

# Electric Railway Journal

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**PUBLIC SERVICE TRAFFIC PROBLEMS** The leading article in the **ELECTRIC RAILWAY JOURNAL** this week is by H. C. Donecker, assistant general manager Public Service Railway, and in it he gives an intimate picture of the traffic problems of that company from the inside point of view. His article is a complement to that by J. W. Brown, assistant superintendent of the same company, printed in our issue for May 13, 1916. Both of these writers have had much to do with the working out of the transportation problems connected with the new terminal which was formally opened to the public on April 28, 1916. Our readers have now a practically complete story of this \$6,000,000 undertaking from its inception, when the plan was announced in our news columns, right up to date, after it has had several weeks of severe service testing. The new terminal is so immense and so different from anything else of its kind that it is difficult for any one who has not personally inspected it to appreciate its extent and uniqueness. We hope that the excellent illustrations which accompany Mr. Donecker's article will assist the reader in forming in his mind a graphic background for the interesting story which is told in this issue.

**EXPERIENCE ORDINANCE BACK-FIRES** A good example of retributive justice has been shown this week in the refusal of the Yonkers (N. Y.) Railroad and the Westchester Electric Railroad to operate their cars, abandoned by strikers, until ordinances requiring motormen and conductors to have fifteen days' experience on the companies' cars are vacated or superseded. Probably it never occurred to those who were instrumental in passing the ordinances that the railways would simply abide thereby and refrain from giving service in strike time under such unfair conditions or that there was a limit to which the public could go in its inconsiderate aid of strikers without regard to the questions at issue. As a matter of fact, the chances are that the ordinances are unconstitutional. As reported in our issue of May 27, Judge Ewbank in the Marion Circuit Court has held unconstitutional an Indianapolis ordinance requiring motormen and conductors to receive thirty days' instruction from men in service one year before being permitted to operate street cars in the city. This was also a strike ordinance, intended to coerce the local company into an unwarranted settlement. That the outcome in the present case will be the same is not now certain, although the Public Service Commission, before whom the matter is said to be placed, may well be expected to order the companies to operate regardless of the

ordinances. The least that such a body can do is to allow the strike to be settled on its merits without the introduction of vicious and biased restrictions like experience ordinances.

**CANADIAN G. O. IS A FAILURE** Another tale has now been told regarding the evils of government ownership—a tale more worthy of attention than many others, for it covers railway operation in a country whose physical, economic and political conditions are most nearly like ours, *i. e.*, Canada. In the June issue of *The Journal of Political Economy*, Samuel O. Dunn has made a critical and exhaustive review of the subject, leading unmistakably to the conclusion that the results obtained constitute a powerful argument in favor of abandoning government ownership in Canada and against adopting it in the United States. The government railroads in Canada, Mr. Dunn avers, are an utter financial failure, the excess of the total amount they have cost the public (exclusive of comparative taxes) over their present value being \$268,000,000 or \$154,378 a mile. With rates that are unjustly burdensome to general taxpayers, the lines have displayed evidences of construction waste, extravagant mismanagement, inaccurate accounting and "pork barrel" improvements that would seem unbelievable to one not acquainted with the inevitable attributes of government ownership. With a capitalization per mile less than the construction cost of the Intercolonial Railway, one of the Canadian government lines, the railroads in the United States handle 5 per cent more passenger traffic and 27 per cent more freight traffic per mile with only 2.6 per cent greater operating expenses. The major cause of this showing has been "politics," and the attempt of the present management to eliminate political influences is met with local opposition and a general lack of assistance. The picture certainly is not pretty, but as an educative one it has great value.

**PSYCHOLOGY IN SIGNS** The force of a printed or spoken suggestion is much greater than we ordinarily think. Some years ago the slogan of a large city department store was, "Shall we deliver it, or will you take it with you?" Signs bearing this slogan were posted here and there throughout the store, and almost invariably it was put as a question by clerks to customers who had just made a purchase. In the course of an economy campaign, someone suggested that the slogan be reversed, or made to read, "Will you take it with you, or shall we deliver it?" The change was made and resulted in an annual saving of several thousand dollars in the delivery serv-

ice. On the face of it, the change appears insignificant; its dollars and cents value was due to the fact that the mind is more likely to be influenced by a first impression than by a later one. In connection with the signs used for the guidance of passengers in matters of safety, cleanliness and general comfort, the lesson is one that any railway operating department might well take to heart. In the publicity department considerable attention has been given to the subject of psychology in connection with signs and other advertising matter. In the operating departments, however, the imperative tone, which an attempt at brevity has given many signs, tends involuntarily to arouse resentment in the minds of some people, while to others, because of the innate contrariness which so often runs through human nature, the sign is an invitation to do the opposite thing. Possibly, if such signs contained first a suggestion of safety, cleanliness or whatever the desired end might be, followed by a properly worded request, they would be more effective. Of course, no direct money saving would result from a careful study of the wording of operating department signs, but the indirect result in increased effectiveness and good will might well repay the effort.

**THE RAILWAYS AND THE TECHNICAL SCHOOLS** Of late, some little space in our columns has been devoted to the subject of co-operative courses in electric railway work. One phase of the subject that we think has not been sufficiently emphasized, is that there could be far better co-operation between the railways and the technical schools that do not have co-operative courses than there is now. In many states where state universities giving training in the agricultural and mechanical arts are maintained, the public utilities carry a very considerable portion of the burden of taxation. Farmers as a class are not often accused of being overly endowed with the co-operative spirit, yet we believe it is a safe assertion that the farmers in these states make more use of the opportunities afforded by the universities and co-operate with them to a greater extent than do the railways. The fault does not all lie with the railways, nor does it all lie with the schools. Co-operation is possible along several lines. University extension courses might be organized for railway employees, and special problems in railway operation which do not require immediate solution, might be made the subjects of graduate and undergraduate research work. For example, traffic studies, transmission line and equipment tests of a special nature all furnish very suitable material in the way of research problems. From the standpoint of the railways, co-operation with technical schools in such matters would lower costs and at the same time give the railways an opportunity to pick promising young men for their organizations. From the standpoint of the university, such work increases the interest of the student in his studies, acquaints him with actual conditions and assists in keeping the university staff in close touch with real problems. All these things make for better equipped graduates and enable the universities to turn over to prospective employers a better product. The railways have problems galore. The universities

have, or will have if the demand is sufficient, the equipment to work out these special problems, the solutions of which in the final analysis are for the benefit of the commonwealth. Cannot the two be brought together in a more effective manner than they are at present?

#### ADDITIONAL FORMS OF MUTUAL INSURANCE

The proposal of the New York Electric Railway Association to enter an organization for mutual insurance in regard to workmen's accident compensation suggests the thought of how important a part insurance in one form or another plays in the present-day life of every electric railway company. Broadly speaking, insurance is founded upon the principle of distributing the risk of disaster over as wide a field as possible. Although the principle has been employed for centuries, yet it remained for the present generation to develop its use extensively. In the electric railway field insurance against various contingencies is common. It is usual for electric railways to insure against loss by fire. The workmen's compensation laws have necessitated insurance against injuries to employees. An interesting outgrowth of the workmen's compensation situation has been the formation of the Utilities Mutual.

Mutual insurance is capable of considerable extension. One of the advantages which has led to the rapid extension of control of electric railways and other public utility properties by holding companies is the insurance protection which is thus afforded to the investor. Many large holding and operating companies have set up contingent reserves, supported by actual cash or other quick assets, from which extraordinary losses suffered by any of the constituent companies may be paid. Investment bankers look with favor upon this practice. The small electric railway is subject to the constant menace of an impairment of its financial position through a serious wreck. Summer travel and the operation of pleasure parks tend to increase the hazard. Numerous instances could be cited of small companies which have been plunged into financial difficulties through an unfortunate head-on collision or other serious accident. In most cases the bondholders have not suffered any loss for in the majority of states the lien of the mortgage protects them against tort claimants. The loss has befallen the stockholders, whose equity has been materially reduced and in some cases completely wiped out in the reorganization of the company. In a still larger number of cases a serious accident means a reduction in or the passing of dividends.

Risks of this character can well be covered by some form of mutual insurance. Difficulties must, of course, be encountered and solved. The well-managed company employing efficient operating methods, whose line is equipped with automatic signals, would not want to be put upon the same basis as a less efficient company in a mutual insurance organization. Similar difficulties, however, have been met and successfully solved in the numerous mutuals for insuring manufacturing plants against fire losses. Anything which tends to decrease the risk of an investor through the impairment of his equity is to the advantage of the industry.

**ACCIDENT INSURANCE ASSOCIATIONS PENALIZE TRAVEL-ON ELECTRIC RAILWAYS**

Our attention has been directed to the limitations of the policies of several of the assessment accident insurance associations which cater particularly to traveling salesmen. In these policies certain sums are paid for all classes of accidents, but the payment is doubled when the accident occurs while the insured is riding as a passenger on a train moved by steam power or else by electricity at the terminal only of a steam railroad. In other words, if the insured is injured while traveling as a passenger on an electric interurban or on an electrified trans-continental line other than at terminals, he is penalized 50 per cent of the amount which would be paid to him if he had been riding behind a steam locomotive. For instance, in the case of the electrification on the Chicago, Milwaukee & St. Paul Railroad, a person injured while on the electric division, as we understand the terms of the policy, would be able to collect only half the amount which he would if that section was still being operated by steam. Why these accident insurance associations discriminate against electric transportation is a question difficult to answer. The old line casualty companies make no such distinction. Inquiries among the insurance officials brought the reply that riding on an electric railway would represent an additional hazard, and the members of the association were receiving all the benefits they paid for.

In districts where a net work of interurban railways exists, traveling salesmen use electric lines in preference to steam railroads because the more frequent service permits them to make several cities and villages where they made one or two before. If these salesmen take into account their insurance when traveling, the limitations of these association accident insurance policies may influence them to travel by steam rather than by the electric railroads. To our way of thinking this is unnecessary discrimination, because the statistics of the electric interurban and steam railroads in the principal Central States, so far as the figures are available in the published reports of the commissions, show that the number of persons killed and injured annually on electric interurban lines is much less than that for steam railroads. For instance, the report of the Illinois commission for 1913 shows that one passenger was killed or injured on interurban roads to each 380,000 passengers carried, whereas the ratio on steam railroads was one passenger killed or injured to each 86,200 passengers carried. For 1914 a much better ratio obtained, being one passenger killed or injured to each 680,100 for the electric railways and one passenger in each 101,000 for the steam railroads. The latest figures from Ohio and Iowa show about the same relation between the two classes of roads as do also those from Michigan, although in the latter State the statistics from interurban and city roads are grouped. In Indiana, no direct comparison is possible because the report of the commission for 1914 does not give the steam railroad figures, but the electric railway figures do not differ materially from those of the other Central States quoted. It seems to us that in view of these

facts the accident insurance associations should change their policies.

**SALES END OF TRANSPORTATION**

Transportation is a commodity to be bought and sold, and as such it is to some extent, at least, subject to the laws of trade. Electric railways are just beginning to realize the importance of salesmanship in their business. This, by virtue partly of the keener competition and partly of the larger units of sale, has been appreciated by the steam railroads for some time. Where interurban roads were in competition with steam railroads, the "selling game" was learned earliest. A large part of the publicity program of any electric railway must be planned from the salesman's point of view.

There are at least three elements in every satisfactory sale: a good proposition, conviction on the part of the salesman that it is a good proposition, and skill in convincing a prospective customer that it is a good proposition. To be a good proposition the prospective sale must hold possibilities of profit for buyer and seller. But the best of bargains will fail to appeal unless advertised convincingly. That the average nickel street car ride is well worth the money is fairly well understood by the railway management, which realizes how small the profit is, but the average rider is not a deep thinker and needs to be convinced.

It is true that there are many difficulties in the way of selling transportation, but the more numerous the difficulties the greater the need for good salesmanship. For one thing, the unit is so small that individual selling is out of the question; in general the public must be reached in the mass. Another difficulty is the ingrained prejudice of the public against corporations. Again, in spite of the high degree of literacy on the part of the American public, it is almost impossible to get its members to read anything of an argumentative nature. The steam roads are making a strenuous effort to do so at this critical juncture in their labor situation, and the very strenuousness of these efforts emphasizes the magnitude of the problem. Other difficulties will occur to the reader, but these will serve to illustrate the point. The true salesman, however, while realizing the magnitude of the job before him, will not be intimidated thereby, and fortunate is the railway whose management contains such.

There is another side to this matter, however—one which furnishes encouragement. Urban transportation is one of the most conspicuous and most intimate elements of community life. Our cars are constantly coming and going and provide a considerable advertisement in so doing. A great deal of riding will be done simply because the cars are there even if the service is poor and the management apathetic. There is thus a good foundation to work upon. Deep down in its heart the public appreciates how necessary the railways are to the community in which the lines operate, and this passive appreciation can be roused into active sympathy when occasion demands. All of these things and many others make it possible to sell more transportation, and that at a higher price than the present, if necessary.



Façade of Public Service Terminal Building on Park Place, Newark, N. J.  
Paintings above marquee are in honor of Newark's 250th Anniversary Celebration

# Rerouteing a Traffic of Nine Cars a Minute

## How the Public Service Railway Solved the Problem of Handling Traffic of Exceptional Density by Means of the New Terminal in Newark

By H. C. DONECKER

Assistant General Manager Public Service Railway

THE recent opening of the Public Service Terminal in the city of Newark, N. J., marked the culmination of plans which had been in process of development since 1913, designed to overcome the extreme congestion in the heart of that city. The whole terminal scheme involved not only the construction of the magnificent building recently thrown open to the public, but required also the installation of extensive track connections for which a total of twenty-nine franchises were secured, these covering approximately 10 miles of track and thirty special work layouts.

### A BUSY TRAFFIC CENTER

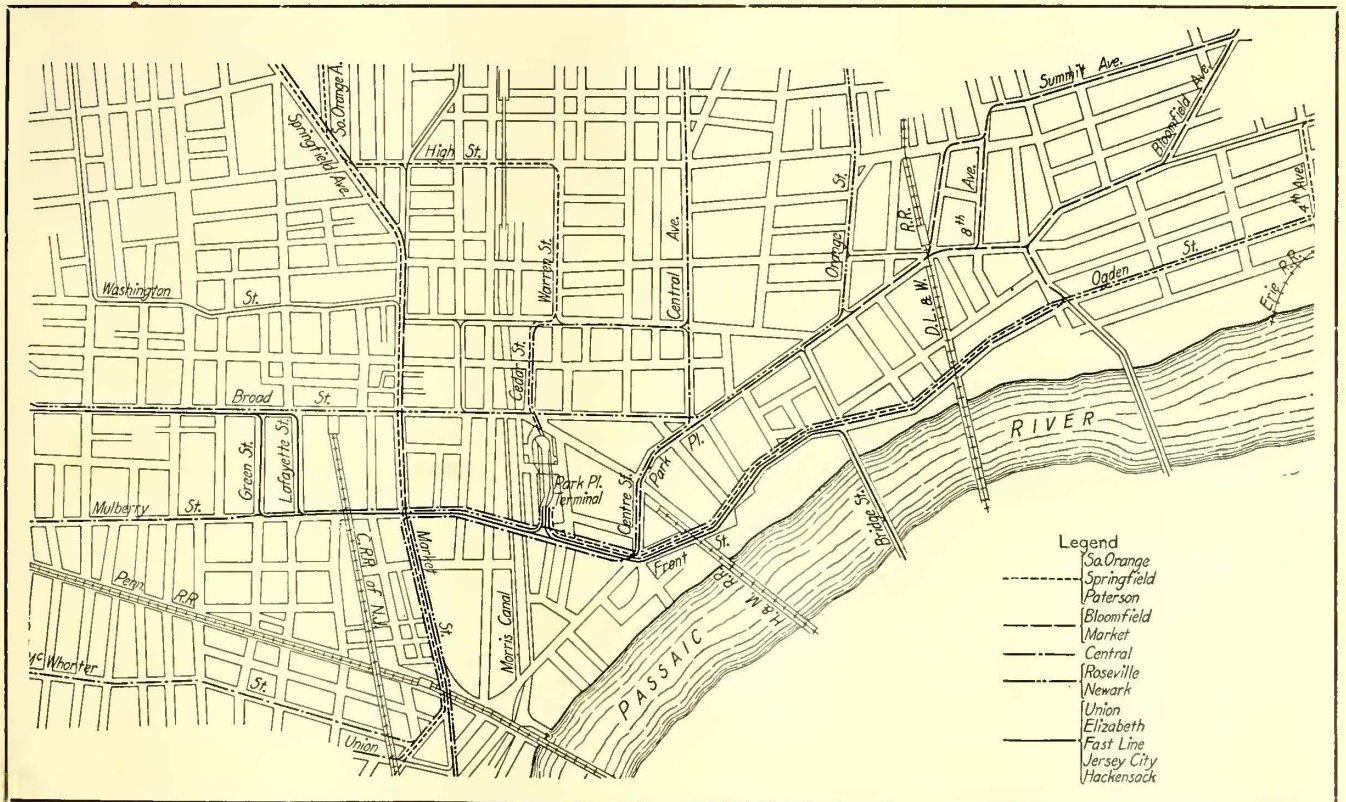
Broad and Market Streets, the business center of the city, is reputed to be the second busiest corner in the country. So far as the street railway was concerned, there were scheduled to cross this intersection in the busiest hours of the day some 527 cars per hour, or nearly nine cars per minute. This car movement involved not only a double-track right-angle crossing at this point, but also curves from Broad Street into Market Street from south to east and from Market Street into Broad Street from west to north. The problems to be overcome in a traffic situation like this are obvious, and it can readily be understood that the slightest interruption meant a reduction in the percentage of car

movements during the maximum hours, with consequent impairment of efficiency in rush-hour operation in this section. In other words, the intersection at Broad and Market Streets had reached the saturation point, and, unless it were possible to attain perfection in the orderly movement of cars crossing this intersection in the rush periods, maintenance of the commission hour-schedule was an impossibility. Records taken indicated that the average of efficiency was 95.2 per cent, or 502 cars for the maximum hour.

Not only was it necessary to meet the congestion difficulties presented due to the number of car movements on the street railway tracks, but there had to be faced, in addition, interferences from an extensive vehicular and pedestrian traffic at this point, Broad and Market Streets being the main arteries of the city of Newark and the "Four Corners" the heart of the business and shopping district. Some idea of the density of traffic at this intersection may be gained from the following figures which were developed from a count taken during the hours from 6 a. m. to 7 p. m. on a typical day previous to the opening of our terminal building:

TRAFFIC MOVEMENT AT BROAD AND MARKET STREETS, NEWARK, N. J., DEC. 22, 1915, 6. A. M.-7 P. M.

Number of electric railway cars.....	3,719
Passengers carried.....	76,291
Pedestrians.....	153,435
Number of vehicles.....	16,892



PUBLIC SERVICE RAILWAY REROUTING—MAP OF REROUTING SECTION AROUND PARK PLACE TERMINAL IN NEWARK, N. J.

Even the above does not give a complete picture of the situation for there must also be borne in mind the fact that the crossing at Broad and Market Streets was a general transfer point for all of the lines crossing this intersection, the extent of the transfer interchange being indicated in the accompanying diagram No. 1, which shows the transfer movement by lines and by directions during the afternoon rush hour of a typical day.

#### WHY TRAFFIC AT BROAD AND MARKET STREETS IS CONGESTED

Some comments on the relation of Broad and Market Streets to the points of interest in the city and to outlying sections might be in order, and will serve to illus-

to South River and South Amboy; in fact, the northbound and southbound lines on Broad Street formed the arteries which by through routes or direct connections furnished transportation facilities from Tenafly on the north to Clementon on the south, a distance, as the bird flies, of 94 miles and by track of 125 miles. The lines on Broad Street also provided means for reaching the station of the Hudson & Manhattan Railroad, the lines of which run direct from Newark to Cortlandt Street, New York, or by transfer to Thirty-third Street and Broadway, and which handle approximately 1,200,000 passengers a month from this one station in Newark. In addition to the Hudson & Manhattan tube station, these lines reached the stations of the Delaware, Lackawanna & Western Railroad, the



PUBLIC SERVICE RAILWAY REROUTING—VIEW FROM REAR OF TERMINAL ELEVATED FLOOR LOOKING TOWARD MULBERRY STREET

trate its importance as a meeting point of many lines serving the surrounding territory in all directions. For instance, the routes through Broad Street running north and south at this intersection reached not only the northern and southern sections of the city of Newark, but also provided through service to Belleville, Nutley, Passaic, Paterson, Harrison, East Newark, Kearney, Bloomfield, Glen Ridge, Montclair, Verona, Caldwell, Elizabeth, Roselle, Cranford, Westfield, Plainfield, Dunellen, Bound Brook, New Brunswick, Trenton and Perth Amboy, while a short block away, some 200 ft. north, there were operated cars (to which Broad Street and Market Street lines transferred) which were destined for Jersey City, Hackensack, Rutherford, Carlstadt, Woodbridge, Hasbrouck Heights, Leonia, Fort Lee and Edgewater.

From the routes above mentioned, connections could be made to Englewood and Tenafly, to Raritan and Somerville, to points between Trenton and Camden, and

Central Railroad of New York and the Lehigh Valley Railroad, as well as the City Hall.

The Market Street lines furnished service from Jersey City on the east to and through the city of Newark to the Oranges (East Orange, Orange, West Orange and South Orange), to Irvington, Hilton and Springfield, besides operating through the large industrial territory along the Passaic River and passing the Pennsylvania Railroad station, the Court House and also various amusement parks lying west of Broad and Market Streets.

While the relief of the congestion described above, which was encountered at Broad and Market Streets and to a less degree at other points in the business district of Newark, was, of course, the primary consideration in the development of the rerouteing plans, the terminal building itself had also for its object the housing of the home offices of Public Service Corporation of New Jersey, including the electric and gas de-

partments, as well as the railway, and, in addition, it provided a station for the heart of the Essex division, especially for those lines of a suburban or interurban character. Of necessity, the terminal had to be located close to the center of the city so that passengers might reach their destinations as conveniently as under the old operation. The site selected fits the conditions admirably, being but 975 ft. from Broad and Market Streets, and covering the entire space between Park Place (which is only 200 ft. across a park from Broad Street) and Mulberry Street, to which street were transferred many of the lines which formerly operated on Broad Street. The location is between the Hudson & Manhattan tube station and the City Hall, and is likewise about equally distant from the Pennsyl-

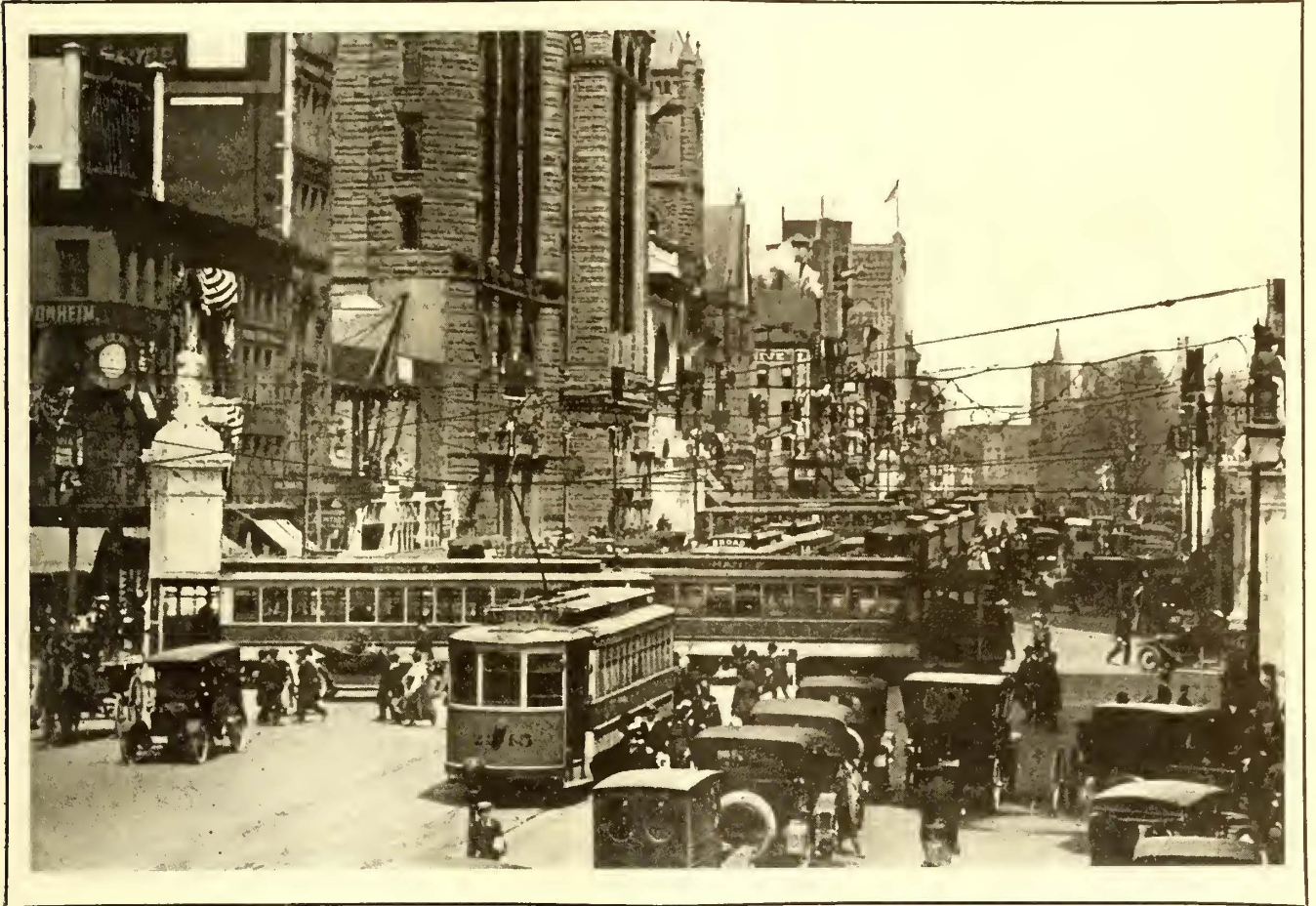
(g) Transfer of suburban or interurban lines to streets of least congestion.

(h) Equalization of car movements over given streets to the end that maximum speed might be maintained in the business district.

(i) Proper and early advertising of proposed changes.

(j) The institution of such changes at a time when the least inconvenience would be caused, and when the public and trainmen would have an opportunity to familiarize themselves with the new operation under the most favorable conditions.

Combined with all of the above there was, of course, always kept in mind the institution of such economies as were possible and which the new investment in terminal and incidental facilities made essential, such



PUBLIC SERVICE RAILWAY REROUTEING—SCENE AT BROAD AND MARKET STREETS BEFORE THE REROUTEING

vania Railroad station and the Court House. Moreover, the principal department store center faces the terminal building.

#### GETTING READY FOR REROUTEING

In the actual development of our rerouteing plans, we were concerned particularly with the following:

- (a) Relief from congestion.
- (b) Minimum disturbance of existing routes.
- (c) Least possible change in termini and routes, this to insure the delivery of patrons as closely as possible to the points at which they formerly alighted from cars without transfer.
- (d) Minimum transferring of passengers.
- (e) Elimination of radical changes, excepting where the trend of travel demanded them.
- (f) Avoidance, where possible, of any revision of routes which would necessitate the changing of the operation of a line from one carhouse to another.

economies, of course, not to involve any curtailment in service.

Some idea of the extent of the problems involved in the development of the final plans may be gained from consideration of the fact that nineteen of the thirty-one lines in the Essex division were directly affected by the opening of the terminal and four were indirectly affected. Five hundred and ninety-nine cars are operated in the rush hour in this division, and of these 425 run on lines directly involved in the terminal scheme, and 117 on those lines which were indirectly affected by the changes. This left but fifty-seven cars on those lines which did not in any way enter into the rerouteing.

Coincident with the selection of the terminal site, there was prepared a comprehensive study of necessary track changes, all subsequent to the general investigation which had been made of the requirements of the railway and, as well, of the details of future city planning work. There then followed the working out of the

problems of the construction of the terminal proper, with the final development of plans involving the following:

1. A subway from Washington Street, some 685 ft. west of the terminal site, by which cars from the western sections could be brought under Broad Street into the terminal structure.
2. The placing of a concourse floor immediately above the lower or subway floor.
3. The elevation of tracks into a third level from Mulberry Street, 700 ft. east of the front of the terminal on Park Place, by which cars from the east, south and north might enter the new building.

ed by some twelve men reporting directly to one of the representatives of our time-table department who has the title of "traffic engineer."

The business section of Newark was first segregated into two districts: the Market Street section, including all lines operating on Market Street from High Street to the Pennsylvania Railroad station (0.84 mile), and the Broad Street section, covering Broad Street from the Delaware, Lackawanna & Western Railroad station on the north to Clinton Avenue on the south (1.51 miles).

Beginning in June, 1915, there was undertaken the work of observing the riding on all of the lines operating in the business districts above referred to.

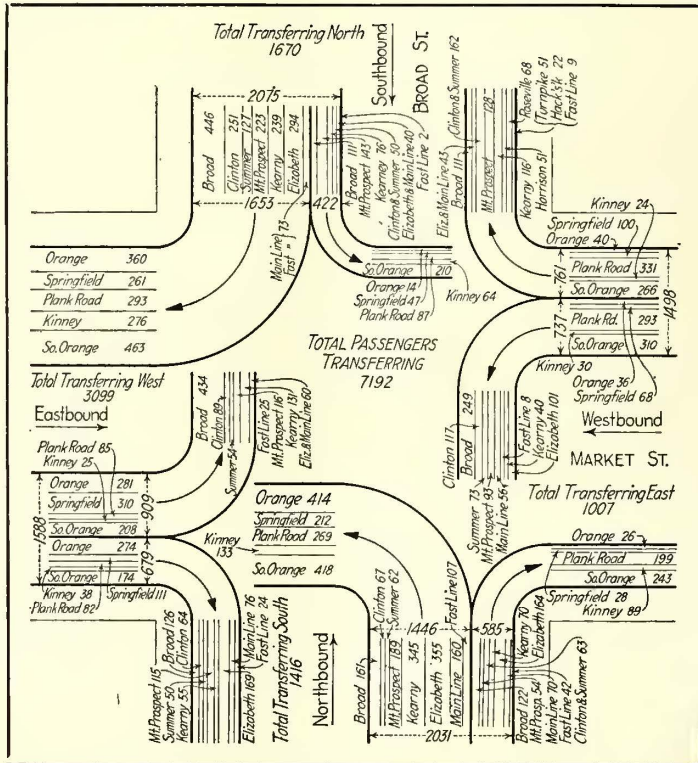
THE TRAFFIC CHECKERS AND THEIR WORK

Passing over all of the intervening steps of obtaining ordinance rights, Public Utility Commission consents, etc., we come to the organization of a force whose work should be to determine, as accurately as possible, the riding habits of the people of Newark. On the Public Service Railway, work of this character is handled in the time-table section of the transportation department and is under the general supervision of the general superintendent.

