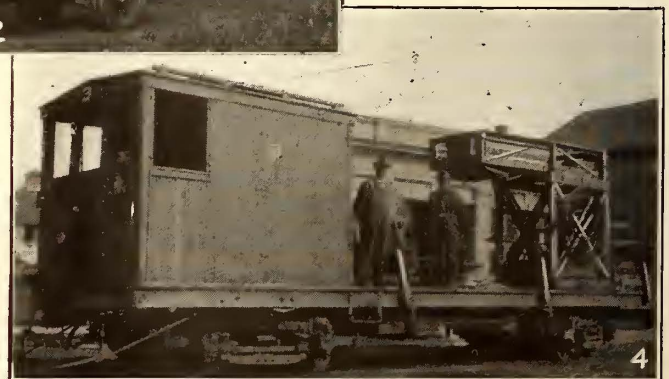
FIG. 1. DETAILS OF AUTOMOBILE TOWER TRUCK CONSTRUCTION

to the live overhead at the starting point. By means of a hook over the trolley wheel an auxiliary wheel is suspended and the new wire being strung passes through this wheel and over a roller on the front of the lower platform. Thus the energy for operation is furnished through the new wire being taken from the reel. Four men with this equipment can take down and reel up 1 mile of old trolley wire and string the same amount of new wire in four hours.

The auto-towers are used on emergency repair work and for small maintenance and construction, as they can be located beside the track with no interruption to traffic.

The cars, however, are generally used on any work of over two spans in length and where traffic is light.

This equipment has proved of great assistance in carrying on the maintenance work of the system and its operating cost has been very low, as is shown by the following:



TYPES OF AUTO TOWERS AND TOWER CARS

Fig. 2, the Twin City auto tower truck and its equipment; Fig. 3, stringing live trolley wire from which the car is operated; Fig. 4, the Twin City tower car and its equipment

The average cost to operate the tower trucks per registered mile for the years 1917 and 1918 has been:

Truck 1.....	0.1413 cent per mile
Truck 2.....	0.1576 cent per mile
Truck 3.....	0.1098 cent per mile
Truck 4.....	0.2069 cent per mile

These figures include all expense such as gasolene, lubricating oil, tires, insurance, painting and general repairs.

Unusual Method for Moving Two 250-Hp. Boilers

Pacific Electric Plan of Moving Two Boilers From the Vineyard Power Plant to a New Plant Located at Torrance Is Described

BY CLIFFORD A. ELLIOTT

Cost Engineer, Maintenance of Way Department, Pacific Electric Railway, Los Angeles, Cal.

IN AN article in the ELECTRIC RAILWAY JOURNAL for March 22, 1919, covering the removal and reinstallation of a power-plant smokestack, mention was made of the intended removal of two 250-hp. Stirling boilers from this company's Vineyard power plant to a new power plant at Torrance constructed to serve the car shops under erection at that point. When the occasion arose for the removal of these boilers it was at first thought to be impossible to remove each one complete, as each consists of four 24-in. drums with numerous 3-in. connecting tubes. The cutting of the tubes connecting the four drums was considered and it was estimated that it would cost approximately \$3,000 to remove them and to weld them in place. A contractor however, successfully carried out this work without dismantling the boilers, with considerable saving in time and expense.

In carrying out this work each boiler was first released from its permanent position on the brick foundation, and the bolts used to hold the steel frames in place

were removed. The rear end was then elevated to the same level as the front, and after cribbing had been set up the boiler was moved on rollers across the steam mains, but without touching them, and over additional cribbing to a point opposite the door. This door was in the side of a concrete wall of the power plant, and it was necessary to enlarge it to 4 ft. jamb by 10½ ft. high. A donkey engine located on a flat car outside the power plant was used to tow the boiler by means of a cable line. Planking was placed on top of the cribbing as a surface for the rollers. The maximum height of the cribbing units was 10½ ft. When the boiler had been brought to a point opposite the door it was lowered by removing the sectional units of the cribbing. It was then turned at right angles to the door, and moved on rollers and skids outside the building. Here it was again moved by means of rollers up an improvised timber incline over an 8½-ft. retaining wall onto a steel flat car which transported it to Torrance. Four flat cars were necessary to handle the two boilers and equipment. One car was used for each boiler, a third car for valves, door fronts and miscellaneous parts and the fourth for the breeching, donkey engine and hoisting equipment.

Safety Cars and Advertising

IN A PAPER on the safety car recently delivered before the Arkansas Utilities Association, A. L. Faber, Westinghouse Electric & Manufacturing Company, said:

"The safety cars enable the railways to offer a service that will benefit the entire population of the community. The interrelation between full cars and the retail business of the city is perfectly definite. It is practically as much to the interest of the merchant to have efficient and sufficiently frequent service as to the street railway.

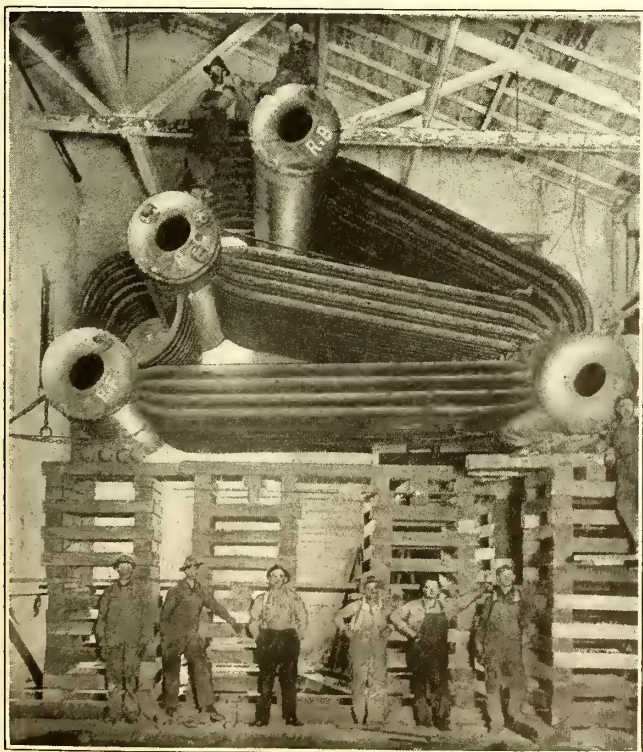
"Advertising of schedules and service conditions is, therefore, a very important factor, and since the interests are parallel, a booklet could be printed with representation of both the merchants and the railway in which the schedules and similar information can be given by the one and the sales message by the other. This booklet would represent the interests of the entire community and its cost would be very small to the railway company.

"With the application of the safety car, a broader advertising policy and such relief in fares as the individual properties require, the street railway interests have some hope of operating for the benefit of all concerned."

Be Wreckless — Not Reckless

The National Safety Council, electric railway section, uses the above phrase in summarizing the causes of car wrecks. The causes listed are: Insufficient headway, conversation with motormen, taking curve too fast, slick rails, not signaling at crossing, improper testing of equipment, unreported defects and misunderstood orders.

The Electric Railway Section of the National Safety Council announces the appointment of J. H. Mallon, safety engineer, Metropolitan West Side Elevated Railway, Chicago, as chairman of its bulletin committee.



ONE OF TWO 250-HP. BOILERS MOVED INTACT BY PACIFIC ELECTRIC RAILWAY



Photo by Harris & Ewing, Washington, D. C.

NEW FEDERAL ELECTRIC RAILWAYS COMMISSION IN SESSION AT WASHINGTON, D. C.

Left to right: Louis B. Wehle, representing Eugene Meyer, Jr., of the War Finance Corporation; Dr. Royal Meeker, commissioner of statistics of the Department of Labor; Edwin F. Sweet, Assistant Secretary of Commerce and vice-chairman of the commission; Charles E. Elmquist, president and general solicitor of the National Association of Railway & Utility Commissioners, who is chairman of the commission; standing, Charlton Ogburn, executive secretary of the commission; Philip H. Gadsden, chairman of the committee on readjustment of the American Electric Railway Association; Charles W. Beall, member of the firm of Harris, Forbes & Company, New York. Absent, George L. Baker, Mayor of Portland, Oregon; W. D. Mahon, president of the Amalgamated Association of Street & Electric Railway Employees of America, Detroit, Mich.

Federal Hearings Commence

President Pardee and Chairman Tripp Open the Railway Case at Washington — Extended Statistics Presented on Status of Industry — Other Witnesses Give Testimony

THE first session in Washington of the long-expected federal inquiry into the status of the electric railways of the country was held on Tuesday, July 15. One prior hearing was held in New York on June 19, when ex-President William H. Taft was the principal witness. Since that time the committee of one hundred has been organized to prepare and present the electric railway case, and this was the first meeting at which this committee was represented. The hearings were held in the large audience room on the twelfth floor of the Interstate Commerce Commission Building at Eighteenth Street and Pennsylvania Avenue, N. W., Washington.

Chairman Elmquist opened the session on Tuesday morning, shortly after 10 o'clock. The commissioners in attendance, besides himself, were Messrs. Sweet, Meeker, Wehle, Beall and Gadsden. Those absent were Commissioner Mahon and the representative of the American Cities League of Mayors, Mayor Baker of Portland, Ore. Charlton Ogburn, council of the commission was also in attendance.

The presentation of the case of the association and of the committee of one hundred was in charge of President Pardee, Chairman Tripp, Counsel Bentley W. Warren, Secretary Burritt, J. W. Welsh, and H. C. Clark. Others from the industry or the committee of one hundred in attendance at the first day's session included S. M. Curwen, W. M. Coleman, W. J. Clark, Barron G. Collier, E. J. Dickson, W. C. Ely, Van Horn Ely, F. W.

Frueauff, Edwin Gruehl, W. F. Ham, G. E. Hamilton, J. H. Hanna, C. S. Kimball, J. B. Lackey, Randall Morgan, E. J. Murphy and J. H. Stephens.

ABSTRACT OF MR. PARDEE'S STATEMENT

Chairman Elmquist in opening the meeting first asked Mr. Pardee to explain the position of the electric railways. In his address Mr. Pardee said in part:

We are before your commission because a crisis has been reached in the conduct of this very important and essential enterprise. We are no longer able, under existing conditions, to continue in the performance of the functions which the electric railways are designed to perform. It is no longer a question of what return shall be allowed to the owners, it is a question as to what service, if any, shall be rendered to the public.

Owing to the complete system of control and regulation exerted over us by the public authorities, which both prescribe our service and control our rates, we are unable to readjust ourselves to changing conditions as every other industry, not so hampered, is readjusting itself. We realize fully that your commission is without power to take peremptory action, or directly to put into effect any recommendations which you may make. You, however, bear the commission of the President of the United States; you were appointed at the joint suggestion of the Secretaries of Commerce and of Labor. Your conclusions and recommendations will have the confidence of the people and will carry with them the weight that must always be attached to the wishes and conclusions of the National Administration. Your appointment of the electric railway industry affords an opportunity of presenting to the public, whose representatives you are, a true picture of the state into which it has fallen through no fault of its own.

There are two major phases of the situation which we now face. The first is that there has never been a proper

conception either on the part of the owners of these properties, nor on the part of the public, as to the factors which should govern the service to be rendered or the fares to be charged by electric railways. This situation, which existed before the war, is entirely unconnected with the changes wrought by the war, but is one of the fundamental reasons why the war has helped to bring disaster upon us.

The second phase was the direct result of the war. The government took control of our labor—it raised the wages of our employees in many cases as much as 100 per cent; it took command of our fuel supply, and fixed the prices which we were compelled to pay for coal; it fixed the price of every commodity that entered into the maintenance and operation of electric railways; in a vast number of cases it prescribed the service which we were to perform, and called upon us companies for construction involving many millions of dollars. In fact, there was not a phase of electric railway operation in which the government did not interfere, with the result that the cost of operating our roads was very greatly and materially increased. To assist us in bearing these burdens it did nothing.

We are not here to claim that this action of the government was not entirely necessary and entirely proper, or that it exclusively affected our industry. But we do say that its effect upon the railways of the country was the more pronounced and the more disastrous because, alone of all the industries affected, the public utilities were unable to apply the obvious remedy—an increase on their own volition in the price of their product to meet the increase in its cost thus forced upon them. These two phases of the situation we propose to lay before you in detail.

The association which I represent and the committee of one hundred, to which it has intrusted the presentation of its case before your commission, do not intend to impress upon you in detail their own views as to the remedies which should be applied to the cure of the situation. We do believe, however, that there are two fundamental ideas which will inevitably force themselves upon you for your consideration. The first of these is that the co-operation of the public is a *sine qua non* to the stabilizing of electric railway conditions; that there must be impressed upon the public a new conception of the relations between the communities and the public utilities which serve them; that the antagonism which has heretofore prevailed is disastrous to both interests, and that only when the public and the companies work together to secure efficiency and economy in operation can the desired service be furnished at a reasonable price.

The second is that in order to provide through the employment of private capital proper transportation facilities for cities and for rural districts the basis of compensation must be so determined as to provide an assured return and a rate of fare so flexible as readily and automatically to adjust itself to the cost of providing the service.

MR. WARREN OUTLINES CASE

At the conclusion of Mr. Pardee's address Bentley W. Warren, counsel for the committee of one hundred, outlined the case of the electric railways. He said that a very severe condition was confronting the industry and that the railways would endeavor to place before the commission statistics showing this condition and the possible remedies which might be supplied. He mentioned as an illustration of the situation that in Massachusetts, his own state, where there was an investment in electric railways of almost a quarter of a billion dollars and gross receipts last year of approximately \$45,000,000, the deficit over operating expenses and fixed charges during 1918 was somewhat more than \$5,000,000.

ABSTRACT OF ADDRESS OF GENERAL TRIPP

Mr. Warren was followed by General Tripp, who spoke as chairman of the committee of one hundred. General Tripp said in part:

We are here not simply to give you the views of investors who have already suffered a great loss and who are threatened with still greater loss, but also, as manufacturers, bankers and insurance men, to present this case in its very broadest aspects and as representing the business and industrial elements of the nation affected by an industry in

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which some \$6,000,000,000 are invested, which has a revenue of \$730,000,000 and which is in danger of complete collapse and dissolution. It jeopardizes more than the interests of those immediately connected with it. Its effect will be a real cause for alarm on the part of insurance companies, bankers, trust companies and other fiduciary institutions which in good faith and with then sound business judgment have invested savings intrusted to their care in the bonds and other securities of electric railways, and it certainly would be a matter of serious concern to manufacturers who find in the electric railways a customer for nearly \$200,000,000 annually of their product.

The appointment of this commission is evidence that the extremely critical situation in which the industry finds itself is also a matter of concern to the federal government, and I take it the concern of the government arises not wholly nor perhaps primarily out of any particular consideration for the railways themselves, but rather that its effect upon the general business fabric of the country, to which I have briefly alluded, is the uppermost factor which led to your appointment; and, consistent with that, there are represented upon your commission the Treasury Department, the Department of Commerce and the Department of Labor.

The Treasury Department is interested because an industry, which requires each normal year new capital to the extent of some \$200,000,000 and whose refunding operations require even a larger sum, cannot indefinitely remain in such a condition as the electric railways are now in without having an adverse effect upon the financial system of the country.

The Department of Labor is concerned because the question of wages and of working conditions and of employment are involved, not only as it directly affects railway companies but also as it affects the manufacturing companies which supply the materials and apparatus used by the railways.

The Department of Commerce is concerned because, to an extent seldom realized until strikes or other circumstances cause an abandonment of service, the business and commercial life of the country is closely bound up with the system of transportation afforded by electric railways.

The appointment of your commission furnishes the first opportunity for the electric railways to present their case as a national problem. The present methods of regulation and control of electric railways have failed. It needs no argument to prove that. The mere fact that a whole industry, covering the entire United States and operating under different local conditions—the mere fact that such an industry as a whole is on the verge of bankruptcy at a time when unregulated industries are at the height of prosperity speaks for itself.

PRESENT METHODS NOT SUFFICIENTLY ELASTIC

The present methods of regulation and control are entirely too inelastic to respond to the stress of changing conditions and have not permitted the adjustment of the price of the product to meet the cost of the product. Any method of regulation which does not permit the application of that simple rule will always be a failure. No doubt this is a fundamental truth which every one recognizes, but in the case of electric railways there has been introduced a psychological factor which has hindered the adjustment of the electric railway problem. The old system of contracts between communities and private companies, whereby the companies agreed for certain fixed fares to do certain fixed service, has resulted in the popular belief, which it has been hitherto impossible to eradicate, that furnishing street railway transportation through the medium of private enterprise amounts to giving away public privileges to private individuals who have realized enormous profits.

The relations between the municipality and the electric railway cannot be satisfactorily fixed upon relations of a simple contract such as might exist between two individuals. I entirely subscribe to the theory of state control and regulation of these utilities; and, that theory having been admitted, it is impossible for the parties to stand in simple contractual relations, and the idea should be entirely eradicated from the public mind and the proper conception of the functions of an electric railway be substituted. This concept I believe to be that the electric railways are acting as agents for the public in furnishing transportation to the public, and for that service they should receive an adequate and just return upon the money invested in such service on terms capable of prompt adjustment to meet changing conditions of operation and of finance.

The electric railway industry is faced at this moment with three alternatives and the issue will come immediately:

- (1) Municipal ownership.
- (2) Private ownership and operation resting on a sound fundamental basis of regulation and control.
- (3) Absolute disappearance of the service.

In some cases the service has already disappeared and the rails have been taken up, but it is unthinkable that in the larger communities this alternative is possible except perhaps in part. Therefore the real issue comes between municipal ownership and private ownership. From the purely selfish standpoint of investors I have no doubt a great sigh of relief would go up if municipalities should purchase the electric railways at a fair valuation. But the experience of governmental operation of those utilities, the operations of which are of more or less a complex character, has not been reassuring, and I believe a great majority of the people of the country believe in private ownership and operation under proper regulations and control.

At the conclusion of General Tripp's address, Mr. Elmquist asked how long the railways would require to present their evidence. Mr. Warren replied that it would take about ten days. Chairman Elmquist then announced that the commission would sit daily from 10 a.m. to 1 p.m. and from 2 p.m. to 5 p.m., but that it would not sit on Saturdays, unless a special announcement was made to that effect.

MR. WELCH PRESENTS STATISTICS

The greater part of the sessions on Tuesday was devoted to the presentation of statistics of the electric railway industry by J. W. Welsh, statistician. A number of the charts presented by Mr. Welsh will be reproduced in the next issue of this paper.

W. J. CLARK TESTIFIES ON EARLY CONDITIONS

During the latter part of Tuesday afternoon W. J. Clark, of the General Electric Company, took the stand and described some of the early electric railway conditions. He said that in the latter part of the decade between 1880 and 1890 he became interested in a small street railway company at Derby, Conn. This road was equipped by him and his associates with the Van Depoele electric system. It was expected that the cars, motors, generators, etc., then provided would be good for service for 20 years or more. Instead, before 1896, the company had changed its car bodies three times and its motors five times and had built its third power station. This rapid obsolescence had caused large development expenses. Much of the so-called "water" in electric railway capitalization, in his opinion, represents actual cash investments of this kind. Mr. Clark believed that electric railways would survive if relief was afforded to them and that much of the traffic now lost to automobiles would come back again. He said that one reason why the Thomson-Houston Electric Company had acquired the Van Depoele electric railway patents in 1888 was that its leading officials had come to the conclusion at that time that the field for electric lighting apparatus was about saturated because most of the cities in New England had then purchased arc lighting outfits. In the same way, many manufacturers of electric railway apparatus had thought in 1896 that but little remained to be done because most of the roads at that time had purchased equipment. He cited prices to show that the early electric railway equipment, although inefficient, was costly, yet the lines thus equipped had been a great benefit to the communities served and had been the nuclei from which large systems had sprung.

GENERAL TRIPP DISCUSSES FINANCES

Testimony relative to the financial condition of the electric railway industry offered by General Tripp occupied the bulk of the time in the Wednesday proceedings. Asked to define the tendency in the electric railway world today, General Tripp said: "It is more than a tendency; it is a rapid progress toward bankruptcy."

He gave as the main cause for this condition the decreased purchasing power of the dollar and said that the railway companies were unable to meet this depreciation because of the taxes fixed by franchise regulations and the ideas of the general public relative to a fixed standard fare.

To show that overcapitalization, or "watered stock," was not the cause, he cited the case of the New York Railways, now in the hands of a receiver. The system when consolidated in 1911 was capitalized at less than its appraisal value and at that time was considered as established on an absolutely safe basis. In connection with this illustration General Tripp remarked. "We have all been living in a fool's paradise." He further said that a business which cannot increase its revenues under any conditions is not on a sound basis and that street railway credit can not be restored as long as the present relations exist between the companies and the communities they serve.

As a general proposition General Tripp approved the action of the National War Labor Board in raising wages since the wage earner had little or no margin to sustain himself with under depreciated currency conditions. In answer to a question from the commission he said that as he saw it no relief could be expected from lowered wages. The financial problem would have to be solved by the public and the railways.

