

# Electric Railway Journal

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## A CREDITABLE STRIKE SETTLEMENT

The power of public opinion was forcibly exemplified in the settlement of the street railway strike in New York City this week. In enforcing its opinion the public assumed certain responsibilities for the future which it cannot evade without disaster. The companies have materially improved their position before the people, and the employees, by the logic of events, are committed to a policy of fair play and sobriety of conduct that will mean much for the industry if honestly carried out. Two issues were involved in the strike, the right of the men to join the union and the demand for more pay. In defending its position on the union question the company was at a disadvantage because it was not able to get before the public for discussion the larger issue of possible union domination through the closed shop if the amalgamated association should get control of its labor and insist upon the employment of union men and none other. The discussion was cunningly confined to the right of the individual to join a union. In the public mind that was a question of individual liberty to which there was but one answer. It would be about as easy to gain support for a rule that no employee should join a debating society, or the Republican party or the Methodist church.

## THE FUTURE RESPONSIBILITY OF THE PUBLIC

The companies took the only wise course open to them in yielding their original position on this point. They were equally wise, as were the mediators, Mayor Mitchel and Chairman Straus, in seeing to it that the terms of settlement were so drawn as to establish a basis on which it may be made very clear to the public that while the men were freely accorded their natural rights in the matter of organizing themselves, the union was not recognized as the dominating and controlling authority in the relations of the companies with their employees. The public authorities who did such excellent work in bringing about the adjustment of this trouble will, we hope and believe, appreciate to the fullest extent the obligation which by implication they have assumed to protect both the public and the transit companies from the intolerable consequences which will follow if Mr. Mahon and his associates are permitted to accomplish their full purpose of bringing the traction lines of the city under the absolute domination of an arrogant, irresponsible and unregulated labor trust. It is the duty of the authorities to recognize that the personal liberty of a non-union man is just as precious and inviolable as the personal liberty of a unionist and that the public interest may be in greater

peril from the recalcitrancy of a labor monopoly than from any aggressions of a monopoly of capital.

## THE MONEY FOR INCREASED WAGES

Under the terms of settlement it is more than probable that the question of increased pay for the men will go before arbitrators. If an advance is made the money with which to meet it can come from only one source—the pockets of the people served. Here is the point at which the employees have a great opportunity. If they can see that they and the companies are working for the same employers—the people who ride in their cars—and that like good business men, whose costs of production have risen, it is necessary for them to show the customers frankly and candidly that the price of the goods must go up to keep pace with the advance in costs, it will be much easier to get the needed money through either increased fares or relaxation of restrictions which now absorb much of the revenues of the companies. The man in the street will of course smile a smile of derision at the first suggestion of this nature. He will not take the first step to banish the myth that utility profits are fabulous and unyielding. The utility employee will simply act in his own interest by helping to make the man in the street understand the facts.

## SOLIDARITY OF EMPLOYEES AND COMPANIES

The employees should be the best friends of the companies in creating that change in public sentiment which must come in order that the companies may live and develop their services in accordance with the rapidly growing needs of the community. The reservoir of funds from which all expenditures of the traction lines must come is not in some magical and inexhaustible treasury reserve. If every cent now paid in interest and dividends were diverted to the payrolls the difference to the individual employee would seem to him to be amazingly small. Increased wages can be obtained and continued only by bringing the public to a more intelligent and a more liberal attitude toward traction interests. At heart the public no more wants underpaid traction companies than it wants underpaid traction employees. The rank and file of employees must bear their part in the task of bringing out and driving home the facts to effect the needed change in the public mind. We recommend to the New York companies and their employees careful consideration of some remarks by Jesse W. Lienthal of San Francisco, printed on another page on the solidarity of interest and sentiment which has been developed between his company and its men.

## POPULARIZING UTILITY OWNERSHIP

A movement which has gained considerable impetus during the last year or more is the partial mutualization of utility ownership through the direct sale of securities to patrons. Thus far the innovation has mostly been found in the electric light and gas industries, but the reported success here has at least made other utility operators keenly alive to the fact that such a policy could perhaps be used to advantage in their fields. To enable electric railway officials, therefore, better to judge the adaptability of the movement, we are publishing this week an article on the security-selling work of H. M. Byllesby & Company, an organization which has carried the plan to a commendable development of general detail for various lighting properties.