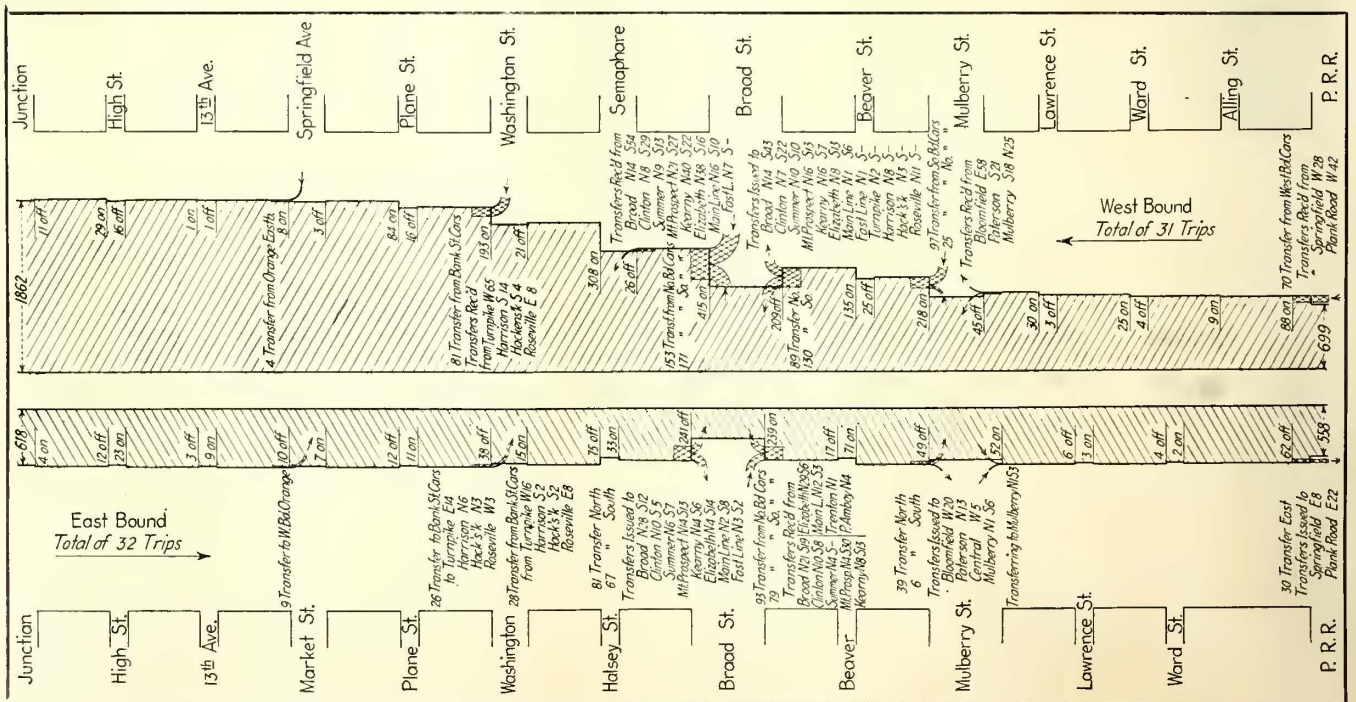
There is constantly at work a force of twenty young men investigating traffic demands throughout the system, paying most attention naturally to the main trunk lines. This corps was augmented

ing in the business districts above referred to. Records were taken on each line for eighteen hours a day during five week days by crews of two men each, who boarded the cars at one end of the district and counted the load, noting also the number of passengers who boarded and alighted at each corner. These counts were entered on forms like that on page 178.

In working up the data, each day was divided into four periods: the morning rush hours, from 6 to 9 a. m.; the midday non-rush hours, from 9 a. m. to 4 p. m.; the evening rush hours, from 4 to 7 p. m., and the night non-rush hours, from 7 p. m. to 12 midnight. The records of counts which had been turned in by the checkers were



PUBLIC SERVICE RAILWAY REROUTING—DIAGRAM NO. 1, TRANSFERS AT BROAD AND MARKET STREETS



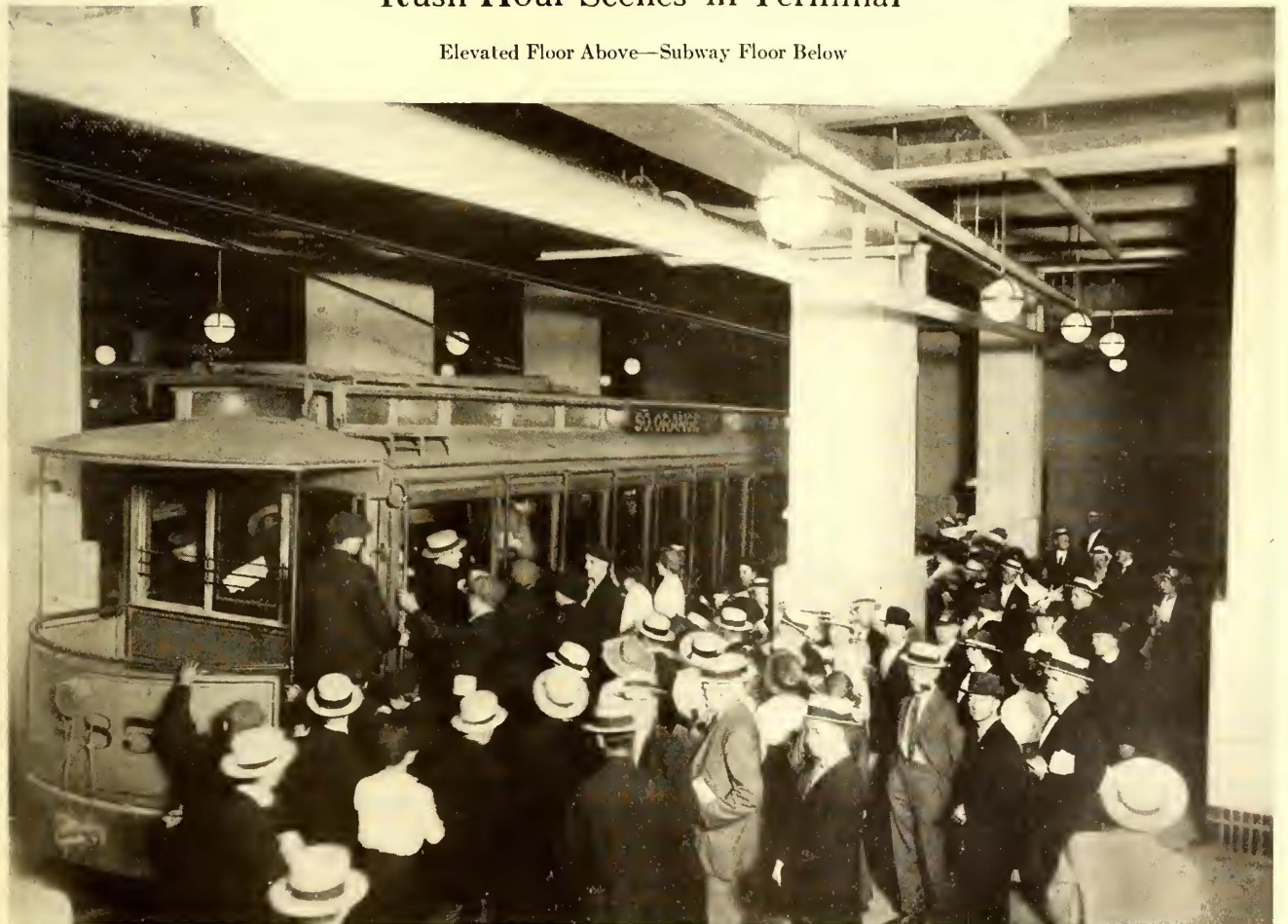
PUBLIC SERVICE RAILWAY REROUTING—DIAGRAM NO. 2, TRANSFERS TO AND FROM BROAD STREET





Public Service Railway Rerouting—  
Rush Hour Scenes in Terminal

Elevated Floor Above—Subway Floor Below



Sheet No.....  
 Line.....Date.....  
 Car No.....Direction.....  
 Time boarding car.....  
 Time leaving car.....  
 Load on car when boarded.....

STREET	ON	OFF

PUBLIC SERVICE RAILWAY REROUTEING—FORM USED IN COLLECTING TRAFFIC DATA

separated into periods, as above, and totaled by days. Charts were then made showing the traffic for an average of the five days for each period of the day.

In addition to the data secured in the above manner on the cars, information regarding transfers—which was very important in the solution of the rerouteing problem—was secured from the auditing department. Transfers were taken from conductors' trip envelopes and counted for each period of the day, the data thus obtained being applied to the charts developed from the observation records.

THE TRAFFIC CHARTS AND WHAT THEY SHOWED

An example of a completed chart is shown in diagram No. 2 shown on page 176, which, it will be noted, gives full data of through and transferring passengers on one of the Market Street lines in the afternoon rush, the figures representing the average riding for the week beginning July 19, 1915, for thirty-two eastbound and thirty-one westbound trips. In addition, charts were prepared showing the transfer movement by lines and by directions at important intersections. An example of these developments has already been given in diagram No. 1 covering the afternoon rush hours at Broad and Market Streets.

From the above-described distribution charts it was possible to determine where people boarded and left the cars in the business district, for the riding into the business area was clearly shown, and also its distribution within that section as well as the traffic across or through it. Following up the alighting of passengers at intersections with other lines, our records of transfers indicated whether or not such alighting passengers boarded intersecting lines and in which direction they went. The records of our auditing department supplemented by the observations of our checking corps gave us an accurate study of the whole transfer movement by districts, by lines, by direction and by time of day, and permitted us to differentiate between rush and non-rush requirements where any variation existed. This enabled us in some cases to divert a line from its original route and to superimpose upon another line a tripper service to take care of a well-defined transfer movement which occurred only in rush periods and over only a portion of the through line whose route was changed.

PRINCIPLES OF REROUTEING

The final result of our investigations led, after due consideration of the elements (a) to (j), as listed on page 175, to the adoption of the following general plans:

(a) Where possible, the combination of lines covering for substantial portions the routes of both, but diverting traffic to different outlying termini, thus

bringing about the elimination of street looping in the center of the city.

(b) The routeing of all lines of suburban and inter-urban character through streets of least congestion to the terminal structure.

(c) Where possible, the retention on the old routes and termini of lines or parts of line which operate within the city and have not been eliminated or combined with other lines.

This has accomplished the following:

It has brought about the splitting of some lines into two parts. For instance, the South Orange line serves in the outlying section, Maplewood, South Orange and the western part of Newark. That portion of the line which runs to South Orange and Maplewood has its new city terminus in the terminal, whereas that portion of the service which operates only to the city line retains its original route across Broad and Market Streets, passing the Pennsylvania Railroad station, to what is termed the "Ironbound" district of Newark.

It has to a large extent segregated the passengers bound for the outlying points from the purely local riders.

It has reduced running time and has insured greater regularity of headway by the transfer of suburban and interurban lines from congested streets to those of less vehicular travel.

It has given an opportunity for a general speeding up of cars on lines affected by the terminal rerouteing, and this, of course, has been accompanied by better maintenance of headways.

It has also permitted the institution of more frequent service at a minimum of cost and has brought about a more efficient use of existing equipment and a higher maximum carrying capacity, due to the greater number of trips which may be made with a given number of cars.

It has produced extreme flexibility of operation in the center of the city at times of service interruptions due to parades, fires, etc., which demand—as has so frequently happened during this period of Newark's 250th anniversary celebration—the stoppage of operation on Broad Street and also on Market. Under such circumstances it has been possible still to maintain the service because the new layout and the building permit the diverting of cars from these two main streets into the terminal from the east, west, north and south, and the splitting of the lines thus diverted so that there is no interruption in the operation. For example, one part of a line will operate from the subway level west from the terminal, and the remaining part, serving the territory east of Broad Street, may run from the elevated level east thereof.

To illustrate the relief which the rerouteing has afforded at congested points, I would direct attention to the following figures giving the car movements in the rush hours at four intersections before and after April 30, 1916:

Street Intersection	Maximum Number of Car Movements Per Hour	
	Before Rerouteing	After Rerouteing
Broad and Market Streets.....	527	326
Market and Mulberry Streets.....	425	230
Broad Street and Central Avenue.....	392	276
Broad and Bridge Streets.....	352	236

After having determined upon the changes in routes which the trend of traffic seemed to warrant, the next question to be taken up was that of our transfer system. The necessary revisions were inaugurated with no serious complications resulting, the condition sought being a situation that would not involve a curtailment

of the facilities heretofore afforded, but which would at the same time insure proper protection to the company's revenue. This we feel has been accomplished with satisfaction to all concerned.

#### INAUGURATING THE NEW SERVICE

The next thing considered was the method of instituting the changes, two plans presenting themselves: (1) A progressive change; that is, taking perhaps one line at a time, or (2) simultaneous changes.

The final decision was a compromise. The lines which did not enter the terminal, but whose routes were affected by the terminal scheme, were rerouted on April 25, 1916, and all other lines (those which in whole or in part actually entered the terminal building) were altered on April 30. In order to insure less confusion on the part of passengers and to enable the trainmen to familiarize themselves with the new operation under the best conditions, the last and greatest change was made on a Sunday which seemed most favorable by reason of the absence of peak conditions. A total of 50,000 people were handled in and out of the terminal building on the opening day.

Prior to the institution of the rerouteing, extensive newspaper advertising was carried on and, in addition, posters were placed in the windows of cars throughout the division and some 250,000 folders describing the new routeing were distributed by conductors, who were also instructed to acquaint patrons with the details verbally where possible.

It is gratifying to note that this great change has been accomplished with little confusion and with a minimum of complaint on the part of the citizens. Newspaper comments have been highly commendatory, and the terminal is daily increasing in usefulness. In other words, the people are gradually educating themselves to taking the short walk necessary to reach the new building, appreciating that no great development in urban transportation facilities has yet been accomplished which did not involve some increase in walking in order that the full benefits might be insured. The new structure is, furthermore, affording a splendid waiting place for the purely interurban lines of the company, which in itself makes such routes the more attractive to the patrons. A transfer under cover in bad weather is another advantage not to be minimized, and one which will be the more appreciated as the winter season approaches.

Last and most important, of course, is the provision which the terminal makes for the future growth of Newark and its environs. The relief of congestion at Broad and Market Streets anticipates the development of this territory, we are sure, for the period of a quarter of a century.

Reports which have just been received from all parts of the Pennsylvania Railroad System show that in the first six months of the present year 92,380,184 passengers were carried without loss of the life of a single one of them in a train accident. This completes two and one-half years in which no passenger has been killed in a train accident on any part of the Pennsylvania System, either east or west of Pittsburgh. In that time 453,952,298 passengers have been safely carried, in more than 3,000,000 trains, for a total distance of more than 10,000,000,000 miles, or 400,000 times around the world. Upward of 3,500,000 freight trains were operated in the same period over the 12,000 miles of line and 26,000 miles of track which make up the Pennsylvania railroad system. On the lines east of Pittsburgh no passenger has been killed in a train accident for more than three and one-half years.

## Extension Built to Evade a Hill

San Francisco Municipal Railway Detours Around Church Street Summit and Cuts Through Eleven Houses on 1400 Feet of Private Right of Way

**I**N building the Church Street extension of the San Francisco Municipal Railway it was found necessary to get beyond the summit of the Church Street hill and impracticable to build a line directly over the 19.3 per cent grade on which Church Street had been built. Several cable and funicular schemes were proposed and abandoned as dangerous and expensive, after which surveys were made for a circuitous detour through private property. It was found that the latter method would allow a 9 per cent grade compensated on the maximum curvature which would have a radius of 100 ft. This plan was finally adopted, and the new line has recently been completed.

The original plan was to make a new street around the hill with a width of 50 ft., which would allow for vehicular traffic as well as the right-of-way on a 9 per cent grade. This plan had to be abandoned because of



SAN FRANCISCO MUNICIPAL RAILWAY PRIVATE WAY LINE ON CHURCH STREET HILL

the strenuous opposition to assessments on the property that would be benefited. Accordingly, a 28-ft. right-of-way was determined upon which would, of course, have to be reserved exclusively for railway use but which would be bought outright by the city. This involved forty-two property owners and the moving in whole or in part of eleven houses. An appraisal of the property involved was made by a competent real estate man, and settlement was made with every owner without resort to the courts, the total purchase price being practically the same as the appraised value.

Instead of the usual concrete poles through the private right-of-way, steel poles were used, about one-half of these being set in the concrete retaining walls that mark the property line. The maximum height of these walls is 18 ft. above the ballasted grade. The private right-of-way is being fenced for its entire length with stout wire-mesh fencing, and to further discourage the appropriation of the private way as a tradesmen's entrance, etc., the rough ballasted track will be left unpaved. Location and construction have been under the general direction of M. M. O'Shaughnessy, city engineer.

A vehicle which can take current from tramway trolley wires when it is running over a tram route, and which is also fitted with batteries, has been devised by D. J. Benzer, manager Bradford (England) Tramways.

# Fare Zones Adjusted in Maine

Maine Commission Authorizes a 2-Cent and an 8-Cent Zone on the Lewiston, Augusta & Waterville Street Railway—8.5 per Cent Return Declared Reasonable—No Deduction for Depreciation

THE Maine Public Utilities Commission in a recent rate decision established a 2-cent and an 8-cent fare zone in a portion of one of the lines of the Lewiston, Augusta & Waterville Street Railway running between Lewiston and Mechanic Falls, a distance of about 10 miles. The total cash fare between these two towns was and still is 20 cents, but one of the fare limits has been ordered to be moved and the cash fares in the four zones changed from four 5-cent fares to two 5-cent fares, a 2-cent fare and an 8-cent fare.

This change in fare limits and rates of fare in two of the zones is the result of a formal complaint filed with the commission on March 31, 1915, by a number of citizens of the town of Mechanic Falls and vicinity against the rates and service on the line mentioned. The complainants stated that the rates were excessively high, and that as compared with the charges for similar service on other lines or branches of the system they were not only high but discriminatory. The complainants called particular attention to the fact that the fare from Lewiston to Minot Corner, a distance of 5.5 miles, was 15 cents, and the fare from Hackett's Mills to Mechanic Falls, a distance of less than 4 miles, 10 cents, and that the fare from the second limit out of Lewiston to Minot Corner, a distance of 0.5 mile, was 5 cents. They also made the claim that sufficient seating capacity was not provided at all times.

## VALUE DETERMINED FROM BOOKS

The commission did not require a physical valuation of the property of the company, for it was able to reach a definite conclusion as to value based upon matter contained in the books and papers of the company. A physical valuation, it stated, would mean in whole or in part an attempt to reproduce and then depreciate the property under what is known as the "reproduction new—less depreciation" theory. This method is used in cases where the original cost data are not available, or where such as are available are vague, insufficient or unreliable, but in all cases where original cost can be ascertained with substantial accuracy this latter method of fixing value is regarded by the courts as most satisfactory. The commission, therefore, used the figures representing the original cost of this line as obtained from the books and papers of both the railway and the Northern Construction Company.

The examination showed that the entire original cost of building the Mechanic Falls line from the corner of Washington Street and Minot Avenue to the end of the line was \$166,430. This amount includes the following charges and percentages of the total cost: \$546 or 0.32 per cent for engineering, \$1,148 or 0.7 per cent for legal expenses, and \$9,046 or 5.4 per cent for contingencies. The total is thus less than 6.5 per cent for such overhead charges. The commission stated that not only are allowances for these matters regarded as entirely proper, but that the range of the total allowed is between 9 per cent and 23 per cent, with an average of 15 per cent. The company was, therefore, very conservative in its claim for these usual allowances, and the commission recognized this point. The company did not make any claim in its statement of value for

interest during construction, which is usually allowed, or for taxes, which are sometimes allowed.

The commission also allowed \$7,068 for the cost of track used jointly by the cars operating between Lewiston and Mechanic Falls, and cars of other lines operating within the cities of Lewiston and Auburn. This proportionate amount was determined by pro-rating the cost of the joint track on the basis of the traffic density. The total book investment in cars and equipment chargeable to the Mechanic Falls line was found to be \$16,895. In determining the proportion of estimated power-house cost of \$50,000 chargeable against the Mechanic Falls line, the ratio of the total output of the Lewiston station to the kilowatt-hour consumption on the Mechanic Falls line, ascertained from the output of the Mechanic Falls substation, was used. This was found to be 11.5 per cent of the total production, thus giving \$5,750 chargeable to the Mechanic Falls line for power-station value. For carhouse and shops, the commission accepted the figures presented by the company, and on the basis of cars operated allowed \$3,261 for the Mechanic Falls line. A further allowance of \$375 was made on the basis of space used in another carhouse for storage. The total investment for the line thus was \$199,781.

## NO DEDUCTION FOR DEPRECIATION IN THIS CASE

The total earnings for the line in question were figured at \$34,238, with expenses of \$17,426, giving net earnings of \$16,812. This amount of net earnings represented a return of nearly 8.5 per cent on the value of the property. The operating expenses shown above included depreciation only upon rolling stock, and the company felt that additional depreciation of 3 per cent upon track and overhead, 6 per cent upon power station and 2.5 per cent upon carhouses and shops should also be allowed. In commenting upon this question of depreciation the commission said:

"Depreciation is deferred maintenance, and in a case where any public utility has permitted its plant or any substantial portion thereof to become insufficient or inadequate on account of failure properly to maintain it, such condition is actual depreciation, and should be properly noticed by decreasing the original cost of the property by the amount actually depreciated. This is just and fair because the company is taking certain money from the public in the form of rates, tolls or charges, and distributing it to its stockholders in the form of dividends, when a certain portion of such amount should be laid out upon the property in keeping it up to as near 100 per cent efficiency as possible. If, on the other hand, a public utility is spending a sufficient amount each year properly to maintain all of its property, and as a result thereof its plant is rendering nearly 100 per cent service, it would be unfair to deduct any considerable amount for depreciation, for the reason that the company would thereafter receive its return upon this reduced value. Being obliged to charge and receive no more than reasonable rates upon a fair value, it would thus never be able to obtain a sufficient amount to place and maintain its particular property in proper and efficient condition.

"In the case of a street railway, its track, roadbed,

poles and wires, carhouses, shops and power houses are ordinarily by maintenance kept in such state of repair that there is never very much actual depreciation. Its equipment of cars, on the other hand, necessarily depreciates, and a certain reserve should be maintained to care for this depreciation. As a matter of fact, the present company maintains its roadbed, tracks, poles, wires, carhouses and power plant in excellent condition, and it maintains such a depreciation reserve upon equipment as satisfies the requirements of the Interstate Commerce Commission. In the absence of evidence that this is not sufficient, we ought to be satisfied, and for the reasons above stated we do not in this particular case feel that there should be any deduction from the ascertained investment of \$199,781. We therefore find that this amount is the fair value of the company's property. And inasmuch as we make no deduction from this figure representing original cost and present value, we do not allow any additions to operating expenses for the items of depreciation claimed by the company, but find the total operating expenses with all proper additions and deductions to be \$17,426, yielding a return of approximately 8.5 per cent."

8.5 PER CENT RETURN IS FAIR

In commenting upon what should be considered a fair rate of return upon the money invested, the commission made the following statement:

"At first view it may be said that 8.5 per cent is a very liberal allowance; that a figure more nearly like that paid for ordinary loans would be adequate. We believe, however, that on inspection most people will agree that this is not true. As long at least as the charge is not greater than the value of the service, the return should be sufficient to encourage the investment of capital in similar enterprises where there is a fair demand for it. Unless this principle is recognized, the State cannot expect the improved transportation facilities in its sections not now served by railroads and street railways. Capitalists will not invest their money in enterprises attended by more or less hazard, inconvenience and necessity for personal attention unless there is reasonable hope of higher rate of return than they could secure from usual investments in securities.

"In arriving at our conclusion in this case, we take into consideration the fact that the present rate averages but 2 cents per mile—20 cents for 10 miles over a suburban line where the short hauls are comparatively few. This cannot be said to be more than the service is worth. A reduction of one zone, to 15 cents, which was suggested by the complainants, would, unless the travel was greatly increased, entail more than a loss of 25 per cent of the profit or return on the investment. It would decrease the gross income one-fourth, and the net approximately one-half. In other words, to grant the smallest reduction suggested would reduce the return on the respondent's investment to 4 per cent. We do not wish to be understood as committing ourselves in the proposition that 8 per cent is a reasonable return on money invested in all public utilities. The character of the utility, the character and density of population of the community in which it operates, and many other things must be taken into consideration. What we do say here—and we repeat it so that there may be no misunderstanding—is that 8 per cent on the money actually invested in a suburban branch of an electric railway is not an unreasonable return where the service is furnished at 2 cents per mile.

"It necessarily follows that there can be no reduction of the 20-cent fare between Lewiston and Mechanic Falls, unless the company can be permitted or compelled to carry passengers between these two places and inter-

mediate points at a rate which yields less than a fair return. If this can be accomplished at all, it can only be upon the theory formerly prevailing that a street railway can be permitted or compelled to serve a portion of its patrons at a loss if it appears that its business as a whole is sufficiently remunerative to warrant such carriage at a loss. Other commissions and some courts seem to have misunderstood a certain decision of the United States Supreme Court; but upon March 8, 1915, this court handed down three decisions, viz.: Northern Pacific Railroad vs. North Dakota, and Minneapolis, St. Paul & Sault Ste. Marie Railroad vs. the same, 236 U. S., 585, and Norfolk & Western Railway vs. Conley, 236 U. S., 605, the first one of which is of special interest. According to this decision, we feel that the same court would hold that this commission would have no authority to compel the street railway to carry passengers upon the Mechanic Falls line at either a loss or at less than a fair return merely because its business as a whole was profitable and would not materially suffer on account of the loss of the receipt of less than a fair return from the services to Mechanic Falls patrons."

DISCRIMINATION AND SERVICE

The complainants insisted that because the company carried passengers upon other branches of its road much longer distances for 5 cents than it transported



MAP OF MECHANIC FALLS LINE

passengers upon the Mechanic Falls line, it showed discrimination and inferential proof that the road could and should extend its fare limits on the Mechanic Falls branch. Some evidence was introduced with reference to one or two other branches, but it was very meager, and no effort was made to show conditions existing upon these other branches, such as density of population, the amount of traffic and other essential facts. The commission fully realized the justice of establishing fare limits with reasonable reference to the volume of travel and residential, business and territorial conditions along a given route, and as the claimants attempted to compare the fare limits of the Mechanic Falls line with those of other lines which were entirely dissimilar in these respects, it asserted that the limits on these lines had no bearing whatsoever on the limits or rates of fare which should be established on the Mechanic Falls line.

In regard to the complaints about the crowded condition of the cars at certain hours of the day, the commission did not make any ruling. It stated that it was engaged in making a study of rush-hour conditions, and until that study was completed it would not make any order relative to the relief of the alleged condition.

FARE LIMITS DIFFICULT TO FIX

The commission said that no single problem in the matter of transportation on electric railways is perhaps more perplexing to the management or more annoying to patrons than the location of the fare limits. The determination of the zones will inevitably inconvenience some people, but the railway cannot be absolutely controlled solely by the desire and inconvenience of a particular patron. Distance, while an important factor, cannot always govern. The first fare limit out of Lewiston upon the Mechanic Falls branch, as shown in

the accompanying map, is located about 3.3 miles from Lisbon Street, Lewiston, the starting point of this line. Although this zone was greater than the remaining ones, the commission held that this was proper, as an important village was accommodated thereby, and the records of the company showed that about 45 per cent of the entire traffic on this line was within the first fare zone. It, therefore, ordered that the first limit be continued in its present location.

Regarding the location of the other limits, there were a number of protests made at the time of the hearing. The distance between the end of the first fare limit out of Lewiston and Mechanic Falls had been divided approximately into three equal parts, so that the lengths of the second, third and fourth zones were as follows: 2.235 miles, 2.32 miles and 2.315 miles respectively. While the complainants did not dispute the territorial equality of this division, they stated that its fairness was not real. They said that the second fare limit ended at a "hole in the ground" where nobody lived, where no roads converged and where patrons to take the car had to walk 0.5 mile or more. They also stated that the third fare limit ended in a desolate, unfrequented place, where there was nothing except an imaginary line which the company had fixed for its own convenience.

The commission decided that the protests of the complainants had merit. For instance, between Lewiston and Mechanic Falls are two small settlements, known as Minot Corner and Hackett's Mills, these being located about 0.6 mile apart. Each is a place where several roads from near-by territory converge. The post-office is located at the former; a cluster of houses and a fair-sized mill at the latter. Either of these places is a natural point for the putting up of teams by persons who are to take cars for Lewiston or Mechanic Falls. The second fare limit out of Lewiston was located about 0.5 mile from Minot Corner towards Lewiston, which meant that a person coming to Minot Corner along any of the crossroads had to walk 0.5 mile towards Lewiston and take the car and pay 10 cents, or take the car at the corner and pay 15 cents, 5 cents of which was for the first half mile. The third fare limit out of Lewiston was about 1 mile beyond Hackett's Mills towards Mechanic Falls, so that a person desiring to go to Mechanic Falls from Hackett's Mills had to pay 10 cents, 5 cents of which he was obliged to pay for the first mile.

As before stated, the commission decided that the first fare limit out of Lewiston was proper and no change was ordered. From Mechanic Falls it felt that there should be a fare limit at Hackett's Mills, a distance of 3.38 miles from Mechanic Falls, for which 8 cents would be a proper charge. It was then decided that the second fare limit out of Lewiston should remain where it was and the fare of 5 cents continued, and that the fare between the end of this second zone and Hackett's Mills should be 2 cents. With this arrangement of fares and fare limits, passengers going between Lewiston and Mechanic Falls would pay no more than formerly. A passenger taking a car at Hackett's Mills for Mechanic Falls would pay 8 cents instead of 10 cents. A passenger taking a car at Hackett's Mills for Lewiston would pay 12 cents instead of 15 cents, a reduction of 20 per cent in both cases.

In making this decision the commission stated that although this would make an apparent reduction in revenue to the company, the evidence presented at the hearing led it to believe that the travel from Hackett's Mills to Mechanic Falls would be materially increased because of the reduction from 10 cents to 8 cents. It realized the possibility of error on its part in making this reduction, however, and provided in its order for

the reopening of the case on petition after a trial of one year.