THERE MUST BE A NEW ORDER OF THINGS

Questioned by the commission as to possible solutions General Tripp said that a new scheme of relationship must be devised and that the solution, whatever it is, must eliminate the fixed income problem which the railways now face. This led to an extended discussion of the service-at-cost method of operation. General Tripp told the commission that it was his personal opinion that the easiest and fairest way of reaching a basis for calculating earnings was by studying the security issues of a company, determining from the history of these issues just what sum of money entered into the investment cost. He said that he felt that investment cost thus arrived at was more easily understood than a cost based on physical value, reproduction cost or other method involving the use of many technical and little understood terms. Other questions by the commission brought up the matters of paving costs, general taxes, effect of raising fares and the jitney. Relative to a reduction of taxes General Tripp said that this would help but would not solve the problem as long as the present inelasticity of income prevails. In answer to a question, General Tripp told the commission that he felt that the investigation should be directed toward a study of the fundamental difficulties common to all companies rather than the difficulties of individual company and that local illustrations of conditions might be used only where they pointed a general moral. He also expressed belief that a strong recommendation by the commission in the way of fundamental methods would do much towards assisting in the solution of the problem.

UTILITY SECURITIES ARE NOT SALABLE, SAYS INVESTMENT BANKER

Following General Tripp, H. L. Stuart, president of Halsey, Stuart & Company, investment bankers, Chicago, took the stand. Mr. Stuart said that in the past his company had done a large business in electric railway securities and that these securities had been sold to insurance companies, banks, trustees and individual investors. He said that for some time street railway bonds had been regarded with distrust by investors and that during the last two years their sale had been practically impossible. Street railway stock had ceased to be regarded as a safe investment some years previous to this. He said that the formation of public utility commissions in a number of states several years ago for a time had increased utility security sales, as it was thought the action of these commissions would be to increase the safety of utility securities.

In answer to a question by the commission Mr. Stuart said that very large amounts of utility securities are held by the ultimate investor. He cited the case of the Kansas City Railways' small bond issues stating that thousands of \$100 bonds had been sold. It is Mr. Stuart's opinion that some form of cost-of-service plan is best and that the indeterminate permit is much better than the fixed period franchise. Like General Tripp, Mr. Stuart thinks that the solution lies between the railways and the public. From the investment banker's standpoint Mr. Stuart said that he felt that the commission is the court of last resort.

MR. HURLEY'S LETTER

After the completion of Mr. Stuart's testimony, Bentley W. Warren, council for the American Electric Railway Association, read into the records a letter from Edward N. Hurley, chairman of the United States Shipping Board. Mr. Hurley pointed out that the rapid development of this country had been due in large part to the construction of transportation facilities and that adequate and efficient electric railway facilities are just as essential to the proper development welfare and prosperity of our cities as the transcontinental trunk lines are to the country at large. He said that the railways should be freely accorded the right to establish such rates as are necessary to meet operating costs and yield a reasonable return on the capital invested. In referring to the need for urban transportation he said:

With the whole world endeavoring to improve its transportation services both on land and sea and spending millions of dollars experimenting on transportation in the air, it is most important to the future prosperity and comfort of our people that the street railways be placed in a position where first-class service will be given the public at a just cost under the supervision of broad-minded, sound commissions. If state and national governments are to determine what is a fair street railway wage scale, then they should also assume the responsibility of determining and establishing what is an adequate street railway fare, and they should willingly, when the facts are presented, meet the new conditions by authorizing street railway companies to increase their fares.

It is clear that every electric railway company should be freely accorded the right to establish such rates as are necessary to meet operating costs, including maintenance and depreciation and a reasonable return on the capital invested. If they are to be denied this right, it is perfectly clear that no additional capital can be safely invested in electric railway securities, that our electric railways will be unable to meet their obligations to the public and their security holders.

As soon as the American public and the street railway corporations of this country are brought to a settled understanding of what constitutes fairness in their mutual relations, your problem will be solved. Capital already legitimately invested in public service will be safeguarded, the credit of our legitimate electric railway companies will be restored, new capital will be available to them as required for the development and expansion of their facilities to meet the requirements of the public, and the public will enjoy efficient, safe service.

In conclusion Mr. Hurley said: "The true value of an electric railway property is the legitimate cost incurred in establishing and developing its business and any method of valuation which disregards this principle is not fair."

SERVICE HAS BEEN IMPAIRED

That service has been impaired was the testimony of Henry G. Bradlee, of the Stone & Webster Corporation. Mr. Bradlee exhibited several charts showing the amount of capital required by several different types of industry and pointed out that the electric railways had been "living off their fat" as it were, for very little maintenance work has been done and few extensions have been built during the last few years. He stated that the street railway companies now need between \$600,000,000 and \$700,000,000 each year for new extensions and improvements. In addition to this, they need between \$300,000,000 and \$350,000,000 annually for refunding outstanding securities, thus bringing the total financial needs to something like \$1,000,000,000 a year.

The question of new capital, to Mr. Bradlee's mind, was the crux of the whole railway situation. He pointed out there were only two ways to get this money, either through municipal ownership or through the establishment of some plan so that the private investor will feel reasonably safe in buying railway securities.

As illustrative of the increase in costs during recent years Mr. Bradlee presented the following interesting data pertaining to three of the Stone & Webster properties:

TABLE SHOWING PERCENT INCREASE OF EXPENDITURES
1919 OVER 1913

Item	Houston Electric Company	Northern Texas Traction Company	El Paso Electric Railway
Maintenance of Way and Structures	76	63.0	47
Maintenance of Equipment	58	83.5	61
Conducting Transportation	50	57.5	90
Miscellaneous	32	7.4	27
Total cost of operation	48.4	45.0	65.3

The figures are for the years ended April 30, 1919, and April, 1913. The 1913 cost figures were arrived at by taking the 1919 items and multiplying them by the unit costs prevailing in 1913. The high cost of conducting transportation increase for the last property as compared with the others is due to the fact that fuel for the first two is still being purchased on a pre-war contract while for the last property current fuel prices are being paid.

When asked relative to the distribution of their securities, Mr. Bradlee stated that they were very widely held. He said the Stone & Webster properties were all operating under the old fashioned form of franchise. He stated that the fixed-period franchise is objectionable because the difficulty of securing new capital increases as the expiration time of the franchise approaches. When questioned by the commission as to the trend in the power situation, Mr. Bradlee said that it would be more economical to have fewer and larger

plants than we now have. Just how far this can be carried is a matter difficult of determination, however.

The commission also asked Mr. Bradlee relative to the possibilities of the Ford gasoline car and the motor bus. Speaking of the first, Mr. Bradlee said that Mr. Ford as yet "had an idea, not a car," and with regard to the motor bus said that his company is operating motor buses in a number of places as feeders to their railway lines. He believes that in general the cost of transportation is greater with the buses than over the rails and sees no chance for them except in special cases where they run through sparsely settled communities.

PROGRAM OF FUTURE HEARINGS ANNOUNCED

Announcement was made at the close of Thursday's hearing by Chairman Elmquist that upon the completion of the railway testimony adjournment would be taken until Aug. 4. On that date Secretary Baker and a group of economists will begin testifying. On the completion of their testimony, another adjournment will be taken until Aug. 11 when the mayors of various large cities, including New York, San Francisco, Boston, Buffalo, New Orleans, Seattle, Detroit, Chicago, Cleveland and others, will begin testifying. Members of various commissions also will be heard with this group.

DEAN COOLEY AND OTHERS TESTIFY ON THURSDAY

With the resumption of hearings on Thursday morning W. J. Clark, of the General Electric Company, was again called to the stand to testify relative to the early history of electric railways. Counsel brought out the point that early experimental work was done at the expense of the electric railways and constitutes a part of the just investment. Mr. Clark compared American and foreign electric railways and discussed the causes of public prejudice at request of the commission. The commission at this point took a recess to permit a photograph of the commission being taken.

After the recess Dean Mortimer E. Cooley, of the University of Michigan, was called to testify as to the elements entering street railway costs. The balance of the forenoon and a considerable part of the afternoon session were occupied by Dean Cooley, who was questioned at great length by the commission on depreciation, obsolescence and maintenance costs, and what should be done to improve the electric railway situation. Dean Cooley said that it would take a generation to educate the public properly, which belief is needed now. He considered higher fares a palliative only. Every public utility needs a surplus fund, a surge tank, to take care of fluctuations. In regard to municipal ownership, Dean Cooley said he did not believe it would be a success but would be the best way of educating the public. "Municipal ownership is beautiful as an ideal but worthless as a practical thing," said he.

In answer to a question from one of the commission as to what should then be done, Dean Cooley said: "I recommend that street railways have the right to charge fares that would permit them to meet their operating expenses, keep up their service, and maintain their properties intact." He indicated that the present fares should be at least 50 per cent higher, and suggested the removal of some of the taxes now borne by street railways and exemption from the obligation to maintain the paving between the car tracks.

At the conclusion of Dean Cooley's testimony, Counsel Warren read into the record a statement from A. Merritt Taylor, president Philadelphia & Westchester Traction Company and formerly manager, division of housing and transportation, United States Shipping Board. This statement will be found below.

W. D. George, one of the receivers of the Pittsburgh Railways, was then called to testify as to the effect of zone fares and the effect of increased fares in Pittsburgh. As a real estate man by profession rather than a railway man, Mr. George was questioned by the commission at great length relative to the matter of public sentiment and interest in the electric industry as against the methods dictated by clear-cut business methods. Mr. George expressed himself as being opposed to zone fares on the ground that they are inimical to the best development of a community.

Further particulars of the sessions on Thursday and an account of the following sessions up to the press date of the issue of July 26 will be published in that issue.

The Valuation of Electric Railway Properties*

BY A. MERRITT TAYLOR
Philadelphia, Pa.

AN ELECTRIC railway company engaged in a legitimate constructive enterprise is entitled to charge rates for service which will yield a profitable return on the true cost of establishing and developing its property and business. Anything short of this means confiscation of money invested in public service.

In order that exact justice shall be accorded all parties at interest, an electric railway property must be valued at the true legitimate cost of its establishment and development up to the date when the valuation is made.

If, in the early stages of development, the net results of operation produce a return which is short of the amount required duly to compensate the owners of capital invested in the property for its use during such period, and to provide for normal depreciation and obsolescence, such shortage plus accrued interest on accumulated portion of just return withheld from investors must necessarily be considered to be a part of the cost of the development of the property and its business, and be included as an element of value.

If an electric railway property be valued (as is proposed by impractical theorists) at its cost less depreciation and obsolescence, or at what would be the cost of reproducing it less depreciation and obsolescence in instances where the net revenue has been insufficient to yield a return on the capital invested therein duly compensatory for the service performed and the risks assumed, and or where the net revenue has been insufficient to provide for depreciation and obsolescence in addition to yielding a just return upon the capital, such valuation is unjustifiable and rates based thereon are confiscatory.

An electric railway enterprise is entitled to charge such rates as are required to protect the capital legitimately invested therein and to yield to the owners of such capital a cumulative return which will adequately compensate them for its use, for the risks assumed and the service performed, and which are required properly to meet cumulative depreciation and

*Statement filed with Federal Electric Railways Commission and read at Washington, July 17, 1919.

obsolescence, to invite corporate initiative and to maintain the credit and ability of the enterprise to procure such additional capital as is required from time to time for the purpose of expanding its facilities for public service.

Capital will not be available for electric railway requirements in states and municipalities where there be question as to whether electric railway companies will be prevented by regulatory authorities from establishing rates required to yield an inviting cumulative return on the capital invested therein. This fact must be recognized and steps must be promptly taken to remove the grounds for reasonable doubt in the premises. Nothing short of a clear and common understanding of how valuations of electric railway properties made for rate-making purposes shall be arrived at, and of what elements must be regarded in the fixation of rates, will enable the electric railway enterprises to raise the capital which is required to meet their obligations and expand their facilities as required for public service.

There is a serious and inherent risk which confronts every investor who invests in electric railway constructive enterprises, namely, the risk that such enterprise will not yield a just return on the capital invested therein at any rate which its customers would be willing to pay for the service. In such instances where the rates are so high as to invoke the law of diminishing return, the management of the enterprise will necessarily have to decrease rates to such a basis as will yield the maximum net return, and the investor, in the absence of public assistance, will necessarily have to accept a lesser return on his capital unless through development of business the shortage can be made up and paid in later years.

HOW SHALL MAXIMUM NET RETURN ON INVESTMENT BE SECURED?

Many electric railway companies which are rendering essential service are now confronted with the fact that there is no rate of fare which will enable them to continue efficient operation of their properties and which will yield to them a return sufficient to meet the new level of operating and renewal costs resultant from the war, onerous conditions and charges imposed upon them by municipal, state and government authority, and to pay a just return on the capital invested in their properties. In such instances the credit of the electric railway company is impaired; it can raise no money with which to provide the additional facilities which are required from time to time for the service of the public in a growing community, and the public must augment its net revenue in one way or another to an extent sufficient to enable it to maintain its credit and meet its just obligations, or, be deprived of essential service. There are many electric railways which will be completely abandoned with the resultant incalculable loss to the communities which they serve unless their credit be promptly restored and maintained through public co-operation.

It is quite possible that the city of Canton, China, may have greatly improved transportation facilities in the near future. The city wall is in process of being torn down and a corporation with a liberal capital has been proposed to develop an electric tramway on the improved streets which will be built after the removal of the wall.

Denver Situation Clearing

City to Re-Grant Temporary Six-Cent Fare—Strike Ended—Service-at-Cost Plan Likely to Be Basis of Settlement

DENVER'S transportation troubles which came to a climax on July 8, as was noted in last week's issue of this paper, when 1200 employees of the Denver Tramway Company went out on strike after the announcement of a wage reduction, have been temporarily settled after an interruption of service lasting nearly four days. Within that period the Mayor and City Council of Denver agreed to re-enact the 6-cent fare ordinance which they had repealed the week before, the notion of jitney buses as a means of transportation was buried beneath overwhelming popular disapproval, and arrangements were made between city and company for a permanent settlement of the street railway situation on the basis of "service-at-cost." The employees presented demands during the walk-out for a closed shop, a 60, 65 and 70-cent scale for trainmen, and proportionate increases for all other unionized employees in the company. They went back to work at the 43, 46 and 48-cent scale, waiving the closed shop demand and leaving increased wages to settlement by arbitration within the next six months.

Approximately 625 jitneys were in operation the second day of the strike. The congestion caused on downtown streets, the terrific increase in accidents, the lack of schedules and failure of the jits to operate to the outlying districts of the city, coupled with the fact that scores of drivers disregarded the 5-cent limit and charged from 10 cents to \$1.50, disgusted the public with jitney buses long before the strike was ended. The "jit" is dead in Denver; whoever tries to resurrect it will meet with violent opposition from the people who ride.

The loss to the merchants of the city has not been estimated, but a thorough canvass of the retail houses discloses that 50 per cent is a conservative estimate of the loss of business during the strike. One department store lost \$10,000 a day; a retail shoe store lost \$800 a day and the downtown grocery and meat and drug stores had practically no business at all. The legitimate and vaudeville theaters suffered only a slight loss in their business, apparently because they drew all the tourist trade from hotels, but movies reported almost a total loss of business, especially in the afternoons. The working people of the city lost as high as one-fourth day's wages because of their inability to get to work on time.

The advertisement of the strike outside the city unquestionably did tremendous damage to Denver's tourist business; the full effect has not yet been felt.

There was no violence whatever during the strike owing to its peculiar nature, otherwise the loss to business men and workers would undoubtedly have been much greater.

The most unusual feature of the strike was the fact that the sympathies of the company were with the men, the management acknowledging that the men could not meet 1919 living expenses with 1917 wages. Advertisements for men to replace the strikers were placed in the newspapers, but only the reduced wage scale was offered and no professional strike-breakers were imported. Daily attempts were made to operate cars by company officials, who were good-naturedly but prompt-

ly pulled off the cars by the strikers. The mayor charged that the company and the strikers were in collusion because of this aspect of the strike, apparently not realizing that the importation of strike-breakers by the company would have led to an outbreak of the Winnipeg and Seattle sort.

In spite of the patent failure of the jitneys to meet the situation, the mayor issued a statement during the second day of the strike in which he declared that the tramway had been proven no longer necessary as a transportation system for Denver, and that the jitneys would supply all needs. He stated that it was "a great victory for the people" and declared the city would immediately spend \$3,000,000 in equipping jitney bus lines as a permanent substitute for the street railway.

Twenty-four hours after this statement was published, the mayor and the city council had agreed to revoke every jitney bus license, kill the jitney bill then before the council, re-enact the 6-cent fare ordinance for a period of 90 days, and before the end of that period to put before the people for their approval a service-at-cost plan based upon the recommendations of the Tramway Adjustment Committee of fifty-five, appointed by former Mayor W. F. R. Mills.

SERVICE QUICKLY RESTORED

With this agreement between city and company completed, General Manager F. W. Hild went into a series of conferences with the union officials. The union men finally agreed to go back to work at the old wage scale of 43, 46 and 48 cents and submit the demand for a 22-cent increase to arbitration. This submission will be made at some indeterminate date in the future, the men allowing a maximum of six months' time so that the company and city can secure a permanent solution of the transportation problem in the meantime.

Cars reappeared on the streets of Denver in time for the evening rush hour Friday, July 11, and were the signal for a mild repetition of the jubilant scenes on the downtown streets when the world war ended.

This was the first street car strike in the history of Denver. Strikes have been threatened several times in the last two years, but in each instance General Manager Hild has succeeded in averting them. On this occasion both the company and the men went on a strike. The 5-cent fare will be in effect during the time required to pass the 6-cent fare ordinance. July 12 the tramway put out petitions for an initiated 6-cent fare ordinance, and the required signatures of 4500 qualified electors were secured in about the time that would be necessary for that number of citizens to write their names. Final passage of the ordinance will probably be made by the City Council on July 28.

The 6-cent fare will be effective for 90 days, or until the passage by the people of the permanent solution.

Conferences looking toward the drafting of a "service-at-cost" ordinance began this week. Tramway employees, as well as city and company's officials, will probably be represented at these meetings. The work should be completed within thirty days, inasmuch as the special election must be called sixty days before it is held. The city will bear the expense of the election.

SERVICE-AT-COST PLAN RESURRECTED

The foundation material upon which the various parties interested will build the permanent arrangements between city and tramway is the report of the committee of fifty-five citizens already mentioned and

appointed by a number of civic, labor, commercial and improvement associations last January at the request of a former mayor. This committee took an active part in the settlement of the strike. Its report, which was filed with the city just before the present mayor took office and subsequently pigeonholed, embodies the conclusions reached after a thorough investigation of the transportation problem in Denver and other cities.

The report, after pointing out that the committee's investigation of the tramway finances leaves no doubt as to the necessity of relief, goes on to say that all manner of suggested solutions were analyzed and discussed, including the zone system, flat increases in fares, a proposal that the city be required by general tax levy to make up the deficit required for the efficient operation of the system as it would have to do if the city owned the lines, municipal ownership, the service-at-cost plan, and removal of extraordinary tax burdens and creation of new sources of revenue. In general, the service-at-cost plan is favored for the following reasons:

The service-at-cost plan provides that the car riders of the city shall pay only the actual expenses incurred in operating and maintaining the system.

It provides that the municipality, not the company, shall control the service given the public, the extensions that shall be made and the additions to service.

It virtually takes control of the street railway system out of the hands of the board of directors of the company and places it in the hands of the municipality.

It establishes a fair value of the property.

It allows the company to earn no more than a fair return on only that value, no matter how many stocks and bonds may have been issued against the property.

It provides an automatic decrease or increase in fares according to the cost of operating the system.

It provides for non-political, expert management of the technical operation of the system.

It encourages those in charge of operation to consider economy in purchase and efficiency in use; in some cities bonuses are allowed in this connection to stimulate extra effort.

It provides for a depreciation fund sufficient to guarantee the replacement of old tracks, old cars and worn out equipment and buildings with new, modern facilities, that will render better service to the public, and places the disposition of the money for such improvements in the hands of the municipality.

It provides for the purchase of the property by the city at a fair valuation at any time the public may decide to substitute municipal ownership for municipal control and supervision.

The service-at-cost plan gives the city all the advantages that might come from municipal ownership; yet does not burden the taxpayers with investment of the city's money in the property at this time, and in the committee's opinion coincidentally avoids nearly all other disadvantages of municipal ownership.

The committee defined "cost-of-service" as including:

1. Cost of wages and compensation to employees.
2. Cost of materials used in the operation of the system.
3. Cost of depreciation and renewals of the property as it wears out.
4. Cost of taxes.
5. Cost of money invested in the property (reasonable return upon the stipulated fair value of the system).
6. Cost of such incidental expenditures as are authorized under the rulings and uniform system of accounting of the Interstate Commerce Commission of the United States.