#### COMMUTATION TICKET SERVICE EXTENDED

It has been the practice of the company for a number of years to sell commutation tickets for transportation between Lewiston and Mechanic Falls in books of sixty coupons, good for bearer only, limited to sixty days from date of sale, and sold for \$9, each coupon entitling the holder to ride between Lewiston and Mechanic Falls for 15 cents instead of 20 cents, the regular cash fare. At the hearing a number of witnesses testified that these commutation tickets were of little value to persons living in Mechanic Falls, for only a relatively few persons had use for a ticket which required the holder to ride from Mechanic Falls to Lewiston each week day, and that, furthermore, \$9 was a considerable cash investment for the ordinary workingman to make at one time. In view of these arguments the commission ordered that the company place on sale commutation books for twelve, twenty-four, thirty-six and forty-eight rides, good for one week, two weeks, three weeks and four weeks respectively, all at the rate of 15 cents per ride.

For a number of years the company has also sold strip tickets at the rate of eleven for 50 cents, each being good for a 5-cent ride. The commission ordered that each of these tickets be regarded as cash in the amount of 5 cents within any of the limits between Lewiston and Mechanic Falls. Thus a passenger riding within the 8-cent zone is entitled to use a ticket and 3 cents in payment of fare, thereby obtaining the ride for about 7.5 cents within this zone. By a strict interpretation of the ruling, a passenger riding within the 2-cent limit could present one of these tickets and receive 3 cents in change. The commission has advised, however, that it was not intended to have the company make any refunds on tickets presented in payment of fares.

The new fares and fare limits became effective on April 27, 1916. At the present time there has not been sufficient time to obtain definite information regarding the effect on the earnings.

### Geographical Distribution Stabilizes Utility Properties.

The new sixty-four page booklet of the Standard Gas & Electric Company, Chicago, Ill., showing attractive photographs of the properties and cities served, contains interesting graphic charts illustrating the stability and progress of gross and net earnings of subsidiaries even during a period which seriously disturbed the country. The booklet says:

"The separated location of the properties is an element of strength. It is an application of the law of averages to public utility investments. Electric and gas companies are the least affected of all industries by general business depressions, but there are occasionally acute local or sectional recessions which unfavorably affect earnings. These acute dislocations, however, do not occur throughout any considerable number of states at any one time. During the recent depression in the lumber industry of the Northwest the wheat growing states, Minnesota, North Dakota and South Dakota, enjoyed marked prosperity. While the low price of cotton was keenly felt at Mobile, Ala, and Fort Smith, Ark., the city of San Diego reached a high point in its prosperity during the holding of the Panama-California Exposition. At the same time the zinc industry of Wisconsin and Illinois established new records for productiveness. Similar instances are many, but the examples given indicate the character of protection accorded the investor by a wide geographical distribution."

# Study of Chicago's Congested Traffic

The Report of the Board of Supervising Engineers, Chicago Traction, on Possibilities of Improving Street Railway Service Involves an Analysis of the Causes of the Congested Conditions and their Remedies

**A**N extended study of the extent and causes of traffic congestion in the Chicago Loop has just been completed. New recommendations have been made for capacity, routing, street traffic regulation, car operation and physical changes. The data on which the foregoing are based have just been issued in an advance reprint from the ninth annual report of the Board of Supervising Engineers, Chicago Traction. Its title is "Investigation of Traffic Conditions and Track Capacity with Respect to Possibilities of Improved Street Railway Service and Rerouting of cars of the Chicago Surface Lines." The report contains 159 pages besides maps.

The plan followed in making the observations and gathering the data was:

1. To ascertain how many cars per hour are passing through the Loop district on the main trunk line streets, and
2. To ascertain the conditions that restrict and prevent realizing a higher standard of service in cars per hour over these tracks.
3. To analyze the possible changes that might be made, both with respect to the relief of interfering surface congestion to the operation of cars, and
4. To develop possible improvements that might be made by a change in routing.

Briefly, the analysis shows that undue congestion results when an attempt is made to pass cars continuously through certain downtown crossings, according to existing schedules; that the capacity at controlling points has been exhausted under the present scheme of routing, and that the only real alternatives (even assuming a great improvement in traffic regulation) are: (1) Rerouting within the congested districts, and (2) provision of additional traffic entrances thereto.

Even the benefits of the first alternative will have been exhausted at the prevailing rate of growth by the time subways or other additional outlets will have become available for street railway operation.

No attempt has been made to decide or assume certain matters of contention which will require authoritative action, viz.: rush-hour loading standard and through-routing of rush-hour trippers.

Alternative assumptions, however, have been made from which may be drawn conclusions within reasonable limitations as to the comparative results.

## SPECIFIC RECOMMENDATIONS

### I. Capacity and Routing:

The report does not recommend definitely a fixed routing plan, but presents several plans comprising a wide range of possibilities as to rerouting and a service standard. The board favors its Plan II.

### II. Traffic Regulation:

1. Advocate the reservation of a two-car loading berth next to each important near-side (or special far-

### Some Recommendations in the Report:

- (1) Two car berths at each important stop.
- (2) Street semaphore signals.
- (3) Introduction of skip stops.
- (4) Stricter regulations of vehicular service.
- (5) Increase in turn - back service.
- (6) Rerouting.

side) stop in the terminal district within which no vehicles shall be parked. Vehicles passing this reserved strip should pass close to the curb, and there await the next proceed signal.

2. At less important intersections the reserved space can be reduced to one car length, which should be established throughout the city at all stops.

3. The limits of these reserved loading berths should be indicated at the most important points by white strips painted upon the pavement, together with a painted iron marker resting upon the pavement at the upstream end.

4. Electric semaphore signals should be placed at the heaviest crossings, to be operated by a traffic officer occupying a raised position at the curb. These semaphores should preferably be suspended at the center of the crossings from overhead messenger wires, so that they may be seen from long distances without confusion. They can readily be fitted with an automatic air whistle.

5. At all crossings where cars turn on the inside loop, traffic regulations should permit these cars to pass on either traffic signal whenever it is necessary to do this in order to relieve the berth from oncoming cars.

6. The vehicle parking ordinances should be more rigidly enforced on car line streets to preserve free way for the second line of vehicles moving next to the car. Considerable advantage may be taken of the precedent already established by city ordinances prohibiting parking within a specified distance of fire hydrants.

7. Encourage the company to report regularly all deliberate violations by vehicles occupying the track needlessly.

8. Ordinances should be favored limiting the width of vehicles or burden carried through the downtown streets or across the bridges.

9. At important branch-offs congestion could be greatly relieved by the use of a double berth far-side stop; *i.e.*, avoiding any loading of cars before passing the switch. This movement should be in charge of a supervisor. During rush hours, the electric switch should be manually operated and during non-rush hours in the ordinary way. The electric connections suited to this class of work were illustrated in the board's sixth annual report.

10. Traffic signal interval should be as short as possible, consistent with the relative demands for traffic; *i.e.*, no dead time should be permitted or holding the crossing open for approaching vehicles.

### III. Car Operation:

1. Avoid extreme shortening of the loading zones on downtown lines so that the loading will not be concentrated at too few points, and thereby introduce a new controlling element of congestion.

2. Increase the turn-back car service during rush hours on those lines on which a large proportion of the

traffic clearly originates just outside of the Loop district. This special service to be of greatest effect should be properly advertised.

3. Encourage prompt acceleration and braking, and this as uniform as possible (except over special work). A rate of 2 m.p.h.p.s. will not be uncomfortable to passengers if uniform and is easily within the power of the motor equipment. It is the erratic handling of the car that causes the discomfort.

4. Encourage multiple car or double berth operation at congested crossings; the second car to follow the first just within safe braking distance in the form of disconnected train operation.

5. Encourage conductors to give forward bell promptly the moment loading is completed without waiting for making change or for transfers, so that cars may not be held over until the next traffic signal to proceed. A full interval is frequently lost in this way at critical points.

At points of heavy traffic where more than ten passengers usually board a car at one time, the outer portion of the hinged hand rail on the rear platform should be dropped so as to permit the full width of the platform step to be used for loading, thereby increasing the reservoir capacity of the platform and decreasing the loading time proportionately. This applies principally to the downtown district.

6. Too frequent stops on certain outlet throats prevent reasonable speed being made during rush hours. A system of skip-stops should be put into operation at least within the following districts:

North throats: Chicago River to Division Street.

West throats: Canal Street to Ashland Avenue.

In these "close-in" districts stops vary from 190 to 470 ft. apart, averaging about 330 ft., permitting about sixteen stops per mile. Consequently, stops should be made at alternate blocks and discrimination as to service between the two sides of the street may easily be avoided by staggering these skip-stops. On diagonal thoroughfares, it is equally important to develop an arbitrary system of stops which will fairly equalize the intervening distances and eliminate all unnecessary stops. Wherever more than eight stops per mile (660 ft. spacing) are encountered, consideration should be given to the skip-stop plan but without instituting excessively long "skips" such as 1000 ft. or more. This, of course, does not apply to the downtown district, in which practically all stops are necessary in order to avoid too concentrated loading. Where such skip-stop plan is put into effect the stopping points should be definitely shown by painted poles, suspended flags or other means.

#### IV. *Physical Layout:*

1. The Board of Local Improvements, the Chicago Plan Commission, the Chicago Terminal Commission and other public bodies having jurisdiction over the broader movements of city planning should incorporate in every plan for street and district development the elements essential to the improvement of local transportation. This refers to:

(a) Street system involving streets closed by railroad occupation, absence of bridges over the river, width of streets, street obstructions preventing four lines of moving traffic, etc.

(b) Pavement involving excessive crowning—granite vs. smooth pavements, etc.

(c) Bridges and viaducts involving grade of approaches, width of roadways, etc.

(d) Rear delivery vs. front delivery of merchandise, involving width of alleys, interior courts, arcades, etc.

2. Ascertain the possibilities of widening Wabash Avenue roadway, north of Madison Street, to the same width as that south of Madison Street. This can be

done without seriously impairing the sub-sidewalk space now occupied by abutting property holders.

3. Secure such modification of the standard pavement contour, especially when smooth surface paving is used, as will make it possible for teamsters to use the roadway outside of the car tracks during inclement as well as good weather. The new paving in Van Buren Street is a good example.

4. In considering modifications of the elevated loop structure plan for the ultimate relief of Loop streets at present obstructed by elevated columns, at least by moving the obstructing columns from roadway to curb.

#### DEDUCTIONS FROM TRAFFIC OBSERVATIONS

Under the heading of "Deductions from Data of Fact," the report presents a section which deals largely with the subject of track capacity and routeing. The results are in turn reflected in the recommendations. The entire investigation practically focuses upon four essential factors, and these should always be held in mind in reviewing this report: (1) track and crossing capacity, (2) routeing system, (3) traffic regulation, (4) service standard.

Manifestly, none of these factors can be intelligently considered without the others. Any reasonable conclusion must recognize all others in due proportion, based somewhat upon judgment but largely upon analysis of the facts. Wherever judgment has entered into the conclusions herein, the same has been noted.

In the simplest terms the questions to be answered are these:

1. Is the capacity of the downtown surface tracks already exhausted?

2. Can the situation be materially improved by re-routeing?

3. With rerouteing, how many years normal growth may be provided for before the capacity is again exhausted?

At the controlling points of the routes or loops the present rate of car movement during the evening rush hours is so great that the track capacity has been practically exhausted, even assuming that all avoidable vehicle interference is removed. That the present number of cars are actually operated on these tracks, handicapped by this avoidable vehicle interference, simply means that cars accumulate from time to time at such a rate as to require as many as five cars to pass per signal. This necessarily decreases largely the quality of service rendered and accounts for the fact that the average speed of transit through the terminal district is frequently lower than walking speed.

Thus, this investigation presents, as a net result, the serious fact that the capacity of the downtown streets under present routeing has long since been exhausted and that re-routeing should be immediately undertaken to relieve the situation for the next few years. Even then in all probability the relief will not last much beyond the earliest date that subways or other additional outlets will be available.

#### DEFINITION OF CAPACITY

For the purpose of this study, the capacity of a street crossing is considered to be the permissible maximum rate of car movement, or amount of car traffic (expressed in cars per hour or other units of time) which can reasonably be operated with existing standard equipment under the improved condition of traffic regulation assumed and recommended herein, across or over the crossing without unduly slowing up the operating schedules or discriminating against vehicle traffic as it exists to-day.

The capacity of any given track using the crossing is



dependent entirely upon the distribution of traffic required on the various tracks comprising the crossing and, to some extent, upon the volume of vehicle traffic when the latter becomes a governing factor. The capacity of any given track outside of the limiting points of congestion, viz., the heaviest crossing, is usually so much greater than that of the limiting point as to be negligible in this study. On a clear track unobstructed by vehicles or other obstructing factors, track capacity is actually dependent only upon the maximum free running speed and safe braking distance. While all stops that are made operate to reduce the schedule speed in proportion to their number and duration, the capacity of a given line or route will be finally determined by the maximum regular duration of stop at any point on it.

ELEMENTS OF CAPACITY

The various factors entering into the determination of track capacity or car movement, all of which have received consideration directly or indirectly in this study are principally as follows:

1. Normal method of car berthing employed—single or multiple.
2. Readiness to move on signal; *i.e.*, whether sufficient cars are scheduled so as to be available at the berth.
3. Interference with running or berthing of cars by vehicles in or alongside the track.
4. Interference with cars at crossings, due to vehicle traffic, other cars and pedestrians.
5. Proportion of traffic in various directions—both car and vehicle; *i.e.*, how nearly traffic is balanced at the crossing and the proportion of curve to straight through movement.
6. Personal equation of traffic officers in anticipating movement, in preserving proportionate intervals and in making fullest use thereof.
7. Promptness with which traffic signal is responded to; *i.e.*, the relative amount of delay in starting due to carelessness or inattention.
8. The type of curve or loop employed; *i.e.*, whether inside or outside loop; inside or outside curve, and right or left hand loop.
9. Time required for various car movements at crossings, including the effect of inside curve movements on every signal.
10. Loading time required; *i.e.*, the importance of the particular crossing with respect to the various loading zones.
11. Suitability of car design for rapid boarding and alighting with platform capacity sufficient to absorb the usual groups boarding without excessive delays in collecting fares and making change.
12. Physical capacity of equipment to accelerate and brake at the maximum uniform rate possible without discomfort to passengers.

PHYSICAL CAPACITY OF EQUIPMENT

The results of the acceleration tests on typical rush-hour trips and an analysis of loading speed previously made for many different locations indicate that every reasonable effort has been made by the Surface Lines to provide equipment capable of maximum duty. The surface cars now load faster than cars in most other cities and are operating under heavier duty than the elevated rapid transit equipment of Chicago with respect to acceleration and braking. It is only with improvement in other directions that this physical capacity can be made available for maximum useful service.

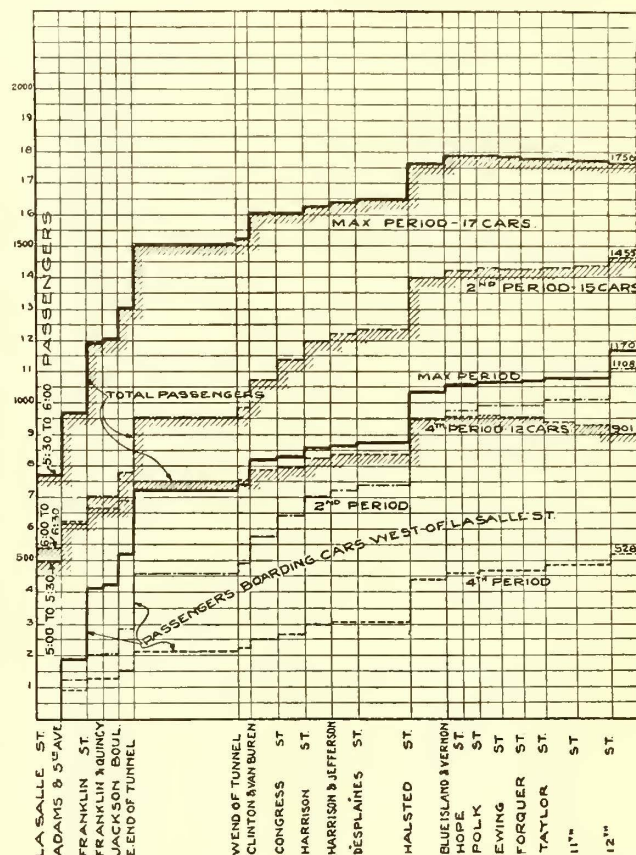
ENFORCEMENT OF TRAFFIC REGULATIONS

After a study of existing ordinances and observation on the street of their inadequacy and the laxity with

which even the present ones are enforced, there appears to be a considerable opportunity for improvement. For example, all car loading berths can be kept free from parked vehicles; multiple berthing of cars can be carried out without obstructions due to intervening vehicles; improper parking of vehicles between blocks can be prevented so as to eliminate much of the "creeping" behind slow vehicles occupying the track; the use of the street for loading merchandise can be prohibited at least during rush hours; and the duration of the signal interval can be roughly proportioned to the pressure of traffic movement in the respective directions and as uniform as possible.

CONDITIONS DUE TO ROUTEING

Equally important with the above is the fact that the particular routeing plan employed has a most direct



This traffic flow diagram indicates that on this route there are as many passengers boarding in the immediate vicinity of Franklin as originate in the loop and shows the advisability of turn-back service.

TRAFFIC FLOW DIAGRAM—BLUE ISLAND AVENUE BY HALF-HOUR PERIODS, COUNT OF FEB. 16, 1915

bearing upon the service capacity of the downtown street system. Admittedly, rearrangement of long established terminals may be serious for a time. Nevertheless, such a rearrangement is to a large degree the main source of increased service capacity for the surface lines. A dual responsibility exists between the city and the companies in a proper enforcement of the ordinances on the one hand and the perfection of the routeing plan on the other; neither, unaided, can accomplish the desired results.

The capacity studies have clearly indicated that with a definite routeing plan each line has a point of limited capacity. Any attempt to operate cars at a higher rate than justified by this capacity simply results in piling up surplus cars for one or more blocks until the congestion can be worked out. These critical points usually

occur where heavy routes intersect with curves. In fact, curve operation, especially with the outside curve, constitutes the weakest point in the routeing system and the source of maximum delay and congestion during rush-hour service. Inside curves at street crossings offer far less obstruction owing to the clearance special work employed. In fact, at certain of the heavy downtown traffic points cars are now permitted to proceed around the inside curve on any signal, with the result that a total movement per track is operated which is considerably greater than possible with even a straight through crossing. This result, however, can only be realized fully when transverse car traffic is so routed as not to interfere with or superimpose upon the inside curve movements, *i.e.*, when the curve movements take place simultaneously in opposite quadrants, and the through cross movement is relatively light. This practice should be encouraged so as to obtain maximum capacity.

Straight crossings occasion very much less delay; in fact, they are a negligible factor except where a very high rate of car movement is concerned.

It may be noted here that the so-called "line delay" at heavy traffic points, due to the whistle signal, may be more apparent than real, for, as a matter of fact, with straight crossings the signal interval may be so adjusted on the average as to permit cars in berth about sufficient time to load and then proceed promptly. The alternate signal system is necessary for vehicle regulation. Therefore, with the near-side stop principle, cars simply may use the signal time for loading and unloading.

INSIDE LOOPS

Where lines intersect, it is extremely necessary to utilize the inside loop around the block, as contrasted with the outside loop; the former, known as the figure 8 or closed loop, crosses itself once but interferes with no other traffic. However, the outside loop, while not intersecting with itself, interferes on curves with other lines of traffic at three intersecting points. Hence, where many routes intersect and other car traffic is encountered, the disadvantage of the outer loop appears.

The one disadvantage of the inside loop, *viz.*, the throat crossing, may fortunately be obviated in many cases by closing the loop on some street outside of the congested district. By thus removing the closing curve outside of the zone of maximum congestion, a terminal system much simpler in operation and quite as effective with regard to loading points is obtained and the track capacity is largely increased.

THROUGH ROUTEING

An analysis of through versus curve movements shows so favorably for the former as to remove any doubt as to the desirability of adopting the through route principle to its maximum practicable extent. This results from the relative time economy of the through movement as compared with a curve movement, even disregarding entirely all other advantages which may be cited in support of the through route plan from the passengers' viewpoint.

If this primary advantage is not admitted in any desired scheme of rerouteing, the function of this study ceases with a statement of how much increased capacity may be derived from the downtown terminal system under present conditions of routeing. But it is believed that such a viewpoint is needlessly conservative because of the fact that the interim growth in traffic, before an adequate rapid transit system can be put into full operation, will practically force a consideration of means of improving existing conditions. The effect of unification

and the operation of the surface and elevated lines under one management must not be forgotten, however, when considering this subject.

The following data show actual observed time required for unit car movements on clear unobstructed track only:

ACTUAL OBSERVED TIME REQUIRED FOR UNIT CAR MOVEMENTS ON CLEAR UNOBSTRUCTED TRACK ONLY			
	Number of cars each direction	Max. time from building line to clear special work	Av. time used* from curb to clear special work
Straight crossing .....	1	11 sec.	9 sec.
Straight crossing .....	2	21 sec.	18 sec.
Outside curve .....	1	17 sec.	14 sec.
Outside curve .....	2	27 sec.	24 sec.
Combination outside curve and straight .....	2	43 sec.	40 sec.
Comparison of straight and curve movement:			
Straight crossing (2 cars each way) ..		21 sec.	18 sec.
Combination outside curve and straight (2 cars each way) ..		43 sec.	40 sec.
Lost time due to curve .....		22 sec.	22 sec.
Lost time per car .....		5.5 sec.	5.5 sec.
Lost time in per cent of straight crossing time .....		104.5%	122%
Note—*This unit is an average between time in passing—			
(a) From building line to clear special work, and			
(b) From fouling point at crossing to clear, practically amounting to time from "curb to clear."			

Based on the foregoing data the average time required to operate four cars on a crossing (two in each direction) is as follows:

Straight crossing .....	18 seconds
Combined outside curve and straight crossing .....	40 seconds
Lost time due to curve .....	22 seconds
Lost time due to curve—per cent of straight time .....	122 per cent

RESERVOIR TRACKS

It is necessary to point out one qualification of any plan adopting universal through routeing in such a special case as now exists in the Wabash Avenue loop. This results from the great advantage of having "reservoir tracks" upon which rush-hour trippers may be "piled up" inbound in order to meet most effectively the sudden demand of outbound rush-hour service. Such a condition exists in Wabash Avenue, due to the preponderance of department stores and office buildings. But the result of this "reservoir operation" is that the average speed of northbound trippers entering the loop just prior to the evening peak is reduced to as low as 2.5 mph., then is increased to normal as the traffic peak is passed.

Obviously, the operation of through routes at normal speed, mixed in with these trippers, becomes impracticable, which fact has an important bearing upon any routeing plan. Both through routeing and "reservoir operation" are highly desirable. When an attempt is made to combine them on one track, one service or the other must be sacrificed. Obviously, for the best results, the service should be separated if possible.

LOADING ZONES

Two important matters may be emphasized here bearing upon car operation in relation to routeing:

1. The danger of reducing too much the number of established loading points in the terminal district, and
2. The desirability of instituting regular rush hour turn-back service as far as practicable on the principle of zone operation.

How serious the first may become, without careful investigation of the actual sources of travel, is illustrated by a recent proposal to shorten all of the west side loops so as to turn at Clark instead of State Street as at present. This case was tested out from actual observations at loading points over the Madison Street line and it was found that turning short in Clark Street would have introduced so long a headway as to limit the service capacity below that contemplated.

It will be immediately apparent that such a move would needlessly inconvenience passengers and also

would entirely defeat its own purpose by concentrating so much loading in a few points that the extra time required to make up for the slower loading of large groups (which would have to board at these few points) would in all probability so greatly increase the headway as to reduce the capacity of the line below requirements. This, of course, applies mostly to loop or stub lines, but it may also apply to improperly located through routes when the number of loading points provided are insufficient.

#### TURN-BACK SERVICE

Previous traffic counts (see cut on page 185) have clearly established the fact that on some routes a very large proportion of passengers are picked up outside of the immediate loop district. For this "pick-up" traffic, it is purely a waste of car mileage to operate equipment therefor down through the congested center. Here, turn-back service becomes of maximum usefulness as, for example, Madison and the Blue Island routes where 50 and 67 per cent respectively of the outbound passengers during the maximum are picked up west of Fifth Avenue and west of La Salle Street.

But it should also be stated that such conditions do not by any means exist universally. Each line must, therefore, be studied by itself to determine where turn-back service may be of maximum usefulness.

#### CAPACITY OF STREET CROSSINGS

After extended observation of the actual traffic movement, under present methods of operation, certain fundamental assumptions are here made as a basis of all calculations of capacity. These are believed to be reasonable in view of the fact that the assumed regulations are to-day in successful operation in other cities. The assumptions follow:

1. Double berthing of cars during time of maximum movement.
2. Cars are always loaded ready to move promptly on signal; *i.e.*, at least two cars will be waiting at any time when the signal is given.
3. At any crossing the total time each street is open is to be approximately proportional to the relative traffic thereon.
4. At the congested crossings, cars using the inside curve are permitted to move on either signal.
5. Excessively long signal intervals to be avoided.
6. All interference with proper berthing by obstructing vehicles to be abolished through enforced regulations herein recommended.
7. Interference between cars and vehicles at crossings, when either or both are moving around curves, to be considered unavoidable.
8. When vehicle movement is unquestionably the controlling factor, the distribution of time between the two streets at a crossing is fixed by vehicle rather than by car traffic.

These assumptions simply accept the principle of the multiple berthing, readiness to move, and abatement of the nuisance of the vehicle interference at loading berths. Unavoidable vehicle interference at crossings is accepted without change.

It does not seem practicable to provide for loading berths, free from vehicular obstructions, for more than two cars, because of the necessary occupation of a portion of the street, for at least temporary parking by automobiles and other vehicles.

In regard to multiple berthing, if a street could be reserved for street car traffic only, it would be reasonable to assume a basis of three or four car berthings ready to move on signal with a corresponding increased capacity in cars per hour.

Thus, if the police regulation of traffic accomplishes

results to be anticipated from experience in this and other cities, the burden of delay in downtown operation will be more equally distributed between the city and the railway company.

#### TYPICAL ANALYSIS

It is well at this point to explain the method of calculating capacity by applying the average units of time actually found to be required for various free car movements to derive the maximum rate of movement expressed in cars per hour, which may be said to be the capacity of the crossing. The following method may appear complicated but in reality it means the building up of a composite result from unit data obtained from observation and analysis of each contributing factor.

#### METHOD OF APPROXIMATION

Step 1. Observations: (a) Ascertain rush-hour car traffic required on each line converging at the crossing under some uniform service standard. (b) Ascertain the actual vehicle traffic in each and all directions during the corresponding rush period. (c) Determine the average time unit for various car movements free from vehicle obstruction.

Step 2. Calculate the total time for making the required free car movements at the crossing by applying the above time units [1—(c)]. If this total time is one hour or 3600 seconds, the true capacity for free movement then results. But, when a crossing is overloaded, the total time required will be greater than the hourly period. In this case the number of cars is too great and the capacity will then be found thus:

Step 3. Reduce the rate of hourly car flow for each individual movement below that "required" by step 1(a) in proportion to the excess time of "required" movement over one hour. Vice versa, where a crossing is underloaded, the capacity would be greater than the "required" car flow and the operation would be reversed.

Step 4. Reduce the car movement, thus found for unobstructed operation, by an interference factor developed from observation of vehicle interference, to obtain the actual capacity of the crossing under existing obstructions in cars per hour for each movement.

Step 5. Finally, apply an additional interference factor to cover unavoidable irregularities in signal intervals, car dispatching, personal equation of the officer or unusual crossing delays, by deducting arbitrarily at least 10 per cent from the previous capacity figures.

It suffices to emphasize here that this method simply modifies the calculated free movement by an amount sufficient to compensate reasonably for unavoidable vehicle interference. Thus, given the car movement and vehicle movement of a certain intersection, the reasonable capacity of each element of that intersection may be found by this same method.

#### SERVICE STANDARD BASIS

Thus far no consideration has been given to the effect of different service standards upon the question of capacity of these downtown lines; *i.e.*, all calculations have been based upon existing schedules. In order to determine the possibilities of increase for the future on those lines which have not now reached capacity at some controlling point, it is necessary to assume some service standard as a basis for computing the probable rate of growth of car traffic on the streets.

Service standards have been recommended by the City Council of Chicago, the Board of Supervising Engineers and the Public Utilities Commission of Illinois. It is assumed that the following alternative standards will suffice to indicate the probable range to be adopted

in the near future under any scheme of practicable routeing:

1. Seventy-passengers per car average during the maximum 30-minute interval of the rush period, as determined for any street line or route at the point of maximum travel.

2. Eighty-passengers per car under the same conditions.

It is assumed that a certain number of cars would be turned back at the boundaries of the Loop district on those lines operating through the congested district in proportion to the amount of local travel clearly originating outside of the Loop. As a matter of fact, the Loop lines have been assigned somewhat more service to take care of the Loop demand than appeared to be called for in the studies of downtown vs. outside or pick-up traffic. This was necessary for practical reasons.

The following section of the report discusses the present and proposed methods of routeing, and this section is followed by the presentation of the observed data on physical and operating problems. These facts of interest will be presented in abstract in a later issue.

### Bridges Destroyed by Flood

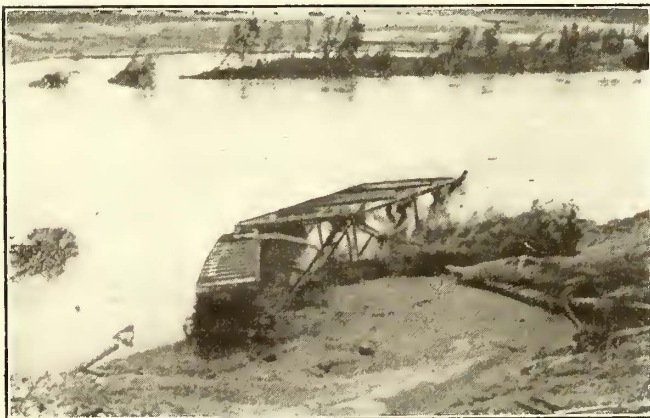
#### Piedmont & Northern and Asheville Electric Roads Suffer Severely from Southern Floods

The two upper illustrations show the havoc wrought to the Piedmont & Northern Railway bridge over the Catawaba River near Mt. Holly, N. C., by the floods, reported in last week's issue of the ELECTRIC RAILWAY JOURNAL, which swept through the Piedmont section of the Carolinas. The two lower illustrations

show the flooded conditions in different parts of Asheville, N. C., during the flood. The upper right-hand view shows where three bridges formerly stood, the foundations in the right of the picture being those of the Piedmont & Northern Railway bridge. The picture shows part of the ruins of this bridge. The Southern Railway Company bridge at Belmont, N. C., a few miles below Mt. Holly, was also swept away. Six coal cars had been placed on the bridge to save it and a score of men were at work getting the driftwood loose when the bridge finally gave way. Practically every man was drowned. A reinforced-concrete highway bridge at Sloans Ferry was another structure completely destroyed by the flood. It was only two years old and the loss is estimated to be \$100,000.