The Board of Control constitutes one of the most important features of the committee's plan, and in the eyes of tramway officials is such a radical departure from present methods that it cannot be considered favorably by the owners of the property. The wide powers of this board include control of the quality and quantity of service, of capital expenditures, of the scale of fares, of the depreciation and renewal funds, etc

The board consists of three members, two appointed by the mayor of the city and one by the company.

As a basis for its plan, the committee adopted the evaluation of the property made by the Public Utilities Commission the previous year, which for both city and interurban lines was \$23,674,100 as compared with the company's valuation of \$26,772,888. The committee allowed, upon the recommendation of Professor Ketchum, L. R. Nash of Boston, and Charlton Ogburn of the National War Labor Board, a depreciation and renewal fund of \$500,000 per annum, which is the amount authorized by the public utilities commission.

On the rate of return the report recommends 7 per cent with a bonus when the fare is 6 cents or less. A sliding scale of fares is provided, with a fare control fund varying between the limits of \$500,000 and \$100,000 which acts to determine the time of changing from one fare schedule to another.

COMMENTS OF MANAGER HILD

General Manager Hild of the tramway considers the committee's service-at-cost plan a classic in its field, even though all its provisions do not meet with his unqualified approval. He says: "From the standpoint of the tramway company there are three main objections to the plan as recommended by the Committee of Fifty-five.

"First, the valuation is too low. We still feel that we were in a better position to judge the valuation than anyone else and we believe that the valuation of the committee misses the mark by about \$4,000,000.

"Second, the rate of return allowed in the plan, we feel, is rather low for attracting capital into the enterprise.

"In the third place, the board of control feature cannot possibly be acceptable to the men who have money invested in the company. It is proposed that the power of administration be given to men whose appointments come from outside the company altogether. It is not natural for the tramway investors to be satisfied with having someone who is not connected with the enterprise tell them what must be done.

"There are many admirable features to the plan, however. I believe that under the service-at-cost plan the company would be able to start out with a 6-cent fare and very soon bring it down to 5½ cents at most."

Status of Daylight Saving

President Wilson has personally come to the support of the advocates of retaining the daylight-saving legislation. He has vetoed the agricultural appropriation bill containing the repeal of this legislation, making public a statement in which he says that he foresees a great economic loss from such repeal. Following the action of the President, which was taken in Washington on July 12, the House of Representatives on July 14 refused by a vote of 247 to 135 to pass the agricultural appropriation bill over his veto. This refusal by the House resulted in taking from the Senate the opportunity to attempt to repass the bill. Notwithstanding the President's veto of the legislation and the refusal of the House of Representatives to pass it over his veto, conferences are being held in Washington between members of the House and the Senate in an attempt to pass the legislation by force, under a proposed new ruling, as new legislation or by indefinitely holding up the agricultural appropriation bill.

Some Observations and Queries on Safety Car Operation*

BY F. J. MOORE

Superintendent Ohio Electric Railway, Springfield, Ohio

WHILE all electric railway men will not agree that one-man car operation is the panacea for our ills, all will agree that revenues must be increased without a corresponding increase in expenses if we expect to continue business. City fares have generally, although not universally, been increased with a view to meeting the increased cost of operation in this way. I have in mind a city of 60,000 population where the fare was increased, first from the rate of six tickets for a quarter to a straight five-cent fare, then to a six-cent fare. The first increase produced a considerable increase in revenue, but the effect of the second was not so good. In other cities, where the fares were increased without an improvement in service by a reduction in headway, the result has been unsatisfactory. This has been due to the loss of short-haul business to a large extent. It is at this point that the one-man car is of service in furnishing the opportunity for shortening headways, thus appealing to municipal authorities and the public, and developing the riding habit. The combination of a higher fare and increased riding gives a better prospect that the electric railway will be able to stay in business.

To illustrate the possibilities with one-man car operation, I shall cite a city of 15,000 population where seven-minute service is given at an average speed of 12 m.p.h. The rolling stock consists of single-truck cars weighing from 6 to 8 tons. Some of the cars are of the rebuilt type with small platforms. There is one grade of 7½ per cent about 600 ft. long on the line, and in the last eight years there have been no accidents due to cars getting away.

In this city the cash fare is 5 cents, but thirty-three composition disks, good for one ride each, are sold for \$1. No transfers are issued, but passengers are transferred from car to car at the transfer points. Approximately 2,000,000 passengers are handled per year. Service is given from 5:30 a.m. to 10:30 p.m. with an owl car on each line until 1 a.m., the fare for owl service being 10 cents. Conductors do not sell tickets, which are sold at local stores at the rate of three for 10 cents. This line is operating at a very satisfactory operating ratio, and there is a noticeable tendency to short riding. I observed that many passengers did not ride more than three or four blocks.

The importance of reducing headway is seen when the growth of the use of the automobile is considered. In Ohio, in 1913, 165,000 automobile licenses were issued; in 1917 the number was 346,262, and in 1919, up to the present time, 500,160 licenses have been issued. At the same time on checking up a number of city car schedules for properties serving populations from 25,000 to 100,000, I find that the same headway is in use in 1919 as in 1913.

In conclusion I wish to list a number of questions which are of interest in studying the one-man car situation in any locality, as follows: (1) What was the determining factor that led to the adoption of the one-man car? (2) If an advertising campaign was con-

*Abstract of contribution to discussion of Sam W. Greeland's C. E. R. A. paper on safety-car operation. See issue of this paper for July 12.

ducted, how long before the inauguration of service was it begun? (3) What criticisms have come from the public and the local council after operation has commenced? (4) Were any changes in schedule made on one-man car lines? (5) What provisions were made for railroad crossings? (6) How do the safety-cars handle rush-hour traffic? (7) Were any changes made in report slips or accounting methods from earlier practice to relieve operators of unnecessary duties? (8) Has it been found possible to adopt a zone system of fare collection on these cars? (9) How and when are transfers issued? (10) How have the Birney cars stood up under operation? Will this type of car be long-lived? What are the maintenance costs on these cars? (11) Is it desirable to use two trolley poles on the car so that the operator can change ends without leaving the car at terminals?

AMERICAN ASSOCIATION NEWS

Last Week's Committee Meetings

The week ending July 12 was a busy one at the American Association headquarters in New York City. The "doings" of the committees are summarized below.

The committee on code of traffic principles of the Transportation & Traffic Association met on July 7 and put its report into final shape for presentation to the executive committee which met later in the week. H. B. Flowers, chairman, and A. Gaboury were in attendance.

The committee on joint use of tracks and terminal facilities, of the same association, met on July 8, for the same purpose. Those present were: Frank Wert, representing chairman R. T. Sullivan; H. W. Clapp, member, and W. H. Collins, sponsor.

The exhibit committee of the American Association met on July 8 and passed upon a number of applications for space and considered other details of its work.

The executive committee of the T. & T. Association met on July 9 for the purpose of finally passing upon the several committee reports which were presented by the chairmen of the several committees. Each report was considered in detail and a number of suggestions were incorporated. A tentative list of names of men to be invited to lead discussion of the various reports was also presented and approved. Those in attendance were: L. C. Bradley, president; W. H. Collins, first vice-president; L. H. Palmer, third vice-president; E. B. Burritt, secretary; W. J. Harvie, chairman of committee on collection and registration of fares; H. B. Flowers, chairman of committee on code of traffic principles; Frank Wert, representing R. T. Sullivan, chairman of committee on joint use of tracks and terminal facilities, and H. W. Clapp member of the last-named committee.

The arrangement of the formal program of the convention was discussed and the following tentative arrangements were agreed upon as covering the reports and discussion of each subject: Oct. 6, code of traffic principles; Oct. 7, one-man car operation; Oct. 8, collection and registration of fares; Oct. 9, joint use of tracks and terminal facilities and election of officers. The committee adjourned to meet again at the call of the chairman.

The committee on zone systems, met on July 15 and

went over the reports submitted by the sub-committee. A tentative form of final report was agreed upon including a terminology for several different types of zone systems. Those present were W. H. Sawyer, Columbus, Ohio, chairman; Thomas Conway, Jr., Philadelphia, Pa.; R. M. Feustel, Fort Wayne, Ind.; James F. Hamilton, Rochester, N. Y.; Walter Jackson, New York City; L. H. Palmer, Baltimore, Md.; A. S. Richey, Worcester, Mass.; R. P. Stevens, Youngstown, Ohio, and C. L. S. Tingley, Philadelphia, Pa.

"Meralco" Welcomes New "G. M."

The Manila joint company section began its second half hundred meetings on May 6, with 175 members in attendance. The gathering took the form of a welcome to the new general manager of the Manila Electric Railroad & Light Company, R. W. Spofford, and no papers were presented. Mr. Spofford expressed great interest in the prosperity of the section and told of the excellent reputation which it holds in the United States. Dr. H. D. Kneedler, company surgeon, also received an ovation in recognition of his war-time service in Siberia. J. C. Rockwell, vice-president of the company, introduced as "grand-daddy," extended a welcome on behalf of the company to the new manager, reinforcing the opening address of the president of the section, C. H. Van Hoven.

LETTER TO THE EDITORS

Traffic Checks of Non-Riders

BOARD OF PUBLIC UTILITY COMMISSIONERS

NEWARK, N. J., July 16, 1919.

TO THE EDITORS:

I was much interested in reading the editorial in the issue of July 12 on the subject of taking traffic checks of non-riders.

The writer has carried out this idea in connection with several traffic surveys which have been made under his direction, and it has been surprising to find, in many instances, the number of people that are walking simply because they are not provided with service or, if service is available, it is so circuitous that they prefer walking over a more direct route. This applies particularly, but by no means exclusively, to manufacturing communities where large numbers of workers have frequently been found to be walking long distances to and from their places of employment, doubtless not for the purpose of saving the fare but rather in order to save time. Many companies appear to overlook the fact that the average traveler wishes primarily to reach his or her destination as quickly as possible and is willing to pay a reasonable fare for such transportation rather than walk.

It is not difficult to determine, or at least closely estimate, the number of walkers, the general territory where their journey originates and their approximate destination. Familiarity with the territory under consideration and the intelligent placing of observers for a few days will soon tell the story.

More attention to this matter on the part of operating officials will undoubtedly result to the mutual advantage of both the community being served and the utility furnishing the service.

H. C. EDDY,
Traffic Engineer.

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

A Great Fuss Over Nothing High-Handed Tactics of Union Official Deprive Akron of Railway Service for Day

One result of Akron's shortest and most inexcusable electric railway "walk-out" has been the suspension from office of George Trahern, the president of the local union, who ordered the walk-out at 5 a.m. on July 12, without public warning. A second result is that the employees, who walked out without even knowing what it was all about, have prepared an apology to the public of Akron for disrupting railway service in Akron.

NO INTIMATION OF TROUBLE

A. C. Blinn, manager of the Northern Ohio Traction & Light Company, was informed at 5:30 a.m. on July 12 that the men would not take out the cars. No previous intimation had been given of any difficulty. No conferences had been held. No strike vote had been taken. No consultation had been held with the Amalgamated Association officers. And most important of all no warning had been issued to the public. Mr. Blinn got in touch promptly with the president of the local union, George Trahern. That gentleman refused to discuss matters over the telephone. Mr. Blinn in a statement later declared that when he spoke in behalf of the public's right to service the local agent replied: "What do you care about the public? They voted down your 6-cent fare. The public can go to hell for all of me."

Mr. Blinn then telephoned W. D. Mahon, president of the Amalgamated, at Detroit. He in turn wired the secretary of the local division to put the men back to work by 4 p.m. or "the laws of the association will be strictly enforced." This, of course, meant a suspension of the local charter.

Mayor Myers and President Gilletly of the Central Labor Union, who held that Mr. Trahern's order was unwarranted, set things in motion for immediate arbitration, but President Mahon's telegram settled matters temporarily.

40,000 WORKERS WALK

The 40,000 or so workers in Akron's great rubber plants either walked to work or rode in trucks.

It turned out eventually that a midnight meeting for the purpose of electing delegates to a convention in Chicago had not finished business and Mr. Trahern decided to hold another meeting at 10 a.m., the men meantime to take "a day off." Later in the day Trahern added that the company was not

furnishing the men with suitable city directories, and decided to take this and one or two other minor grievances up at this meeting.

Mr. Blinn in a public statement declared that the men's action was contrary to the spirit of their contract with the company and that none of the complaints made by Mr. Trahern had any just foundation. He added that regardless of the merits of these minor questions the method taken to settle such complaints was unwarranted and without precedent in his long railroad experience.

Wage Arbitration Suggested

A committee representing the Norfolk and Portsmouth divisions of the organized conductors and motormen of the Virginia Railway & Power Company, in a letter to the company on July 7, withdrew their request for recognition of a "closed shop" union, and asked that the company go into conference or arbitrate their demand for increased wages and other questions, treating with them as members of an "open shop" union.

In reply to this the company, in a letter signed by T. Norman Jones, assistant manager, declared its willingness to confer with the men on the open shop basis, but suggested that a conference or arbitration over the matter of increased wages would be useless until the company were permitted to increase its fares. In the event of a 6-cent fare, according to Mr. Jones' letter, the company will fix a wage scale of from 41 to 45 cents. If arbitration is insisted on, the company will agree to City Manager Ashburner as a third arbitrator, as suggested by the carmen's committee.

New Jersey Agreement Signed

The two-year agreement between the Public Service Railway, Newark, N. J., and the Amalgamated Association covering wage and working conditions was signed on July 9 by President McCarter of the railway and by the union officers.

The agreement establishes a day of nine hours with pay for ten hours. Overtime, under the contract, is to be paid at a rate of time and a half for all time outside the regular day except the time consumed in completing a nine-hour run. Meetings will be held by the nine local unions in the State, at which the revised agreements will be read.

The terms of the award of the War Labor Board in the New Jersey case and the conditions of the settlement subsequently agreed to between the company and the men were reviewed in the *ELECTRIC RAILWAY JOURNAL* for July 5, page 37.

Mayor Signs Dispossess

Toledo Company Preparing to Comply With Measure Ordering It off Streets on Aug. 1

Mayor Cornell Schreiber on July 11 signed an ordinance which, in effect, is an order to the Toledo Railways & Light Company, Toledo, Ohio, to cease operation on July 30. The ordinance had been passed by the City Council about a week before. It was referred to in the *ELECTRIC RAILWAY JOURNAL* for July 12, page 87.

PREPARING TO DISMANTLE ROAD

For several days the company has been preparing to obey the order. All improvement work has been stopped, and the men engaged on it were discharged. Other preparations have been made for dismantling the road.

Frank R. Coates, president, is quoted as saying that the ordinance will be obeyed to the letter. Service, he said, will cease at midnight on July 30.

Mayor Schreiber issued a call for the support of the people in this crisis and at the same time he promised to provide transportation. Just how he would do this, he did not explain. It is expected, however, that he will resort to the use of jitneys.

Several times the company has offered the city service at rates and on conditions that were fair, but they were as often refused in an effort to establish a 3-cent service or something equally as low. For several years the road has been operated without a franchise. A year or two ago a so-called street railway commission offered a plan for turning the road over to a community company, the city to pay for it partly in cash and the remainder from surplus from operation.

Some time ago the company advanced the rate of fare from six tickets for a quarter to straight 5 cents and 1 cent for transfers. This move was attacked in the courts, but the company won its case. The court said the company had a right to fix a rate of fare, but the city might order it to cease the use of the streets. Then, when expenses had mounted high because of the war, the rate was raised to 6 cents with 2 cents for transfers.

DISORDER FOLLOWED FARE INCREASE

Since that time there has been opposition of all kinds. Workmen at one time wrecked several cars and then attempted to operate the others themselves.

Mayor Schreiber has said that a franchise will be prepared and offered to the lowest bidder.

Strike Declared on Boston Elevated

Trials of Boston Elevated Seem to Have Become More Complicated Than Ever Under Ten-Cent Fare

Despite all efforts of the trustees and officers of the company and of the public authorities to avert a walkout, the members of the carmen's union on the Boston (Mass.) Elevated Railway struck at 4 a.m. on July 17, tying up every surface and rapid transit car on the system. No attempt was made by the company to operate cars. An enormous traffic was handled during the day by the steam railroads and by automobile. On the afternoon of July 16 Samuel L. Powers of the board of trustees reached Chairman Taft by telephone at Point a Pic, Que., and Mr. Taft stated that the War Labor Board would hand down a finding by Aug. 2. Acting Mayor Ford of Boston called a meeting of union employees of the company at Tremont Temple on the evening of July 16, at which an appeal was made to the men to postpone the walkout, but without success. About 4500 car men are involved in the strike.

W. Jett Lauck, secretary of the War Labor Board, wired the union leaders at Boston to the effect that as the case was submitted to the board on June 19, the time spent in consideration had not been unreasonable. He pointed out that the award would be retroactive, fully protecting the interests of the employees, and declared that under such circumstances a strike would be unwarranted and an invasion of the rights of the public. He urged the rescinding of the strike vote pending the decision of the board.

Charles G. Wood, of the Massachusetts State Board of Conciliation and Arbitration, issued an appeal on July 16 to the union officials and membership urging them to abide by their contract and not to abuse the confidence of the public by acts in violation of their agreement.

The employees voted, on July 14, to strike at 4 a.m. on July 17 unless in the interim the War Labor Board should hand down a decision in the pending wage arbitration case.

MEN WANT 73½ CENTS AN HOUR

The men demand a wage of 73½ cents an hour and an eight-hour day. Charlton Ogburn of the War Labor Board wired the union officials at Boston on July 14 that it would be impossible to get an award on the Boston Elevated case before July 15 on account of the location of the chairmen, and suggested a settlement between the company and the men as the best solution.

The union officials claimed that the War Labor Board has had the case in hand for decision for the past three weeks.

The Boston company started a 10-cent fare on its entire system on July 10, with the result that a large amount of traffic has been at least temporarily

diverted to the suburban steam railroad lines in the metropolitan district. The effect of the new fare upon the company's receipts had not been determined up to the present writing beyond a reduction in the total number of passengers carried.

It is the intention of the trustees, Mr. Jackson declared, to find out as soon as possible what can be done in the way of applying a zone system to Boston.

The company has been called upon to make heavy expenditures in subway rentals and in maintenance and highway contributions and is seeking legislative action to be relieved of these burdens so that it may devote attention to a zone system.

The trustees are firm in their conviction that just as soon as the summer is passed, and the present ill feeling begins to subside, the passengers will return to the trolleys, hastened by the advent of any bad weather.

The auditor of the road reports that under the first four days of the 10-cent fare, the revenues have made an

average increase of more than 56 per cent over the same four days of last year.

STATISTICS OF GAIN

On July 10, there was a gain of 52.3 per cent over the corresponding day of last year; on July 11 a gain of 60.4 per cent; on July 12 a gain of 46.7 per cent, and on July 13 a gain of no less than 71 per cent.

The revenue for the first day of 10-cent fares, July 10, was \$77,645 against \$50,982 for the corresponding day of a year ago; for July 11 \$80,447, against \$50,168 a year ago; for July 12, \$84,200, against \$57,149 a year ago, and for July 13 \$55,000, against \$32,166.

Total passenger earnings for the first 190 days of the year, or up to July 11, were \$14,178,971, against \$9,830,056 for the same period last year.

For the first eleven days of the month, passenger earnings were \$761,394, against \$551,210, or a gain of 38.1 per cent.

However, the trustees are unwilling to draw any conclusions until after a thirty-day period has passed under the 10-cent fare, for there is much variability, and always has been, in revenue.

All the steam roads are reporting large increases in suburban patronage.

Ask 77 Per Cent Increase

Chicago Men Threaten Strike Vote if Their Wage Demands Are Refused

Employees of the surface and elevated lines in Chicago, Ill., took action on July 11 looking to an advance of 77 per cent in their wages. Conductors and motormen of the surface lines want the maximum wage raised from 48 cents to 85 cents an hour; motormen of the elevated road from 50 cents to 87 cents; conductors of the elevated lines from 45 cents to 82 cents; all other employees, both systems, 37 cents an hour increase all effective as of June 1. The employees want also an eight-hour day, a six-day week and time and a half for overtime, and insist that 80 per cent of the runs shall be "straight," the balance to be finished in limits of ten hours.

The formal demands were presented to the management of both companies on July 12. L. A. Busby, president of the companies, said these increases would add about \$14,000,000 a year to the payrolls of the surface lines and that the only way to meet them would be to raise fares to 9 or 10 cents. The fare is at present 5 cents on the surface and 6 cents on the elevated lines. The men were promised an answer in a short time, it being generally understood that the solution of the matter lay with the Public Utilities Commission of Illinois, which some months ago refused to advance surface railway fares.

The meeting where the demands were formulated was a joint session of the surface and elevated employees.

The president of the union was quoted as saying:

We don't care where the money comes from and are not interested in what the companies charge for fares. All we want is our new wages and we are going to get them. We are going to give the companies only a short time.

The Chicago Surface Lines union has more than 10,000 members and the elevated organization about 4000.