As soon as the water began to recede the Southern Railway Company despatched a steam shovel, three train loads of material and about 500 men to construct a temporary bridge in place of the one destroyed at Belmont. Piles are being placed as rapidly as possible by crews working on both sides of the river, considerable difficulty having been experienced in driving the first few piles, as the water continually washed them loose. Similar work is being done on the Seaboard Air Line and the Piedmont & Northern Railway bridges. Pending the completion of these temporary bridges the railroads have constructed rafts for transporting passengers. Men in row boats are also doing a profitable business in carrying passengers across the river at \$1 a person.

The South Carolina Light, Power & Railway Company of Spartanburg, S. C., was one of the few companies in this section to maintain its full service. Its hydroelectric plant was slightly damaged, but the steam plant was able to carry the entire load.



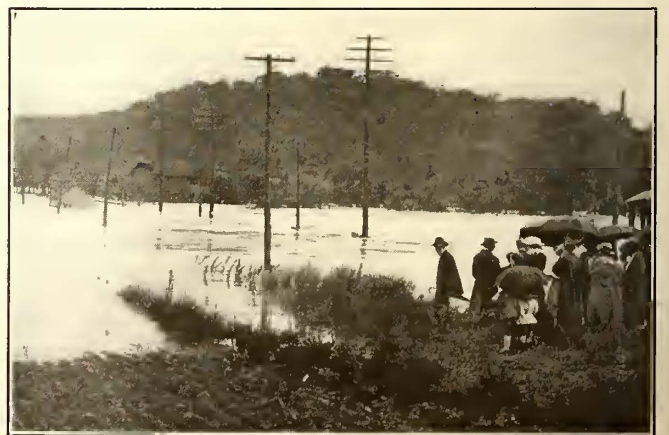
RUINS OF THE PIEDMONT & NORTHERN RAILWAY BRIDGE AT MT. HOLLY, N. C.



LOCATION NEAR MT. HOLLY (N. C.), SHOWING ALL THAT REMAINS OF THREE BRIDGES



MAIN STREET IN ASHEVILLE (N. C.) SHOWING TWO STREET CARS STALLED BY THE FLOOD



REMAINS OF BRIDGE BETWEEN ASHEVILLE AND BILTMORE (N. C.) WHICH WAS COMPLETELY DESTROYED BY THE FLOOD

# Bay State Company Says Last Word

Submission of Briefs and Final Arguments Now Put Question of Allowing Fare Increases Up to Massachusetts Commission for Decision

Briefs were filed by the opposing counsel at the final hearing before the Massachusetts Public Service Commission on July 24 in the Bay State Street Railway fare case. This case, which was opened on Sept. 2, 1915, involves probably the most elaborate street railway rate problem which has ever been considered by the Massachusetts board. In general the proposed increases, the propriety and reasonableness of which the commission will now judge, cover an increase from 5 to 6 cents as the single cash fare over all lines of the system, which total 955.07 miles of track and serve a population of about 1,351,600, excluding Boston; the sale of nine tickets for 50 cents, receivable for fare in certain localities; the modification of certain existing fare zones and transfer privileges, and the withdrawal of reduced rate tickets other than school tickets. The main points of the company's brief are abstracted below.

## INVESTMENT SHOULD BE RATE BASIS

The company maintains that the total outstanding securities (with the exception of \$1,994,000 coupon notes) should be recognized as the proper rate base in this case. The remonstrants contended that a portion of the money furnished the property had been provided from income and not by the investors, but R. M. Feustel, expert for the company on valuation, contradicted this on the ground that the cost shown by the appraisal fell short of the securities issued against the property and that the income had never been sufficient to furnish money for the acquisition of new property. Witnesses for the company stated that neither betterments nor new construction were paid for out of earnings, and President Sullivan said that all betterments were capitalized. The actual funds put into the property through security issues amount to more than the original cost figures. The company has never had a reasonable return on its investment, and its maintenance and depreciation expenses since 1893 have averaged 4.95 cents per car mile, or about 24 per cent below the figure deemed necessary by Alton D. Adams, expert for the remonstrants. In case expenditures have been made which could have been capitalized, they have been more than offset by depreciation which has accrued and not been taken out of income.

Although some of the constituent companies paid good dividends at the time of the consolidations and may have made improvements out of earnings, the prosperity of these companies, after the advent of electric operation, was more apparent than real. The Lynn & Boston, for example, though paying 8 per cent dividends, had funded debt outstanding to the extent of three or four times its stock, and the total disbursements of a number of years previous to the consolidations averaged around 5.5 per cent. The bad physical condition of some of the city properties at this time was due to their being reconstructed for electrical operation at an early date. A comparatively high capitalization was to be expected for some of these roads, owing to the high prices for electrical equipment, and other materials prevailing in the early nineties.

The Feustel inventory of physical property was available for checking throughout the entire case. In a report by H. W. Hayes, engineer for the commission,

sample checking was made of about 61 miles of track and roadway, including trolley overhead construction. The two inventories checked within 0.5 per cent, Mr. Feustel's figures being the lower.

The difference in overheads, as shown by Mr. Feustel and the company books, was caused in large part by the fact that the Interstate Commerce Commission system of accounts requires that wherever possible such charges shall be assigned to the special overhead accounts only when they can not be assigned elsewhere. If any overheads were paid for out of operating expenses, they were paid for by the stockholders by foregoing dividends or by capitalizing replacements which the public should have paid for. In the last two years alone the stockholders have foregone in the way of dividends considerably more than enough to make up any possible failure to capitalize overheads, and the entire amount has gone back into the property to take care of depreciation.

An extended discussion of overhead charges is included in the brief, with a bibliography of percentage allowances in terms of physical property ranging from 12 to 28.5 per cent. The Feustel appraisal allowed 12.74 per cent of the structural cost or \$4,769,000 for all overheads. No opinion evidence was introduced by the company as to the intangible costs incurred, as it was felt that with the full history of the companies before the commission, the question was an economic and legal one for the board to decide.

## DIVIDENDS AND DEPRECIATION

The average dividend paid over the whole period by the Bay State constituent companies from 1862 to 1916 was 4.07 per cent; from 1862 to 1900, 3.63 per cent, and from 1900 to 1915, 4.20 per cent. It was urged at the hearings that the payment of any dividend was a return of capital to the stockholder if accrued depreciation had not been cared for. Such a policy has not received commission sanction, although it has been urged in many cases.

President Sullivan explained in his testimony that it was well known in earlier years that the necessity of a greater amount of renewals would increase as the property grew older and that the company would have liked to accumulate a fund. Traffic, however, had failed to develop as expected owing to the automobile, etc., and the failure of revenue together with rising prices had prevented the company from taking care of the full amount of renewals desired in the last three or four years. Yet the directors at all times had carefully weighed the advisability of amounts to be paid in dividends as compared to the amounts to be charged off for depreciation, and declared only such dividends as were thought necessary. At present dividends are practically suspended (only 2.5 per cent being paid in 1915 and 50 cents in 1916).

In view of the sacrifices of the past and future, it is said to be hardly equitable to suggest that depreciation should be deducted from the property value because dividends have been paid. Depreciation has not been deducted in other cases before the Massachusetts commission, even though dividends were paid. In the Manchester (N. H.) case dividends averaging 5.8 per cent had been paid, but the original cost of the property was allowed. Mr. Feustel estimated the annual

depreciation on the straight-line basis to be 4.41 per cent, the composite life of the depreciable property being 22.7 years and the composite life of the entire property 29.26 years. The annual depreciation on the whole investment is 3.4 per cent.

Taking everything into consideration, the company believes that the total amount of over-capitalization of all the companies would not exceed \$1,000,000 and would be more than offset by premiums paid on capital stock. The commission or its predecessor has passed upon securities of the company to the amount of \$41,938,400. On June 30, 1916, \$46,621,200 in securities were outstanding, excluding coupon notes. The investment cost of the property, including working capital, was fixed by Mr. Feustel at \$43,635,365. (See *ELECTRIC RAILWAY JOURNAL*, Dec. 4, 1915, page 1123.)

#### RATE OF RETURN TO BE ESTABLISHED

It is not the question of a minimum constitutional rate, but a commercially fair rate, which the commission has to decide in this case. The board must establish a rate which will insure the ready flow of capital into the industry in order to secure to the public the extensions of the service which their growing needs may require. Massachusetts utilities are in most active competition in obtaining money with utilities in other states. Practically all commissions whose allowances have been investigated by the company allow a rate of 7.5 to 8 per cent. The Wisconsin Railroad Commission habitually allows at least 7.5 per cent. The cost of money has risen with the cost of labor and other commodities, and the investor in the public utility field has been educated by experience to the fact that he cannot expect a profit and must assume a considerable risk. Hence he is demanding a higher return on his money than formerly.

#### DIFFICULTIES CONFRONTING THE COMPANY

According to the brief, taxes in 1898 took 2.9 per cent of operating revenue and in 1914 6.8 per cent. The ratio of gross earnings to capital investment has increased but slightly in the company's case, from 19.12 per cent in 1901 to 19.60 per cent in 1915. It is extremely problematical whether the necessary increased capital expenditures of the future will better the position of the stockholder. The brief refers to the testimony of C. F. Bancroft, superintendent of motive power and machinery, that it has never been possible to realize any net saving in the cost of power through the installation of additional feeders, for the reason that motormen turn the increased voltage to account in the direction of securing higher acceleration, with the resulting increase of energy consumption.

The brief also mentions the testimony of President Sullivan that while the company wished to establish two repair shops, one north and one south of Boston, no net saving could be secured when the additional capital was considered. He also testified that in general it was impracticable to consolidate car houses, as the dead car-mileage would more than offset the saving which could be effected. Moreover, the anticipated savings resulting from speed increases, as set forth in the report by Bion J. Arnold to the commission, appear impracticable to the company, two-thirds of whose territory is single-tracked. Stops should be eliminated in many places, but in the Bay State territory this cannot be done on a percentage basis. It is very difficult to make valuable use of the time saved on such a system by increased speed, when layovers and single-track conditions are taken into account. It is not believed that the company should decrease service in many cases, as suggested in the Arnold report. Assuming, however,

a total net saving of \$390,000 along the lines of the Arnold report, the company notes that this is practically offset by the increase in wages due to the labor award, amounting for 1915 to about \$345,000.

If the traffic in question is not furnishing a reasonable return (as in various small towns where ticket concessions are made), the wisdom of withdrawing low fares is, it is stated, a problem for the management of the company and not for the commission to consider. The commission has not the authority to prevent the company from raising these unprofitable fares. In *So. Pac. vs. I. C. C.*, 219 U. S. 483, it was held that the powers of the Interstate Commerce Commission did not extend to regulating and controlling the policy of the owner of the railroad in fixing rates and that the commission could not substitute for a just and reasonable rate a lower rate, either on the ground of policy or on the ground that the railroad was by its former conduct in establishing low fares estopped from charging a higher rate where the higher rate was otherwise reasonable.

The brief of the opposition contended that the cost of the system was excessive and criticised the management of the property in general terms.

#### FINAL ARGUMENT

In his final argument Attorney Jackson declared that the company needs about \$2,000,000 more revenue per year; that the only possible increase in revenue is from higher fares, and that public ownership is the only alternative. The company would have been glad many years ago to have discontinued certain unprofitable lines could it have secured permission to do so. Gross earnings have not increased at the rate of wages and material increase. If other street railways in Massachusetts were required to charge off even 3 per cent depreciation in addition to present maintenance, they would be furnishing transportation at less than cost. The Bay State company, the speaker said, is in the same position. The modern policy of regulation is on trial in the Bay State case. From 1899 to 1915 platform wages have increased from 18.6 per cent of operating revenue to 22.6 per cent. The ratio of operating expenses to gross earnings has increased from 61.38 per cent in 1901 to 73.04 at present. Scarcely a street railway company in Massachusetts has adequate financial credit. On the Bay State Street Railway, out of its total capitalization only about \$1,000,000 could be classed as water, and a large part of this represents the cost of changing from horse to electric traction. In general, the cost of transportation should be equally shared all over the system.

The safety first problem on the Louisville & Southern Indiana electric lines and the New Albany & Jeffersonville, Ind., city lines, has been reduced chiefly to a question of how to prevent passengers from hurting themselves. Educational work done in the last few years has greatly reduced the disposition of the public to take chances, and it is observed that the character of these casualties is generally minor, although they look bad in the record. The safety work on the system south of Charlestown and Sellersburg, Ind., is under the direction of Harry Hutchens, assistant safety agent of the system. He reports that the records for the first six months of 1916, which have just been made up, show an improvement over the similar period last year. When the system began operating as a whole in 1908 the average for that year was forty-eight accidents a month. The average for the system for last year was eight accidents a month, a reduction of 83 1/3 per cent.

1916 CONVENTION  
ATLANTIC CITY  
OCTOBER 9 TO 13

## ASSOCIATION NEWS

1916 CONVENTION  
ATLANTIC CITY  
OCTOBER 9 TO 13

Committee on Standards Held This Week—Committee on Electrolysis Met July 21 to Consider Report of American Electrolysis Committee—Exhibit Space Engaged to Date Aggregates 42,000 Square Feet—Company Membership Still Growing Rapidly

### Committee on Standards of the Engineering Association

The Engineering Association committee on standards met in New York on July 27 and 28 to consider the recommendations of the several technical committees of the association. The committee members in attendance were: H. H. Adams, Chicago, Ill., chairman; E. B. Katté, New York; Martin Schreiber, Newark, N. J.; J. H. Hanna, Washington, D. C.; C. H. Clark, Cleveland, Ohio; R. C. Cram, Brooklyn, N. Y.; C. L. Cadle, Rochester, N. Y.; C. R. Harte, New Haven, Conn.; A. B. Stitzer, New York (representing J. W. Welsh), W. E. Johnson, Brooklyn, N. Y. (representing W. G. Gove), and J. M. Waldron, New York.

The committee took up first the report of the committee on way matters, discussing the recommendations for revision of specifications for special work and the various materials used in its construction. These revisions were largely changes in form, together with some minor improvements and additions to the text, although a new set of specifications for plain bolted special work was introduced. The revised specifications were approved by the committee as recommended practice. It was decided not to recommend type "C" track construction as a standard design in view of the fact that conditions under which this form of construction is required are exceptional.

The report of a sub-committee on the Engineering Manual was considered, and it was decided to refer this subject back to the committee for further consideration in the light of the facts brought out in the discussion, which was very comprehensive.

The report of the power distribution committee was next considered, and with slight amendments its recommendations were approved, with the exception that it was considered inadvisable to recommend the inclusion of the admirable and exhaustive report on concrete pole design as its extent brought it outside of the contemplated scope of the Manual section on miscellaneous practices.

As this issue of the paper goes to press the committee is considering the recommendations of the block signal and other technical committees.

### Exhibit Outlook Good

Secretary Burritt of the American Electric Railway Association reports that the outlook for the exhibit at Atlantic City this fall is very favorable. Up to the present time some 42,000 sq. ft. of space has been engaged by intending exhibitors, and many applications are being received from others, so that it is practically certain now that all the space will be taken up before the convention. The contract for furniture and rugs for the lobby has been let to C. M. Koury Company of Atlantic City, which has had charge of this work at past conventions, and blanks specifying the furniture, rugs and other furnishings desired for the different booths from the Koury Company have been sent to all intending exhibitors. A prompt reply is desired by Secretary Burritt.

### Vice-President of Accountants' Association Appointed

The executive committee of the American Electric Railway Accountants' Association has filled the vacancy in the office of third vice-president of the association caused by the death of George G. Whitney, chief clerk Washington (D. C.) Railway & Electric Company. John J. Landers, auditor York (Pa.) Railways, has been appointed to fill out the unexpired term.

### New Company Members of Association

The number of manufacturing companies which have joined the association now number 158. The following is a list of those companies which have joined since May 31 and is supplementary to the list published in the issue of June 3:

Acme Supply Company, Chicago, Ill.; Allis-Chalmers Manufacturing Company, Milwaukee, Wis.; American Mason Safety Tread Company, Waltham, Mass.; Anderson Manufacturing Company, A. & J. M., Boston, Mass.; Atlantic Welding Corporation, New York, N. Y.; Atlas Railway Supply Company, Chicago, Ill.

Baldwin Locomotive Works, Philadelphia, Pa.; Bayonet Trolley Harp Company, Springfield, Ohio.

Carnegie Steel Company, Pittsburgh, Pa.; Chicago Varnish Company, Chicago, Ill.; Collier, Barron G., Inc., New York, N. Y.; Commonwealth Steel Company, St. Louis, Mo.; Consolidated Car Fender Company, Providence, R. I.; Cooper Heater Company, Carlisle, Pa.

Davis-Bournonville Company, Jersey City, N. J.; Dearborn Chemical Company, Chicago, Ill.; Differential Car Company, Nashville, Tenn.; Dossert & Company, New York, N. Y.; Duff Manufacturing Company, Pittsburgh, Pa.; Du Pont Fabrikoid Company, Wilmington, Del.

Eclipse Railway Supply Company, Cleveland, Ohio; Electric Railway Improvement Company, Cleveland, Ohio; Elcon Company, New York, N. Y.

General Railway Signal Company, Rochester, N. Y.; Green Engineering Company, Chicago, Ill.

Heath & Milligan Manufacturing Company, Chicago, Ill.; Holden & White, Chicago, Ill.; Hyatt Roller Bearing Company, Newark, N. J.

Imperial Car Cleaner Company, Newark, N. J.; Indianapolis Switch & Frog Co., Springfield, Ohio.

Jennison-Wright Company, Toledo, Ohio; Jewett Car Company, Newark, Ohio; Johns-Manville Company, H. W., New York, N. Y.

Laconia Car Company, Boston, Mass.; Lincoln Bonding Company, Cleveland, Ohio; Lord Manufacturing Company, New York, N. Y.

Mechanical Rubber Company, Cleveland, Ohio; Midvale Steel Company, Philadelphia, Pa.; More-Jones Brass & Metal Company, St. Louis, Mo.

National Car Wheel Company, Pittsburgh, Pa.; New Haven Trolley Supply Company, New Haven, Conn.; Niles-Bement-Pond Company, New York, N. Y.

Ohmer Fare Register Company, Dayton, Ohio; Oxweld Acetylene Company, Chicago, Ill.

Pratt & Lambert, Inc., Buffalo, N. Y.

Railway Utility Company, Chicago, Ill.; Roebling's Sons Company, John A., Trenton, N. J.; Root Spring Scraper Company, Kalamazoo, Mich.

Sonneborn & Sons, L., New York, N. Y.; Spray Engineering Company, Boston, Mass.; Standard Underground Cable Company, Pittsburgh, Pa.

Trigger Lock Reversible Controller Finger Company, Niagara Falls, N. Y.

Union Electric Company, Pittsburgh, Pa.; U. S. Electric Signal Company, West Newton, Mass.

Western Electric Company, New York, N. Y.; Wilson Corporation, J. G., New York, N. Y.

# Some Recent Advances in EQUIPMENT AND ITS MAINTENANCE

Steam Shovel with Small Clearance    An Ingenious and Practical Reeling Machine  
Geared Door Engine for New York Municipal Railway  
Made-Over Open Bench Cars    A "Stunt" for Use with Worn Button-End Axles  
Shorter Articles of Interest and Value

## Portable Motor-Driven Reeling Machine

BY S. L. FOSTER

Chief Electrician United Railroads of San Francisco.

In the *Street Railway Journal* of June 3, 1905, page 984, there appeared an illustrated article on the above subject describing an appliance that was being used to pull injured lead-covered street railway feeder cable out of the underground ducts in St. Louis and, in combination with a cutting and tearing off device for the lead covering, rapidly accomplishing the double purpose of reeling the insulated conductor up for use elsewhere as overhead feeder and of leaving the lead piled up separately at the mouth of the manhole. This scheme appealed strongly to the United Railroads although they had no lead-covered cable to pull out. As a result the device shown in the accompanying illustrations was constructed at once.

The appliance consists of a condemned Walker 25-hp. single-reduction, 500-volt car motor with a 4.78 to 1 gear ratio. On what corresponds to a 3.75-in. car axle is mounted a steel foot-controlled band brake 12 in. in diameter and 3 in. wide, and a 7.25 in. diameter fixed gypsy drum at one end and another gypsy drum and a six-toothed spur pinion for use with No. 88 sprocket chain or chain belt at the other end. These small drums are sometimes convenient for pulling ropes and straightening out annealed old trolley wire, thereby saving manual or horse power for lowering the filled reels, etc.

The 2-in. shaft on which the empty reel is to be placed is equipped with a 37-tooth sprocket wheel, a reel-driving bar or latch with adjustable dogs or pins for engaging in corresponding holes in the reel, and a suitable set-screwed collar for keeping the reel against the driving bar. It is mounted in inclined, hinged, babbitted, thrust bearings provided with swing bolts and large wing nuts.

The whole mechanism is installed on a 6-in. x 8-in. x 4-ft. x 8-ft. wooden trussed frame with sled ends shod below with ¼-in. sheet iron, and is suitable for being

carried on a low four-wheel, two-horse truck or on a flat car. In near-by city work the horse-drawn rig is used, but for country work the appliance is readily transferred intact to a flat car and operated from that location.

The motor is started and stopped by a GE Type K controller and suitable starting resistances and, when reeling up, the strain is held on stops by the foot brake.

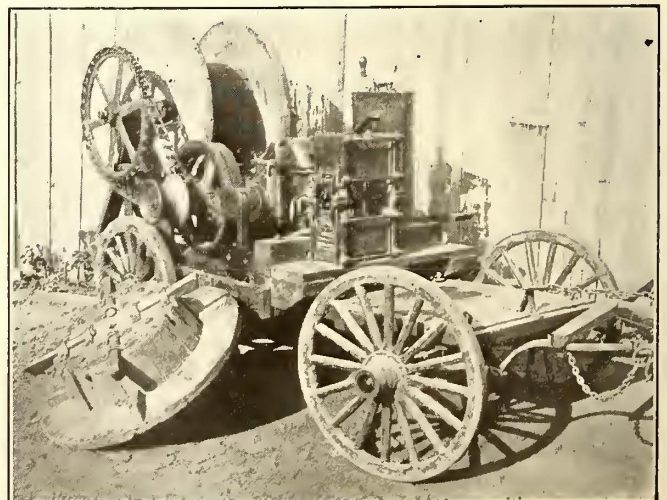
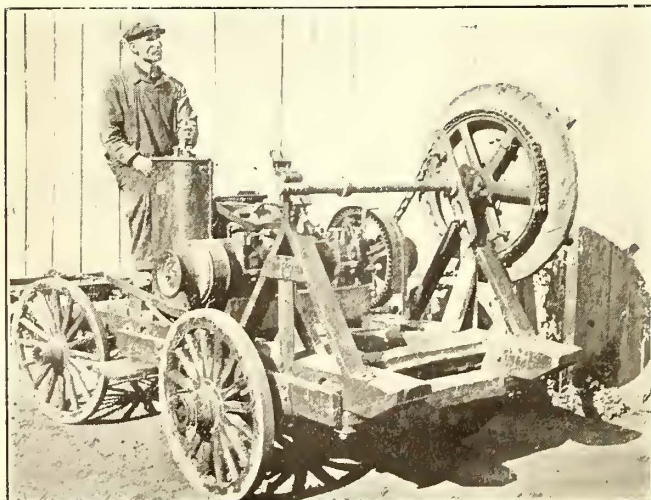
The connection to the trolley wire is made by a hooked pole and to the rail by a weight laid on the latter, though a poorer ground is often more desirable than the rail so as to introduce resistance and hold down the speed, for the appliance is over-motored for most purposes. To protect the mechanism from chance showers it is provided with a heavy tarpaulin cover.

Exclusive of the motor, controller and resistances which were considered about obsolete when acquired, this appliance probably did not cost much more than \$150.

During the past eleven years this labor-saving tool has saved its cost many times, being readily used to take down and reel up overhead wires of all sizes and kinds up to 1,000,000 circ. mil triple-braid weather-proof copper. Nothing larger than 1,000,000 circ. mil has been tried, as no cable larger than this is installed overhead in San Francisco. The machine has never failed.

A few months after it was built it became necessary to transfer several miles of 500,000 circ. mil cable from a suburban line where the density of traffic necessary for a certain race track had been found much less than had been anticipated. This line was constructed on a narrow right-of-way over the usual "fills" and "cuts" found on such routes. The use of horses and wagons was out of the question, and even room for setting up the empty reel was lacking.

The illustrated reeling machine was transferred from its wheeled carriage to a flat car, the feeder was cut up in lengths suitable for filling a reel, and the machine rapidly drew it off the cross-arms and turned it out



PORTABLE MOTOR-DRIVEN REELING MACHINE BUILT AND USED BY THE UNITED RAILROADS OF SAN FRANCISCO



reeled up ready for convenient transportation without interrupting the regular car service. The cost of going 15 miles to this job, taking down and reeling up the cable and bringing it back to the storeyard was \$3.50 per 1000 ft. On this length of feeder the saving, compared with the usual expense of taking down and reeling up 500,000-circ. mil cable by hand in city work where there is ample room to handle men and teams on the ground, more than repaid at once the full cost of constructing the reeling machine.

Since then it has been used a surprising number of times with strikingly rapid and efficient results as, for example, in taking down long lengths of 1,000,000-circ. mil cable put up temporarily for special aeroplane exhibits at distant parks; in transferring heavy feeders from one street to a parallel street to escape the necessity of putting them underground or because the franchise had expired and the municipality had constructed a line on the abandoned route; in removing at the rate of 18,000 ft. per day, from among numerous foreign wires on a business street, 20 miles of No. 0000 11,000-volt a.c. cable from 50-ft. and 60-ft. poles where replaced by underground conductors; in transferring conductors from reels crushed in transcontinental transportation to new reels or from one reel to another to secure exact linear measurements in disputes between company and wire contractor; in reeling up spliced-up pieces of conductors, etc.

The facility, safety and speed with which the United Railroads' overhead conductors can be drawn off the poles in long, continuous, reel-filling lengths by this appliance is due principally to the tapered form of brass splicer used on these conductors, descriptions and illustrations of which appeared on page 955 of the Nov. 6, 1915, issue of the ELECTRIC RAILWAY JOURNAL. These double-tapered splicers are slightly, if any, larger in diameter than the weatherproof cable and readily slide over the cross-arms without any attention.

If a feeder happens to be on the end pin of the cross-arm on the track side of the pole with the spanwires attached above the feeders and there are no interfering foreign service wires crossing the street under the feeder, it can be taken down by this appliance without running any risk of the weatherproof insulation being abraded by being dragged over the cross-arms or along the ground. The conductor can be cast off one cross-arm after another as the 25-hp. motor on the machine performs at the same time the double task of driving the wagon or flat car along the street or rails and of snugly reeling up the taut cable.

In transferring feeder cable from one street to another, if the distance is short the reel, still in place on the machine, is hauled to the new location, the cable drawn off and only a single empty reel is required for the whole transfer of miles of cable from pole line to pole line.

In removing a full reel from the machine the sprocket chain is opened at the key link by a special sprocket-chain wrench, planks are inserted under the flanges of the reel, the slant hinged shaft bearings at either end are opened by the wing-nutted, hinged bolts and the reel and shaft together allowed to slowly roll to the ground or waiting vehicle, the speed being controlled by ropes snubbed around the gypsy drums on the ends of the motor gear axle. When pulling cable off the reel while still in the machine the sprocket chain is cast off.

Even when in the linemen's quarters this reeling appliance is made to earn its interest and upkeep by having a half reel equipped with a 2-ft. diameter taper drum attached to the spokes of the overhung sprocket wheel for making up short handcoils of strand or trolley wire for the repair crews. The galvanized cable comes in

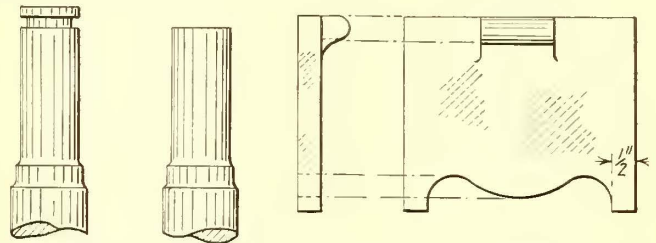
mile lengths entirely unsuitable for use on ordinary maintenance work. By means of the reeling machine these mile lengths are cut up cheaply by apprentices into 250-ft. coils ready for the linemen to hang up on their cars or wagons. It should be added that before the outside men get these short coils the strand is given two coats of linseed oil paint by immersion. Trolley wire also is made up by the reeling machine into coils of convenient size for use by emergency men. Four 2.5-in. by 1.5-in. removable oak pegs are inserted around the periphery of the half reel at the flangeless, smaller end of the tapered drum to retain the coil of strand until it has been securely tied, cut off and is ready to remove for painting.

## Another Scheme for Reclaiming Worn Button-End Axles

BY J. S. MILLS

Foreman Electrical Department Morris Park Shops, Long Island Railroad

The writer has noted the method used in renewing button-type journal ends by J. N. Graham, master mechanic of the Rockford & Interurban Railway, which was described on page 89 of the Jan. 8 issue of the ELECTRIC RAILWAY JOURNAL, and also the article by A. H. Thompson, carshed foreman Christchurch (New Zealand) Tramway Board, described on page 788 of the issue for April 22. A scheme was tried by the writer some time ago in which the button-end of the axle was cut off and a special check plate was used to prevent end play, details of which are shown in the accompanying illustration.



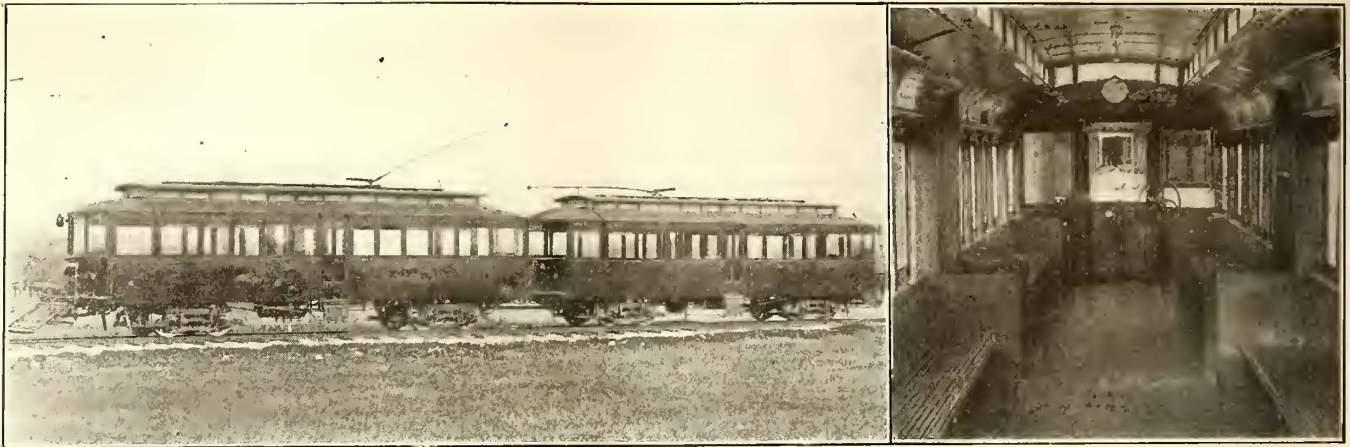
Journal before and after removing button-end. Redesigned check plate

SKETCHES ILLUSTRATING METHOD USED IN RECLAIMING WORN BUTTON-END AXLES

When the check-plate groove in the end of the journal became worn, the axle was placed in a lathe and the button cut off flush with the inside edge of the check-plate groove. The check-plate was then redesigned so that it fitted up squarely against the end of the axle after the button-end had been cut off. The redesigned check-plate was cast of brass and touched up on an emery stone, thus eliminating the machine work and materially reducing the cost of the check-plate. In order to hold the check-plate down after it was in position a 13/32-in. hole was drilled through the side of the journal box and a 3/8-in. bolt was inserted. A nut and a lock washer were then put on outside of the journal box.

Axles reclaimed by this method have been in use for more than two years with hard service over a rough roadbed, and have given less trouble than axles used with the old-style check-plate.

If it is desired to renew worn button-end axles on small roads when a lathe with sufficient swing is not at hand, these buttons can be cut off with a hacksaw and the ends of the journals smoothed up with a file. This scheme can also be applied to new journals, and will reduce the cost of both labor and material.



TRAIN OF REMODELED OPEN CARS; INTERIOR OF REMODELED OPEN CAR

## Rebuilt Cars for Rush-Hour Service

BY CARROLL H. SHAW

Electrical Engineer Sheboygan Railway & Electric Company, Sheboygan, Wis.

This company has recently placed in daily operation a permanently coupled, two-car train that is made up of two rebuilt Brill Narragansett open cars. The train is operated between Sheboygan and Kohler, a distance of approximately 4 miles, and is used exclusively to carry workmen to and from a large manufacturing plant located in the latter village. About 1000 passengers are carried each way daily, and as a majority must be handled before 7 o'clock in the morning and between 5.30 and 6 o'clock in the afternoon, the capacity of the cars that were available before this new equipment was added was taxed to the utmost.

Before these cars were rebuilt they were used only a few hours a year, principally on special occasions such as circus days, holidays or Sundays, and it was felt that if they could be reconstructed to serve throughout the year it would be much better than to purchase additional cars, which would themselves be used but part of the time.

The cars are 41 ft. 6 in. long over all and are 9 ft. 2 in. wide. Each car was equipped originally with fourteen cross-benches, seating capacity, seventy; two 38-hp. No. 401 Stanley motors; Type K-11 control, hand brakes, and Type 27-G Brill trucks with 33-in. wheels. The framing is of wood with 4½-in. x 6-in. sills.

In rebuilding, all of the cross-seats were removed, a new floor was laid, and, with the exception of the openings in the center of the cars for the doors, the sides were sheathed throughout with No. 14 gage sheet steel. The cars are coupled together permanently, 22 control wires being carried between the cars through specially designed terminal blocks which can be opened in case of emergency. The new control is Type K-6, and is arranged for double-end operation. All of the starting grids are located on one car so that in case the train is cut in two one car cannot be operated.

New equipment consisting of straight air brakes, with GE CP-25-C air compressor, and Eclipse Type C fenders has been added. The old trucks, motor equipment and hand brakes have been retained.

The seats are now arranged about the sides of the cars with a total seating capacity of forty. The doors, which are hand operated, have a 27-in. opening, and the three steps are 14 in., 13 in. and 13 in. respectively with treads of 12 in. and 8 in. The doors are single fold. Ten 96-watt Mazda lamps are used in each car for lighting.

The cost of the complete reconstruction is shown in

the accompanying table, and represents the full cost of changing the two cars from their original design to the completed two-car train as shown in the illustrations.

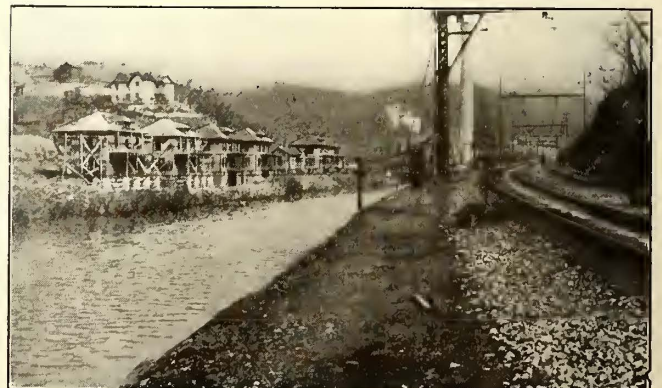
Car bodies: Material.....	\$665.22
Labor .....	709.15
Electrical equipment: Material.....	211.73
Labor .....	59.11
Total .....	\$1,645.21

In its operation the train is giving excellent service, and since the expense of its construction was far below the cost of providing similar capacity by any other means, the officials of the company feel that this method of utilizing old equipment that was still in good condition is an ideal solution for this particular transportation problem. From the operating point of view the important thing accomplished is the more effective use of the equipment resulting from the remodeling

## Company Houses on the Norfolk & Western Electrification

The accompanying illustration shows a number of houses which have been built recently by the Norfolk & Western Railway for the accommodation of the employees of the power house and line department at Bluestone Junction, W. Va.

These are modern, eight-room houses with all conveniences, including heat, electric light, etc. There are six new houses in all, in addition to a section house which had been erected some time previous. Four of the houses are now occupied while two are still in the course of construction.



COMPANY HOUSES RECENTLY BUILT AT BLUESTONE JUNCTION, W. VA.

## Steam Shovel Requires Only 8-ft. Clearance

In connection with the rehabilitation of 2½ miles of double track in Youngstown, Ohio, the Stone & Webster Engineering Corporation, in executing a contract for the Mahoning & Shenango Railway & Light Company, employed a steam-shovel tractor which required but an 8-ft. clearance. As shown in the accompanying illustrations, this shovel excavates a 9-ft. trench in rehabilitating a double track, without interfering with the traffic on the adjoining track. The feature of this shovel which makes operation within this limited radius possible, is that the boom is pivoted and swings independent of the power end of the equipment. Another feature of this shovel is that it leaves practically a level trench behind, since the boom, in the excavating position, is lowered parallel with the sub-grade and the shovel advances along the bottom of the trench until the teeth penetrate the material to be removed. When the bucket is filled the boom is elevated and swung over the wagon or truck placed on the clear side of the trench, where the flap bottom is released to dump the material.

This shovel is manufactured by the Keystone Driller Company, Beaver Falls, Pa., and it is operated by two men, one to handle the power end and the other the boom. It is equipped with ½-yd. bucket, which slides back and forth on the boom, its operation being practically the reverse of that for a dragline excavating equipment. In the work done in Youngstown, after the old rails and ties had been removed, no plowing was required, since the direct horizontal pull of the bucket along the bottom of the trench forced it into the material to be excavated. Besides the engineer and fireman, no additional help was required other than the occasional assistance of the track force in case the bottom of the trench became unstable. The shovel is mounted on broad-flanged tractor wheels, and it can move forward with its own power. The wheels are locked in any operating position so that the shovel can resist the backward action of the bucket when loading.

The standard construction adopted for this section of track, which is the main traffic artery of this railway, and serves both the street and interurban railways, includes International steel ties, 134-lb. grooved-girder rail supported on a solid concrete foundation. Brick paving laid on a sand and cement cushion with a tar filler, was also adopted for this work. The steel ties were placed at 6-ft. centers and the concrete foundation took the form of a supporting beam beneath the rails and around the channel ties, but only in a sufficient amount to incase

them and form a foundation for the pavement. A tile drain was also installed along the center line of the devilstrip in order to insure a perfectly stable sub-grade. After the rail was laid and fastened to the ties, the track was brought to a permanent line and surface, and the concrete was deposited in place. Temporary joints were applied during the concreting operation, but these were subsequently replaced by Goldschmidt thermit insert welded joints, following which the rail heads were carefully ground to perfect surface.

## The Door Engines of the Latest 250 New York Municipal Cars

The electro-pneumatic door engines for the latest 250 cars of the New York Municipal Railway Corporation reveal the remarkable demands set by present rapid transit operation contrasted with what was considered amply satisfactory little more than a decade ago. In 1903, when the first New York subway was opened, and for some years thereafter, hand operation for doors seemed sufficient. Then came the reconstruction to the center-door type which made power control a necessity, and, finally, the car in which both the end and side doors are power-operated. With each change has come an acceleration in passenger handling which is of the utmost importance on short headway, high-speed lines.

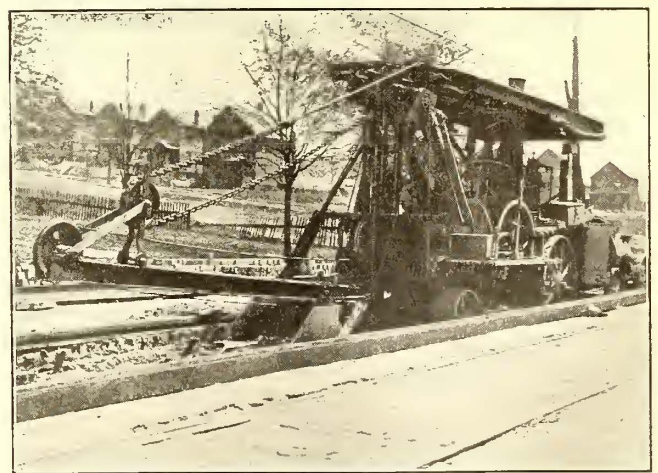
While the New York municipal engineers had the experience of other subway operators as a most helpful basis for study, they had to provide for a distinctly different kind of rapid transit operation with a car of entirely new design and of exceptional length and width (67 ft. x 10 ft.). That one man in the center of the car should be able to control six pairs of doors (three per side) together or singly was perhaps the most novel of the conditions to be cared for. The following paragraphs set forth the specifications and the way they have been met in the National Pneumatic Company's equipment as furnished by the Sayre Company.

### DOOR CONTROL REQUIREMENTS

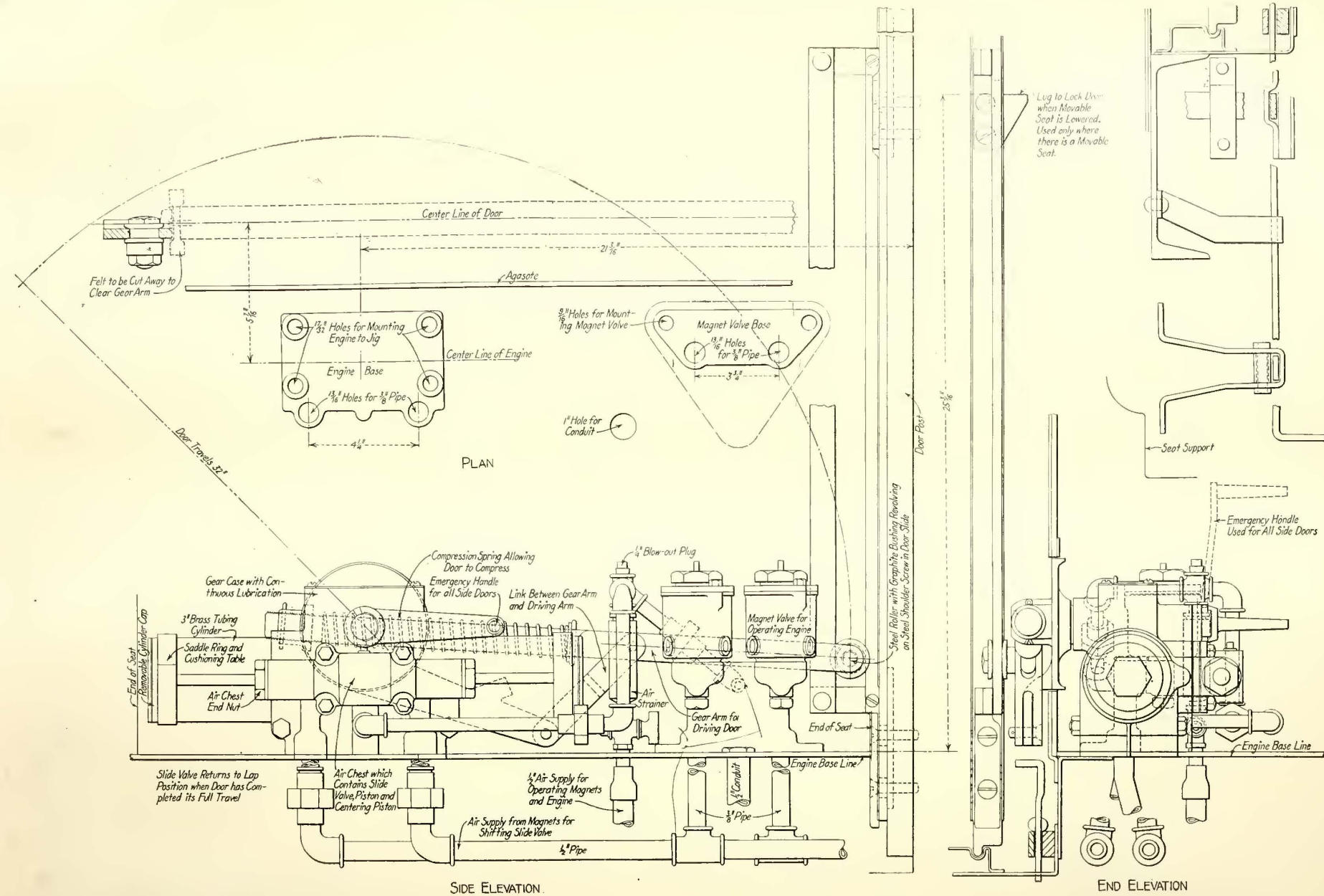
The space available made it necessary to design an engine of greater compactness than had ever before been produced. Another limitation imposed was that of weight. It will be recalled (see *ELECTRIC RAILWAY JOURNAL* for June 6, 1914, page 1261) that existing elevated structures had been reinforced to carry an axle load not exceeding 30,000 lb. Hence every part of these cars, from body to door mechanism, had to come reasonably close to the weight estimates made by the New



LIMITED CLEARANCE STEAM SHOVEL IN DUMPING POSITION



LIMITED CLEARANCE STEAM SHOVEL IN LOADING POSITION



Drawing Presenting Principal Features of Pneumatic Door Engine Used on New York Municipal Railway

York municipal engineers. Thus, despite the provisions for withstanding vibration and rough treatment by passengers, the fourteen-door engines per car (twelve for the side doors, two for the end doors) weigh only 462 lb. without the piping, and 742 lb. with the piping.

Because of the large number of engines per car, economy in the use of air was strictly enjoined. To guard against all air leakage as far as possible, the valve mechanism of each engine is so arranged that when the door is entirely opened or closed the air supply is cut off at the engine by means of a slide valve, which in turn is operated by small electro-magnetic valves. This slide valve governs the supply of air from the main reservoir. Thus, any possibility of leakage beyond the piston leathers, except while the door is at its actual opening or closing movement, is eliminated. Since this engine exhausts the compressed air, it is possible for a station platform guard to close the door by hand.

Both of the end doors which communicate from one car to the next and all the side doors can be opened mechanically in an emergency. For inside mechanical operation, small handles, located under a seat adjacent to the door, are installed on the main shaft of the engine. These handles are keyed to permit operation in one direction only, being idle until they are picked up. For outside mechanical operation in emergency there is a trigger underneath the car, so connected to the engine arm that the arm can be raised independently of other power.

As one guard operates all the doors on one side of the car and the two end doors from one position at the center of the car, it was necessary to use door engines the valves of which are controlled electrically by means of push-buttons in a push-button group at the center of the car.

The danger that a passenger will be caught in a closing door is avoided by the use of a flexible connection between the door engine and the door itself. This connection allows the door to be forced in an opening direction 5 in. after the door engine has completed its cycle in the closing direction. Consequently, the passenger can remove his arm or foot from the door after it has been closed by the engine. On the other hand, if a door, while closing, is obstructed and brought to rest by such obstruction, the door will not slam when

the obstruction is removed, but will continue in the closing direction at its normal speed.

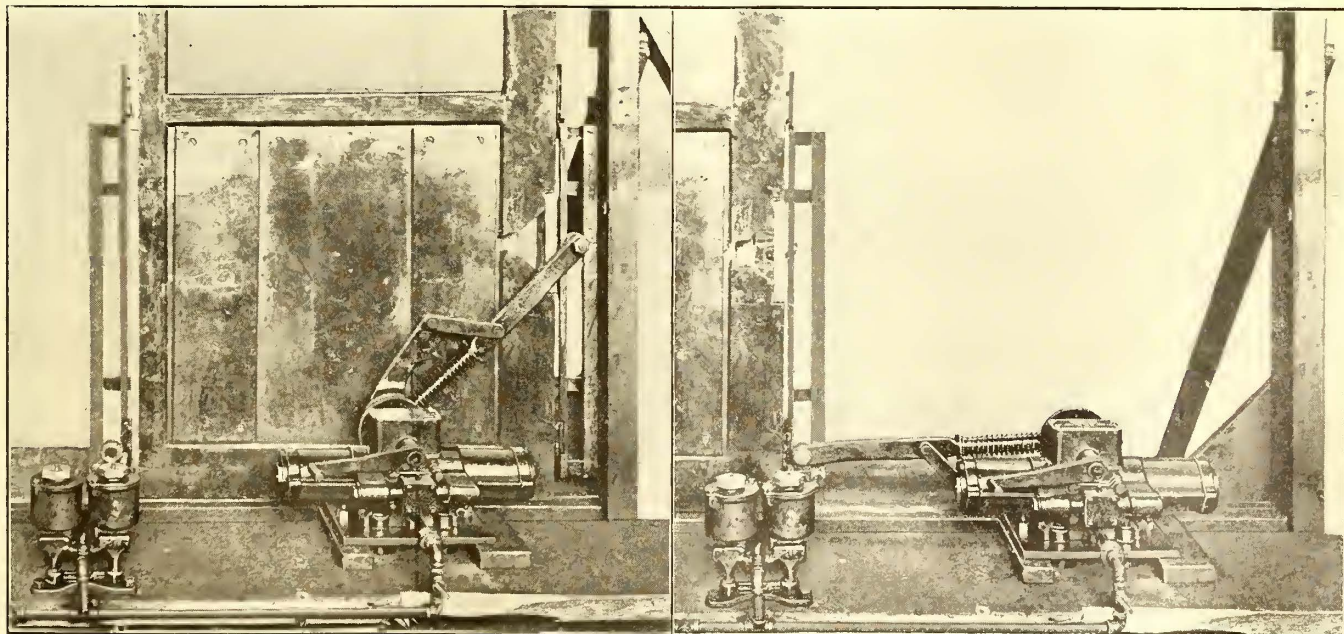
To make the cushioning of the door positive and uniform at all times a non-adjustable cushioning device was built into the engine at the time of manufacture so that the cushioning period could not be changed arbitrarily.

A time limit of one and one-half seconds for opening and two seconds for closing from the instant the control buttons are pressed was established after careful thought as to the fastest speed at which door could be safely operated. This performance is based upon an air pressure between 90 lb. and 100 lb. A variation of 10 per cent is allowed within a temperature range of from zero to 100 deg. Fahr. Should conditions so require, the time limits named could be altered without difficulty. Last winter's operation of the first fifty of these equipments developed no appreciable differences in operation at the summer maximum and winter minimum temperature.

One point in the specification was that the door engine must be capable of making some 300,000 operations between periods of lubrication. These engines are fitted with a central lubricating system which not only lubricates the rack, gear, gear shafts and piston washers, but also the valve and the valve operating mechanism. It is possible to run the engines a much longer period than specified without renewing the lubricants, because all parts run in a continuous bath of grease.

As folding seats are used in front of each pair of doors during the lighter hours of the day, the engines include mechanism for both the mechanical and pneumatic locking of the door behind such of these seats as are in use.

As a substitute for the counterbored cap employed to waterproof the outside ends of armature bearings, a cap made of twenty-six gage tin, costing about one-tenth as much, is now used by the mechanical department of the Kansas City (Mo.) Railway. The tin cap is set over the end of the armature bearing and a special crimping tool is then applied to clamp it in place. In order to fasten the tin cap securely to the bearing, a tapered slot is cut in the bearing near the outside end. The tin cap is then crimped into this slot, where it holds securely until the bearings are renewed.



VIEWS OF NEW YORK MUNICIPAL PNEUMATIC DOOR ENGINE INSTALLED FOR TEST PURPOSES

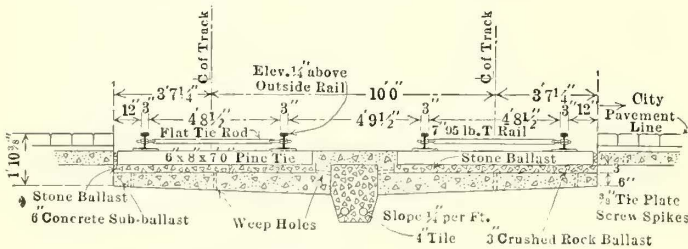
### Proposed Milwaukee Track Standards Track Sections Suggested by the Company Section Are Illustrated

QUESTIONS of operating and engineering standards for the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., are being referred to the various committees of this company's section of the American Electric Railway Association. In the fall of 1915 committees were appointed to investigate and report on the construction of time-tables, schedule speed, roadway, track-zone paving, special work, design of cars, cost of service, rules and regulation, profit-sharing plans, appraisals and employees' co-operative activities.

these various committees, and in some instances definite recommendations have been made. For instance, the roadway committee has submitted proposed standards for concrete headwalls for cast-iron pipe culverts, a standard highway crossing construction, a standard roadway section for single track on a private right-of-way, for double track in cuts and on embankments. Two types of paved standard track construction for city streets were also recommended, one a plain ballasted construction which has been used quite generally in Milwaukee, and a proposed new type of construction with a concrete substructure and provisions for drainage. This standard cross-section and the one for single and double-track roadways on private rights-of-way are shown in the accompanying illustrations.

### Storage Battery Markers for Emergencies

As a safety precaution the Kansas City (Mo.) Railway carries on each of its cars a tail lamp with a 10-in. red glass lens mounted on the dash and two red markers with 4 1/2-in. lenses. When the trolley energy supply is interrupted the tail lamp and markers are lighted from a 40-amp.-hr. 4-volt storage battery which is automatically cut into the circuit by a small relay. This storage battery is recharged every forty-five days and has not been floated on the line in order to obviate difficulties which might arise on account of a short-circuit. A switch is interposed in the storage-battery circuit so that it may be cut out of service when the car is in storage. This system of emergency lighting has been in service for some time and has proved very satisfactory.

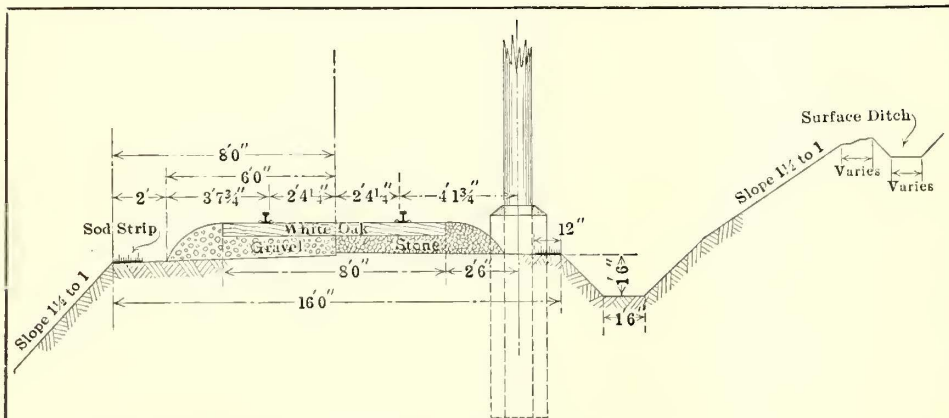


PROPOSED NEW TYPE OF TRACK SUBSTRUCTURE

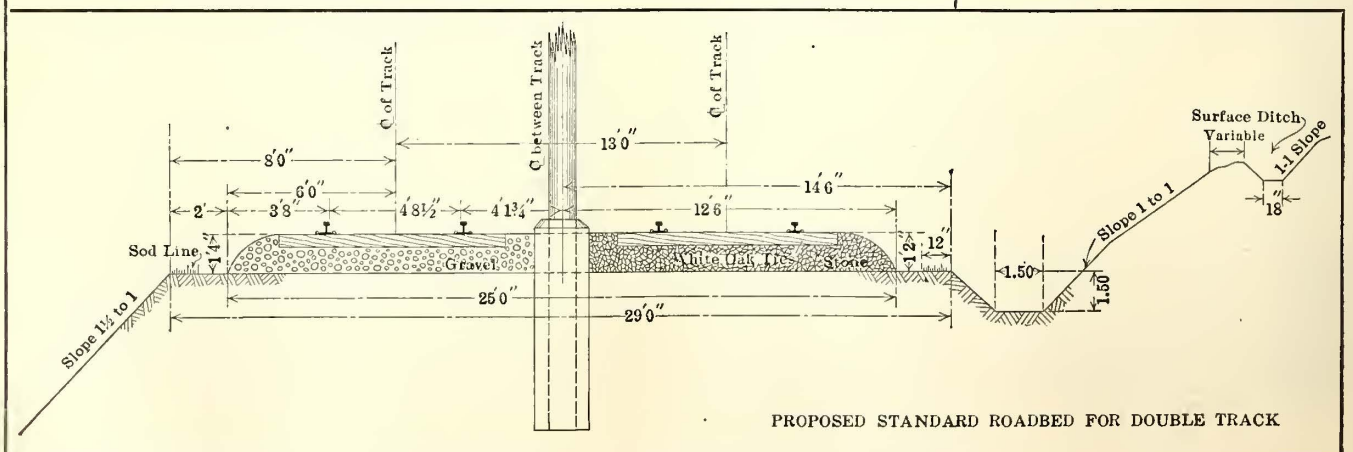
As will be observed, the scope of the work assigned to these various committees includes the more important divisions of the company's railway operations, and each committee is required to make at least two reports during the year. In addition to the foregoing committees, a committee composed of members whose interests cover the various phases of railway operation was also appointed to review the technical press each month. These reviews are mimeographed and distributed among members, and they contain a ready reference of the more important articles appearing in the current issues. During the year progress reports have been made by

Broken trolley poles are now being fitted with sleeves and welded together with oxy-acetylene for \$1.10 each in the shops of the Kansas City Railway Company,

Kansas City, Mo. It has been the practice in the past to weld these trolley poles together without a sleeve, but they failed by breaking. The sleeve consists of a 6-in. section of seamless steel tubing with a 3/32-in. wall. The ends of the sleeve are bored out so that they will fit the ends of the trolley pole perfectly. The ends of the broken trolley pole are then slipped into this sleeve and the welding is then performed on a special table fitted with clamps to hold the work securely in position.



PROPOSED STANDARD ROADBED FOR SINGLE TRACK



PROPOSED STANDARD ROADBED FOR DOUBLE TRACK

## NEWS OF ELECTRIC RAILWAYS

### STRIKE DECLARED ON NEW YORK SUBURBAN LINE So-Called Experience Ordinances Add Unusual Complication to Orderly Operation of Cars

The trainmen of the Yonkers Railroad and the Westchester Electric Railroad, which are included in the system of the Third Avenue Railway, New York, are on strike, and no cars are being operated in Yonkers, Mount Vernon and New Rochelle. The strike was declared on Saturday, July 22, after the men who are affiliated with the local Amalgamated union had voted to go out if the company decided not to meet their demands with respect to wages or to arbitrate the differences over the wage scale. The men demanded an increase in pay of 5 cents an hour over the present rate of 25 cents an hour for the first year and 28 cents thereafter. This demand was refused by Edward A. Maher, vice-president and general manager of the Westchester Electric Railroad, acting for that company and for the Yonkers Railroad in the absence of Frederick W. Whitridge, president of the Third Avenue Railroad, who sailed recently for Europe.

Before he left for Europe Mr. Whitridge made an offer to the men of 26 cents an hour for the first year of service, 29 cents for the second, third, fourth and fifth years and 30 cents after five years. The men considered this an unequal increase and rejected it. Mr. Whitridge in a public announcement of an interview with the representatives of the men said that he had increased the wages of the men on the system to the amount upward of \$500,000 annually. He said that the situation as to wages had changed materially in the last few years. He therefore proposed to put all men with the exception of those who ran storage-battery cars on the same basis, with pay on the sliding scale previously mentioned. Everything had gone up in price except the rate which the railroad could charge to the public. Hope for the company lay in the exercise of ingenuity, skill, proper work and increased business. Ingenuity, skill and labor could do no more for the company. Increased traffic would help out, but he did not see how it was possible for the company to pay more than it was now doing until there was some possibility of getting larger compensation from the public.

On July 24 the Yonkers Railroad and the Westchester Electric Railroad carried in the daily papers in the territory in which they operate an advertisement which read: "We desire herewith to notify the employees of the Yonkers Railroad and the Westchester Electric Railroad who went on strike on July 22 that all of such employees who report for work on or before July 27 will retain their rate and place to which they were entitled on July 22. After July 27 any former employee applying for reinstatement will, if he is accepted, be re-employed as a new man and will receive the rate and place of a new man."