The men still have contracts with the companies which do not expire until June 1, 1920. The wage terms were changed by the War Labor Board last August to continue for the period of the war. This award raised the payroll of the surface lines \$4,200,000, and the elevated company's expenses about \$1,700,000. President Busby said:

To express the matter succinctly, the surface lines cannot meet any wage increase whatever without an increase in fare to cover it. The issue is of vital interest to the public. Under the present fare of 5 cents we have barely been able to meet interest charges, but have succeeded merely because traffic has been unusually heavy for the last few months. The demands of the men will receive every consideration when formally presented, but I believe the facts will show that the men are seeking terms out of all proportion to the high cost of living here and elsewhere.

The union employees say they will take a strike vote in a short time if their demands are refused.

On July 14 the City Council of Chicago took action to avert a strike. A resolution was adopted directing the Mayor to appoint a commission of nine

members, consisting of himself, four Aldermen, two representatives of the trainmen and two representatives of the surface and elevated roads, to report at once on what must be done to obtain uninterrupted transportation. The Mayor would not say when he would name the commission.

On July 15 the Board of Operation of the Chicago Surface Lines held a meeting which was followed by meetings of the directors of the underlying companies. At these sessions the directors decided to reject the demands of the men, on the ground that the companies were not in a position to grant any wage increase.

President Busby sent a letter to President William Quinlan of the trainmen's union setting forth the conclusion of the board of operation. In this he stated that for eleven months under the War Labor Board scale of wages there was a decrease in residue receipts of \$2,620,705, and that the total net receipts for this period yielded a rate of return on the purchase price of 4.98 per cent.

He called attention to the friendly relations that have existed between the companies and the employees. He said there had never been a disposition to deny the employees a fair wage, but on the other hand neither the management nor the people would approve any unwarranted wage increase or unreasonable working conditions. He said the demands of the organization would increase wages more than 77 per cent and that under them additional employees would be required for operation and supervision.

While admitting that there had been a material increase in the cost of living, Mr. Busby denied that there was such an increase as that carried by the proposed new wage scale and he referred to the report of the United States Department of Labor, that the cost of living is practically identical in Chicago, Detroit and Cleveland. The eight-hour day, he said, is not practicable in train service in Chicago with the heavy traffic congestion and frequent blockades. The request for time and one-half for Sundays, holidays and overtime would impose a heavy and unnecessary burden on the public, and it would not be practicable to apply a uniform rate or percentage of increase to the wages of the employees outside the train service irrespective of their skill or value to the service.

Municipal Ownership Resolution Adopted

The General Council of Atlanta, Ga., has adopted a resolution asking the Legislature of Georgia to amend the municipal charter in order that the city may be empowered to acquire, either by negotiation or condemnation, the properties of the Georgia Railway & Power Company, and enabling the municipality to erect lighting and transportation plants for itself in case of failure to acquire the power company's property.

The action of Council is the first important official step that has been taken in Atlanta toward municipal ownership since the initial announcement of Mayor Key that he had held a conference with the officials of the Georgia Railway & Power Company, in which he was given to understand that the railway and the gas properties would be sold to the city under certain conditions.

The Mayor has given out statements from time to time, announcing his determination to bring about city ownership of the public utilities, and a message was sent to Council on July 8 by the Mayor, urging action upon the question. This message has been referred to the charter revision committee.

The measure adopted by Council, if passed by the General Assembly, will give the city of Atlanta the right to negotiate with the Georgia Railway & Power Company for the purchase of its railway lines, its power lines, and its gas lighting plants in the city, or to acquire these properties by condemnation, if necessary. Should the charter of Atlanta be amended in accordance with the resolution, the city would also have the right to erect its own lighting and power plants, and its own street railways—in case the purchase and the condemnation proceedings prove impracticable.

Fifty Cents an Hour Asked

The City Commissioners of Trenton, N. J., have refused to act as arbitrators in the dispute between the Trenton & Mercer County Traction Corporation and its employees relative to the demands for increased wages. The commissioners, however, agree to act as mediators, hearing both sides, with a view of having the wage scale amicably adjusted. Rankin Johnson, president of the company, and the employees then decided to continue the conferences.

It was at first agreed to place the matter in the hands of the War Labor Board, but that organization said it could not take up any new cases at this time. President Johnson told the men that as Trenton people would have to pay for any increase granted it was up to the Trenton authorities to settle the wage dispute.

The platform men are now receiving 42 cents an hour and the operators of the one-man cars 47 cents an hour. They want 50 cents for all employees and 75 cents an hour for all overtime. The company offered an increase of 1 cent an hour dating from July 1, and another increase of 1 cent an hour on Oct. 1. This was turned down. The company holds that the increase requested would involve more than \$100,000 additional a year and that it can not meet the added payment out of present income. The remainder of the working agreement remains in effect until March 31, 1921.

The choice of arbitrators is referred to on page 137.

Strike on Shore Line

Employees of the Shore Line Electric Railway, Norwich, Conn., are seeking an advance in pay. In reply to the men's formal request for more money, R. W. Perkins, president of the company, has addressed the representatives of the men, outlining the condition of the company. In concluding his statement of the financial affairs of the company Mr. Perkins points out that in 1918 the company had a net revenue of \$45,947 with which to pay taxes of \$68,266 and rentals and interest amounting to \$402,490, so that the actual loss for the year, without figuring dividends of any kind, was \$424,809. In conclusion Mr. Perkins said in part:

Because of this unsatisfactory condition of earnings, the management is now making a careful study of schedules and wherever the earnings are not taking care of the actual operating expenses, these schedules will be reduced, which will, of course, mean a reduction in the number of men employed, and a consequent reduction in the payroll, and every effort will be made to reduce operating expense to the point where earnings will cover it.

The Shore Line is owned by the estate of Morton F. Plant, deceased, and the question raised by your request for an increase in wage has been taken up with the executors for final determination, and their conclusions are that, as executors, they are not justified, and, in fact, cannot legally put other funds of the estate into this property, but that they are willing to forego their claim for interest on the securities held by them long enough to determine whether with changed conditions resulting from the signing of the peace terms the property can be made to operate at a profit.

As a consequence, the management is in a position of being absolutely unable to meet any increased operating cost, and, while fully in accord with the idea of arbitration, can see no advantage that would result from arbitration, for it would be necessary to stipulate in the beginning of the negotiations that an award for an increase of wage would result in suspension of service, for as has already been shown, wages and material are absorbing every dollar that we are able to collect from our patrons, and the only way in which the company can meet the demands for increase of wage is through more liberal support of the company by the people of the communities it serves, and this the people seem unwilling to do, with the result that if present conditions continue the communities face a very greatly reduced service, and in some instances, entire abandonment of service, for it goes without saying, operation of the present schedule can only continue for, and so long as, the people will pay the cost of producing it.

Both you and the owners of the property are confronted with a condition that is most critical, and it would look as if the industry held little encouragement either for labor or capital until the people can see the tremendous commercial, social and economic value of electric railway service, and give the company its patronage, instead of giving it to the other less reliable forms of transportation service.

Count of the strike vote taken by employees of the Shore Line Electric Railway showed 98 per cent of the 500 men in favor of a strike, it was announced on July 14. A conference will be requested with the Shore Line officials, and upon the result of that will depend the time of calling the strike. The men are asking a raise from 42½ cents an hour to 60 cents an hour for an eight-hour day.

On July 16 the men put into effect their threat to strike, and it was reported that service was entirely suspended on the entire Shore Line Electric Railway system, which includes 221 miles of road.

Wage Increase in Kansas City

A wage increase, retroactive to July 1, has been put into effect by the Kansas City (Mo.) Railways. President Kealy, announcing the increase, said that it was made because of hoped-for favorable action by the Public Service Commission with reference to increased fares and would not be possible without such higher fares. Under the new scale, the minimum wages for extra men is \$85 a month against the old scale of \$75; other comparisons of trainmen's wages are as follows:

Present Scale		New Scale	
Period	Rate	Period	Rate
First six months.....	35 cents	First three months.....	40 cents
Second six months.....	36 cents	Second nine months.....	42 cents
Second year.....	37 cents	Second year.....	43 cents
Third year.....	38 cents	Third year.....	44 cents
Fourth year.....	39 cents	Fourth year.....	45 cents
Fifth year.....	40 cents		

Carhouse men will receive the same pay as trainmen.

Five cents more than the scale is paid to operators of one-man car. Operators of mail cars receive 4 cents more than the scale.

The company was in need of men when the wage increase was announced; within a few days it had secured more than 100, because of the better pay. A few of the former employees who had struck last year but had not taken a malicious part in the strike, returned to work.

Increased Wage Predicted for Pittsburgh

The War Labor Board does not feel that it can take into account financial difficulties of electric railways in considering the wage increase disputes, according to a Washington dispatch published July 15 in the Pittsburgh Post.

The story in which this statement appeared was a forecast that the board will make an award in favor of the employees of the Pittsburgh Railways, whose demand for a 12-cent increase is now under consideration. The men are asking a maximum rate of 60 cents. They will be granted a scale somewhere between 53 and 60 cents, according to the Washington correspondent of the Post.

A new standard and a new maximum for large cities is expected to follow an award in favor of the Pittsburgh employees. Several new conditions are under consideration by the board, this report relates, among them increased cost of living, as compared with that at the time the 48-cent scale was established, and several settlements in which arbitration by the board was not invoked, by which the workers involved are now receiving more than 48 cents. The situation in Portland, Ore., is cited in particular, the men there receiving 50 cents.

One of the objections of the receivers

of the Pittsburgh Railways to a wage increase has been inability of the lines to pay more. On this matter the position of the board is understood to be that it cannot concern itself with the revenues or financial condition of a company.

The award in the Pittsburgh case is expected shortly after July 25, when Basil Manly, joint chairman with William Howard Taft, of the board will return to Washington from the Pacific coast. As has been explained before in the ELECTRIC RAILWAY JOURNAL, this award will not be final, as the United States District Court at Pittsburgh has reserved the right of passing upon it. In turn, the men have reserved the right to re-open their strike, which was brought to a close by submission of their demands to the board, if the court negatives any award in their favor.

Kansas City Employees Aid Company

The employees of the Kansas City (Mo.) Railways assisted materially in the application of the company for increased fares, before the Public Service Commission of Missouri. The employees prepared a petition, signed by several hundred of them, pointing out to the commission that part of the income from increased fares would be used to give them more wages. A significant feature of the petition was the statement that the present employees of the company do not believe in strikes; and that they are not now holding any threat over the company, the public or the commission, of going on strike if higher rates and higher fares are not granted.

This position of the men is in contrast with the attitude of the unions which formerly included a large proportion of the company's employees, the union men going so far as to threaten not only the company and the public, and inferentially the commission, but to intimate to courts that formal orders had no effect on their attitude.

The Kansas City Railways did not wait for the formal order of the commission with reference to higher rates, but increased wages, about the time the petition was presented.

The petition to the commission was presented by forty employees while the commission was holding a hearing at Kansas City on the matter of fares. Except for the preamble the petition follows in full:

In considering this petition we ask that you take into account the following facts:

1. That the present employees of the Kansas City Railways entered its service at a time when the people of Kansas City were denied transportation by the refusal of the company's former employees to work.
2. That we do not believe in strikes by employees of a public utility, but believe that we are rendering a public service, and we have every confidence that your body can and will make such adjustments as are necessary to secure for us an adequate and living wage.
3. We know that the financial affairs of the company are such that an increase in wages under present conditions is an impossibility, and that any such increase without an increase in income will only

result in bankruptcy to the company, reduction of service to the public, and worse conditions than those we are now undergoing.

4. We know that the management of the company realizes the necessity for an increase in wages and have the assurance that any increase in revenue granted the company will be shared by us, and that the company is willing that the commission so order.

5. We also desire to call to your attention the fact that throughout the United States the street railway union in its negotiations with railways for higher wages recognizes the above conditions and has in many cases joined as we are doing with the company in an appeal to state authorities for relief. The union has, however, held as a club over the heads of the company, the commissions, and the public, the threat to strike and disrupt the business and social life of the communities in which these companies operate. This we do not do.

Therefore, having in mind these considerations, we respectfully petition your honorable body in its deliberations on the rate of fare in Kansas City to have in mind the service we are rendering and the fact that we address you without threat or compulsion, and grant to the Kansas City Railways, with all the restrictions and safeguards necessary for the proper protection of the public, such a rate of fare as will allow this company to pay us a wage commensurate with the rate paid for the same work in other cities, and that in so doing you incorporate in your decision the scale of wages to be paid by the Kansas City Railways.

Improvement Program Started

The city engineering department of Seattle, Wash., announces that according to all indications, the work of completing the necessary connections for the Seattle Municipal Elevated Railway will, in all probability, be completed by Aug. 1 and service started at that time.

The track work at the outer end of the elevated is completed. The northern terminus of the line will be relocated, permitting the patrons of the Lake Burien line to ride into the business section of the city of Seattle without transferring at Riverside, as heretofore planned.

Work on a number of municipal railway projects will be started at once, with J. J. Wetrick, chief engineer, in charge. The projects were recommended to the Council by Thomas F. Murphine, superintendent of public utilities, after a careful survey of the system.

The work of improvement that it is planned to carry out at this time is provided for in a bond issue of \$750,000 passed recently. The proceeds from this issue will not reach the city treasury until September, but the work will be financed by loans from the city railway and general fund.

The most important work planned includes the double-tracking of Leary Avenue for use by Ballard cars; construction of a double-track line on Avalon Way; and making track connections at Third Avenue and Pine Street. The latter improvement is made for the purpose of enabling the city to operate its Division "A" or Ballard cars on Third Avenue, instead of Fourth Avenue, as at present, thus eliminating a monthly payment to the Seattle & Rainier Valley Railway for common-user rights on its Fourth Avenue tracks.

News Notes

Receiver's Name on Cars.—The name of Job E. Hedges, receiver of the New York (N. Y.) Railways, is being painted on all the cars of that company in letters 6 in. high, underneath the name, "New York Railways," and above and close to the wheels.

Toronto Strike Settled.—Service on the lines of the Toronto (Ont.) Railway was resumed on July 4 after twelve days, on the announcement that the Ontario Railway & Municipal Board had agreed to accept the interim award of the Board of Conciliation to the employees, granting them a minimum wage of 50 cents an hour and a maximum wage of 55 cents.

Kansas City Director Reappointed.—The Court of Appeals at Kansas City, Mo., has announced the reappointment of W. T. Kemper as a city director of the Kansas City Railways. His present term expires in August. Mayor Cowgill, in compliance with the franchise ordinance, submitted three names, including that of the retiring director, to the court. The other names were J. Q. Watkins and George H. Edwards.

Employees Reject Offer.—Officials of the union have informed E. F. Schneider, general manager of the Cleveland, Southwestern & Columbus Railway, that the company's offer of an increase of 6 cents an hour in the wage schedule has been rejected. They are asking a maximum of 60 cents an hour. The company's offer is 41 cents for the first three months, 44 cents for the next nine months and 48 cents thereafter.

Receiver Authorizes Payment of Accident Claims.—Authority to pay accident claims found just after investigation has been granted the receivers of the Pittsburgh (Pa.) Railways by the United States District Court. This order settles one of the difficulties the receivers have faced. Numerous suits now pending in the Common Pleas Court can be settled at a saving and much future litigation may be avoided.

Orders Tracks Removed.—The Commissioners of Stark County, Ohio, adopted a resolution, on July 9, demanding that the Northern Ohio Traction & Light Company cease operation on the Canton-Massillon line within ten days and remove its tracks within thirty days. The resolution authorizes the prosecuting attorney to start and ouster suit in the Ohio Supreme Court if the company has failed to vacate the road at the end of thirty days. This tribunal some time ago held that the franchise expired in 1917.

Barber, Cigar and Shoe Shining Privileges.—The Kansas City (Mo.) Railways is providing space at its Ninth and Brighton division headquarters, for the opening of a barber shop, cigar stand, shoe shining outfit, and other conveniences, to be operated by old employees, catering to trainmen. The company is not financing the enterprise, but is assisting the men in establishing it on a sound basis. Moderate prices will be charged. The establishment of these conveniences at headquarters will obviate the necessity for the men going several blocks for such service.

Trenton Arbitrators Chosen.—James H. Vahey, counsel for the Amalgamated Association, has been named by the employees of the Trenton & Mercer County Traction Corporation, Trenton, N. J., as their arbitrator to consider the wage differences between the men and the company. A. S. Richey, Worcester, Mass., will act as arbitrator for the company. Messrs. Taft and Manly, joint chairmen of the War Labor Board, will appoint three others to act with Messrs. Vahey and Richey. The arbitrators will not meet for several days yet.

Georgia Municipalities Favor Municipal Ownership.—The Georgia League of Municipalities in session at Atlanta, Ga., recently endorsed the principal of municipal ownership in its entirety and appointed a committee of five to appear before the present session of the Legislature of Georgia and appeal for legislation permitting municipalities to acquire or to build and operate such public utilities as they may desire. The Legislature will also be asked to guarantee to the municipality that their right to own and operate their own public utilities shall not in any way be abridged or restricted.

Wage Question Compromised.—Through an agreement reached on July 11 between the representatives of the motormen and conductors and the officers of the Cleveland, Southwestern & Columbus Railway, Cleveland, Ohio, the threatened strike was averted. The agreement was in the nature of a compromise. The men are to receive 42 cents for the first three months of service, 46 cents for the next nine months and 50 cents thereafter. The old scale was 38, 40 and 42 cents. The company had previously offered the men 41 cents for the first year of service, 44 cents for the second and 48 cents thereafter.

Broadway Subway Extended.—Two new stations on the Broadway subway line of the Brooklyn (N. Y.) Rapid Transit Company have been opened, thus extending the present line from Times Square, New York, to Fifty-ninth Street, at the point where the subway will turn east to connect the lines in the Borough of Manhattan with those in the Borough of Queens. The line has been in operation in Broadway as far north as Forty-second Street for many months. Its extension

farther north was delayed because of the complicated construction involved in passing underneath the line of the Interborough Rapid Transit Company just north of Forty-second Street.

Municipal Ownership Committee Appointed.—President Corcoran of the Common Council of Milwaukee, Wis., has announced the membership of the committee which will inquire into the feasibility of the purchase by the city of the utilities owned by the Milwaukee Electric Railway & Light Company. A law enacted at the present session of the Legislature provides for financing the purchase of public utilities by the cities of Wisconsin with payment for any such plant by bonds issued against the value of the plant, a certain percentage of gross earnings being set aside to pay the interest and principal of the securities. Heretofore the only method of paying for public utilities purchased by cities was by general city bonds. With the constitutional debt limit of 5 per cent only a few cities had a sufficient bond issue margin to permit of purchasing public utilities.

Improvement Plan Halted.—Lack of money and the difficulty of disposing of bonds will prevent the Chicago (Ill.) Surface Lines this year from carrying out the ordinance provision which requires 23 miles of track extensions every year. This announcement was made to the transportation committee of the City Council on July 9 by John E. Wilkie, assistant to L. A. Busby, president of the company. "The market value of our securities is so low," he said, "that we cannot afford to stand the loss of placing new securities on the market which would hardly give us half the value of the paper." The Surface Lines system has been growing rapidly because of this provision of the ordinance, and while there was little or no extension last year because of government restrictions the Aldermen had hoped that the building program would be renewed. The matter was left to a sub-committee.

Service Restored in Urbana.—Twenty-minute service was given by the Urbana & Champaign Railway, Gas & Electric Company in Urbana, Ill., on July 8. Each car was accompanied by an armed guard, and no effort was made at any time to interfere with the free movement of service. No cars were run after 7 p. m. The cars were in charge of men who belonged to the "brotherhood," all union men being out on strike. There were no developments during the day, except a hint that there would possibly be a general strike of all organized labor in Champaign and Urbana in sympathy with the union street railway men. The strike was unchanged on July 14, the cars being operated under a twenty-minute schedule with guards on each car. No cars are operated after 7 p. m. The best of order prevails. The twenty-minute schedule is a source of inconvenience to the public, which is accustomed to a 10 and a 12-minute service.

Financial and Corporate

Revenues Jumped 86 Per Cent

W. B. & A. System in 1918 Again
Displayed a Marvelous Ex-
pansion in Business

The calendar year 1917, with an increase of \$613,923 or 64.9 per cent in gross operating revenue, had seemed to set a mark which it would be difficult to reach again in the growth of the Washington, Baltimore & Annapolis Electric Railroad, Baltimore, Md. Nevertheless the succeeding year of 1918 proved even more successful, for the gross operating revenues showed a gain of \$1,341,889 or 86.0 per cent over those of 1917.