The situation in the territory in which the companies operate is complicated by the fact that there are ordinances in Yonkers, Mount Vernon and New Rochelle which prohibit the employment of any man as a motorman or conductor on the city lines unless he has fifteen days' experience on these same lines. The ordinances pretend to be measures of public safety. Mr. Maher for the companies stated that the so-called experience ordinances, passed at the request of the unions, were considered by the officers of the company to be unconstitutional, but that the companies were willing to abide by them so long as they remained in force.

In an effort to compel the companies to restore service at once, Corporation Counsel Curran of Yonkers went to Albany on July 25 to demand that the Public Service Commission for the Second District take action toward annulling the charter of the Yonkers Railroad if it did not resume the operation of its lines without delay. Mayor James T. Lennon is said to have approved this demand.

The tie-up of the lines has worked an unusual hardship on the residents of the territory affected. The New York, New Haven & Hartford Railroad and New York & Port Chester Railroad are taking care of the people whose destinations

are in Manhattan and the Bronx. The frequent trains on these roads also serve to furnish some sort of local transportation. New Rochelle, however, was completely tied up save for the main line of the New York, New Haven & Hartford Railroad and the New York & Port Chester Railroad.

On July 27 the strike was extended to the lines of the Union Railway, another Third Avenue Railway subsidiary, which operates in the borough of the Bronx. The company was prompt to resume service there.

The Yonkers Railroad and the Westchester Electric Railroad were prompt to issue to the business men and residents of Westchester County a statement giving the facts concerning the questions at issue. This statement, 16 in. by 12 in., was arranged for poster display and was very effectively paraphrased. It follows in part with the paragraphing eliminated for purposes of economy in space:

"The wages of these employees have been increased twice within the past six months. They have made a further request for an increase, which request has been refused by the companies, and has resulted in this strike. Since 1908 these two companies have been operated at a loss of \$488,000, or about \$54,000 a year. Despite this fact, during the same period, the wages of the motormen and conductors have been increased from 30 to 38½ per cent. During the past week 50 per cent of the men who worked seven days received more than \$21 a week, and 17 per cent received more than \$22 a week. Statistics published by the American Electric Railway Association, showing the rate of wages paid by fifty-two of the principal electric street railways in the State of New York, show two roads pay a higher rate, five roads pay a maximum rate as high, forty-five roads pay a lower rate than is paid by the Yonkers Railroad and the Westchester Electric Railroad. The officials of the companies feel that they have been more than just to the employees, and the duty that the officials owe to the security holders of the companies will not permit them to grant the unreasonable demands of these men.

"The real reason for this strike is not that the men are dissatisfied with the increased pay allowed, because, at a conference held with the officials of the companies and a committee representing the men, on July 11, the chairman of this committee, Mr. Hoey, among other things, said: 'There is no dissatisfaction among the older men. Of the 477 motormen and conductors employed on the lines of the Yonkers railroad and the Westchester electric railroad, only ninety men have served less than one year, or 19 per cent of the total number. So that 81 per cent of these men are 'older men.' The real reason for this strike is that the officials of the companies decline and refuse to deal with the motormen and conductors, except as employees of the company, and not as representatives of Local 490 and Local 498 of the Amalgamated Association of Street & Electric Railway Employees of America. The whole situation may be briefly summed up in this question: Shall these roads be operated in the interests of the people who have invested their money in them, the general public and of the employees? or shall the employees be permitted to dictate entirely the policy of the operation of the roads?'"

Seymour Van Santvoord, chairman of the Public Service Commission for the Second District of New York, announced at Albany on July 26 that every possible effort would be made by the commission to aid in bringing about an early settlement of the strike. He said that inquiries had already been started by the commission and that a conference with the railroad officials would be held within the next few days. The chairman's statement is as follows:

"In its petition under date of July 22 the city of Yonkers, through its Mayor, James T. Lennon, has petitioned the commission 'to compel the Yonkers Railroad to comply with the provisions and conditions of its several franchises granted to it by the city of Yonkers and to run its cars in compliance therewith,' and also for an order compelling the railroad 'to live up to the conditions agreed upon between the

railroad company and its employees made before the Public Service Commission of this district on Jan. 15, 1913.' The petition alleges that in a similar dispute between the railroad and its employees in 1913 the company agreed that the matter should be settled by arbitration, but that its officers now state that during the absence abroad of the president of the company no one has power to agree upon arbitration.

"On the occasion of a previous strike upon the Yonkers railroad in 1913 this commission very clearly pointed out the considerations which made it impossible for this body to compel an adjustment of the controversy. These considerations were that if the commission made an order directing the road to resume operations the corporation would decline to obey the order on the ground that the so-called fifteen-day ordinance would prevent it from operating its cars by motormen or conductors who had not first received fifteen days' instructions on the street railway lines of the city, fortified by a proper certificate of fitness from a competent instructor. In such case the only redress would be application for a mandamus to compel obedience to the commission's order. Such application would necessarily be denied if the ordinance were held valid, and if the ordinance by any chance were held to be void by the court, after the mandamus should be issued the only course for the company would be to operate its cars by strikebreakers, probably resulting in scenes of violence and possible bloodshed, because of which it would be a sharp question of discretion whether or not the commission should by its order bring about such a deplorable result.

"The commission is advised that the so-called fifteen-day ordinance of the city of Yonkers remains unrepealed. Moreover, under Section 42 of the Railroad Law, railroad corporations are compelled to subject to thorough examination all applicants for positions as motormen or gripmen as to their habits, physical ability and intelligence, and after being satisfied in these respects the corporation is compelled to place such applicants in the shop or power house, where they may become familiar with the power and machinery which they are to control; thereafter they must be placed on a car with an instructor, and after the latter is satisfied as to the applicant's capability for the position sought the fact must be certified to the officers of the company, and if appointed the applicants shall first serve on the lines of least travel. Any violation of these requirements is made to be a misdemeanor.

"Considerations which actuated the commission in 1913 appeal with equal force to the commission as now constituted, and accordingly as the case stands the commission decides that it is without authority to compel an adjustment of the present unfortunate controversy by any order which it may properly make."

Up to noon on July 28, the representatives of the Amalgamated had failed in their attempt to organize the employees of the Third Avenue Railway proper. Inspector Schmittberger of the New York police at first refused to permit policemen in uniform or plain attire to man the cars of the Union Railway. He asserted that he was acting under orders from Mayor Mitchel. After a conference of Deputy Commissioner Law with Police Commissioner Woods, however, a decision was reached to permit 100 policemen in plain clothes to ride on the cars.

#### TEXT OF UTILITY INQUIRY RESOLUTION

The text of the House resolution on government ownership or regulation of utilities, which has already passed the Senate and will probably have the signature of the President, follows:

"The committee is appointed to investigate also the subject of government ownership of all public utilities, such as telegraph, telephone and express companies, and railroads engaged in interstate and foreign commerce, and report as to the wisdom or feasibility of government regulation and control, as compared with government ownership and operation."

It is expected that hearings will be held by a sub-committee in the fall, and that a full report returned by the sub-committee will be presented to Congress in the first week of January, 1917. The investigation is a part of the general investigation of common carriers under the Interstate Commerce Commission.

#### LOYAL HARRISBURG MEN RECEIVE INCREASE

Company Refuses to Treat With Men Except as Individuals  
—Service Resumed in Part

The Harrisburg (Pa.) Railways on July 26 granted its loyal men a wage increase of 2 cents an hour and agreed to certain working conditions requested by a committee of the loyal employees. Fifty-six of the loyal employees met on July 26 at the request of F. B. Musser, the president of the company, and at his suggestion a committee was appointed to stand as a permanent grievance committee. This committee presented a list of suggestions as to a revised wage scale and working condition adjustments, and the company officials after discussing the matter at length agreed upon changes acceptable to the employees' committee. The schedule of changes is as follows:

1. Effective on Aug. 1 rates of pay of platform men will be as follows: First-year men, 24 cents an hour; second and third year men, 26 cents an hour; fourth-year men, 27 cents an hour; five-year men, 28 cents an hour.

2. Suburban men being relieved of their cars at the termination of the day's run, time will be computed exactly at relief on the hour of relief. Suburban crews being relieved of the cars at the carhouse, at termination of the day's work, if fifteen minutes late, will be allowed thirty minutes therefor. Less than fifteen minutes not to be regarded.

3. Passenger stations will be marked by the company by painted white poles and numbered in the suburban districts.

4. Emergency rope will be provided on all cars in case of line down or other emergency.

5. Toilets for the use of the men will be maintained at present locations until necessity may require changes, in which event arrangements will be made immediately for other points.

6. Extra cars crowded out on the Steelton Division due to be relieved at 9.30 p. m. will not be required for foundry work.

7. It is understood that the Fourth Street crew due to be relieved at 11.52 p. m. will not be used for further work on account of Sunday morning schedule.

8. Stools will be provided for the motormen on all cars, and a committee of the employees will be allowed to outline the radius for the use of these stools.

9. Employees agree in furtherance of this that all grievances by them shall be taken up by the company and not with the general public.

Mr. Musser stated to the ELECTRIC RAILWAY JOURNAL representative that the company will continue to refuse to recognize the local division of the Amalgamated Association. Mr. Musser said:

"We shall be glad at any time to treat with our employees as a body through their permanent committee, so long as they owe allegiance only to the company and not to the Amalgamated Association. By no means will we refuse to re-employ such men as have good records. Each application for re-employment will receive separate and individual consideration. We do not for an instant believe that all or even most of the men now on strike are bad. We do think they have been misguided and misled.

"The directors decided not to recognize the union. I alone could not have maintained that stand without knowing the opinion of the directors. It is not the intention of the company to recognize a union, then let the organization run the company at the expense of the convenience of the public in the future.

"The new men on the cars were brought here only because our loyal employees were intimidated after the riots of last Monday night. If the strikers do not return at once we will start to re-crew all of the cars. Every effort will be made to resume normal service on all lines as soon as possible.

"The new men will be kept here for the protection of the loyal employees and the company's property. When they are not needed any more they will leave. As soon as we can man all of the cars for regular service there will be no need to keep them here."

On learning of the increase in wages and the changes in working conditions the strikers announced that a statement would be made the following day.

On July 26 Mayor Ezra S. Meals declared that all jitneys will be run off the streets as soon as the company succeeds



in operating its cars on regular schedule. The Mayor also declared that recognition or non-recognition of the union should not be allowed to stand in the way of a settlement of the strike.

On July 21 Mr. Musser met a committee of the strikers to discuss the situation. The committee refused to treat with Mr. Musser except as the recognized committee representing Division 709 of the Amalgamated Association. Mr. Musser insisted he would not discuss grievances with any of the employees except as individuals, and the strikers' committee accordingly retired.

Fifteen cars were operated on July 21. They were protected from violence by a corps of seventy deputy sheriffs who patrolled the lines throughout the city. The crowds in the down-town section were much quieter than at any other time since the start of the strike. One of the reasons for the quieting down of the crowds is believed to have been the issuing of a statement by District Attorney Michael E. Stroup in which he announced that he would prosecute to the full extent of the law any person arrested on violence charges. He said further that it was the duty of all citizens to assist in preserving good order and in observing the law.

Mr. Musser declared in a statement to the press that as the laws of Pennsylvania hold the county responsible for the damage done to cars claims will be presented to the proper officials.

On July 22 seventeen cars were operated and partial service to the suburbs was resumed. The jitney situation grew serious, however, and the newspapers rapped the police for permitting overcrowding and overcharging of passengers. Some of the men charged as high as a dollar to take passengers where the street cars ordinarily take them for a nickel. The strikers acted as dispatchers for jitneys throughout the day.

On the evening of July 22, traffic congestion reached its highest point since the start of the difficulties. The cars did not run late and the jitneys were unable to haul the thousands who always come to the central part of the city on Saturday evening. On July 23, twenty cars were operated, but they carried few passengers.

Chairman McLaughlin, for the strikers, issued a statement on July 24 setting out the position of the men. This statement accused the company of taking an arbitrary stand when the committee tried to meet and adjust the situation without a strike. In this statement Mr. McLaughlin said that so far as the street car men themselves and their organization was concerned, they were ready and willing to meet with the company officials to take up the grievances of the men, but they felt that they had as much right to have a man on their committee to represent the association as Mr. Musser had to have an attorney advise him in regard to any steps taken by the company.

On July 25 an incessant rain drove hundreds to ride on the cars, as many of the jitney men took a day off rather than get their cars wet. There was no disorder during the day, but near midnight three sticks of dynamite and a vial of nitroglycerine were found in a switch near Rutherford station on the Hummelstown line, fortunately before a car had crossed the point.

Following a conference on July 27 with Mayor Meals and the City Commissioners, Mr. Musser announced that the company would meet no more committees from the union; that any men who walked out and wished to re-enter the employ of the company would have to make individual application; that enough men had been employed to re-man all the cars, and that regular schedules would be resumed shortly. At this conference Mayor Meals presented a proposed agreement placed in his hands by the strikers whereby the company would agree to meet a committee from Division 709 without formally recognizing the Amalgamated Association. Mr. Musser refused to consider this agreement.

The strikers and representatives of other labor organizations held a parade on the evening of July 27. About 600 men were in line. The crowds were small and orderly and cars were operated until late in the evening. Forty cars were operated throughout the day.

Mayor Meals announced on July 27 that jitneys would receive forty-eight hours notification to suspend operation "when we are ready to issue such orders."

## HEARING BUT NO ACTION ON NORFOLK FRANCHISES

The Councils of Norfolk, Va., met on July 25 as a committee of the whole to consider the proposed franchises to the Virginia Railway & Power Company. Only two speeches were made in opposition to the franchises. One of these was by the same man who has appeared in opposition to the grants at various mass meetings. He objected to the combination of the railway and lighting franchises, and to limiting to 500 yd. the distance over which a competing company may operate over the tracks of the Virginia Railway & Power Company. He also advocated six tickets for a quarter sold on the cars, stated that gas rates were too high and tax rates too low, and made numerous other criticisms. The other speaker talked along the same lines. The Councils also received resolutions from the Board of Supervisors of Norfolk County asking that no action be taken until expert advice had been secured. They want what they consider their rights protected in matters of taxation and fares, and do not consider that the city has a right to tax the company on earnings on railway and lighting lines in the county.

Henry W. Anderson, general counsel, spoke for the company and stated that the company was not asking for these franchises, but was willing to accept them in their present shape in order to settle differences between the company and the city. He stated that there was no mystery in connection with the franchises, that they had been passed upon by the city attorney and city electrician, and the committee composed of members of Councils and business bodies were familiar with all the details. The meeting adjourned at the conclusion of Mr. Anderson's talk, without taking any action, to meet again at the call of the chairman.

## HEARING BEGUN ON CINCINNATI VALUATION

The hearing on the tentative valuation of the property of the Cincinnati (Ohio) Traction Company, as made by the engineers of the Public Utilities Commission of Ohio, was begun before that body in Columbus on July 20. The commission is not satisfied with the company's valuation and the city claims that both the commission's and the company's figures are much too high.

The hearing is the result of an attempt to get at the value of the property for the purpose of readjusting the rate of fare, as provided in the franchise agreement. The commission has placed the value at \$24,333,947. The company's engineers claim a value of \$35,837,044. Ward Baldwin, the city's expert, fixed the value at \$11,969,284.

The company wants credit in its capitalization for the horses and mules that were worn out, the old inclines, cable lines and old horse cars. The superseded property in this item amounts to \$5,558,000. It also asks for an allowance of \$5,675,236 in return for the division of earnings it has paid the city since the road began operation under the Rogers law grant, and \$3,812,481 as interest during construction, discount, hidden costs, cost of omission and construction hazards. According to its estimates, the cost of reproduction of the tangible property would be \$27,640,490. The commission's engineers placed the reproduction cost, less depreciation, at about \$21,261,000.

Attorneys Lawrence Maxwell and Ellis G. Kincaid, President W. Kelsey Schoepf and Secretary Walter A. Draper represented the company at the hearing. The city of Cincinnati was represented by City Solicitor Charles A. Groom and Engineer Ward Baldwin.

The first witness called on July 20 was A. L. Drum, under whose direction the company's engineers made the valuation. Mr. Drum said he could not answer the technical questions regarding the work that had been done in making fills, cuts, etc., without the complete records and profiles before him. City Solicitor Groom complained because the witness could not give him details. Attorney Lawrence Maxwell arose and said that the examination of Mr. Drum was entirely improper, and that the city was attacking the commission's valuation and it should produce its evidence. Mr. Groom finally desisted but entered an exception to the ruling of the commission that this was the proper procedure. He then called Engineer Ward Baldwin, the city's expert, who testified in regard to an excavation in Eden

Park. The company's figures showed an estimate of 44,000 cu. yd. of earth that had been moved at prices varying from 50 cents to \$1 per cubic yard. Mr. Baldwin's estimate was 37,000 cu. ft. at 30 cents per cubic yard. Mr. Baldwin stated that he had allowed nothing for excavations in Highland Avenue, Harrison Avenue, Vine Street, Warsaw, Wilder, Burnet and Melish Avenues, because the tracks do not occupy them now. He claimed that, under the franchise, the company was to do this work and that the cost was properly an operating expense and should not be charged to capital account. If the allowances are to be made, he insisted that the company's figures are too high.

#### KANSAS CITY TERMINAL STATION ORDINANCE PRESENTED

The Interurban Central Station Company, composed of property owners, merchants and others, has asked the City Council of Kansas City, Mo., for an exclusive franchise for an interurban union passenger station, to be established, for a period of twenty-eight years, in the block between Ninth, Tenth, McGee and Oak Streets. The station building as projected would be at least six stories in height, 208 ft. by 132 ft., fireproof, and with walls and foundation strong enough to carry at least four additional stories. Interurban roads would enter and use the station as tenants only. They would have no part in the financing of the project. Section 16 of the Kansas City Railways franchise provides for an interurban passenger terminal, and as encouragement toward the building of such a terminal it stipulates that approximately 1 cent of each 5-cent fare paid by interurban passengers at the city limits, whether entering or leaving the city, should go to the station company in lieu of free public use of a commodious waiting room and the conveniences of a modern station. The officers of the Interurban Central Station Company are: C. C. Peters, president; R. A. Long, vice-president; Dr. W. E. Minor, treasurer; W. C. Scarritt, secretary; Scarritt, Jones & Miller, attorneys. The company is chartered under the laws of Missouri. The investment contemplated by the Interurban Central Station Company at Tenth and McGee Streets is approximately \$1,500,000. The company, in its franchise ordinance, pledges itself to complete the central station within two years, and as a guarantee offers a bond in the sum of \$50,000, to be forfeited if the station be not completed within the time and under the conditions of the ordinance.

#### EIGHT-DAY STRIKE IN WILMINGTON

The motormen and conductors in the employ of the Tidewater Power Company, Wilmington, N. C., who went on strike on the morning of July 4, returned to work on July 12, in accordance with the terms of an agreement reached through the efforts of a citizens' committee. Before beginning work each man signed an agreement to abide by the conditions of the settlement.

In a statement which he issued during the progress of the strike Hugh Mac Rae, president, said that the company recognized no differences with the men who left its employ on the morning of July 4. They acted voluntarily, declining the invitation of the officers of the company to further conferences after the company had made a full explanation in writing of the position it would be necessary for it to take and had given the men the reason why further concessions were impossible. Mr. Mac Rae said that the company conceded fifteen out of sixteen demands made upon it by the men, but declined the sixteenth because it involved absolutely the question of whether the officials of the company or the men should conduct the management. This was a matter of principle and not open to arbitration. The points which the company was willing to concede were matters of expediency and could have been arbitrated, but the company yielded immediately at the risk of being considered morally weak. Mr. Mac Rae said that while he could not assent to making a vital principle a subject of arbitration he recognized that the support of public opinion was essential to a public service corporation and would, therefore assent to a committee of 100 men considering the question of whether the position of the company was right

or wrong. If these men decided that the company was wrong he would resign his position as president of the company, dispose of his controlling interest, and in the future have no connection whatever with its affairs. If, on the other hand, it was decided that the company was right he would expect unqualified public support.

On July 12 Mr. Mac Rae said that in the settlement the officers of the company had yielded not a single principle for which they had contended from the first. The paramount and fundamental issue at stake was one of authority, and he declared that he had never abandoned the position maintained from the beginning that he could not assent to a division of authority with the conductors and motormen at a point where the company was held morally and financially responsible to the public. He stated that he believed in unions, but that he could never agree to share with others the authority that made him and his company solely responsible to the public.

The agreement which each employee signed on returning to work was concluded as follows:

"We understand further that this agreement, after we have accepted positions again with the Tidewater Power Company, is, as far as we are concerned, to be interpreted solely and absolutely by the citizens' committee, and each signer hereto agrees to abide at all times by the decisions of the citizens' committee and through Mr. Noe, its chairman, where powers and authority have been conferred on him."

#### SHORT STRIKE IN MEMPHIS

The employees of the Memphis (Tenn.) Street Railway went on a strike on July 22 to enforce their demands for the reinstatement of men alleged to have been discharged on account of their union affiliations, to secure recognition of the union, and changes in the wages and the hours of service. The company employs between 600 and 700 men. It operates 124 miles of line and more than 300 passenger cars. The representatives of the strikers claimed that all but 100 men went out.

The strike was of short duration, for on July 23 T. H. Tutwiler, president and general manager of the company, agreed to meet a committee representing the union in amicable discussion of questions of wages, hours of work, and other matters of mutual interest. All men discharged recently will be put back to work. Present or former employees of the company will not, however, be compelled to join the union.

An effort was made in the early part of the evening of July 22 to keep the service going, but by 9 o'clock not a car was moving in the downtown portion of the city, and but few were being run on the outlying line. There were very few reports of violence. Mounted police patrolled the downtown sections in addition to the patrolmen, and, as far as possible, kept the crowd on the move. Little direct attempt, however, was made by the police to prevent the striking employees from closing in on the cars and inducing the crews to quit work.

#### MR. DOHERTY OBJECTS TO CITY CHARTER AMENDMENT

At a conference on July 19 between the street railway commission of Toledo, Ohio, and Henry L. Doherty, Mr. Doherty objected to the proposed amendment of the city charter intended to give the city the right to purchase the street railway property at any time on the plan that is being formulated by the commission. He said that with the proposed amendments, the Council could at any time put the question before the people and that by pledging the general credit of the city, 20 per cent of the purchase price could be raised through bonds. Mr. Doherty indicated that he would be willing to sell the property at once, but not upon the plan that is being worked out now. He said that the satisfactory plan for an immediate sale would be a contractual relationship. The city could pay the company 80 per cent of the purchase price in bonds and secure the other 20 per cent through an increase in fares. He indicated that the term of five years would be the only satisfactory limit under the plan the commission is working out.

### UTILITY BOARD CREATED FOR NEW ORLEANS

#### A City Commissioner of Public Utilities and Four Others to Constitute a Local Board with Broad Powers

The General Assembly of Louisiana has passed an act amending the act incorporating the city of New Orleans so as to provide for a board of public utilities for the city. The measure has been signed by the Governor. The board is to be composed of a City Commissioner of Public Utilities and four other members who are qualified electors of the city. The members are to be appointed by the Governor. The term of office of the appointed members is to be four years, but the terms of the first members are to be for one, two, three and four years respectively. The men appointed to the board are to serve without salary unless otherwise provided by the Commission Council of the city. The terms of the members first appointed will date from Aug. 15, 1916.

The board is vested with authority to supervise and regulate the service rendered by all public utilities within the territorial limits of the city of New Orleans, and is authorized to fix reasonable and just rates of charges for the service and commodities supplied by the public utilities, to establish reasonable and just standards of service, to provide for accurate tests of the appliances for measuring the commodities supplied to the public, to prevent unjust discrimination and extortion in rates, charges, prices, fares, etc.

The board is empowered especially to require corporations and other agencies operating street cars or other instrumentalities for the carrying of passengers within the limits of New Orleans to adopt reasonable necessary safety appliances and sanitary regulations, to re-establish and relocate or extend the routes of the street railroad upon such terms as may be mutually agreed upon between the Commission Council and the corporations operating the properties, to require reasonable and adequate street railway service, and to require any public service utility as a condition of its being permitted to engage in business in New Orleans to secure a license, franchise or permit from the Commission Council.

The act says that it shall be lawful for every public service utility to establish a sliding scale of rates, fares or charges, provided that its schedule showing such scale of rates, fares or charges shall have first been filed with the Commission Council and approved by it, and that it shall be lawful for every public service utility to establish with the consent of the Council a scale of charges subject to automatic adjustment in relation to dividends to be paid to the stockholders or the profits to be realized by any single person engaged in a similar business. The Commission Council is empowered to delegate such of its powers and authorities to commissioners in the department of public utilities as may be necessary for the safe carrying out and execution of the purposes and provisions of the new act. The right of appeal to the court by any order of the Commission Council or the board is reserved to the utilities.

In commenting on the act, the New Orleans Railway & Light Company said:

"The directors, officers and management of the company entirely approve of this measure, both in principle and in its specific provisions. By it the company is assured a non-partisan board which will act upon all complaints brought to it by the public, and the board, acting for the public, must determine the justice or otherwise of such complaints. So far as the present law is concerned, we have nothing whatever to fear from it. We are conscious of the fact that the fundamentals of our several services are proof against attack. We are also confident that the company will get a 'square deal' from the board and that is all that we can ask for or should expect."

### STRIKE DEMONSTRATION BY SAN FRANCISCO MUNICIPAL RAILWAY MEN

A spectacular but vain attempt to precipitate a strike on the United Railroad lines was carried out in San Francisco, Cal., on July 14 by stalling cars on the municipal lines at Geary and Market Streets in such a position that both of the Market Street tracks of the private company were blocked.

The blockade was staged at 5.30 p. m. when there would be the greatest number of people in the streets and the greatest inconvenience to passengers. The municipal cars are equipped with Westinghouse type H emergency brake valves which can be thrown from either platform. Several successive cars were stalled by throwing this emergency brake just as the cars crossed the private company's tracks. It is believed that at least some of the mischief was done by strike sympathizers and not platform men. As the cars collected in the blockade a union organizer who has been active in San Francisco for some time trying to unionize the United Railroad platform men, led a mob in an effort to make the United Railroad platform men strike and leave their cars in the street. This they refused to do, and regular service was resumed in about half an hour. Meantime nine arrests had been made, including three municipal railway employees. At a hearing before the Board of Public Works of San Francisco on July 21 it developed that six municipal railway employees were implicated in the scheme. T. A. Cashin, superintendent of the municipal line, states that when the hearing has been concluded all city employees who have been shown to be involved will be summarily discharged.

**M. O. Ordinance Vetoed.**—Mayor Napoleon Rice of Roseburg, Ore., has vetoed an ordinance recently passed by the Council providing for the expenditure of \$300,000 in the construction of a municipal railroad between Roseburg and Rock Creek.

**Cape May Power Plant Destroyed.**—The power plant of the Cape May, Delaware Bay & Sewell's Point Railroad, the Ocean Street Passenger Railway and the Washington Street Railway, Cape May, N. J., was practically destroyed by fire on July 21, involving a loss estimated at \$100,000.

**Cape May Employees Strike.**—All the conductors and motormen on the Cape May, Delaware Bay & Sewell's Point Railroad, Cape May, N. J., and the Ocean Street Passenger Railway went on strike on May 20. The men were paid their June wages on July 19, but claimed that their first two weeks' wages of July remained unpaid.

**Iowa Road Not Sold.**—The sale of the property of the Chicago, Anamosa & Northern Railroad under foreclosure, set for July 11, was not held. It was reported in May that the road would probably be taken over by the Waterloo, Cedar Falls & Northern Railway, electrified and made part of that system. The Waterloo, Cedar Falls & Northern Railway is not now interested in the road in any way.

**Chicago Suburban Line Increases Wages.**—The Chicago & Joliet Electric Railway, Joliet, Ill., has voluntarily advanced the wages of its employees to the following scale: First six months, 23 cents; second six months, 26 cents; second year, 28 cents; third year, 29 cents; after three years, 30 cents; Chicago division, 33 cents; work car, 31 cents; baggage car, 31 cents; snow plow and sweeper, time and one-half; overtime, rate plus 2 cents an hour.

**Philadelphia Suburban Line Increases Wages.**—The Philadelphia & West Chester Traction Company, Upper Darby, Pa., has announced that, beginning Aug. 1, the wages of its trainmen will be increased 2 cents an hour and the salaries of all other employees advanced 4 per cent. This is the second increase voluntarily granted by the company to its workers this year. On Jan. 1 trainmen received an increase of 1 cent an hour, and other employees received an advance of 4 per cent.

**Louisville Companies Accept Compensation Act.**—The Louisville (Ky.) Railway and the Louisville & Interurban Railway have announced that they will accept the terms of the Kentucky Workmen's Compensation Act, passed by the last Legislature and effective on Aug. 1. The company heretofore has been carrying its own insurance of this kind and will continue to do so. No state fund is created by the law, rates only being stipulated and insurance to be carried by commercial or mutual companies.

**San Francisco to Have Rapid Transit Service.**—With the completion of the Twin Peaks tunnel, which is to be ready for service some time next year, a 10,000-acre residence district tract hitherto without satisfactory transportation accommodations will be brought within twenty minutes of the business district of San Francisco. In a recent report

stating these facts, City Engineer M. M. O'Shaughnessy urged every effort toward an early settlement of the legal action between the city and the United Railroads, pending the conclusion of which construction of the new rapid transit line will not be possible.

**Service Resumed in Logansport.**—On July 24 cars were operated at night in Logansport, Ind., for the first time since the motormen and conductors of the local city lines of the Fort Wayne & Northern Indiana Traction Company there went on strike on July 18. No trouble was experienced on July 23. All the cars were operated on schedule during the day. Two policemen rode on each car. At the meeting of the Trades Assembly on July 23 the strike was discussed, but aside from appointing committees to take up the controversy with a view to attempting to get the company and its employees together nothing definite was done. In order to avoid any possibility of further trouble from the hoodlum element when the cars are operated at night, the sheriff has sworn in several more deputies to maintain order.

**Stock to Be Sold to United Light & Railways Employees.**—The directors of the United Light & Railways Company, Grand Rapids, Mich., have completed details of a plan by which all officers and employees of the company and its subsidiaries will be permitted to subscribe for preferred and common stocks of the company and to pay for them in small installments over a period of two years. Each officer or employee will be permitted to subscribe for from one to ten blocks of the stocks, each block consisting of one share of preferred and one share of common under a guarantee that the cost of each share of preferred shall not be more than \$80 and each share of common not more than \$55. Subscriptions are not obligatory and any subscriber may surrender his subscription at any time and obtain the amount paid plus 4 per cent interest.

**Sale of Tickets on Cars Made an Issue.**—The City Council of Seattle, Wash., recently adopted a resolution reviving the question of the sale of tickets on cars of the Puget Sound Traction, Light & Power Company in Seattle. The resolution requests the corporation counsel to advise the City Council whether an appeal may be taken from the order of the Thurston County Court, enjoining the Public Service Commission from compelling the sale of tickets on street cars. In the event that the corporation counsel rules that no appeal may be had, the Council directs him to advise by what method it is possible to obtain an adjudication of the question. Councilman R. H. Thomson, who voted against the adoption of the resolution, said: "It seems to me that to pursue this issue will increase the transportation trouble we have been having the last seven years. The street railway is making not to exceed 3 per cent on its investment. The legislation proposed will further decrease its income and cause transportation difficulties. This thing ought to be left alone."

**Jacksonville Rate Case Decided.**—In a rate case at Jacksonville, Ill., involving gas, electric, and street railway rates, the State Public Utilities Commission of Illinois, in an order dated July 11, 1916, found the total for present values to be as follows: Gas department, \$200,000; electrical department, \$190,000; street railway department, \$175,000; total, \$565,000. The commission found a reasonable and fair rate of return to be 7 per cent per annum upon the above valuations, and found the depreciation which should be set aside annually to be: Gas department, 7.5 cents per 1000 cu. ft.; electric department, \$8,500, plus 4 per cent of cost of additions; street railway department, \$99,000, plus 4 per cent of cost of additions. Several schedules of rates for gas, electric and street railway service were fixed. In support of its order the commission reaffirmed its position, taken in the Springfield gas case, on subjects such as overhead expenses, depreciation, going value, fair value of the property, rate of return and rate of depreciation. In addition it discussed special features of the Jacksonville case, such as the division of property among the various classes of service. In regard to depreciation the commission stated that it could not hold one rate to exist for depreciation in a property for time that had passed, and another for time still to come, with the date of the rate proceeding the dividing line. The brief of the Jacksonville Railway & Light Company in this case was abstracted in the ELECTRIC RAILWAY JOURNAL of April 15, 1916.

## Financial and Corporate

### ANNUAL REPORTS

#### Washington Railway & Electric Company

The comparative income statement of the Washington Railway & Electric Company, Washington, D. C., and its subsidiaries for the calendar years 1914 and 1915 follows:

	1915		1914	
	Amount	Per cent	Amount	Per cent
Gross earnings from operation	\$5,191,627	99.57	\$5,048,435	99.33
Miscellaneous income	22,328	0.43	33,890	0.67
Gross income	\$5,213,955	100.00	\$5,082,325	100.00
Operating expenses (including taxes)	3,009,071	57.71	2,863,736	56.34
Net income	\$2,204,884	42.29	\$2,218,589	43.66
Interest	\$1,144,582	21.96	\$1,147,534	22.58
Miscellaneous	43,415	0.83	29,583	0.58
Total	\$1,187,997	22.79	\$1,177,117	23.16
Surplus for the year	\$1,016,887	19.50	\$1,041,472	20.50

The gross earnings from operation during 1915 showed an increase of \$143,192 or 2.8 per cent. Thus, in spite of the general business depression during the year, the company maintained its record of increases for recent years, the explanation being the unique position occupied by the national capital. Miscellaneous income, however, showed a loss of \$11,562, and the operating expenses and taxes increased \$145,335. But the 1914 figure shown above for operating expenses and taxes includes depreciation for only half of 1914, since the new accounting classification went into effect on July 1 of that year. With the 1914 amount adjusted for this so as to permit a fair comparison, the operating expenses and taxes in 1915 showed a rise of \$115,335, or 4 per cent. As a result the net income increased only \$16,293 or 0.7 per cent. A large part of this gain was absorbed by the increase in fixed charges, amounting to \$10,880, and the year's surplus rose only \$5,413.

The percentage of operating expenses, including taxes, to gross earnings in the last fiscal year was 57.96 per cent, as compared to 56.73 per cent in the preceding year. Complete details are not available in the company's annual report in regard to the various operating expense groups, although it is said that the amount disbursed or set aside for maintenance and depreciation of railway and lighting equipment, including way and structures, was \$921,939 in 1915 as compared to \$853,327 in 1914, and that \$274,880 was disbursed or set aside for maintenance of track and roadway as compared with \$270,983 in the preceding year.

The extensions and additions to plant, road and equipment during the year involved an expenditure of \$523,296, this amount being divided \$212,607 for the Washington Railway & Electric Company and subsidiary railways, and \$310,689 for the Potomac Electric Power Company. During the last fiscal year, the cars of the system traveled 10,701,755 miles and carried 86,482,956 passengers, of which 20,378,525 were free transfers. The average fare per pay passenger was 4.291 cents, with an average fare of 3.252 cents for all passengers carried, including transfers.

The legal department during the year settled 600 claims at a total cost of \$144,402. While the total expense for claims covering accidents and damages was a little greater than in the preceding year, it may be noted that a much larger number of claims was entered, handled and finally disposed of. More than 46 per cent of those litigated were more than three years old, while others dated from 1907.

The company was fortunate in holding contracts dated before the advance in prices, covering the requirements not only of 1915, but for considerably extended periods. A great saving was effected by a contract covering copper wire and cable negotiated at a time of low prices. Similar economies were enjoyed in the line of iron and steel products, such as gears, brake-shoes, car axles and wheels; also coal, lubricating oils and many other classes of material.

**Middle West Utilities Company**

The comparative combined earnings statement of the various subsidiaries of the Middle West Utilities Company, Chicago, Ill., for the fiscal years ended April 30, 1915 and 1916, follows:

	1916	1915
Gross earnings.....	\$8,091,148	\$7,634,745
Operating expenses, including taxes..	5,013,388	4,877,016
Net earnings from operation.....	\$3,077,760	\$2,757,729
Rentals on leased properties.....	191,645	
	\$2,886,115	
Bonds, debenture, and other interest charges paid outside holders.....	1,339,412	\$1,307,629
Dividends on stock and proportion of undistributed earnings to outside holders .....	206,093	310,428
Total earnings accruing to Middle West Utilities Company.....	\$1,315,968	\$1,139,672

According to the above statement the combined subsidiary earnings during the last fiscal year gained \$456,403 or almost 6 per cent. The net earnings from operation, less rentals on leased properties, were \$2,886,115, and the total earnings accruing to the Middle West Utilities Company after payment of interest charges, amortization of discount on securities, dividends on stock, etc., were \$1,315,968, an increase of \$176,296, or about 15.5 per cent.

Of the above amount of \$1,315,968 the following went to the Middle West Utilities Company: Received and accrued as interest on bonds and debentures, \$503,069; received and accrued as interest and brokerage on money advanced, \$234,994; received and accrued as dividends on stock, \$447,175, making a total of \$1,185,238. The Middle West Utilities Company's proportion of the surplus carried to the aggregate surplus accounts of the subsidiary companies on their own books was \$130,730.

It was not until September, 1915, that any marked improvement in general business conditions was shown. The summer of 1915 was unusually cold and generally unseasonable, causing a marked falling off in the sale of ice and fuel gas, and in passenger receipts on street and interurban railways. At the end of August, the gross income of the subsidiary companies was \$107,276 lower for this fiscal year to that time than it had been in the previous fiscal year. To the general improvement in business which immediately followed, the earnings of the subsidiary operating companies responded remarkably well, with the result that their gross earnings for the whole fiscal year substantially increased as indicated.

**CONSOLIDATION OF STRICKLAND LINES APPROVED**

**Formation of Texas Electric Railway Ratified—Details Proposed for Disposition of New Securities**

Stockholders of the Southern Traction Company and of the Texas Traction Company at meetings held in Dallas on July 18 formally ratified the action of the directors of the companies in effecting the consolidation under the name of the Texas Electric Railway, recently chartered under the laws of Texas with the purpose of building and operating an interurban railway from Denison through Dallas, Waxahachie, Waco, Austin, San Antonio to Houston. The meeting of the combined interests will be held soon at which officers and directors for the consolidated company will be elected.

The organization of the Texas Electric Railway with a capital stock of \$10,500,000 was referred to in the ELECTRIC RAILWAY JOURNAL of July 15, page 117. The \$10,500,000 of stock consists of 105,000 shares of \$100 each. Fifteen thousand shares are first preferred, 30,000 are second preferred, and 60,000 are common stock. It was stipulated that first preferred stock should bear 7 per cent yearly dividends as a maximum allowance. Similarly, second preferred stock will bear a 7 per cent maximum dividend. Both issues are subject to redemption at 115 per cent of par, plus the accrued dividend. The following disposition of the stock is proposed:

1. First preferred stock of Texas Electric Railway of the par value of \$1,400,000 to be placed in the treasury of the Texas Electric Railway (\$900,000 par value thereof to purchase, acquire or discharge the existing floating indebtedness of Texas Traction Company and Southern Traction Company and to retire the \$500,000 face value of outstand-

ing second mortgage bonds of Southern Traction Company and the remaining \$500,000 par value to be used in the future from time to time to make betterments, improvements and extensions to the properties of the Texas Electric Railway).

2. The second preferred stock of Texas Electric Railway of the total par value of \$3,000,000 to be delivered: \$1,200,000 par value to the Texas Traction Company and \$1,800,000 par value to the Southern Traction Company, or offered for distribution among their respective preferred stockholders at this following ratio, namely: \$120 par value of second preferred stock of Texas Electric Railway for each \$100 par value of preferred stock of Texas Traction Company and \$107 2/3 par value of second preferred stock of Texas Electric Railway for each \$100 par value preferred stock of Southern Traction Company.

3. The common stock of Texas Electric Railway of the total par value of \$6,000,000 to be delivered, \$2,000,000 par value to Texas Traction Company and \$4,000,000 par value to the Southern Traction Company or offered for distribution to their respective stockholders at the following ratios, namely: \$100 par value of common stock of Texas Electric Railway for each \$100 par value of common stock of the Texas Traction Company, and \$80 par value common stock of Texas Electric Railway for each \$100 par value of common stock of the Southern Traction Company.

4. The Texas Electric Railway upon acquiring the properties of the Texas Traction Company and the Southern Traction Company to issue its first and refunding mortgage gold bonds to the principal aggregate amount of \$5,000,000 to be used in funding or discharging present outstanding bonds of the Southern Traction Company to the same principal amount and also to execute a second refunding mortgage to the principal amount of \$1,000,000, to be used in discharging bonds amounting in the aggregate to \$100,000 of the Southern Traction Company, both of said mortgages to be subject to present outstanding mortgages or deeds of trust of the Texas Traction Company as far as the properties of the Texas Traction Company are concerned.

**REORGANIZATION COMMITTEE APPOINTED FOR UNITED RAILROADS**

According to a statement issued by Frank B. Anderson of the Bank of California, a committee of San Francisco bankers will prepare plans for the reorganization of the United Railroads of San Francisco. J. W. Lilienthal, president of the company, says that the committee will have the co-operation of officers of the corporation in this work. The committee consists of Frank B. Anderson, chairman; William H. Crocker, Herbert Fleishhacker, I. W. Hellman, Jr., and J. D. McKee. Its function is to protect all holders of the company's bonds and other securities and at the same time to place the company in a sound position as regards its financial matters.

The San Francisco committee was agreed to after several weeks of negotiation, in the course of which four plans for the reorganization of the company were presented by Mason B. Starring, president of the United Railways Investment Company, New York, which controls the United Railroads of San Francisco; Moritz Rosenthal and Benjamin S. Guinness of Ladenburg, Thalmann & Company, New York. It is probable that the \$2,200,000 of securities falling due in the next few months, Mr. Anderson stated, will be paid in cash raised by the issuance of bonds junior to any outstanding underlying bonds. Plans have not yet been definitely formulated, but it is hoped that the outstanding stocks and bonds can be cut to one-half the present total. Any plan that is adopted must first be approved by the California Railroad Commission.

Atlanta & Carolina Railway, Atlanta, Ga.—The property of the Atlanta & Carolina Railway will be sold at receivers' sale in Atlanta on Aug. 1. The company owns franchises and right-of-way from Atlanta to Augusta. About 15 miles of the line have been graded and 3 miles of track have been laid, beginning on Confederate Avenue, Atlanta, and extending to the DeKalb County line. R. E. Church, 318 Peters Building, Atlanta, Ga., is acting in the capacity of receiver of the company.

**Chicago (Ill.) Elevated Railway.**—The time for the deposit of the two-year 5 per cent notes of the Chicago Elevated Railway with the National City Bank, New York, N. Y., and its sub-depositaries has been extended to and including Aug. 1.

**Chicago, Aurora & De Kalb Railroad, Aurora, Ill.**—F. W. Cherry, Princeton, has been appointed receiver of the Chicago, Aurora & De Kalb Railroad to succeed J. H. Bliss and William S. Kirby.

**Columbia (Ga.) Electric Company.**—The Columbus Railroad, all of the stock of which is owned by the Columbus Electric Company, has applied to the Georgia Railroad Commission for authority to issue \$630,830 of additional stock of a par value of \$20 a share for the purpose of retiring \$423,000 of first consolidated mortgage 5 per cent bonds, of which the Columbus Electric Company owns \$370,000, and to retire \$207,819 of short-term notes, all reported as held by the Columbus Electric Company.

**Detroit (Mich.) United Railway.**—William Salomon & Company, New York, N. Y., are offering, in accordance with the market, first consolidated mortgage 4½ per cent gold bonds of the Detroit United Railway of 1902 due on Jan. 1, 1932, but callable on any interest date at 105 and interest. Interest is payable in January and July in New York. The authorized issue of these bonds is \$25,000,000, and the amount issued \$16,270,000.

**Fresno (Cal.) Interurban Railway.**—The Railroad Commission of California has authorized the Fresno Interurban Railway to issue \$149,700 of first mortgage 6 per cent twenty-five year bonds, \$10,936 face value of notes and \$8,100 par value of capital stock.

**International Traction Company, Buffalo, N. Y.**—The Public Service Commission for the Second District of New York has authorized the International Railway, the stock of which is owned by the International Traction Company, to issue additional \$1,175,000 of refunding and improvement 5 per cent bonds to be sold at not less than 89. The proceeds, together with the proceeds of the \$2,395,000 of bonds heretofore authorized, are to be used to pay for the new line between Buffalo and Niagara Falls. The total of refunding and improvement mortgage 5 per cent bonds outstanding, not including the issues just approved, is \$12,799,000.

**Kansas City, Kaw Valley & Western Railway, Bonner Springs, Kan.**—The Kansas City, Kaw Valley & Western Railway has filed for record a mortgage for \$812,500 in favor of the Commerce Trust Company, Kansas City, Mo., as trustee, covering the holdings of the company in Wyandotte, Leavenworth and Douglas Counties. The instrument is not a lien on the property of the company in Shawnee County.

**Lancaster & Southern Street Railway, Millersville, Pa.**—The Provident Life & Trust Company, Philadelphia, Pa., mortgage trustee, has given notice that Samuel T. Freeman & Company will sell the property of the Lancaster & Southern Street Railway at public auction in Philadelphia on Aug. 15, free from the lien of the first mortgage of 1911 securing an authorized amount of \$225,000 of bonds.

**Minneapolis, St. Paul, Rochester & Dubuque Electric Traction Company, Minneapolis, Minn.**—United States Judge Booth at Minneapolis has appointed Charles P. Bratnaber receiver of the Minneapolis, St. Paul, Rochester & Dubuque Electric Traction Company, generally known as the Dan Patch line. C. T. Jaffray, vice-president of the First & Security National Bank, has been made chairman of the bondholders' protective committee. The bonded indebtedness outstanding amounts to \$750,000 owned by the General Electric Company, J. G. White & Company and investors in Minneapolis and vicinity. The bonds held by the General Electric Company were taken by the company for equipment furnished and those owned by J. G. White & Company were accepted in return for engineering services rendered.

**Northern Ohio Traction & Light Company, Akron, Ohio.**—On July 20 the Ohio Public Utilities Commission authorized the Northern Ohio Traction & Light Company to issue \$14,075,000 of bonds. Of this amount \$12,000,000 is to be used to retire present underlying securities and the re-

mainder as follows: \$387,000 for double tracking the road between Cuyahoga Falls and Bedford, \$160,000 for double tracking between Bedford and Newburg, \$275,000 in making improvements between Canton and Massillon, \$12,000 for extension of tracks in Akron, \$175,000 for double tracking the line between Blue Pond and Springfield Lake on the Canton-Akron division, \$340,000 for double track work in Akron, \$280,000 for high tension wire near Canton, \$350,000 for the new terminal building in Akron and \$35,000 for the extension of the Mahoning line in Canton to the factory district.

**Public Service Corporation of New Jersey, Newark, N. J.**—A financial report just issued by the Public Service Corporation of New Jersey shows a gain of \$426,816 in total business for June, or 13.8 per cent over the corresponding month of last year. The balance available—after payment of operating expenses, fixed charges, sinking fund requirement, etc.—for amortization, dividends and surplus was \$570,001. The increase in surplus available for dividends over the corresponding month of 1915 was \$173,993. For the six months ended June 30, 1916, the gross increase in total business amounted to \$2,387,302, or 13.3 per cent. The balance available for amortization, dividends and surplus was \$2,533,767, while the increase in surplus amounted to \$610,164.

**Tidewater Southern Railway, Stockton, Cal.**—The California Railroad Commission has issued an order authorizing the Tidewater Southern Railway to issue \$20,000 of first mortgage bonds to be deposited with New Amsterdam Casualty Company, New York, N. Y., in return for a surety bond amounting to \$10,000. The railway company desires to issue the surety bond to the Southern Pacific Company in connection with the construction of standard interlocking plant one-half mile south of Modesto previously ordered by the commission.

**Toronto (Ont.) Railway.**—Seventy-nine 4½ per cent currency bonds of \$1,000 each and 305 sterling bonds of £100 each of the Toronto Railway issued under the first mortgage dated Sept. 1, 1892, have been drawn for redemption at par and interest on Aug. 31. Payment will be made at the office of the Canadian Bank of Commerce in Toronto.

**United Railways, St. Louis, Mo.**—The Missouri Public Service Commission has authorized the United Railways to issue \$200,000 additional of its first general mortgage 4 per cent bonds to provide for the retirement of \$200,000 of general mortgage 5 per cent bonds of the Southern Electric Railroad dated Aug. 1, 1896, and maturing Aug. 1, 1916.

**West End Street Railway, Boston, Mass.**—Merrill, Oldham & Company, R. L. Day & Company and Harris, Forbes & Company, Inc., Boston, Mass., are offering at 100.75, yielding about 4.73 per cent, \$1,581,000 of three-year 5 per cent bonds of the West End Street Railway dated Aug. 1, 1916, and due on Aug. 1, 1919. Interest is payable on Feb. 1 and Aug. 1 at the office of the Old Colony Trust Company, Boston, Mass. The bonds have been issued in the denomination of \$1,000.

**Winona Interurban Railway, Warsaw, Ind.**—Judge Harman has appointed C. J. Munton, president and manager of the Fort Wayne & Northwestern Railway, Kendallville, Ind., receiver of the Winona Interurban Railway. The appointment was made on the petition of the First Trust & Savings Bank, Chicago, and E. K. Boiset, trustee. They seek to foreclose a mortgage for \$750,000 on the Goshen branch of the Winona system. It is alleged that the defendant has defaulted interest payments on the mortgage, dated July 1, 1905, and that \$37,500 is due and unpaid. In the ELECTRIC RAILWAY JOURNAL for Oct. 9, 1915, page 779, it was announced that the company had under consideration a plan for reorganization, and that pending the negotiations caused thereby it would not pay the coupons which matured on Oct. 1, a large amount of the bonds having been deposited with the trustee. It was said then that the company had submitted this plan to its creditors with the statement that unless the holders of the bonds then outstanding consented to some plan which would insure the payment of bond interest, the company would be compelled to default on its interest payment, which would undoubtedly mean the disposal of the property at judicial sale.

**DIVIDENDS DECLARED**

American Railways, Philadelphia, Pa., quarterly, 1¼ per cent, preferred.

Brazilian Traction, Light & Power Company, Toronto, Ont., quarterly, 1 per cent, ordinary.

Bristol & Plainville Tramway, Bristol, Conn., quarterly, 2 per cent.

Cities Service Company, New York, N. Y., monthly, one-half of 1 per cent, preferred; monthly, one-half of 1 per cent, common; 2 per cent, common (payable in common stock).

Grand Rapids (Mich.) Railway, quarterly, 1¼ per cent, preferred.

Lehigh Valley Transit Company, Allentown, Pa., quarterly, 1¼ per cent, preferred.

Lewiston, Augusta & Waterville Street Railway, Lewis-ton, Maine, quarterly, 1½ per cent, preferred.

Philadelphia Company, Pittsburgh, Pa., \$1.25, 5 per cent preferred.

**ELECTRIC RAILWAY MONTHLY EARNINGS**

**ARKANSAS VALLEY RAILWAY, LIGHT & POWER COMPANY, PUEBLO, COL.**

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '16	\$100,107	\$55,908	\$44,299	.....	.....
1 " " '15	94,618	54,983	39,635	.....	.....
12 " " '16	1,215,940	681,102	534,838	.....	.....
12 " " '15	1,154,516	685,864	468,652	.....	.....

**BATON ROUGE (LA.) ELECTRIC COMPANY**

1m., May, '16	\$17,765	\$8,266	\$9,498	\$3,469	\$6,029
1 " " '15	14,961	*8,761	6,200	2,166	4,034
12 " " '16	201,669	*105,681	95,988	33,610	62,378
12 " " '15	181,148	*111,446	69,702	25,127	44,575

**BROCKTON & PLYMOUTH STREET RAILWAY, PLYMOUTH, MASS.**

1m., May, '16	\$10,076	*\$9,663	\$413	\$1,101	†\$688
1 " " '15	9,473	*8,485	988	1,132	†144
12 " " '16	118,566	*99,623	18,943	13,338	5,605
12 " " '15	120,004	*99,754	20,250	13,426	6,824

**CAPE BRETON ELECTRIC COMPANY, LTD., SYDNEY, N. S.**

1m., May, '16	\$30,278	*\$20,036	\$10,242	\$6,548	\$3,694
1 " " '15	26,611	*16,411	10,200	6,724	3,476
12 " " '16	378,587	*222,213	156,374	78,654	77,720
12 " " '15	340,033	*207,966	132,067	78,432	53,635

**CLEVELAND, PAINESVILLE & EASTERN RAILROAD, WILLOUGHBY, OHIO**

1m., May, '16	\$39,296	*\$22,551	\$16,745	\$12,074	\$4,670
1 " " '15	36,149	*20,357	15,792	10,993	4,799
5 " " '16	167,088	*99,543	67,545	56,695	10,850
5 " " '15	149,186	*89,483	59,703	54,771	4,932

**EASTERN TEXAS ELECTRIC COMPANY, BEAUMONT, TEX.**

1m., May, '16	\$65,334	*\$36,738	\$28,596	\$8,870	\$19,726
1 " " '15	58,140	*31,897	26,243	8,713	17,530
12 " " '16	781,095	*407,974	373,121	105,923	267,198
12 " " '15	672,184	*388,167	284,017	104,205	179,812

**HOUGHTON COUNTY TRACTION COMPANY, HOUGHTON, MICH.**

1m., May, '16	\$25,962	*\$15,625	\$10,337	\$5,351	\$4,986
1 " " '15	21,897	*12,602	9,295	5,582	3,713
12 " " '16	302,353	*167,948	134,405	65,900	68,505
12 " " '15	265,217	*170,818	94,399	67,032	27,367

**HUDSON & MANHATTAN RAILROAD, NEW YORK, N. Y.**

1m., May, '16	\$502,544	*\$222,629	\$279,915	\$219,395	\$60,520
1 " " '15	462,256	*194,341	267,915	211,778	56,137
5 " " '16	2,484,255	*1,080,135	1,404,120	1,073,376	330,744
5 " " '15	2,324,163	*971,741	1,352,422	1,056,629	295,793

**PADUCAH TRACTION & LIGHT COMPANY, PADUCAH, KY.**

1m., May, '16	\$24,203	*\$16,707	\$7,496	\$7,159	\$337
1 " " '15	21,926	*14,334	7,592	7,795	†203
12 " " '16	299,054	*182,072	116,982	88,807	28,175
12 " " '15	295,356	*188,897	106,459	91,803	14,656

**PENSACOLA (FLA.) ELECTRIC COMPANY**

1m., May, '16	\$23,844	*\$13,373	\$10,471	\$7,710	\$2,761
1 " " '15	20,789	*11,690	9,099	7,179	1,920
12 " " '16	274,438	*152,313	122,125	83,147	39,978
12 " " '15	251,397	*156,465	94,932	86,988	7,944

**REPUBLIC RAILWAY & LIGHT COMPANY, YOUNGSTOWN, OHIO**

1m., June, '16	\$321,024	*\$188,705	\$132,319	\$72,031	†\$60,495
1 " " '15	246,690	*155,948	90,742	55,954	†35,229
6 " " '16	1,933,918	*1,143,437	790,481	381,028	†381,028
6 " " '15	1,456,918	*916,302	540,616	332,302	†209,078

**TAMPA (FLA.) ELECTRIC COMPANY**

1m., May, '16	\$72,781	*\$46,209	\$26,572	\$24,394	\$22,178
1 " " '15	81,422	*42,851	38,571	4,378	34,193
12 " " '16	978,851	*519,135	459,716	52,238	407,478
12 " " '15	991,480	*509,480	482,000	52,912	209,088

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

**Traffic and Transportation**

**APPEAL FOR EMPLOYEE CO-OPERATION**

Mr. Fisher of the Chicago, Ottawa & Peoria Railway Appeals to the Men as Their Friend and Co-Worker

F. E. Fisher, general superintendent of the Chicago, Ottawa & Peoria Railway, Joliet, Ill., recently addressed a letter to the employees in which he discussed problems confronting the company of vital interest to all the men in the service. The letter, extraordinarily human in its appeal, was addressed to "My fellow employees," and was signed by Mr. Fisher as "Your friend and co-worker." The communication was inclosed with the pay checks recently. It follows in full:

"Believing that you are interested in anything that concerns our property, I beg to advise that same is not and has never been a profitably operated one from a financial standpoint. It is dependent upon its earnings from freight and passenger traffic for the money that furnishes you and me a living. The ever-increasing use of the automobile, which has undoubtedly come to stay, has further affected our net earnings seriously, making it necessary to find ways and means of increasing the earnings. I am prompted to ask if by a little more thought and attention to our joint and individual duties we cannot advance the company's interests in the way of increased earnings to such an extent as will enable it to continue to increase our wages, improve our working conditions and at the same time establish a standard of service to the public that will bring forth such favorable comment as to make everyone connected with the property feel proud of the fact. I honestly feel that it can and will be accomplished.

"First, let us adopt as our slogan 'Safety First; Loyalty, Courtesy and Co-Operation.' These four words cover a multitude of results obtainable. We must all feel that the company's interests are our own interests. What will help or hurt one will help or hurt the other, and by keeping this fact always in mind and acting accordingly our goal will be reached. Our campaign of safety first has been fruitful in results, so let us continue to perform our duties in a way safe to ourselves, to others, and to the company. Loyalty is one of the greatest virtues of a railroad employee. Always have a good word to say in behalf of your fellow employee regardless of his rank or position, and also for your company. A knock never gets us anything. Courtesy at all times, regardless of conditions, pays better in dollars and cents and in self respect than almost anything else. Every friend we make for ourselves and the company is an asset. Let us pile up the assets. Last, but not least, is co-operation.

"The field that promises to be the most fruitful for increased earnings is that of freight traffic. There are approximately 200 employees in our family, each of whom purchases the necessities of life from the merchants in the various towns in which he lives, and it is only fair and entirely reasonable that these merchants should be requested in a polite and courteous manner to reciprocate and favor our property with shipments of freight, and to travel on our line whenever they conveniently can, rates and conditions being equal with the steam roads. If each of us will constitute himself a committee of one and endeavor at all times to talk to the merchants with whom we deal, and with our friends, asking them for their business, assuring them that we will endeavor at all times to give them the best service possible, there is no question but that the results desired can be obtained. At least it is worth the effort. Whenever you learn of prospective movements of freight or passengers call them to the attention of one of the agents, or take the time to drop a line to the writer. Any suggestions that you have to offer leading to increased earnings or better service will be most welcome.

"Trusting you will accept this communication in the same spirit in which it is sent, I beg to remain,  
"Your Friend and Co-Worker."

### NEW HOUSTON JITNEY ORDINANCE CONSTITUTIONAL

Judge J. D. Harvey of the Eightieth District Court held on July 12 that the new jitney ordinance of Houston, Tex., was constitutional. The decision was rendered in the case of the Houston Jitney Association versus the city of Houston. The ordinance requires operators of jitneys to furnish a \$2,500 bond. It was to have gone into effect on July 1, but was suspended by a temporary injunction granted on application of the jitney men, who claimed that it was unconstitutional. Following the decision of Judge Harvey upholding the ordinance motion was made for the dissolution of the temporary injunction. This motion was upheld, but the order for its dissolution was suspended pending an appeal which will be made by the jitney men in the First Court of Civil Appeals. The appellate court will not meet until fall. Meantime the jitney men will operate without bond under the terms of the ordinance which was formerly in effect.

In rendering his decision Judge Harvey stated that while in his opinion the ordinance was constitutional, there are about 400 families dependent on the jitney business for their livelihood, and should he be mistaken in his ruling it would cause a great hardship. He stated that for this reason his order would be suspended, virtually holding the injunction in effect pending the decision of the Court of Appeals.

Under the old ordinance jitney men are paying an annual license fee of \$72, instead of \$36 a year, which the new ordinance provides.

A petition has been filed by the jitney men, bearing the signatures of more than 3000 citizens, asking for the submission to a referendum vote an ordinance prepared by the jitney men.

### DETROIT SKIP STOPS SAVE TIME

*Electric Railway Service* for July 21, published by the Detroit (Mich.) United Railway, contained the following in regard to the saving in time under the recently installed skip stop:

"The first week of the skip stop operation on Woodward Avenue, from Adams Avenue to Log Cabin, and on Jefferson Avenue, from Hastings Street to the limits, is now almost over, and from the expressions of public opinion that have come to us the plan is meeting with the success we felt sure would follow.

"It has been clearly demonstrated already that it is a time saving plan. And that means you benefit through reducing the length of time spent on the cars.

"The average saving, as shown by schedules, on Woodward Avenue between the Cabin and Adams Avenue, is eight minutes. As a matter of fact, the saving is more than that, as under the old plan it was no uncommon thing for the cars to take much longer time than the schedule indicated. Under the skip stop plan the cars have been operating on time. The former Woodward speed was 9 m.p.h.; the new speed north of Adams is 11 3/5 m.p.h.