INCOME STATEMENT OF WASHINGTON, BALTIMORE & ANNAPOLIS ELECTRIC RAILROAD FOR CALENDAR YEARS 1917 AND 1918

	—1918—		—1917—	
	Amount	Per Cent	Amount	Per Cent
Railway operating revenues...	\$2,902,014	100.0	\$1,560,125	100.0
Railway operating expenses*	1,740,281	59.9	738,597	47.3
Net revenue rail- way operations	\$1,161,733	40.1	\$821,528	52.7
Net revenue auxiliary oper- ations....	127,188	4.4	25,575	1.6
Net operating revenue.....	\$1,288,921	44.5	\$847,103	54.3
Taxes assign- able to rail- way opera- tions†.....	523,426	18.4	129,052	8.3
Operating in- come.....	\$765,495	26.1	\$718,051	46.0
Nonoperating income.....	17,953	0.6	12,893	0.8
Gross income... Deductions from gross income.....	\$783,448	26.7	\$730,944	46.8
Net income‡....	\$494,536	17.1	\$462,651	29.6

* Includes special depreciation on account of war-work facilities.

† This item covers all taxes, including income and war taxes.

‡ Net profit for the year, after the deduction of income and war taxes and special depreciation.

The operating expenses, because of both the increased business and the higher costs, naturally showed a large increase too, but there was still left a gain of about \$441,000 in net operating revenue. Of this sum \$394,000 was taken up in the item covering taxes, including excess profits and war taxes. The final result for the year was an increase of \$31,885 or 6 per cent in net income.

Approximately one-third of the gross revenue only was derived from Camp Meade and practically all of the profit thereon was paid to the government in excess profits taxes. Therefore, the elimination of Camp Meade, if contemporaneous with the elimination of excess profits taxes, would not in the least affect the normal earn-

ing capacity of the company. There has been, however, an official announcement that the cantonment at Meade is to be a permanent factor in the military program.

When the Washington, Baltimore & Annapolis line was originally constructed about fifteen years ago, the territory between Baltimore and Washington was very sparsely settled and almost undeveloped. It has taken this territory many years to come into its own, but with the advent of the railway and frequent electric service between Washington and Baltimore and the intervening districts, there has sprung up an interurban population and traffic, rapidly extending, now sufficient in the judgment of the company to warrant the stability of the system.

The total car miles operated in 1918 were 5,344,729, of which 5,101,507 were passenger. A total of 5,946,697 revenue passengers were carried in 1918 as compared to 3,429,966 in 1917. The earnings per car mile were the same in both years, at 58.98 cents. The total net expenditure for acquisitions and permanent improvements during 1918 was \$700,424, of which \$520,733 was for way and structures and \$159,743 for equipment.

Reorganization Approved

The properties of the Oakland Antioch & Eastern Railway, Oakland, Cal., the Oakland & Antioch Railway and the San Ramon Valley Railroad, as planned by the committee named to reorganize the three lines, are to be sold to a corporation to be formed for the purpose of carrying on the business of the three lines in accordance with the plans of the reorganization committee.

The California Railroad Commission, in an order issued on June 27, has consented to the transfer of the properties to the new corporation as soon as it has been formed and has authorized the new company to issue the stocks and bonds necessary to carry out the reorganization plan. Of the bonds, there are to be not exceeding \$1,950,000 bearing interest at not more than 6 per cent a year; \$1,330,000 of 6 per cent preferred stock and \$4,000,000 of common stock.

The reorganization plan reduces the annual fixed charges of the properties from \$285,000 to \$117,000 a year; the bonded debt from \$6,444,000 to \$1,950,000 and the capital stock from \$8,711,300 to at least \$5,330,000. The holders of 92 per cent of the obligations of the three roads have approved the plans of the reorganization committee.

The details of the reorganization plan were reviewed in the *ELECTRIC RAILWAY JOURNAL* for May 17, page 981.

Receiver for Surface Lines

Brooklyn Roads Placed Under Mr. Garrison on Account of Impairment of Their Credit

Judge Julius M. Mayer, in the Federal District Court, at New York, on July 14, extended the Brooklyn Rapid Transit receivership so as to place Lindley M. Garrison, the receiver, in charge of the surface railways in Brooklyn. Previously, the receivership had covered only the Brooklyn Rapid Transit Company and the elevated and subway lines of that system.

ALL SURFACE LINES COVERED

The extension was made to cover the Brooklyn Heights Railroad, the Nassau Electric Railroad, the Brooklyn, Queens County & Suburban Railroad, and the Coney Island & Brooklyn Railroad which, through leases, virtually control all surface lines in Brooklyn.

The action was taken at the instance of the Central Union Trust Company to foreclose the first refunding 4 per cent mortgage of the Brooklyn Rapid Transit Company, and to enforce a legal and equitable lien upon the property, as well as to protect the title to the real estate and personal property of the company. The additional bond of the receiver was fixed at \$100,000, and the order putting him in charge of the surface roads was made returnable before Judge Mayer on Aug. 26. Under the order the receiver will operate the surface lines as well as the elevated and subway lines.

The first refunding gold mortgage under which the Central Union Trust Company is trustee was made on July 1, 1902, to secure an issue of bonds aggregating \$150,000,000 due and payable on July 1, 2002. Of these bonds, which drew interest at 4 per cent, \$57,240,000 was issued. Under the mortgage \$29,619,000 of the gold mortgage bonds which had been converted into capital stock have been surrendered and cancelled, leaving \$27,621,000 outstanding.

CREDIT OF SURFACE LINES IMPAIRED

In the foreclosure suit it is alleged that since the appointment of Mr. Garrison as receiver for the Brooklyn Rapid Transit Company the credit of the surface railroads has become impaired, and the companies will be unable to finance their immediate and future capital requirements. It also is asserted that their available funds, receipts, and earnings are being exhausted because of the lack of credit and the necessity of making cash deposits as security for stay or other bonds which they cannot obtain.

Timothy S. Williams, formerly president of the Brooklyn Rapid Transit Company, it was announced, will remain with the receiver, having charge of the operation of the surface lines. There will be no change in the management or operation of the lines included in the surface railway system.

Notice of Default Served

The United Railways, St. Louis, Mo., has been served with notice of default by the trustees for holders of the general mortgage 4 per cent bonds, aggregating \$30,000,000, it was revealed on July 10 in the hearing before Special Master Henry Lamm on Receiver Rolla Wells' application for authority to issue receivers' certificates or one-year notes to pay the government loan of \$3,235,000, which is several months overdue.

The inability of the company to raise the funds to pay off this loan, which was secured by the pledging of matured Union Depot Railway bonds, threatens the foreclosure of the general mortgage. The failure to release the Union Depot bonds for cancellation constitutes the alleged default.

The default notice was served upon the United Railways by the St. Louis Union Trust Company, trustee for the United Railways' 4 per cent bonds.

Judge George H. Williams, a bondholder, and attorney for one of the bondholders, said the United Railways covenanted itself to pay off and retire the underlying bonds as they fell due and that its failure to take up the Union Depot bonds violates this agreement and constitutes a default.

No foreclosure, however, under the terms of the general mortgage, can occur, Mr. Williams said, until ninety days' notice is given.

The purpose of the hearing before Special Master Lamm is to devise some financial arrangement for paying off the War Finance Corporation loan of \$3,235,000, which would release the Union Depot Railway bonds for cancellation and thus avoid foreclosure.

Charles W. Bates, attorney for the receiver, suggested to Special Master Lamm that Judge Lamm recommend to the court that it direct the receiver to issue certificates, these to be a first lien on the Union Depot Railway bonds, and that this lien be behind all of the divisional mortgages and ahead of the 4 per cent bonds.

Discontinuance of Service Threatened

Unless the communities served by the Georgetown, Rowley & Ipswich and the New Bedford, Middleboro & Brockton branches of the Eastern Massachusetts Street Railway, Boston, Mass., are willing to contribute to the support of these lines under the provisions of Section 15, Special Act of the 1918 Legislature, which allows them to do so, service will be discontinued thereon on Sept. 1.

Notice to this effect has been served upon the public officials in the territory included in these two units of the system by the public trustees of the railway, who say they do not believe either can be included fairly in any of the adjoining districts.

The trustees further declare that from figures available they are con-

vinced that without substantial financial aid from the cities and towns involved the lines cannot be operated without a loss.

In the establishment of the "home rule" districts, the trustees feel that the complaint of many communities that they should not be made to carry the financial load of non-paying lines, with which they have nothing directly in common, is a well-founded one.

On the Georgetown, Rowley & Ipswich and the New Bedford, Middleboro & Brockton branches there are about 54 miles of rail.

The discontinuance of service on other unprofitable lines is also being considered by the trustees.

Memphis Valuation Board Appointed

Prof. Albert S. Richey of the Worcester (Mass.) Polytechnic Institute has been appointed by the Railroad & Public Utilities Commission of Tennessee to act as its representative in the appraisal of the property of the Memphis Street Railway in accordance with the order of the commission dated June 12, which is quoted in the *ELECTRIC RAILWAY JOURNAL* of June 21, page 1247.

Three appraisers are to be appointed to determine the value of the railway in its fight for a permanent 6-cent fare. The city of Memphis has announced that it will appoint Ross W. Harris, Madison, Wis., who represented the city in the preliminary hearing on the 6-cent fare. The third appraiser, to be appointed by the railway, has not yet been designated.

Virginia Road Reclaimed

The Richmond - Ashland Railway, Richmond, Va., organized recently, has taken over the property of the Richmond & Chesapeake Bay Railway and is actively rehabilitating the line under the plan to reclaim the road outlined briefly in the *ELECTRIC RAILWAY JOURNAL* for March 29, page 662. The first 8 miles of the road between Richmond and Greenwood are now in operation and during the month of July the complete line will be rehabilitated and will be in operation as far as Ashland.

The corporation has in contemplation some extensions of considerable general interest if it should be in position to carry out the proposed plans. The temporary organization of the company consists of Jonathan Bryan, Richmond, president, O. J. Sands, Richmond, treasurer, and J. A. Baird, Petersburg, Va., general manager. Upon completion and beginning of the operation of the line between Richmond and Ashland the permanent organization will then take charge of the company and the property, but it is hoped that certain of the proposed additional plans will be worked out prior to that time.

Segregation Permitted

Judge Julius M. Mayer, in the United States District Court, made an order, on July 11, separating the Eighth Avenue Railroad from the receivership of the New York Railways. The order carries with it the proviso that the contract to be made by the receiver with this line shall, in the matter of transfers, be the same as if the severance had not taken place. The order eliminates the danger of a 10-cent fare, as the old transfer system applies until the order of Public Service Commissioner Lewis Nixon, prescribing a 2-cent transfer charge, is confirmed or set aside.

Judge Mayer said he had come to the conclusion that the Eighth Avenue line was not an asset but a burden to the estate under the receivership and should be severed therefrom. He made it clear that the order, when settled, should not be in conflict in any way with the order of Commissioner Nixon. He did not decide he had any authority to fix a joint rate between any lines involved in the transfer issue.

Bronson Winthrop and Henry L. Stimson appeared for the receiver while Michael Kirtland and Morgan J. O'Brien represented the company seeking severance. Mr. Winthrop said:

The Eighth Avenue Company is playing the part here of a company anxious to get back its lines, but without being able to show the court it can operate them. The most serious objection is that the Eighth Avenue line has no right to operate a double-track system below West Tenth Street, in West Broadway. It has only a single-track franchise. It must operate double tracks in this street if it can get anywhere where it can turn around and come back.

This company has a single-track franchise down West Broadway to Vesey Street, and then up Church Street to Chambers. The Church Street line is not in operation. From Vesey to Chambers it is a dead line. It would take two or three months to electrify a cross-over at either of the points named.

Mr. Kirtland, for the applicant, said that all tracks south of Canal Street to Chambers were owned jointly by the Sixth and Eighth Avenue companies and all south of Chambers Street by the Sixth and Ninth Avenue companies. His company proposed to use the Cortlandt Street loop of the Ninth Avenue system until it could build its own crossovers.

Sharon, Mass., to Control Electric Railway

The town of Sharon, Mass., will shortly begin to operate the former Norwood, Canton & Sharon Street Railway, which was sold for wreckage purposes recently to the Dominion Iron & Wrecking Company, of Canada. The town will proceed upon authority of an act passed by the Legislature of 1918, which allows municipalities to finance the operation of electric railways by the assessment of a tax of not over \$1 per \$1,000 valuation. The act was passed as a war measure but remains in force upon the statute books at this time. It is planned to sell stock to the citizens at \$50 a share, an allow-

ance of 6 per cent interest being accorded as a part of the regular operating cost of the road. A stock company composed of citizens was formed recently with the following officers: President, Vernon S. Hawkins, of the Sharon Board of Selectmen; clerk, Postmaster Joseph L. McGrath; treasurer, S. G. Spear; directors, Frederick A. Prince and C. V. Reynolds. The road barely escaped being junked, the town coming to the rescue just in time to prevent dismantling.

Court Upholds Milwaukee Purchase

The State Supreme Court of Wisconsin has handed down a decision sustaining the findings of the Circuit Court of Dane County, denying a temporary injunction restraining the Railroad Commission from proceeding to determine the application of the Milwaukee Electric Railway & Light Company for leave to issue \$1,600,000 of common stock in part payment for the purchase of the utility property of the Milwaukee Light, Heat & Traction Company. Deeds were executed and delivered covering this property on Feb. 11, 1919.

City Attorney Williams of Milwaukee sought an injunction before the Dane County Court to restrain the Railroad Commission from proceeding to determine the application of the company for leave to issue certain securities and make certain payments for the property of the traction company. Judge Stevens denied the temporary injunction, from which decision the city appealed.

In commenting upon the decision of the Supreme Court, S. B. Way, vice-president and general manager, said:

The contention of the electric company in the matter of the purchase of the property of the Milwaukee Light, Heat & Traction Company has apparently finally been vindicated by the decision of the Supreme Court. In this, as in a considerable number of other cases in which the city attorney has appealed to the Supreme Court, the decision has been against the city.

\$2,500,000 of Receiver's Certificates

As the result of an informal agreement between the various financial interests in the United Railways, St. Louis, Mo., involved in the litigation before Special Master Lamm, the latter indicated on July 15 that he would recommend to Federal Judge Dyer authorization of the issuance of \$2,500,000 in receiver's certificates to take up the \$2,400,000 defaulted balance and interest due the United States War Finance Corporation.

The receiver's certificates will be secured by a first lien on the property of the Union Depot Railway, part of the Bellefontaine, Tower Grove, Cherokee and Eighteenth Street lines of the United Railways.

By the sale of these certificates the \$3,500,000 of 6 per cent Union Depot bonds now held as collateral by the War Finance Corporation will be re-

tired. It will not be necessary to issue a new mortgage to secure the receiver's certificates. If the certificates cannot be sold at a satisfactory price, the receiver will come before Special Master Lamm with an alternate proposal. The special master made it clear that he did not favor selling the certificates at a heavy discount.

The agreement was reached after Judge Lamm had expressed his opinion on the necessity of a reorganization of the United Railways from the ground up "on a substantial foundation." The master said:

This corporation must cut loose and make a new superstructure on a decent foundation. We haven't got it yet. We will have it in a few months (referring to the valuation of the United Railway properties now being made by the Missouri Public Service Commission).

It is urgently necessary to preserve this property for the present. I am inclined to make this order (for the receiver's certificates) to the chancellor. I would like to put a limit on the discounting of the certificates, however. In an emergency such as this financiers might insist on a heavy slice. That would ultimately increase the bonded debt.

The special master finally gave Receiver Wells permission to drive the best bargain possible.

Illinois Road Sold Under Foreclosure

The property of the Southern Traction Company, in the hands of a receiver for five years, has been sold at public auction to H. D. Mephram, St. Louis, Mo., for \$400,000. Mr. Mephram was one of the original builders of the road. He announced immediately after the sale that interests in the East would at once begin the operation of the road over the free bridge in East St. Louis and gradually would extend service to Belleville.

The road was sold at the terminal yards of the company, at Twenty-sixth Street and Trendley Avenue, East St. Louis, Ill., by Peter P. Schaefer, master in chancery of the Federal Court for the Eastern District of Illinois, under an order of Judge George W. English, who had decreed that \$300,000 was to be the minimum price for which the property could be sold.

There were only two bidders for the property: Attorney Rowland, representing Mr. Mephram, and Attorney E. C. Kramer, representing the Southern Coal, Coke & Mining Company. Mr. Mephram presented a certified check for \$30,000 on a New York bank. The next step will be the payment of the remaining \$370,000 due on the purchase price. If any default arises, another sale will in all probability be ordered.

The lines, according to the original plans, were to have been extended through a rich coal mining district, passing through the cities of Christopher, Duquoin, Benton and West Frankfort. Court proceedings instituted in clearing up the claims against the Southern Traction Company probably will not be disposed of for more than a year, it is said.

Financial News Notes

Sale of Jackson Property Reported.—It is reported from Jackson, Miss., that the property of the Jackson Light & Traction Company, has been purchased by M. H. Grossman, Milwaukee, Wis., whose bid was \$5,000, subject to all liens, etc.

Additional Preferred Stock Issued.—The Pacific Gas & Electric Company, San Francisco, Cal., has sold \$5,000,000 of its 6 per cent cumulative preferred stock to a syndicate of bankers. According to an official of the company, the sale of the stock will increase the company's cash to an amount in excess of \$10,000,000.

Asks Reduction in Tax Value.—On July 9 the Cleveland (Ohio) Railway filed suit in Common Pleas Court against County Auditor John A. Zangerle and the members of the State Tax Commission, asking that the annual tax valuation of the company's property be reduced from \$33,825,220 to \$19,843,960. A similar suit filed a year ago has been carried to the Ohio Supreme Court.

Jersey Central Traction Company, Matawan, N. J.—The Jersey Central Traction Company has been ordered by the Board of Public Utility Commissioners to make repairs and replacements to be completed not later than Nov. 9. On the Keyport-Perth Amboy division the company has been ordered to raise the tracks to the proper level at the approaches to the bridge across the Matawan Creek.

Will Appeal Tax Decision.—Thomas W. Gregory, secretary-treasurer of the St. Louis & East St. Louis Electric Railway, East St. Louis, Ill., operating on Eads Bridge, has announced that an appeal will be taken to the United States Supreme Court from the decision of Judge Bond in the Missouri Supreme Court, affirming a judgment in the suit of the city of St. Louis against the company for taxes amounting to \$8,356.

Bond Interest Payment Authorized.—Payment of \$18,750 due on July 1, on the mortgage of the Pittsburgh, Canonsburg & Washington Railway, included in the system of the Pittsburgh (Pa.) Railways, was ordered recently by the federal court, under which receivers are operating the lines. Hope that payment of fixed charges may be resumed is entertained since the announcement was made of an increase in the cash fares to 10 cents to take effect on Aug. 1.

Time for Consolidation Extended.—At a meeting of the City Commission of Dayton, Ohio, on July 9, the local railway companies were granted an extension of time for consummating a

consolidation. When they were granted an increase in fare, it was on condition that they make an earnest effort to effect a merger. It is understood that satisfactory progress has been made by the City Railway looking toward taking over the People's Railway.

Ohio Road May Be Junked.—C. G. Taylor, receiver of the Sandusky, Norwalk & Mansfield Electric Railway, Norwalk, Ohio, is quoted as saying that this company's line, about 24½ miles in length, may be junked. Mr. Taylor is reported to have said that the star of the interurban line seemed to be setting. There was too much competition. According to him, the automobile has absorbed much of the passenger traffic and now came the automobile truck to take away what little freight business there was.

Interest Payment Ordered.—Job E. Hedges, receiver of the New York (N. Y.) Railways, was ordered by Judge Mayer in the Federal Court at New York on July 14 to pay the Guaranty Trust Company, New York, N. Y., interest to Oct. 7 next, on a note for \$400,000. The payment will prevent the Guaranty Trust Company from selling the collateral security, consisting of \$1,000,000 first real estate refunding 4 per cent bonds of the New York Railways. The Guaranty Trust Company, in 1917, lent to the New York Railways \$1,200,000, which has been reduced since to the amount of the note, upon which no interest has been paid since April 2.

St. Louis Receiver Reports Earnings.—The gross earnings from passenger traffic of the United Railways, St. Louis, Mo., during the period between June 1, 1918, and April 30, 1919, were \$13,310,537, a gain of 14.56 per cent over the previous year, according to a report filed on June 27 with the Missouri Public Service Commission by Rolla Wells, receiver of the railway. Of these earnings \$12,808,625 were from traffic within the city of St. Louis and the balance for St. Louis County. The increase in earning on the city division over the previous year was 15.42 per cent, while the county earnings of the company showed an increase of only 1.97 per cent over the previous year. The total number of revenue passengers carried during the period covered by the report was 225,983,272.

\$130,000 of Bonds Authorized.—The Public Service Commission for the Second District of New York, on July 10, passed an order authorizing the Poughkeepsie & Wappingers Falls Railway, Poughkeepsie, N. Y., to issue \$130,000 of 6 per cent first mortgage bonds, provided the bonds shall not be sold until the proposed sale price is approved by the commission. The proceeds of the bonds are to be applied to construction work partly completed and proposed relaying of track in Main Street, Poughkeepsie, from the carhouse to Cherry Street and in Main Street from Cherry Street to Arlington

switch including paving. The completed work is principally in Wappingers Falls, including paving costs and other general track reconstruction and equipment.

Application for Receiver Refused.—Judge Guy F. Nelson of the Superior Court has denied the application of Mayor John L. Wisener for a receiver for the Muskogee (Okla.) Electric Traction Company in connection with the strike of the employees of that company. The court held, first, that the city had no standing in court, inasmuch as it has nothing at stake financially, and that no one but a stockholder or bondholder could maintain an action of this kind. Secondly, that the conditions charged by the city had been in effect for years and the city had taken no action which indicated the suit was brought in good faith. The court scored the city officials for failure to give the company police protection when it had twice made an effort to operate its cars. The judge said: "It is the duty of the city to furnish protection for all property within the city and to furnish the protection needed to carry on business."

New Bill for Receiver.—A new bill for the appointment of a receiver for the Rock Island (Ill.) Southern Traction Company, together with a motion to dismiss the old bill, has been filed in the Knox County Circuit Court at Galesburg, Ill. The old bill, on which evidence has been heard by the master in chancery, charged that the defendant company had allowed the rolling stock and property of the road to run down until there was danger that the stockholders and bondholders would lose their investments. The new bill charges that the company had defaulted for six months in the payment of interest on the bonds. The old charge of allowing the property to deteriorate is also included in the new bill. The financial affairs of the Rock Island Southern Railroad have been in court for some time and the new bill for a receiver is the final step in litigation between the Continental & Commercial Trust & Savings Bank, Chicago, Ill., representing the holders of the secured debt of the company, and the owners of the road.

Receivership Action Continued.—An attempt to throw the Galesburg & Western Railway, now under lease to the Rock Island Southern Railroad, into the hands of a receiver was blocked in the Knox County Circuit Court at Galesburg, Ill., when Judge Thompson advised the attorneys for the Continental & Commercial Trust & Savings Bank, Chicago, Ill., seeking the order, to ascertain whether the Rock Island Southern Railway is under government control. Judge Thompson questioned whether the fact that the Galesburg & Western Railway was leased to the Rock Island Southern Railroad brought the former under government control, if the Rock Island Southern connected with the Chicago, Rock Island & Pacific Railway and the

Chicago, Burlington & Quincy Railway, both under government control. Judge Thompson also noted the point that interurban railways are excluded from government control.

Move to Protect New Haven's Interests.—Federal Judge Mayer in New York, on July 10, appointed Nathaniel W. Smith, who is counsel at Providence for the New York, New Haven & Hartford Railroad, as counsel for the Rhode Island Company against which receivership litigation is pending in Rhode Island State courts. A petition filed by Edward G. Buckland, president of the New York, New Haven & Hartford Railroad explained that the Rhode Island Company is indebted to the New Haven for notes aggregating about \$4,000,000 and that the New Haven had special interest in the preservation of the property of the Rhode Island Company. Judge Mayer's action, granted at the request of Mr. Buckland, was concurred in by Frank M. Swacker, special counsel for the government in connection with the Sherman law dissolution suit against the New Haven, of which the Rhode Island Company is a subsidiary. Mr. Buckland told the court that bondholders' committees for the United Traction & Electric Company and the Rhode Island Suburban Railway have been in conference with directors of the New Haven, and that he was hopeful of an early settlement of the controversy in connection with the electric railway properties heretofore operated by the Rhode Island Company.

Utility Offering Preferred Oil Stock.—An issue of \$6,000,000 participating 7 per cent cumulative preferred stock of Shaffer Oil & Refining Company is being offered investors by a syndicate formed by Bonbright & Company and H. M. Byllesby & Company, at 93 and interest. The preferred stock, in addition to being entitled to 7 per cent dividends, will participate in dividend disbursements with the common stock up to 10 per cent, the preferred receiving 1 per cent for each \$1 paid on the common in excess of \$7 in any one year, and at the rate of one-quarter of 1 per cent for each dollar paid per annum on the common stock in excess of \$10. The Standard Gas & Electric Company owns the majority of the common stock of the Shaffer Company, which will continue under the operating management of C. B. Shaffer and staff. With the completion of this financing the Shaffer Oil & Refining Company will have approximately \$4,000,000 in its treasury for development work to increase its 1918 net production of 1,500,000 barrels of petroleum, and to make improvements to its 6,000 barrel refinery which will nearly double the present output of gasoline. The company owns upward of 137,000 acres of oil leases in Oklahoma, Kansas and Texas, and in addition to its refinery has complete pipe line and tank car equipment and a marketing organization in nine States of the Middle West.

Traffic and Transportation

Another Increase Asked

Washington Company Again Appeals for Fare Relief, Asking Now a Seven-Cent Rate

The Washington Railway & Electric Company, Washington, D. C., has filed a petition with the Public Utilities Commission asking for establishment of an initial 7-cent cash fare for transportation within the District of Columbia on all lines owned by it, with the privilege of charging 2 cents for transfers to and from any of its subsidiary lines.

Separate petitions, asking similar financial relief, were filed by each of its subsidiary lines—the City & Suburban the Georgetown & Tenleytown and the Washington Interurban Railways.

THE PROPOSAL OUTLINED

In addition the company requests that no further through cars be run over the suburban lines, but that each line operate its own cars over its own tracks and be permitted to charge for transfers, thus making it practically a 9-cent fare for persons who do not live in the city proper.

First, the subsidiary companies, the Georgetown & Tennytown, City & Suburban and Washington Interurban, in their own rights without reference to the system as a whole, ask the following:

- 1—A straight seven-cent fare.
- 2—Discontinuance of all transfers, free, pay or otherwise.
- 3—Discontinuance of all through transfer arrangements.

Second, the Washington Railway & Electric Company, the parent body, speaking for all the subsidiary lines, asks that the system be kept intact through the granting of a general straight 7-cent fare and the continuing of transfers at the present 2-cent charge.

These are the two general propositions submitted, with an alternative proposal made to the effect that the existing financial difficulties may be overcome if the commission will permit both the Capital Traction and Washington Railway & Electric companies to charge a straight 6-cent fare, and, in addition, will restore the electric light rate to 10 cents.

Refuses to Order Zone System

The Massachusetts House on July 11 refused to order the trustees of the Boston Elevated Railway to put the zone system into effect.

It is estimated by the officials of the Boston Elevated Railway that the first day of the 10-cent fare produced rev-

enue of approximately \$77,000 to \$78,000. This total represents an increase of 52 per cent over the same day a year ago which was a bright sunny day with the temperature about 72 deg. Fahr.

According to present indications, although no definite figures are yet available, it is estimated that the passengers for July 10 fell off about 14 per cent compared with July 9, the last day of the 8-cent fare. As yet no clear indication of the result of the higher fare is possible.

Seven Cents in Columbia

The Columbia Railway, Gas & Electric Company, Columbia, S. C., is involved in a controversy which includes an increase in wages for its employees and an advance in fares. The employees wanted more pay. It seems that they were even prepared to strike, if necessary, to enforce their demands. This contingency was averted, however, by an agreement to submit matters to arbitration.

A board of three was accordingly appointed to inquire into the merits of the issues in dispute. After a careful audit had been made of the company's books it was found that the recent minimum loss by the company for any one month was about \$10,000 and that the total loss of the company since Dec. 1, last, was more than \$180,000. Accordingly, the arbitrators reported in favor of a flat 7-cent cash fare, with tickets at four for 25 cents, and a reduction in the hours of employees from ten to nine with no change in pay, making virtually an advance in the wage scale of 10 per cent.

In accordance with this award the company put the new rates of fare into effect on July 1. Meanwhile the city attorney had been inquiring into the matter and he interpreted the rights of the city not to extend authority to the Council to fix rates. Here citizens interposed and sought an injunction to restrain the company from continuing to collect the advance in fares.

The status of the opposition to the advance was fixed on July 3 when Judge Townsend refused to restrain the company from collecting the advance, holding to the opinion that any action against the company should be brought by the Attorney General, a solicitor or other public official charged with the duty of protecting the rights of the public in instances where such rights appear to have been injured. He accordingly denied the injunction. It was not plain to the court wherein the plaintiffs who were seeking to restrain the company had suffered to a degree uncommon to other users or patrons of the railway.

Interurban Rates Raised

Empire State Railroad Authorized to Charge 2.77 Cents a Mile, With Commutation Increase Also

The Public Service Commission for the Second District of New York on July 1 authorized the Empire State Railroad Corporation, Syracuse-Oswego and Oswego and Fulton city divisions, to file a new tariff, effective on July 6 and to remain in effect for one year from that date, unless otherwise ordered by the commission.

STATEMENT OF CHANGES

The changes authorized, in part, were in a proposed tariff by the railroad, applying to interurban fares on the Oswego-Syracuse division. The tariff was based on a rate of 2.77 cents a mile, but made no increase in local fares in Syracuse, Fulton, and Oswego to points between Syracuse and Baldwinsville, excluding Baldwinsville, or between Minetto and Oswego, although the one-way Minetto-Oswego rate is increased 1 cent. Commutation rates are increased from 1½ to 1¾ cents a mile, but the tariff, as filed, provided for the withdrawal of a family book. Rates for certain special tickets are not disturbed, but a charge is provided where passengers board cars where ticket offices are open. Rebate slips, however, are to be provided by the company.

COUPON TICKET BOOKS ORDERED

The commission's order approved the company's tariff and it further provides for coupon ticket books, 100 coupons of the value of 5 cents each to be sold for \$3.75. The books are for the use of the purchaser and family if used within three months, not less than two coupons to be detached for any distance travelled. Commissioner Irvine, in a memorandum which he filed, says in part:

In constructing an estimated income account under the proposed rates revenues have been assumed without any allowance for decreased travel due to increased rates. It is probable that there will be less decrease than usually occurs in such cases because, while there are two steam roads operating between Syracuse and Oswego and there is theoretical competition between most intermediate points, the passenger service has been so greatly curtailed on both roads and the service of the applicant is so frequent that the steam competition, while not negligible entirely, is so small that unless the service operated by the steam railroad is greatly improved it will not seriously affect the revenues of the applicant.

EVIDENCE CONCLUSIVE

Operating expenses have been largely increased in part by the cost of material, but chiefly by the increases in wages according to the award of the War Labor Board. For example, platform men were allowed 45 cents per hour and a ten-hour day, irrespective of the amount of platform time, and there was testimony to the effect that on this basis, with overtime, the average platform expense is nearly 50 cents an hour for each man. The commission has received information to the effect that very recently the wage scale for the platform men has been increased to 47 cents an hour to equalize the pay with that received on neighboring interurban lines. This will make a further increase in operating expenses, but we base our estimate on the evidence offered at the hearing.

Commission Can Raise Buffalo Fares

Court of Appeals Rules Upon Unusual Clauses of Milburn Agreement—Threatened Foreclosure May Be Averted

The Public Service Commission for the Second District of New York has authority to raise fares in Buffalo above 5 cents, according to a unanimous decision handed down by the Court of Appeals at Albany, July 15. The decision holds that the Legislature, to which under the Milburn agreement between the city of Buffalo and the International Railway power was specifically given to adjust fares under the franchise, delegated this jurisdiction to the commission when it passed the public service commissions act in 1907. As the result, the court holds that in deciding in favor of the rate-making power of the commission it is not overriding but enforcing the conditions of the franchise.

COMPLETE DECISION NOT AVAILABLE

The complete decision is not yet available, but from advance reports it is believed that the ruling does not constitute a direct reversal of the famous 1918 Quinby decision, in which it was held by the same court that whatever power the Legislature had to alter, without city agreement, fares imposed under the constitutional consent clause, such power unmistakably had not been delegated to the commission. In the Buffalo case the city authorities, in imposing a 5-cent fare, at the same time consented that the Legislature might regulate this fare, but few if any franchises in other cities are believed to be similar to the Milburn agreement in this respect.

The peculiar aspects of the Buffalo case are well brought out in Judge Cardozo's opinion, which follows in part:

On Jan. 1, 1892, the Buffalo Railway, the West Side Street Railway and the Cross Town Street Railway, covenanted with the city of Buffalo for a sufficient consideration to abolish transfer charges and established a uniform fare of 5 cents for a continuous trip upon any portion of their lines. That is the Milburn agreement which was thereafter ratified by the Legislature.

None of these roads was then subject, in the enjoyment of its franchise, to any condition imposed by the local authorities affecting rates of carriage. Some of the franchises went back to days when the consent of the local authorities was not required by the constitution. None had been coupled with any conditions in respect to rates except such conditions as had been imposed by the Legislature itself. The power to supervise and regulate has been exercised by the Legislature in the past and against these very roads. The Milburn agreement made no attempt to escape its exercise in the future.

On the contrary, there was express provision that "nothing in this contract contained shall be construed to prevent the Legislature from regulating the fares of said company or either of them." The companies signing that agreement, together with the Buffalo Traction Company, were later consolidated under the name of the International Railway. From time to time, upon the application of the consolidated company, the local authorities gave consent to extensions of the routes, and in so doing again limited fare to not more than 5 cents.

At the same time, however, they provided that "all the terms, provisions and conditions of the Milburn agreement should be deemed a part of the consent." They thus reincorporated the covenant that the

fares should remain subject to regulation by the Legislature.

In December, 1916, the city of Buffalo, believing the fare to be too high, petitioned the Public Service Commission to fix a just and reasonable rate. For nearly two years that proceeding remained dormant. The war was at hand, and with it came enormous increase in the cost of maintenance and operation. The question was no longer whether rates should be lowered. The question was whether there was not need, if bankruptcy was to be averted, that rates should be increased.

SOME OF THE MOVES MADE

The Council of the city of Buffalo passed a resolution consenting to an increase, but a referendum was demanded and the resolution vetoed by the electors. The company then turned for relief to the representatives of the State at large. It answered the dormant petition on file with the commission. It said that the rates, instead of being too high, were too low, and joined in the city's prayer that they be considered and revised. The commission refused to accept the answer on the ground of want of power. The special term granted a mandamus. The proceeding was afterward changed by amendment into one of certiorari. The appellate division annulled the ruling of the commission and contended the proceeding for hearing and decision. Upon the appeal hereafter allowed to this court the following question has been certified: "Has the Public Service Commission jurisdiction and power under the facts shown in this proceeding to regulate the rate of fare to be charged by the respondent for the transportation of passengers in the city of Buffalo?"

We think the power must be upheld. This is not a case where demand is made upon the commission to abrogate a defeasance reserved by the local authorities as one of the conditions of a franchise. This is a case where the local authorities, in imposing a condition, have consented that the Legislature may change it, and have thus renounced the right of forfeiture or revocations that might otherwise be theirs.

There is nothing to show, and we have no right to assume, that the reservation of the power of the State was for the benefit of one of the parties with exclusion of the other. The power to regulate rates is the power to increase them if inadequate just as truly as it is the power to reduce them if excessive. The Public Service Commission is the delegate of the Legislature and regulation by one is regulation by the other.

RATES FIXED BY AGREEMENT PROVISIONAL

The situation then, is this: Municipality and railroad have joined in the declaration that the rate fixed by their agreement shall be not final, but provisional. It is subject, in case of need, to re-examination and readjustment by the agents of the State. The need that was foreseen as possible has arisen. In upholding the jurisdiction of the commission to deal with it, we do not override the conditions of the franchise. We heed and enforce them. There are times when the police force modifies a contract in spite of the intention of those who have contracted. Here its action is in aid of their intention. The covenant which limits rates is a condition of the consent, but only in equal measure with the covenant presented and defining the power of amendment. So far as the power of the commission is concerned, the situation is the same as if no condition had been imposed at all.

Henry W. Killeen, of counsel for the International Railway, says that application will be made at once to the commission to fix an adequate rate of fare in Buffalo. The company will request a 6 or 7-cent fare pending the final determination of what is considered a reasonable rate. The company will use the valuation fixed by the board of arbitration, \$33,000,000, as its valuation in the fare case.

If the company gets a fare increase, a revival of its credit is assured and the threatened sale of stock by the bondholders will be put off. The de-

cision, it is hoped, will act as a stay to the proceedings to foreclose and sell the collateral which has been begun by the bondholders' committee of the International Traction Company.

Kansas City Wants Ten-Cent Fare

Hearings before the Public Service Commission of Missouri on the application of the Kansas City Railway, for a continuance of increased fares—and a further increase—were concluded, at Jefferson City, on July 7. The 6-cent fare now being collected was authorized by the commission for one year, the period expiring on July 15. The railway represented to the commission in the recent hearings, that it has dropped behind \$2,707,000 during the year of 6-cent fares; and that a 10-cent fare would be necessary to pay operating expenses, interest and other charges. The suggestion of the company was that a 10-cent fare be authorized, with two tickets for 15 cents. Representatives of the municipality objected to any increase in fares, but urged that in no event should an advance extend beyond 7-cents. Pending decision on further increase, the 6-cent fare will stand.

Comes to the Aid of the Trolley

The City Commission of Chehalis, Wash., recently took drastic action against jitney traffic between Chehalis and Centralia, when it considered an ordinance forbidding jitneys and "for-hire" cars to make trips over National Avenue oftener than two trips each twenty-four hours. As National Avenue is the only paved thoroughfare connecting the two cities, passage of the ordinance is expected effectually to stop competition that has threatened the discontinuance of the electric railway service between the two cities operated by the North Coast Power Company.

Back to the "Bike"

The Morris Plan Bank appears to be the latest agency to lend aid to the propaganda against the electric railway. An advertiser in a Topeka, Kan., paper says that the bank is prepared to make advances of money to prospective purchasers of bicycles lacking cash, but who see in the bicycle a means of escape from paying a 6-cent fare. The advertisement follows:

Hundreds of people in cities where street car fares have been raised have positively refused to stand the advance. In Chicago over 600 bicycles were bought during the first week of increased fares. Even in Kansas City, with all its hills, hundreds of bicycles have been bought, owing to the general conditions which have existed in connection with riding on street cars. Now that Topeka is hit by 6-cent fares, arrangements have been made by the Harding Wheel Company to take care of all who are not disposed to "whack up" their earnings with the railway company. The Harding Company has arranged with the Morris Plan Bank to handle deferred payments, allowing the purchaser to make almost his own terms. To meet the situation the Harding Company has more than 100 bicycles in stock, being the largest stock of bicycles ever carried by one house in Topeka.

Rome Increase Denied

The Public Service Commission for the Second District of New York denied the application of the New York State Railways for permission to increase its rate of fare in Rome.

Commissioner Irvine, in the memorandum accompanying the commission's order, says if the case were to be determined on the normal basis the increase would have to be granted. The evidence shows revenues in the first eleven months in 1918 of \$57,490 and expenses \$69,583, including depreciation of 3½ per cent and taxes of \$5,561. At the very best, the commissioner says, there is a deficit between the revenue and actual out-of-pocket operating expenses.

The evidence, it was held, showed without contradiction—and it has been confirmed by examination by the commission—that the service rendered is bad. The roadbed, for the most part, is in very bad condition and the equipment, although somewhat improved since the hearing, is also bad. A great deal of the deferred maintenance has necessarily been accumulated during the war, and even now, from what the commission knows of the financial affairs of the applicant, it is not warranted in directing immediate rehabilitation of the Rome system.

The possible increase in revenue would be insufficient to provide for rehabilitation or substantial improvement in service. It would benefit the applicant but little and it would impose an undue burden on the patrons of the road in view of the service now afforded or likely to be afforded in the near future.

Until it can improve its service there, the commissioner says, it is not in position to ask an increase in rates which will substantially burden its patrons without affording it any substantial relief.

Ten Cents on New Rochelle Line

The Public Service Commission for the Second District of New York will hold a hearing, in New York, on July 21 upon a tariff filed by the Westchester Electric Railroad in which it is proposed to increase the fare from 5 to 10 cents on the New Rochelle-Subway line between points in New Rochelle and points in Mount Vernon. The company asks authority to make the fare change effective on July 31.

The commission authorized the railroad, effective on July 12, to establish a new line, known as the New Rochelle-Mount Vernon line to operate between Mechanic Street terminal in New Rochelle and the south city line of Mount Vernon at White Plains Avenue over the same tracks as its present New Rochelle-Subway line operates, and providing a 5-cent fare between any two points on the line with the same transit privileges as now afforded passengers using the New-Rochelle-Subway line.

The permission also provides that on

the New Rochelle-Subway line the fare will be increased from 5 to 10 cents for passengers carried between any two points in adjoining zones. The fare on this line will be 10 cents between New Rochelle and the northern terminal of the subway on White Plains Avenue and also to points in Mount Vernon.

Economic Necessity Plays No Favorites

Ralph McLeran, chairman of the finance committee of the Board of Supervisors of San Francisco, Cal., has suggested the possibility of increasing fares on the Municipal Railway to 6 cents to offset the heavy drains on the operating revenue of the lines.