"The average saving, as shown by schedule on Jefferson Avenue, between Hastings and the limits, is three minutes, but as a matter of fact the saving is six minutes, as new schedules taking that much longer were in the course of preparation to permit of the operation of a large number of trailers, as the old schedule was too fast to be followed. Under the skip stop plan the speed from Hastings west is 11 4/5 m.p.h., as against 10 miles."

**B. R. T. Aids Mayor's Cleanliness Campaign.**—The Brooklyn (N. Y.) Rapid Transit Company has aided in the campaign against the spread of the dreaded infantile paralysis by reprinting for distribution in its cars and stations the appeal of Mayor Mitchel, dated July 18, to the citizens for co-operation in the movement for minimizing unsightly and unsanitary street conditions.

**Wage Arbitration Proposed.**—The employees of the Middlesex & Boston Street Railway, Newtonville, Mass., have rejected the company's compromise offer of an increase in wages of 1 cent an hour each year for three years. According to an existing agreement between the company and the employees, the question of the compensation of the

employees must now be submitted to the State Board of Arbitration and Conciliation.

**One-Man Cars to Be Used in Topeka.**—A. M. Patten, assistant general manager of the Topeka (Kan.) Railway, was quoted recently in part as follows: "Light one-man cars are going to solve the demand for quick street car service. The move to adopt one-man cars is country-wide. Automobiles have revolutionized street car transportation. With the one-man cars we can run two cars practically at the cost of one big one. Car works are developing the new type. Topeka has been using cars weighing 11 and 12 tons. New cars are being built weighing only 5 or 6 tons which carry as many or more people."

**One-Man Cars for Tacoma.**—L. H. Bean, general manager of the Tacoma (Wash.) Railway & Power Company, recently reported that about Aug. 1 his company will place in operation several one-man cars. Some of the cars will be double-end and some single-end. The first car will be placed in service on the Jefferson Avenue and Pacific Avenue lines. The one-man car will also be used on the Sixth Avenue line to give a rapid rush-hour service. Instead of four ordinary cars during the day, eight of the new ones will be placed on the run, and instead of eight ordinary cars during the rush hours twelve to sixteen of the new light cars may be used, giving a service of a car every four or five minutes. The cars are being built in Tacoma shops under the direction of Superintendent Kurt C. Schluss.

**Jitney Ruled From San Francisco Business District.**—The Board of Supervisors of San Francisco, Cal., on July 17 ruled jitney buses off Market Street between Fremont and Sixth Streets from 10 a. m. to 4 p. m. The ruling is to take effect in about two weeks. The board further decided that not more than 700 jitney bus permits would be issued for Market Street runs, that each must follow only its specified route and must go to terminal on each trip, that the police shall establish not more than two points in each block on each side of Market Street and that passengers may be taken on and discharged at such points only. Finally, jitney permits will be issued hereafter only to citizens of this country. The main shopping and business district is located on Market Street between the streets from which the jitneys are excluded.

**Portland Accident Figures for Six Months.**—According to the semi-annual report of Harry P. Coffin, chairman of the public safety commission of Portland, Ore., six persons were killed and 187 injured in Portland during the six months ending June 30. Five of the fatalities were caused by automobiles and the sixth by a street car. Of the 187 injuries, 148 were due to automobile accidents, twenty-one to street car mishaps, three to interurban car accidents, and six to coaster accidents. Two hundred and fifty-six automobile accidents were reported. Of these sixty-nine were classed as unavoidable, and 152 as due to carelessness. There were eighteen collisions between street cars and automobiles and three between street cars and other vehicles. A total of 2103 traffic violations is listed, of which sixteen were due to intoxicated drivers, seventy-two to reckless driving, 480 to speeding, and seventy-six to passing street cars while taking on or discharging passengers.

**Vancouver Passenger Figures Compared.**—The traffic figures of the British Columbia Electric Railway, Ltd., Vancouver, B. C., for June show the first decrease since Jan. 1 as compared with the corresponding period last year. During June 2,207,206 passengers were carried on Vancouver and suburban lines, as compared with 2,249,951 in June, 1915, a decrease of 42,745. At the same time, the amount paid to the city has gone up from \$2,700 in June, 1915, to \$3,121 in June, 1916. During the first six months of 1916 the company carried 13,580,993 passengers, as compared with 12,023,413 in the first six months of last year. In commenting on these figures W. G. Murrin, general superintendent, said: "We are giving better service now than we were this time last year, although our policy then was to provide the maximum number of cars that we could under the circumstances. During June, 1916, 564,907 car-miles were operated, as compared with 557,072 car-miles in June, 1915. This increase has taken place when people want the service and means actually more than appears from the bare figures."



## Personal Mention

**E. T. McMurray**, formerly secretary of the Petaluma & Santa Rosa Railway, Petaluma, Cal., has been elected president of the company.

**W. R. Childers** has been appointed superintendent of the lines of the Southern Public Utilities Company at Greenville, S. C., to succeed W. R. Brewton, resigned.

**C. Harms** has been elected secretary of the Petaluma & Santa Rosa Railway, Petaluma, Cal., to succeed E. T. McMurray, who has been elected president of the company.

**J. K. Brassill** has been appointed superintendent of motive power and marine equipment of the Northwestern Pacific Railroad, San Francisco, Cal., to succeed R. J. Quintrel, who had the title of master mechanic.

**Roy Alexander** has been appointed superintendent of railroads of the Central Illinois Public Service Company, Mattoon, Ill. He succeeds W. M. Brown, who resigned to become connected with the Seattle, Renton & Southern Railway, Seattle, Wash.

**H. H. Vreeland**, director of welfare of the Interborough Rapid Transit Company and the New York (N. Y.) Railroads, has contributed to the industrial welfare number of *The Modern Hospital*, an article on welfare work by public utility corporations.

**Joseph A. West**, formerly chief engineer of the Ogden (Utah) Rapid Transit Company and the Ogden, Logan & Idaho Railway, has been appointed chief engineer of the Sumpter Valley Railroad of Oregon, and will have charge of the survey and construction of several important extensions into the timber country.

**W. R. Brewton**, superintendent of the lines of the Southern Public Utilities Company at Greenville, S. C., has resigned from the company. He became connected with the company as a clerk. He was later made bookkeeper and afterwards transferred to the operating department of the railway system.

**G. H. Wilson** has been appointed auditor of the Evansville (Ind.) Railroads to succeed G. L. Ford, resigned. Prior to taking this position Mr. Wilson was a public accountant, in which work he had wide experience. He was born and educated in Indiana and began work as a teacher in the public schools. Later he became connected with commercial work as an instructor in accounting, after having made a special study of this subject.

**B. L. Martin** has resigned as superintendent of the line department of the Georgia Railway & Power Company, Atlanta, Ga. Mr. Martin has been in the employ of the corporation and its predecessors for twenty-seven years. His former duties will be distributed among T. F. Johnson, superintendent of transmission; E. P. Peck, superintendent of tests and repairs; A. C. Wilson, superintendent of drafts and records, and H. L. Wills.

**W. S. Rodger**, Detroit, Mich., has been appointed general traffic manager of the Detroit United Lines, the appointment to take effect on Aug. 1. Mr. Rodger will have supervision over the freight, express and passenger business of the company. For the past seven years he has been assistant to E. D. Bronner, general manager of the Michigan Central Railroad, with headquarters at Detroit. Prior to that time he was successively engaged with the Michigan Central as clerk, agent at Joliet, traveling freight agent in the territory west of Chicago and commercial agent at Toledo.

### OBITUARY

**William A. McGovern**, general manager of the Northern Electric Railway, Chico, Cal., died suddenly on July 15 at his cottage at Emerald Bay camp on Lake Tahoe. Mr. McGovern was formerly superintendent of the Oregon Short Line, with headquarters at Pocatello, Idaho. He was a native of Ontario, Can., and was fifty-five years of age.

**J. P. Reiss**, vice-president of the Sheboygan Railway &

Electric Company, Sheboygan, Wis., died suddenly in that city on July 21. Mr. Reiss was connected with the C. Reiss Coal Company, Sheboygan, and was well known throughout the Central West. He and his associates took over the railway and light properties in Sheboygan several years ago from Eastern interests.

**Max T. Kirschke, Sr.**, Chicago, Ill., died on July 18, after a short illness. For nearly four years Mr. Kirschke was a member of the sales force of the Chicago office of the Baldwin Locomotive Works and the Standard Steel Works. He was formerly in the engineering department of the McGuire Cummings Manufacturing Company and the Pullman Company, at Chicago and Pullman.

**W. R. Patterson**, formerly plant engineer of the Western Electric Company, Chicago, Ill., and since his retirement from the company seven years ago a member of the consulting engineering firm of Patterson & Davidson, Chicago, died on July 19. Mr. Patterson was born at Effingham, N. H., in 1854. In 1876 he was graduated from Dartmouth College. Mr. Patterson entered the employ of the Western Electric Company as a paymaster in 1877 and later he was assigned to make a study of cable manufacture, and out of the years which he devoted to this, finally developed "Patterson" cable, which for many years was generally accepted in the electrical industry as the term descriptive of lead sheath cable.

### EIDS CALLED FOR INSTALLING TRACK IN BROADWAY SUBWAY

The Public Service Commission for the First District of New York has set Aug. 10 as the date for the receipt of bids for the installation of tracks on that portion of the Broadway-Fourth Avenue subway system between Fifty-ninth Street and Seventh Avenue, Manhattan, and Flatbush Avenue Extension at Prince Street in Brooklyn. The contract will also include the installation of tracks on the Canal Street connection between Canal Street and Broadway and the Manhattan approach of the Manhattan Bridge. This is the line which gives the Brooklyn Rapid Transit Company, through its New York Municipal Railway Corporation, the contracting company, thoroughfare into the heart of Manhattan. In all, the contract covers the installation of tracks on fifteen sections of subway work, some of which are already entirely completed and some of which are approaching completion. The commission has also let the contract for station finish from the Battery to Fourteenth Street on this line and work is well advanced. The track work is to be let in three divisions, all in one contract. The first division begins at Fifty-ninth Street and Seventh Avenue and extends southerly down Broadway, under Union Square and down Broadway to Vesey Street, thence to Church Street, ending at a point 590 ft. south of Rector Street. The second division comprises the Canal Street section, beginning under Broadway, extending easterly under Canal Street to the bridge approach. The third division begins under Church Street, 590 ft. south of Rector Street, extends under Trinity Place and Morris Street, thence easterly to and under Broadway to Whitehall Street to the East River, beneath the East River by way of the Montague-Whitehall Street tunnels now building, to and under Fulton Street, Brooklyn, through and under other streets and private property to the connection of the Flatbush extension at Prince Street.

The city will supply the contractor with practically all the material that he needs. The steel rails, splice bars, screws, ties and timbers, tie-plates, etc., having been previously purchased by the city under various material contracts. Concrete and concreting material and a small amount of cast iron pipe will be practically all the track installation the contractor has to furnish, besides the labor of laying ties, rails and incidental iron and steel work. The contractor is ordered to begin work within thirty days after the delivery of the contract and must lay 500 ft. of single track a day during any given month, with the option resting with the commission to increase the amount to be laid to 1000 ft. a day. The commission reserves the option of ordering work to be prosecuted simultaneously at several different points. The contract will cover the laying of approximately 25 miles of single track.

## Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (\*) indicates a project not previously reported.

### RECENT INCORPORATIONS

**Hillsborough-Pinellas Interurban Railway, Tampa, Fla.**—Application for a charter has been made by this company to construct a line to be operated by electricity, gas or other power from Tampa to Safety Harbor, Tarpon Springs, Sutherland, Dunedin, Clearwater, Belleair, Largo, St. Petersburg and other points, about 60 miles in Hillsborough and Pinellas Counties. Capital stock, \$1,000,000. Officers: H. F. Winter, president; J. E. Winter, vice-president and treasurer, and M. Carabello, secretary, all of Tampa. [July 8, '16.]

\***Coatesville, Pa.**—Application for a charter will be made to construct a line from Modena to Coatesville, 10 miles. Among those interested are H. G. Rambo, H. I. Schotter, J. V. Pennegar, Charles F. Humpton and W. J. Elliott, all of Coatesville.

**Marlin-Temple Interurban Company, Marlin, Tex.**—Incorporated in Texas to construct and operate an interurban line between Marlin and Temple. Capital stock, \$1,190. Among the incorporators are G. W. Glass, S. D. Hanna, William Gimmuth, George Houston and E. W. Moore. [July 1, '16.]

### FRANCHISES

**Sacramento, Cal.**—The Northern Electric Railway has received a fifty-year franchise from the Council to construct a line through Sacramento.

**Berwyn, Ill.**—The City Council of Berwyn has been notified that the new ordinance granted the Metropolitan West Side Elevated Railway for an extension of its Douglas Park branch through the suburb is not acceptable to the company. The ordinance provides that the company shall construct a spur into South Berwyn.

**Oneida, Iowa.**—The Iowa Railway & Light Company has received a franchise from the Council to extend its transmission lines into Oneida and to furnish electrical service there.

**Bowling Green, Ky.**—County Road Engineer Malcolm H. Crump was authorized to advertise for bids for the sale of a twenty-year street railway franchise to extend from a point on the Cemetery Pike to the new Fair Grounds. It is understood that the Southern Traction Company, which owns the line, will be the purchaser.

**Winnipeg, Man.**—The City Council has approved the construction of a temporary line on Talbot Avenue by the Winnipeg Electric Railway.

**Toronto, Ont.**—The Toronto Railway has received permission to extend its tracks north on Yonge Street from the Canadian Pacific Railway to Farnham Avenue.

**Pittsburgh, Pa.**—The Pittsburgh Union Passenger Railway has received a ten-year franchise to construct an extension on Woods Run Avenue.

### TRACK AND ROADWAY

**Visalia Electric Railroad, Exeter, Cal.**—Construction will be begun soon on this company's proposed extension from Exeter to Lindsay, thence to the El Mirador orange district. The right-of-way has practically all been secured and definitely decided upon, and offices have been established at Honolulu Street, Lindsay.

**Central Florida Interurban Railway, St. Cloud, Fla.**—This company, which was recently incorporated, is making a preliminary survey and securing right-of-way for the first section of its proposed line from Hopkins to St. Cloud, about 50 miles. William Hall, St. Cloud, secretary. [July 1, '16.]

**Chicago & Joliet Electric Railway, Joliet, Ill.**—This company will expend \$20,000 for new rails, ties and special work on its North Collins Street line.

**Kankakee & Urbana Traction Company, Urbana, Ill.**—This company is constructing tracks from Patton Street, Paxton, five blocks north to its new station site.

**Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind.**—This company will straighten its tracks in the business district of Bluffton, raise the tracks to conform to a new grade and weld and grind the rails.

**Vincennes (Ind.) Traction Company, Vincennes, Ind.**—It is reported that construction on this company's line from Barbourville to Manchester will be completed by Nov. 1. M. E. S. Posey, Barbourville, chief engineer. [April 8, '16.]

**Winnipeg (Man.) Electric Railway.**—The City Council of Winnipeg has approved the plan of the Winnipeg Electric Railway for a single-track line on Levis Street. The Council has instructed the law department to apply to the public utilities commission for an order to compel the company to build a double-track line on McGregor Street, between Dufferin and Selkirk Avenues; also a temporary track on Sergeant Avenue from Arlington to Wall Streets.

**Bay State Street Railway, Boston, Mass.**—This company has received permission from the Council to relocate its track on Cabot Street from Charnock Street to the Gloucester Crossing and for the extension of the turnout from Charnock Street to Dane Street.

**Connecticut Valley Street Railway, Greenfield, Mass.**—This company will reconstruct its track on King Street, Northampton.

\***Boston & Western Street Railway, Marlboro, Mass.**—This company plans to construct a line from Marlboro to Waltham, about 15 miles.

\***Clarksdale, Miss.**—The citizens of Clarksdale have recently voted, by authority of a recent act of the State Legislature, a \$100,000 bond issue to provide funds for the construction of a line from Webb, Miss., on the Yazoo & Mississippi Valley Railroad, northwest via Clarksdale to a point on the Mississippi River, about 30 miles. The act authorizing the bond issue also empowered the city to engage in railroad construction and operation. An engineer has been engaged to begin work immediately upon the location of a route. The City Commissioners have also appointed a city railroad commission which will have charge of the location and construction of the line and finally of its operation, the chairman of this commission being M. J. Bouldin.

**Kansas City (Mo.) Railways.**—This company will construct a double-track line on Eighteenth Street, Kansas City, Kan.

**New York Municipal Railway, Brooklyn, N. Y.**—Bids for the installation of tracks on the Broadway-Fourth Avenue subway system in Manhattan and Brooklyn, from Fifty-ninth Street, Manhattan, to a connection with the Flatbush Avenue extension of the Interborough Rapid Transit Company will be opened by the Public Service Commission for the First District of New York on Aug. 10. This contract will include the track installation on fifteen sections of subway work, and the contractor will be supplied by the city with a large amount of material, including nails, splice bars, screws, ties and timber, braces and tie plates, on all of which bids have been taken by the Commission. The work of the contractor will consist of little more than the laying of the tracks. About twenty-five miles of single track will be laid under this contract. Provision is made that portions of the subway may be opened and operated before the work is completed. Track installation under this contract also includes the Montague-Whitehall Street tunnels under the East River, and the connection between Canal Street and Broadway and the Manhattan approach of the Manhattan Bridge.

**Northern Ohio Traction & Light Company, Akron, Ohio.**—More than one mile of car line extension in Canton immediately and a total of 2½ miles before the close of next year have been agreed upon with the business representatives and municipal authorities of that city as the solution

of the problem of Canton's need of greater street railway facilities. The trackage to be finished this year is known as the Belden Avenue extension and will extend to the city limits in Eighth Street. It connects with the Tuscarawas east line. A  $\frac{3}{4}$ -mile extension to be finished within one year will be added to the Garfield Avenue line, extending through Eighteenth Street to Harrison Avenue, thence south to the plant of the Canton Sheet Steel Co. A  $\frac{1}{2}$ -mile extension will be built to the Navarre line, via Navarre Road to Alden Avenue. An extension to Waco, via Belden Avenue, is also agreed upon, to be built immediately.

**Ohio Electric Railway, Cincinnati, Ohio.**—The commissioners of Franklin County have asked the Ohio Electric Railway to move its tracks to the center of the highway east of Columbus, where about four miles of brick pavement will be laid. The company objects to the improvement on the ground that it is not in position to pay for its portion, in the neighborhood of \$125,000. It is possible that it will build into Westerville over a private right-of-way instead of remaining on the highway where the improvements are to be made.

**Dover, Millersburg & Western Railway, Dover, Ohio.**—This company advises that contracts will be let within sixty days for grading on its proposed electric line from Dover to Millersburg, 37 miles. Benjamin George, Dover, secretary. [Dec. 11, '15.]

**Mahoning Valley Railway, Youngstown, Ohio.**—This company plans to construct a 3000-ft. extension of its North Avenue line.

**Toronto (Ont.) Civic Railway.**—Work has been begun by R. C. Harris, Commissioner of Works, grading the Yonge Street North Toronto hill preparatory to laying foundations for track to connect the Toronto Civic Railway with the Toronto & York Radial Railway.

**Toronto (Ont.) Railway.**—This company will reconstruct its tracks on Queen Street, between Brock and Roncesvalles, this summer.

**Southern Oregon Traction Company, Medford, Ore.**—A report from this company states that plans are being contemplated for the construction of a 30-mile extension in the near future.

**Eastern Pennsylvania Railways, Pottsville, Pa.**—It is reported that this company plans to construct an extension from Tamaqua to Reading.

**Saskatoon (Sask.) Municipal Railway.**—The city of Saskatoon has placed an order with Smiley & Company, Edmonton, for 50 tons of rails to be placed over the new traffic bridge. The Council plans to construct about 1200 ft. of double track at an estimated cost of \$8,600.

**Northern Texas Traction Company, Dallas, Tex.**—This company has just completed and opened for traffic at Dallas, a viaduct 1800 ft. long, of concrete and steel construction, to connect Dallas with Oak Cliff, and over which the electric street railway and interurban cars are now running. The cost of the viaduct was about \$175,000. The company has begun the work of tearing up its tracks on Main Street preparatory to laying heavier rails and paving one-third of the street in connection with the repaving of this thoroughfare by the city. Creosoted block paving on a 6-in. base of concrete will be used, and the cost to the Northern Texas Traction Company for its part of the work will be \$115,000.

**\*Greenville & Northwestern Railroad, McKinney, Tex.**—The question of completing the construction of the Greenville & Northwestern Railroad is being agitated in McKinney in connection with a proposition to electrify the line. The road has been completed from Anna to Blue Ridge and thence to Westminster, but has been inoperative for some time.

**Monongahela Valley Traction Company, Fairmont, W. Va.**—A contract has been let to Keeley Brothers of Clarksburg for the construction of this company's extension from O'Neil to Wolf Summit.

**Janesville & Madison Traction Company, Madison, Wis.**—G. Pickhardt advises that the assets of the Janesville & Madison Traction Company, which proposed to construct a line from Janesville to Madison, forty-two miles, have been

sold to the Capital Interurban Company, 1012 Majestic Building, Milwaukee, recently organized with the following officers: Gustav Pickhardt, Milwaukee, president, treasurer and purchasing agent; Edgar Smith, Madison, vice-president; E. C. Smith, Madison, secretary; Anton Rosing, Madison, general manager, and C. M. Conlee, Madison, electrical engineer. The company reports that operation will probably be begun around Lake Monona Aug. 1. [March 25, '16.]

## SHOPS AND BUILDINGS

**Pacific Electric Railway, Los Angeles, Cal.**—Work will soon be begun by this company on the construction of a freight station on Garey Avenue between Third and Fourth Streets, Pomona. Plans are also being made by the company to construct a combination freight and passenger station at Claremont.

**Northwestern Elevated Railroad, Chicago, Ill.**—This company has withdrawn its application for a permit to erect a new station at Wilson Avenue. Officials of the company state that they have decided to build a platform and canopies for the new stub-end terminal and to give access to the old station by means of subways.

**Chicago & Joliet Electric Railway, Joliet, Ill.**—The carhouse of this company at Joliet has been completely overhauled this summer and much of it has been rebuilt.

**Joliet & Eastern Traction Company, Joliet, Ill.**—The general offices and waiting rooms of the Joliet & Eastern Traction Company have been removed to the building formerly occupied by the Elgin, Joliet & Eastern Railroad. A spur track from Cass Street has been constructed at this point and the building will be used as the freight and passenger terminal of the line.

**Alexandria (La.) Municipal Railway.**—Material has been received by the Alexandria Municipal Railway for the construction of a brick carhouse at Lee and Tenth Streets.

**Pittsburgh (Pa.) Railways.**—This company has awarded a contract to W. F. Trimble & Sons, Pittsburgh, for the construction of a carhouse at Millvale.

## POWER HOUSES AND SUBSTATIONS

**Pacific Gas & Electric Company, Sacramento, Cal.**—This company is spending about \$3,000 for improvements to substations in the immediate vicinity of Chico. The machinery at substation No. 2 at Esquon, operated jointly by the Pacific Gas & Electric Company and the Northern Electric Railway, has been raised above flood water at a cost of \$1,500.

**Massachusetts Northeastern Railway, Haverhill, Mass.**—It is reported that this company contemplates the construction of a new boiler house in Merrimac.

**Cape May, Delaware Bay & Sewell's Point Railroad, Cape May, N. J.**—The \$100,000 power plant of the Cape May, Delaware Bay & Sewell's Point Railroad, the Ocean Street Passenger Railway and the Washington Street Railway was practically destroyed by fire on July 21.

**Columbus Railway, Power & Light Company, Columbus, Ohio.**—The City Council of Columbus has passed an ordinance granting permission to this company to construct a \$300,000 power plant on Kimball Street, north of Broad Street. The company will construct its plant 50 ft. west of the levee and it is announced will also build a new retaining wall.

**Carbon Transit Company, Mauch Chunk, Pa.**—This company is installing a 375-hp. B. & W. water tube boiler of 150 lb. steam pressure, with steel stack, Coppus turbine blower and special furnace for burning its own anthracite culm; also a 300-kw. Westinghouse generator direct-connected to a Russell four-valve engine and a 300-kw. Allis-Chalmers generator direct-connected to an Erie ball cross compound engine with condensing equipment.

**Puget Sound Traction, Light & Power Company, Bellingham, Wash.**—Plans have been announced by this company for the installation of a 150-hp. substation in Deming to supply that town with energy for business, street and residence lighting. The station will ultimately be increased to 450 hp.

## Manufactures and Supplies

### CARBON BRUSH PRICES INCREASING

#### Imported Materials Are Difficult to Get and Continue to Rise in Price

The majority of the carbon brush makers are experiencing considerable trouble in securing enough of the materials imported for use in their brushes to keep pace with the orders in hand. Several companies have found it necessary to raise prices from 10 to 20 per cent, due to the increased cost of raw materials and also the labor cost, which in one instance is 33 per cent higher than at the beginning of the war.

One company advises that it is obliged to order imported materials in quantities three times as large as were ordered before the war and to carry a heavier stock. Prices have been increased considerably as the percentage of advance on some raw materials has exceeded 100 per cent. In spite of the present high prices some of the customers of this concern have placed large contracts covering their requirements for some time to come. These contracts are not subject to cancellation, as it was necessary for this company to protect itself by purchasing the raw material at the present prices.

About half of the companies interviewed claim that the railways are buying brushes in large quantities to care for the future, while the others say the roads are buying just enough for their immediate requirements.

The prices of the raw materials, and of course the finished product, are higher now than at any time since the beginning of the war, and a number of the manufacturers feel that the highest price has not yet been reached.

### ROLLING STOCK

South Covington & Cincinnati Street Railway, Covington, Ky., is in the market for twenty-five 44 ft. 6 in. cars for single end operation.

Shore Line Electric Railway, Norwich, Conn., is converting several open cars into pay-as-you-enter cars at the Greenville carhouse.

Kankakee & Urbana Traction Company, Urbana, Ill., has purchased five freight cars from the Interstate Car Company, Indianapolis, Ind.

Burlington County Transit Company, Hainesport, N. J., has ordered two 29-ft., semi-convertible cars from The J. G. Brill Company to be equipped with GE 258 four-motor equipments.

Burlington (Vt.) Traction Company has ordered one double-truck convertible car from the J. M. Jones Sons Company and five quadruple equipments of 323 V motors with double-ended K-28-B control.

### TRADE NOTES

McQuay-Norris Manufacturing Company, St. Louis, Mo., announces that Benjamin R. Evans and Russell W. Long have joined their sales force as field men, traveling out of the St. Louis plant.

Protective Signal Manufacturing Company, Denver, Col., announces that it has opened an office at 550 Peoples Gas Building, Chicago, Ill., and is represented there by J. M. Fitzgerald and O. S. Flath.

King Foundry Company, manufacturers of ornamental street lighting specialties, announces that it has become necessary to move its main office from St. Joseph to Chicago. Its address in the future will be 927 Monadnock Building, Chicago, Ill.

Holden & White, Chicago, Ill., announce that hereafter Garland railway ventilators for electric railway service will be sold in Eastern Canada by C. E. A. Carr Co., Toronto. This company also handles Perry-Hartman side and center bearings for Holden & White.

Gas-Electric Motorbus Corporation, New York, N. Y., has received an order from the Chicago Motor Bus Company for

forty buses complete, of the new low-level type. The buses are to be operated on the north side of Chicago. The chassis will be built by this company and the bodies have been ordered from the St. Louis Car Company through Wendell & MacDuffie, Eastern representatives.

Curtain Supply Company, Chicago, Ill., has received an order to equip with ring 88 fixtures and Rex rollers the six cars being built by the Southern Car Company for the Montgomery (Ala.) Light & Traction Company. This company has also received an order for ring fixtures for five buses for the Havana (Cuba) Electric Railway, Light & Power Company.

C. G. Chamberlin, for the past eight years with the F. W. Devoe and C. T. Reynolds Company, New York, in charge of the Electric Railway Department, has associated himself with the W. H. Coe Manufacturing Company, Providence, R. I., and will devote his attention to Coe's gilding wheels and Coe's ribbon gold leaf in the Eastern part of the country. Mr. Chamberlin's wide acquaintance with the field augurs well for his future success.

Union Switch & Signal Company, Swissvale, Pa., announces that J. S. Hobson, formerly General Sales Manager, has been appointed Western Manager in charge of the Chicago, St. Louis and San Francisco offices with headquarters in Chicago. C. E. Denney, formerly assistant General Sales Manager, has been appointed assistant to the President, with headquarters at Swissvale. The positions of General Sales Manager and assistant General Sales Manager have been abolished.

American Embassy, Paris, France, is anxious to receive catalogs, price lists and similar printed material from American manufacturers interested in the French and Spanish markets. The embassy has numerous inquiries almost every day for the names and addresses of American firms capable of furnishing a large variety of products, and it is more helpful to be able to exhibit catalogs to such inquirers than simply to give them names and addresses of American firms. The catalogs should be addressed to the Commercial Attaché of the American Embassy, 36 Avenue de l'Opera, Paris, France.

### ADVERTISING LITERATURE

Westinghouse, Church, Kerr & Company, New York, N. Y., have issued a circular in poster form, showing in colors the work of rebuilding a plant without interfering with its output.

Joseph T. Ryerson & Son, Chicago, Ill., has issued bulletin 20,141, describing and illustrating the Riley universal elliptic spring-forming machine which this company recently placed on the market.

Locke Insulator Manufacturing Company, Victor, N. Y., is distributing the 1916 issue of "The Insulator Book," which is profusely illustrated and contains data of considerable interest to the transmission engineer.

Ohmer Fare Register Company, Dayton, Ohio, has issued a booklet on the Ohmer System of fare collection, entitled "The End of the Argument." This company has also published pamphlets on its totalizing registers and transfer machine.

### NEW PUBLICATION

Central Station Management. By H. C. Cushing, Jr., and Newton Harrison. D. Van Nostrand Company, New York. 397 pages. Cloth, \$2 net.

The authors state in their preface: "It is the purpose of this volume to set forth clearly and simply those principles that are to-day adopted by the successful electric light and power stations of the United States." In a number of instances, however, they have taken the liberty of wandering rather far astray. The book is written in a popular style. Its interest to the average reader would have been enhanced by the use of some appropriate illustrations. Interesting and valuable data are given in the body of the text, but their value would have been greater if the authors had put them in a more usable form. The commercial side of central station management is emphasized, and for that reason the book should be of interest to central station managers and power salesmen. It contains very little matter of interest to electric railway men.