The Board voted to increase the pay of platform and track men from \$4.50 to \$5 a day, but declined to reduce the percentage of gross passenger revenue that is set aside for depreciation.

Supervisor A. J. Gallagher offered an amendment to the existing ordinance reducing the depreciation and replacement fund from 18 to 15 per cent. The effect of this would be that instead of setting aside 18 per cent of the gross passenger revenues to this fund, only 15 per cent would be diverted to it and the 3 per cent difference could be used to meet the increase in pay.

It was pointed out that an increase of 50 cents a day would add \$118,000 to the annual pay roll, while the diversion of 3 per cent from the depreciation fund would raise only about \$78,000. The difference of \$40,000 would have to be met from some other source.

It was at this point that Mr. McLeran suggested the fare advance. He said that the depreciation fund had been drawn upon to pay the men when their wages were raised to \$4.50 a day and that the Municipal Railway is now carrying \$600,000 in water bonds, and \$200,000 in Liberty bonds which will have to be converted into cash at a discount if the present conditions continue.

After Supervisor Power's motion to pay the employees \$5 a day, beginning July 1, was passed, the Supervisors referred the Gallagher amendment to the finance committee, which has two weeks in which to report back.

New Jersey Zone Hearings

Witnesses at hearings before the Board of Public Utility Commissioners of New Jersey, on July 10 and 15, assailed the appraisal of the Public Service Railway properties made by Dean Mortimer L. Cooley as a basis for a proposed zoning system.

Edward W. Bemis, appraisal engineer, testified for the League of Municipalities that the proportionate value of the land included in the estimates was too high and that the Public Service property, instead of being in 89.4 per cent condition, as computed by Dean Cooley, should be considered at from 70 to 80 per cent condition.

Fare Compromise Arranged

The Railroad Commission of South Carolina held a hearing recently for the purpose of considering a petition from the Charleston Consolidated Railway & Lighting Company for an increase in rates from the city of Charleston to the Navy Yard.

On Dec. 28 of last year the Railroad Commission issued an order permitting the company to charge a 5-cent fare from the city limits to the Navy Yard. On Jan. 1 an accident occurred in the plant of the company and this prevented compliance with the conditions under which the increase was granted, so an order was issued abating the former order until such time as the Railroad Commission should again order that it go into effect.

Recently the company petitioned again for an increase in rates, and a hearing was ordered. After discussing the question the Railroad Commission agreed to a compromise, which is said to be acceptable to both sides. It provides that the company put on sale a commutation ticket which will cost 15 cents for the round-trip during the go-to-work and knock-off hours at the Navy Yard. To get the advantage of the rate, a person must hold a ticket. These tickets are to be had by everyone wishing to purchase them, whether or not they work at the Navy Yard. The commutation tickets are good only at the time when persons are going to work or returning home. At all other times the rate will be 5 cents from the city limits. If one boards a car inside the city limits it will cost 5 cents to the boundary and 5 cents from there on to the Navy Yard. The new rate went into effect July 1.

Hearing on Mail at Kansas City

It was announced that matters concerning the carrying of United States mails would be taken up at a hearing by the Interstate Commerce Commission in Kansas City on July 18. A conference on this subject was held in Kansas City on July 8, by officials of transmississippi companies. The meeting was presided over by Philip J. Kealy, president of the Kansas City Railways. The following officials were present representing their companies:

J. P. Boyle, traffic manager of the Iowa Southern Utilities Company, Centerville, Ia.

R. A. Leussler, assistant general manager of the Omaha & Council Bluffs Street Railway, Omaha, Neb.

W. G. Nicholson, secretary and auditor of the Omaha & Council Bluffs Street Railway, Omaha, Neb.

J. H. Van Brunt, vice-president and general manager of the St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo.

J. M. Bramlette, vice-president and general manager of the Lincoln (Neb.) Traction Company.

Thomas Riley, general manager of the Missouri & Kansas Interurban Railway, Kansas City, Mo.

J. R. Harrigan, vice-president and general manager of the Kansas City, Clay County & St. Joseph Railway, Kansas City, Mo.

W. A. Satterlee, general manager of the Joplin & Pittsburg Railway, Pittsburg, Kan.

R. F. Malone, of the Waterloo, Cedar Falls & Northern Railway, Waterloo, Ia.

O. H. Bernd, secretary of the Des Moines (Ia.) City Railway and the Inter-Urban Railway, Des Moines, Ia.

Transportation News Notes

Will Abandon Skip Stop.—The Cincinnati (Ohio) Traction Company will abandon the skip-stop introduced as a war measure as soon as necessary changes in schedule can be worked out.

Freeport Advance Suspended.—The Public Utilities Commission of Illinois has re-suspended to Jan. 13, 1920, the proposed advance in railway rates from 5 cents to 7 cents in the city of Freeport.

Fare Increase Approved.—The City Council of Ashtabula, Ohio, on July 8, passed an ordinance granting an increase in fare from 5 cents to 6 cents to the Ashtabula Rapid Transit Company.

Opposed to Seattle Fare Change.—By a majority vote, the utilities committee has gone on record as opposed to any change in fares on the Seattle (Wash.) Municipal Railway, except by authority of the City Council.

Six Cents in Lansing.—New rates of fare authorized by the City Council of Lansing, Mich., at a recent session were put into effect, on July 8, by the Michigan Railway. The new schedule calls for a straight 6-cent fare for a single ride. Tickets are to be sold to the patrons of the company at five for 30 cents, as a matter of convenience.

Fare Reduced to Shipyards.—The Trenton, Bristol & Philadelphia Street Railway, Bristol, Pa., has reduced the round-trip fare from Bristol to Harriman, Pa., from 27 to 21½ cents. The company is now selling tickets in strips of twelve. The reduction in rates was made to accommodate the shipworkers at the Harriman shipyards.

More One-Man Cars Authorized.—The Public Service Commission of Massachusetts, on July 10, authorized the purchase and operation of one-man cars by four additional companies, namely, the Springfield Street Railway, the Interstate Consolidated Street Railway, the Worcester Consolidated Street Railway and the Milford, Attleboro & Woonsocket Street Railway.

Business Men See Need.—An 8-cent or possibly even a 10-cent fare may be necessary to keep railway service in New Castle, Pa., up to the standard desired, it was decided at a conference of business men and Councilmen of that city recently. The majority of those in attendance favored immediate consultation with the members of the Public Service Commission for advice on the situation.

Massachusetts Lines Establish Freight Service.—The Northampton (Mass.) Street Railway, the Connecticut Valley Street Railway and the Holyoke Street Railway have united in forming a freight department and run-

ning cars for carrying freight of all kinds between Northampton and Springfield, Greenfield, Amherst, Easthampton, Florence, Millers Falls and other points.

Syracuse Transfer Case Closed.—The Public Service Commission for the Second District of New York on July 8 ordered closed, subject to reopening on application of the company, the petition of the New York State Railways for permission to charge 1 cent for transfers in Syracuse. The railroad did not press its application following negotiations over certain proposed paving in Syracuse.

Moline Tariff Suspended.—The Public Utilities Commission of Illinois has permanently suspended the rate schedule of the Moline, East Moline & Eastern Traction Company, which proposed an advance of rates for service in Moline, East Moline and Silvis, Ill., and also a schedule of the Tri-City Railway, Davenport, Ia., proposing an advance of rates for service in Rock Island, Moline, East Moline, and Milan, Ill.

A Wonderful Record.—On Jan. 1, 1907, the Portland Railway, Light & Power Company, Portland, Ore., took over the operation of the consolidated electric railway lines in Portland. From that date up to and including May 31, 1919, the company handled 1,038,922,806 passengers on its city cars. In all that time and in moving that enormous volume of traffic not a single passenger has been killed while in the custody of the company.

Fare Order Qualified.—According to an opinion by Robert Evans, assistant corporation counsel of Seattle, Wash., the order of the Public Service Commission authorizing the Seattle & Rainier Valley Railway to increase fares does not alter other franchise provisions, and the company must continue to carry policemen and firemen free of charge. It is held that the commission must specifically state that such passengers are to be charged the usual rate.

Commission Will Hear Binghamton Petition.—The Public Service Commissioner Fannell planned to hold a further hearing on July 15 on the petition of Receiver William G. Phelps, of the Binghamton (N. Y.) Railway for authority to increase fares in Binghamton and other municipalities. The commission on June 26 denied a motion to dismiss the receiver's application for lack of jurisdiction and decided to proceed with the hearing on the company's petition.

Opposed to Bus Competition.—The Aurora, Elgin & Chicago Railroad, Wheaton, Ill., has brought suit against the Inter-City Motor Express Lines claiming that the latter company is engaged in illegal operation of an express business between Aurora and Elgin and other cities served by the electric railway. The case is now before the Public Utilities Commission of Illinois. Counsel for the railway contends that the motor company is not

authorized by the commission to carry passengers or freight.

Surface Cars Trains in Brooklyn.—The Brooklyn (N. Y.) Rapid Transit Company started two-car train operation on the Gates Avenue surface line on July 14. It is stated that all of the center-entrance cars on the surface lines of the company are to be equipped with couplers so that they may be operated in trains and that eventually train operation will be put into effect on the St. Johns Place line as well as the Flatbush and the Gates Avenue lines. Two-car trains in charge of one motorman and two conductors have been in successful operation on the Flatbush Avenue line in Brooklyn for more than six months.

Court Directs Higher Fare for Omaha.—The Supreme Court of the State of Nebraska on July 16 directed the State Railway Commission to grant the Omaha & Council Bluffs Street Railway increased rates, recommending a 6-cent rate, pending further investigation of the company's books to determine the present earning capacity and permanent rate. The company applied for a 7-cent rate in July, 1918. The railway commission rejected this application last November, and the company appealed. The Supreme Court decision further held that the company, on the showing already made, is entitled to increased earnings to insure it against insolvency.

Trip Ticket Privileges Modified.—The Schenectady (N. Y.) Railway has been authorized by the Public Service Commission for the Second District, to put into effect on Aug. 1 a change in rules governing the sale of fifty-four-trip commutation tickets between Schenectady and Ballston Lake, Ballston Junction, Albay and Troy. There are no changes in the present fifty-four-trip ticket rates, but the new rule provides that they are to be used by the purchaser only within thirty days from and including date of sale, trip coupons to be accepted in either direction between specified points on business days and not on Sundays or legal holidays, tickets to be forfeited if used by any person other than the one entitled to use them.

Fare Conference in Norfolk.—A conference was held in Norfolk, Va., recently of committees of the Chamber of Commerce and the city government with officers of the Virginia Railway & Power Company looking toward financial relief for the company through fare readjustments. A suggestion from the company was offered proposing zone fares, but it was explained by officers of the company that they were open to any practical suggestion that would increase the revenues of the company sufficiently to enable it to meet advancing costs. The conference adjourned subject to call without having reached a definite conclusion. Pending further conferences a postponement was secured until July 24 of the case of the company before the State Corporation Commission looking toward relief.

Personal Mention

Col. A. T. Perkins Manager

Railroad Advisor to St. Louis Union Trust Company Succeeds Mr. McCulloch With United Railways

Col. Albert T. Perkins, former director of combat railways for the American Expeditionary Forces in France, on July 8 assumed the duties of manager for the receiver of the United Railways, St. Louis, Mo., succeeding Richard McCulloch, who resigned several weeks ago.

Colonel Perkins served for twenty months in France, and at the signing of the armistice he was in command of 12,000 men. In awarding the Distinguished Service Cross to Colonel



COL. A. T. PERKINS

Perkins the War Department made the following citation:

For exceptionally distinguished and meritorious service. As deputy and later as manager of light railways, he undertook the task of organizing a light railway service for the American expeditionary forces. His long and complete railroad experience and knowledge assured the success of these lines. By his foresight in promptly gathering from the United States a generous supply of railway material, he quickly brought the light railway service to a high degree of efficiency.

Upon his return from France Colonel Perkins resumed his post of railway advisor for the St. Louis Union Trust Company, in which capacity he had charge of the trust company's interest in the St. Louis, Brownsville & Mexico Railway. He was also consulting engineer in the construction of the lines of the lines of the Southern Traction Company of Texas from Dallas to Waco and Wakahachie.

Colonel Perkins will have full control of the properties of the United Railways and will answer only to Receiver Wells. After announcing the appointment, Mr. Wells said:

I have named Colonel Perkins to assist me in the capacity of manager for the re-

ceiver to have full charge of the operation of the properties taking the place of Richard McCulloch. I selected Colonel Perkins because I became acquainted with his ability as an engineer during my term as Mayor of St. Louis. He is a high-class man and will prove invaluable in rehabilitating the properties.

Colonel Perkins, when notified of his appointment, said:

I feel that as a result of my experience I am fitted to give the proper and proportionate consideration to the four main interests involved—the public, the employees of the company, the municipality and the security holders. At the present time I am not familiar with the conditions and affairs of the properties. As soon as I make the acquaintance of the operating staff and the employees of the company I shall make a careful and extended study of the plant and the operations of the properties. Until then, it will be impossible for me to give any real advice to the receivers or any general statements as to the conditions of affairs and the policy to the public. I want to deal very frankly with the public through the press. The present railway problems in most of our large cities are serious ones and I hope to win the co-operation of the public and the press in working out service in a way that will be at least as effective as done in any other city.

Colonel Perkins was born in Brunswick, Me., fifty-four years ago. He was graduated from the Boston Latin School and from Harvard University. He began his railway career with the Chicago, Burlington & Quincy Railroad in 1887 and continued with that company in various capacities until 1907 when he was called to St. Louis as advisor to the Municipal Bridge & Terminal Commission when Rolla Wells, now the receiver of the United Railways, was Mayor of St. Louis. He served with the commission until 1909, his duties requiring him to investigate the terminal facilities of the principal American and European cities. In 1908 while still acting as advisor to the commission he was made railroad advisor and syndicate manager for the St. Louis Union Trust Company.

Maurice E. McCormick has resigned as assistant general manager of the New Brunswick Power Company, St. John, N. B., operating the St. John Railway. Mr. McCormick has been at St. John since the fall of 1917. He was formerly assistant general manager of the Bangor Railway & Electric Company, Bangor, Me., the service of which company he entered in 1896 as an apprentice in the shops.

Robert S. Warner has resigned as financial manager of the United Railways, St. Louis, Mo., but will continue as vice-president, serving without salary. In a statement which he issued Mr. Warner declared that a directorate of a utility should include representatives not only of the stockholders but also of the city, the Public Service Commission, and the employees. Mr. Warner was elected vice-president and a director of the company last October. Previous to that time he had been a

member of the firm of Warner-Tucker & Company, bankers, Boston, Mass.

Harold D. Larrabee has been appointed general manager of the Eastern Connecticut Power Company and of the Shore Line Electric Railway, with headquarters at Norwich, Conn. Mr. Larrabee is well known in New England electric railway circles. For the last ten years he has been general manager of the Charles H. Tenney & Company properties at Montpelier, Vt., including the Barre & Montpelier Traction Company and the Barre & Montpelier Light & Power Company. At his new post he will have charge of about 240 miles of electric railway and of an interconnected power supply system including a new 22,000-kw. steam plant which is to furnish industrial power to southeastern Connecticut.

E. D. Merrill has been appointed assistant superintendent of transportation of the Milwaukee Electric Railway & Light Company, Milwaukee, Wis. His



E. D. MERRILL

duties will lie chiefly with the technical division of the company's work. He will have charge of traffic surveys, bonus plans, schedules and similar matters and will assist the superintendent in other ways as directed. Mr. Merrill is a civil engineer by profession but has worked up through the electric railway organization. He began his railway career on construction work for the Union Pacific Railway, but preferring the electric railway business entered that service as a motorman with the Puget Sound Traction, Light & Power Company at Seattle. From motorman he entered the shops and then had experience in electric welding in the track department, later becoming traffic engineer in charge of traffic investigations and similar work. He became connected with the Milwaukee Electric Railway & Light Company last December, entering the statistical department on traffic survey work. Mr. Merrill will continue this line of work with headquarters in Milwaukee.

Francis H. Dewey, president of the Worcester (Mass.) Consolidated Street Railway, has resigned as president of

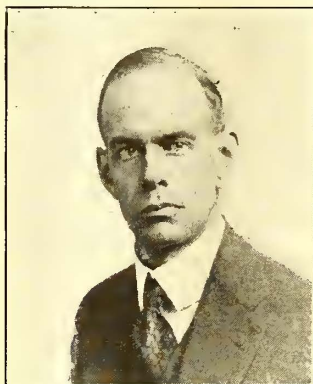
the New England Investment & Security Company and is succeeded by C. V. Wood, Springfield, as noted elsewhere in this department. Mr. Dewey has been president of the New England Investment & Security Company for the last four years. His resignation from the company has no bearing whatever on his office as president of the Worcester Consolidated Street Railway, which is controlled by the New England Investment & Security Company.

Clark V. Wood, president of the Springfield (Mass.) Street Railway, has been elected to the board of trustees and to the presidency of the New England Investment & Security Company, replacing F. H. Dewey, Worcester, who has resigned as president. The New England Investment & Security Company is the holding company for the Springfield Street Railway, the Worcester Consolidated Street Railway, the Milford, Attleboro & Woonsocket Street Railroad, the Interstate Consolidated Railway and the Attleboro Branch Railroad. Mr. Wood has been connected with the properties mentioned for more than ten years. He is a former president of the New England Street Railway Club.

Ralph M. Sparks, transportation manager of the Eastern Massachusetts Street Railway, Boston, Mass., has resigned to enter business at Worcester, Mass., where he will be interested in and will manage the Worcester district of the Willys-Overland Company. Mr. Sparks is widely known in the electric railway field. He has been associated with the Bay State System, the predecessor of the Eastern Massachusetts Street Railway, as general passenger agent and later transportation manager for upwards of a decade. He has had an active hand in the development of the company's transportation organization to meet the growing needs of the system during the period of centralized operation and fare revision which has now terminated in public control and trustee administration. Mr. Sparks leaves a host of friends in the electric railway industry who will wish him success in his new work.

R. C. Cram has been appointed engineer of surface roadway of the Brooklyn (N. Y.) Rapid Transit Company, by Lindley M. Garrison, receiver. This appointment was announced recently by C. L. Crabb, engineer of way and structure, in connection with other changes made in the departmental organization. Mr. Cram entered the employ of the Bridgeport (Conn.) Traction Company in 1900, after completing the scientific course at the Bridgeport High School in 1898. After a few months in the general store-room he was transferred to the track division as time-keeper and the following year entered the office of the engineer and assistant general manager as draftsman. When the company was merged into the Connecticut Railway & Light Company in 1902, Mr. Cram was transferred to the office of the electrical superintendent,

and in 1905 became assistant superintendent of track. When the road passed to the control of the New Haven Railroad in 1906, he was appointed assistant engineer in charge of field work, construction and general maintenance under C. R. Harte, construction engineer. The following year he was transferred to New Haven to the department of E. M. T. Ryder, who had become engineer of the Connecticut Company in charge of maintenance of way. Mr. Cram continued in charge of the maintenance engineering matters on the old Connecticut Railway & Light division until 1912. In that year he joined the way and structure department of the Brooklyn Rapid Transit System as assistant engineer in charge of reconstruction of surface tracks. Later the maintenance engineering matters for the surface lines were added to his duties. The title now given to Mr. Cram more exactly indicates his present work. He continues to report to Mr. Crabb. Mr. Cram is a member of the Connecticut



R. C. CRAM

Society of Civil Engineers. He was a member of the A. E. R. E. A. committee on way matters for four years, two of these as vice-chairman, and served also as a member of the committee on standards of the same association. He has been consistently interested in the work of this association.

Obituary

Frederick Evans, long a well-known newspaper man, and later a corporation official, died recently at Charlotte, N. C., at the age of fifty-seven. In 1897, after spending many years in newspaper work, Mr. Evans became secretary to Garrett A. Hobart of New Jersey, then Vice-President of the United States, and remained in that position until Mr. Hobart's death. Later he was successively secretary of the Rapid Transit Subway Construction Company, New York, N. Y., which constructed the

original rapid transit lines in that city, secretary of the Interborough Rapid Transit Company, New York, and secretary of the Public Service Corporation of New Jersey. The last few years of his life were spent by Mr. Evans in newspaper work as editor of *Hampton's Magazine* and as an editorial writer on the *Wall Street Journal*.

New Publications

Treatment of Industrial Problems by Constructive Methods

Published by the Director General, Working Conditions Service, Department of Labor, Washington, D. C.

This pamphlet, with the accompanying organization chart illustrating the functions of the Working Conditions Service as a national information center, shows how the Department of Labor is aiming to give the best possible advice on matters of industrial health, safety and labor administration.

Office Management

By Lee Galloway. The Ronald Press Company, 20 Vesey Street, New York, N. Y. 700 pages. Flexible full leather.

This is an admirable critical study of how representative business concerns handle their departmental routine. It is neither incomprehensive nor superficial. It is a manual of concrete methods and detailed procedure, and also a careful presentation of the scientific principles underlying the control of personnel and production, the analyses of conditions, the classification of data and the standardization of operations. Commendable in contents, arrangement and illustrations, the book should rapidly become the standard for office engineering.

Cost Accounting

By J. Lee Nicholson and John F. D. Rohrbach. The Ronald Press Company, 20 Vesey Street, New York, N. Y. 500 pages. Flexible full leather.

The extensive development in cost accounting due to speeded-up production under Washington supervision during the last few years makes this new manual a most welcome addition to accounting literature. The book not only gives a comprehensive treatment of the most approved procedure for finding, distributing and recording costs but also presents a full account of cost-plus contracts and an interpretation of the government's ideas on cost methods and depreciation rates. In supplying experience data as to the life of physical property the authors have made a large contribution to the field. It is not too much to say that this revised book of Mr. Nicholson is the authority on up-to-date cost accounting methods.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER,

SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES

BUSINESS ANNOUNCEMENTS

Opportunity for Manufacturers in Sweden

Program of Power Development and Railway Electrification Will Produce Extensive Markets

The great stimulus being given to waterpower development, the electrification of railroads, and the consequent greatly increased use of electricity for industrial purposes under the direction of the government and through its financial aid in Sweden, according to a recent report of the Guaranty Trust Company of New York, should create an active source of export sales for American manufacturers of various kinds of electrical equipment. The production of the heavier types of machinery required in this electrification work is an important industry in Sweden, but the drop in German imports in many allied lines has been seriously felt.

CLOSER RELATIONS WITH UNITED STATES

Heretofore, Sweden has paid heavy toll to Germany for her lack of direct shipping connections with outlying countries, but now plans are being for-

have increased, and her labor situation appears more favorable than that of her neighbors. A period of temporary depression must follow the speculation and rapid expansion of the war years, but Sweden's future for the long pull never appeared brighter than at present.

Insulating Materials Again Higher

Increasing Price of Raw Materials Forces Yarns, Tapes, Cloths and Compounds Higher

How closely insulating materials follow the market conditions for the raw products is apparent from a study of what has happened during the past week or ten days. As a natural conclusion to the almost daily advances in the cotton market have come frequent increases in the price of cotton products. Silk, too, has gone up. Varnished silk insulation has increased in price about 63 per cent since April. The last increase was a week ago.

Varnished cotton insulation is 20 per cent higher, 5 per cent of which oc-

Copper Products Advancing in Price

Rail Bonds Higher—All Wires Follow Base Metals on Constantly Increasing Price Basis

At this writing copper is selling for 22½ cents a pound, delivered, and is generally expected to continue its advance. It is back to within 3½ cents of the fixed price ruling before the armistice, and predictions are rife that it will go to 25 cents by fall. Copper sales are increasing right along. The recent admission of Germany to trade with the United States merely provides another foreign outlet to American copper, and with already curtailed production it is not unreasonable to expect higher prices with the increased demand.

Rail bonds have advanced again, and over the last week-end the prices increased just over 6 per cent when discounts dropped from 20 to 15 per cent. In the last five weeks bond prices have increased 13½ per cent. The last drop of 5 points was sufficient to carry the interest on a rail bond investment for a year. There have recently been a few bond purchases of such size as to lead to the belief that there was to be some stocking in anticipation of still higher prices.

PRICES SUBJECT TO CHANGE

Brass and copper products have followed the base metal up about 3 cents a pound since last week. Hot rolled copper sheet is 31.50 cents, round copper rods are 28.25 cents and seamless copper tubing is 35.50 cents a pound. Copper scrap is 17 to 18 cents while brass scrap is 9 cents for light and 10 cents for heavy in New York. No change in price, however, has been reported in brass overhead line material, controller parts or commutator bars, but it is anticipated.

Copper wire at the mill is quoted 24 to 24.50 cents a pound. Rubber covered wire base is 26 cents, weather-proof base is 23.50 to 25.00 cents and bare wire base is 22.50 to 23.50 cents. These prices are liable to change almost daily.

Cotton Cord Advances

Bell cord and register cord have advanced with cotton. Depending on the grade, the increases in the past week have amounted to approximately 8 per cent. No increase in buying has been noticed. Cotton is expected to go higher still when exporting comes into its own. The crop is smaller than usual and the demand larger.

GERMAN ELECTRICAL EXPORTS TO SWEDEN

	1909	1910	1911	1912	1913
Electric cables	\$1,023,000	\$1,021,000	\$752,000	\$565,000	\$500,000
Electric appliance for illumination, transmission of power, etc.	188,000	262,000	334,000	340,000	481,000
Electric incandescent lamps	340,000	329,000	513,000	373,000	406,000
Electric meters, registers, etc.	99,000	151,000	189,000	217,000	261,000

U. S. ELECTRICAL EXPORTS TO SWEDEN

	1913	1914	1915	1916	1917
Batteries		\$569	\$3,809	\$537	\$8,540
Dynamos or generators	48			1,168	17,359
Insulating wire and cables		1,253	535	1,276	29,400
Meters, other measuring instruments			2,000	1,858	1,150
Motors	5,298	1,400	6,400	711	11,000
Transformers		30,113			
All other	5,500	10,700	19,000	31,500	88,500

mulated which will bring Swedish ports into direct and regular communication with this country. The new policy of her big men is predicated upon the cultivation of closer commercial and financial relations with the United States.

MARKET FOR U. S. GOODS GROWING

Prior to the war the part of the United States in supplying electrical equipment to Sweden was almost nil. The accompanying figures show the importance of the trade from the German standpoint. It is only in the past two years that our share has grown appreciably, and it would appear to be entirely up to the American exporters of these commodities whether the figures rise to new heights or fall back to the old level.

In spite of the handicaps of the war period, Swedish private enterprise and the purchasing power of the people

curred early this past week. Cotton tapes and webbings advanced 5 per cent this week. No advance has been reported on friction tape, but it is expected to come through any day.

There has been better buying of insulating compounds and materials in the past two weeks. Sales have been getting bigger in size and are covering more varied material. Inquiries, too, have been seeking more definite information. They are asking for quotations on definite amounts rather than for just prices in general. These inquiries, moreover, have been on larger amounts. Prices cannot be guaranteed as they are liable to change from day to day.

Linseed oil and varnishes have increased considerably. Linseed oil has risen 30 cents a gallon in the last two weeks, with a resultant effect on insulating material prices.

Rolling Stock

Toronto (Ont.) Railway is reported to be ordering electrical and other equipment for fifty cars to be built in its own shops.

Peoria (Ill.) Railway.—Improvements to its system and rolling stock amounting to about \$100,000 are being planned by the Peoria Railway.

Levis (Que.) County Railway has bought twelve standard safety cars, specially fitted for the local climate, from the American Car Company, St. Louis, Mo.

Nova Scotia Tramways & Power Company.—The proceeds of the proposed \$2,000,000 note issue are to be utilized for the purchase of additional cars and other equipment and for improvements and repairs.

Detroit (Mich.) United Railway is building bodies for 100 new street cars. These are nearly completed, but there may be some wait for the trucks, according to the officials of the company. The new cars contain the latest ventilating system, which is being used extensively in some of the other large cities. The cars will be distributed where most needed.

Franchises

Newport, Ky.—The City Commissioners of Newport have granted a franchise to the Andrews Steel Company to construct its proposed line

on Licking Pike from Eleventh and Brighton Streets to Twelfth Street, west to Lowell and south to the corporation line. The road will connect with the South Covington & Cincinnati Street Railway and the ordinance provides for the interchange of transfers between the two companies. [June 14, '19.]

Track and Roadway

La Jolla, Cal.—Announcement has been made through Edgar F. Stahle, chairman of the committee on transportation of Chamber of Commerce of La Jolla, that arrangements have been made for financing the construction of 4½ miles of electric line to serve that suburb of the city of San Diego, Cal. It is planned to take over the present line of the Bay Shore Railroad, which connects with the Point Loma Electric Railroad at Ocean Beach and extends through Mission Beach, and thence to build the 4½ miles of new line, using a 60-lb. rail. The line is to be operated as an adjunct of the San Diego Electric Railway, which now operates the Point Loma line. The present plans have resulted from the abandonment of the old steam and gasoline-operated line connecting San Diego and La Jolla known as the Los Angeles & San Diego Beach Railroad.

Chicago & Joliet Electric Railway, Joliet, Ill.—The Chicago & Joliet Electric Railway will double-track its lines on West Jefferson Street between Center Street and the Wilcox Street switch.

East St. Louis & Suburban Railway, East St. Louis, Ill.—Plans are being considered by this company for the extension of its line to Scott Field, Ill. It is planned to construct the extension from the O'Fallon division.

Charles City, (Ia.) Western Railway.—Charles City Western Railway is to be extended north on Main Street to connect with the Illinois Central Railway and the Chicago, Milwaukee & St. Paul Railway at their passenger stations. Extra cars will be added to meet all trains on those lines. Spur tracks will be built to the plants of the Cedar Valley Electric Company and the Lambert Lumber Company to accommodate their freight service. Work will be begun on the extension and spurs as soon as the material is assembled. The cost will be approximately \$12,000.

Trenton & Mercer County Traction Corporation, Trenton, N. J.—The State Board of Public Utility Commissioners has issued an order directing the Trenton & Mercer County Traction Corporation to improve its various divisions. The order becomes effective in August and requires the company to replace its roadbed on West State Street, Hamilton Avenue, Olden Avenue and Pennington Avenue. On West State Street new ties and 103-pound grooved rails and grouted granite block pavement on a concrete foundation will have to be laid. The utility board also ordered a double-track to take the place of the single one on Pennington Avenue. A double-track will also be laid on part of Hamilton Avenue.

NEW YORK METAL MARKET PRICES

	July 2	July 17
Copper, ingots, cents per lb.	19 00	22.50
Copper wire base, cents per lb.	20 50 to 21 00	24.50
Lead, cents per lb.	5 40	5 50
Nickel, cents per lb.	40.00	40.00
Silver, cents per lb.	7 35	8.15 to 8.25
Tin, cents per lb.	70 50	70.00 to 70 50
Aluminum, 98 to 99 per cent, cents per lb.	33.00	32.00 to 33.00

OLD METAL PRICES—NEW YORK

	July 2	July 17
Heavy copper, cents per lb.	16 00 to 16 50	18 00 to 19 00
Light copper, cents per lb.	13 00 to 13 50	15 00 to 15 50
Heavy brass, cents per lb.	8 50 to 9 50	10 50 to 11 00
Zinc, cents per lb.	5 25 to 5 75	5 75 to 6 00
Yellow brass, cents per lb.	7 75 to 8 25	9 00 to 9 50
Lead, heavy, cents per lb.	4 75 to 4 87½	5 00 to 5 12½
Steel car axles, Chicago, per net ton.	\$25 00 to \$26 00	\$25 00 to \$26.00
Old carwheels, Chicago, per gross ton.	\$22 00 to \$22 50	\$22 00 to \$22 50
Steel rails (scrap), Chicago, per gross ton.	\$19 00 to \$20 00	\$20 00 to \$22 50
Steel rails (relaying), Chicago, gross ton.	\$20 00 to \$21 00	\$21 00 to \$22.00
Machine shop turnings, Chicago, net ton	\$7 75 to \$8 00	\$8.00 to \$8.50

ELECTRIC RAILWAY MATERIAL PRICES

	July 2	July 17
Rubber-covered wire base, New York, cents per lb.	23	26
Weatherproof wire (100 lb. lots), cents per lb., New York	27	28
Weatherproof wire (100 lb. lots), cents per lb., Chicago.	25 75 to 26.50	27 75
T rails (A. S. C. E. standard), per gross ton	\$49 00 to \$51 00	49.00 to 51.00
T rails (A. S. C. E. standard), 20 to 500 ton lots, per gross ton.	\$47 00 to \$49 00	47 00 to 49 00
T rails (A. S. C. E. standard), 500 ton lots, per gross ton.	\$45 00 to \$47 00	45 00 to 47.00
T rail, high (Shanghai), cents per lb.	3	3
Rails, girder (grooved), cents per lb.	3	3
Wire nails, Pittsburgh, cents per lb.	3.25	3 25
Railroad spikes, drive, Pittsburgh base, cents per lb.	3 35	3 35
Railroad spikes, screw, Pittsburgh base, cents per lb.	8	8
Tie plates (flat type), cents per lb.	2.75	2.75
Tie plates (brace type), cents per lb.	2.75	2.75
Tie rods, Pittsburgh base, cents per lb.	7	7
Fish plates, cents per lb.	3	3
Angle plates, cents per lb.	3.90	3 90
Angle bars, cents per lb.	3.90	3.90
Rail bolts and nuts, Pittsburgh base, cents per lb.	4 35	4 35
Steel bars, Pittsburgh, cents per lb.	2 35	2.35
Sheet iron, black (24 gage), Pittsburgh, cents per lb.	4 20	4.20
Sheet iron, galvanized (24 gage), Pittsburgh, cents per lb.	5.25	5 25
Galvanized barbed wire, Pittsburgh, cents per lb.	4 10	4 10

	July 2	July 17
Galvanized wire, ordinary, Pittsburgh, cents per lb.	3.70	3 70
Car window glass (single strength), first three brackets, A quality, New York, discount †.	80%	80%
Car window glass (single strength, first three brackets, B quality), New York, discount.	80%	80%
Car window glass (double strength, all sizes AA quality), New York discount	81%	81%
Waste, wool (according to grade), cents per lb.	14 to 17	14 to 17
Waste, cotton (100 lb. bale), cents per lb.	8 to 12½	8 to 12½
Asphalt, hot (150 tons minimum), per ton delivered
Asphalt, cold (150 tons minimum, pkgs. weighed in, F. O. B. plant, Maurer, N. J.), per ton
Asphalt filler, per ton	\$30.00	\$30.00
Cement (carload lots), New York, per bbl.	\$2 90	\$2 90
Cement (carload lots), Chicago, per bbl.	\$3.05	\$3.05
Cement (carload lots), Seattle, per bbl.	\$3.13	\$3.13
Linsced oil (raw, 5 bbl. lots), New York, per gal.	\$1.90	\$2 20
Linsced oil (boiled, 5 bbl. lots), New York, per gal.	\$1.92	\$2 23
White lead (100 lb. keg), New York, cents per lb.	13	13
Turpentine (bbl. lots), New York, cents per gal.	\$1.00 to \$1.03	1.12½

† These prices are f. o. b. works, with boxing charges extra.

Portland Railway, Light & Power Company, Portland, Ore.—The Public Dock Commission of Portland, Ore., is considering the construction of an electric railway connection between the municipal terminal at St. Johns and the existing railway system, as the result of an offer from the Portland Railway, Light & Power Company to operate the line on a cost plus 15 per cent basis, if the dock commission will build the connecting track. F. I. Fuller, vice-president, states that the company is not financially able to build the line, or to make any extensions of any kind. The cost of the connection is estimated at \$25,000, and the legality of the proposition will be passed upon by City Attorney La Roche.

Power Houses, Shops and Buildings

Alabama Power Company, Huntsville, Ala.—A contract has been awarded by the Alabama Power Company to the Dixie Construction Company for the erection of a power line from Gadsden to Huntsville via Albertville and Guntersville. The cost of the new line will be about \$200,000.

Pacific Electric Railway, Los Angeles, Cal.—Work will be begun at once by the Pacific Electric Railway on the construction of a new substation at North Front Street, San Pedro. The structure will be 36 ft. x 70 ft. and will cost about \$12,000.

West Virginia Power Company, Sistersville, W. Va.—The power plant of the West Virginia Power Company, the successor company to the Sistersville Electric Light & Power Company, which furnishes energy to the Sistersville & New Martinsville Traction Company, will be moved from Sistersville to Paden Park early next year.

Trade Notes

Drew to Move to Cleveland

The Drew Electric & Manufacturing Company of Indianapolis, manufacturer of electric railway overhead material, broke ground on July 11 for a new plant at Cleveland where the company has acquired a two-acre site at Collamer Avenue and the Nickel Plate Railroad. The new plant will cost in the neighborhood of \$50,000 and will include in the structure offices, machine shop and brass foundry. A separate building is to be erected as a hot galvanizing plant. The first building, which is 80 x 200 ft., is scheduled for completion in forty-five working days from July 11. James H. Drew, president of the company, writes that the company expects to have the entire business moved to Cleveland by Sept. 1. This move is being made because Cleveland, being more nearly in the center of the com-

pany's business activities, affords better shipping and traveling facilities.

Trenle Porcelain Company, East Liverpool, Ohio, announces that it has built a large new office, double the size of the old.

No. 29656—A firm in Belgium desires to purchase or act as agent or receiver on consignment of electric railway equipment.

Carbo Steel Products Company reports that it has moved its factory and office to 2600 West 111th Street, Morgan Park, Chicago.

French-American Banking Corporation, Cedar and William Streets, New York City, has opened business in foreign banking and foreign trade of every description.

American Pattern Works Company, 1551 West Market Street, New York City, has taken over the business formerly conducted by the American Pattern Works.

Massey Concrete Products Corporation, Chicago, announces the following appointments of resident managers: Paul Kircher, New York; G. H. Redding, Chicago; H. E. Burns, Dallas, Texas.

Edward Valve & Manufacturing Company, Chicago, announces that it has opened a Pacific Coast office at 223 Rialto Building, San Francisco, with F. J. Hearty as Pacific Coast representative.

F. G. Echols, for many years general manager of the small tools department of Pratt & Whitney Company, Hartford, Conn., has been elected vice president of the Greenfield Tap & Die Corporation, Greenfield, Mass.

E. E. Brownell, Philadelphia, Pa., consulting engineer, has been made appraiser of the Grand Rapids (Mich.) Railway Company properties. J. R. Hogarth is assistant to Mr. Brownell. The appraisal is in connection with the car fare rate question.

Structural Slate Company, Penargyl, Pa., has recently opened branch offices in Boston, Pittsburgh, St. Louis and Chicago, which, in addition to New York City, Philadelphia, Washington, D. C., Cleveland, Columbus and Cincinnati makes ten branch offices in all. All of these branch offices are prepared to make estimates or furnish information on the company's products.

E. E. Maher announces the formation of the Maher Engineering Company, with offices in the Michigan Boulevard Building, Chicago, to handle the sales and installation of Erie Engine Works high-speed engines, the Sims Company feed-water heaters, the Dayton-Dowd Company centrifugal pumps, Wagener Steam Pump Company's pumps, and Pratt Engineering & Machine Company's fertilizer and sulphuric-acid machinery.

W. R. Kerschner Company, Inc., 50 Church Street, New York City, announces the election of W. B. Hoggatt as president, vice W. R. Kerschner, deceased. Mr. Hoggatt is president of the Keyes Products Company. The company will continue to handle the accounts of The Columbia Machine Works & Malleable Iron Company, Albany Car Wheel Company, The Cincinnati Car Company, National Safety Car & Equipment Company, The Keyes Products Company, and Charles I. Earll.

New Advertising Literature

Westinghouse, Church, Kerr & Company, New York City: Illustrated circular on industrial housing.

Allis-Chalmers Manufacturing Company of Milwaukee: An eighteen-page bulletin No. 1096-A, on direct-current motors and generators.

Roller Smith Company, New York City: Bulletin 110 on "Handy" pocket portable ammeters, voltmeters, and voltmeters for direct current.

Rogers Journal Packing Company, 140 South Dearborn Street, Chicago, Ill.: Bulletin No. 1 giving instructions on the use of "Stecos" journal packing.

Railway Storage Battery Car Company, 50 Broad Street, New York City: Bulletin 106 on "Edison Storage Batteries for Self-Propelled Railway Cars."

Combustion Engineering Corporation, New York City: Bulletin S-1 on the "C E C Tube Scraping Device" for cleaning lower boiler tubes without shutting down the boilers.

Pratt & Lambert, Inc., New York City: Pamphlet in colors on "The Vitralite Railway Enamel System," showing methods of finishing steel and wood cars and other railway equipment.

The Carbo-Hydrogen Company of America, Benedum-Trees Bldg., Pittsburgh, Pa.: Twenty-seven page catalog describing, with illustrations, the use of Carbo-Hydrogen apparatus for cutting steel and wrought iron.

W. S. Barstow & Company, Inc., New York, N. Y.: The 1919 edition of data concerning properties in which Barstow & Company are interested. In a sixty-one page cloth-bound book the operators have presented all the essential facts and the necessary maps.

The British Aluminium Company, Ltd., London, England, whose Toronto address has been changed to 265 Adelaide Street, West Toronto, Can., has issued a folder on "The Casting of Aluminium," touching on aluminium alloys, their mixing, moulding and melting.

Elliott Company, Pittsburgh, Pa.: Combined catalog of its own power accessories, and those of the Liberty Manufacturing Company, Pittsburgh, Pa., and the Lagonda Manufacturing Company, Springfield, Ohio. These products comprise condensers, heaters, strainers, extractors, separators, traps, valves and boiler and condenser tube cleaners.