The chief object of selling securities to patrons is not to raise funds but to create better public relations for the company. The basic idea, of course, is that the thing which touches a man's pocketbook directly is the thing that interests him vitally. The patron who is a security holder is not nearly so likely to listen to the demagog, to formulate incessant objections to and criticisms of the company's practices and to hinder the expansion of its business, as is the patron who has not this direct interest in the company. In other words, the indifference or even hostility of the mere patron tends through security ownership to be transformed into an active co-operation to advance the company's prosperity. The experience of the Byllesby properties shows that this is not at all an unobtainable ideal, and the advisability of adopting the plan for electric railways can not, we think, be questioned upon very strong grounds.

It will be said, of course, that electric railways, unlike the electric lighting and gas utilities, have no definitely listed clientele for security sales. This is true, but it is a minor point. It makes an individual appeal to prospective purchasers more difficult, but the intrinsic merits of security ownership are such that a general systematic advertising of the security-selling plan would undoubtedly bring to light many people of small incomes who would be glad to use their local railway as a combined vehicle for saving and investment. The securities offered would have to be of small denomination, and a partial-payment plan might be necessary, but the extra trouble and expense caused thereby would be negligible in comparison to the results to be gained. Moreover, as to the probable assertion that small denomination securities have been discredited on account of their use in "get-rich-quick" schemes, we feel that any prejudice arising from such a cause would be dispelled when the securities are issued by a reputable management upon a property under the immediate personal observation of the buyers.

Furthermore, it will be pointed out that if electric railways take up direct-security selling, they will be obliged to overcome the opposition of investment banks. These live on security commissions and profits, and it would not be unnatural for them at first glance to oppose any plan whereby a utility would deal with local investors directly. There are reasons, however, why

this obstacle should not prove serious. In the first place, the bankers may enter the case only to buy in old securities for resale locally, in which event they are not in position to dictate regarding the disposition of the securities. In the second place, in comparison to the amount of new securities handled by the investment bankers, the absorptive power of the local community is almost invariably small, and the bankers ought to be most willing that the company should reserve a small part of new offerings for sale to its patrons at the syndicate or market price. The successful carrying out of its security-selling policy would have a beneficial effect upon the company's public relations that would sooner or later redound to the financial benefit of the bankers themselves. The bankers should not even desire to handle the local sales themselves, inasmuch as the work can be sufficiently well done by the local company, with the possible assistance of the local banks in partial payment matters. Indeed, in view of the desire to create better public relations, it is quite essential for the railway to make the sales, for it rather than the investment bankers will make paramount a wide diffusion of the securities instead of a quick placing of the whole amount.

Another objection to selling electric railway securities to patrons will arise in connection with the fundamental question of market popularity. While utilities have sold and will probably still sell some bonds and notes to customers and patrons, the direct-selling plan fundamentally is based upon the local distribution of stock issues, for it is the stockholder rather than the bondholder who has the most keen interest in every detail of operation and through whom the idea of having the utility and its patrons partners in financial matters and community advancement can best be carried out. Moreover, as the offer of stock is made on an investment basis, it goes without saying that the issue should be of an investment character, that is to say, fundamentally good and with security of principal and of return more important than speculative value. In a broad sense, these are the characteristics which a public utility security should naturally possess, because while regulation will prevent large returns, its tendency is equally to protect existing investments from competition and confiscatory legislation. If the common stock does not possess the requirements outlined above, an issue of preferred stock can often be made to advantage, or an issue of debenture bonds with convertible features.

The sale of stocks to patrons is not by any means an immediate panacea for all railway ills, but it is a valuable aid for putting a portion of the public in a position where they will understand and see the injustice of many such ills. It may be thought that the amount of stock absorbed locally will not be enough to enable the holders to influence very much the community feeling, but the amount is a secondary matter. The vital point is the number of stockholders, for the more local holders there are for the allotted block of stock, the stronger will be the effect upon the general public. The basic theory of local stock ownership is sound, and the movement deserves a fair trial at the hands of railway operators. Thus to bring about a more popular ownership

of electric railways, combined with the operating efficiency that now characterizes privately owned lines, would be to attain the aim without all the attendant evils of municipal ownership.

#### IS A NEW UNIT FOR COMPARING TRACK MAINTENANCE COSTS DESIRABLE?

Track maintenance costs varying from \$86 to \$2,200 per mile per year, or from 0.42 cent to 16.11 cents per revenue car-mile, are listed in the 1914 report of the Public Service Commission for the Second District of the State of New York. Equipment costs for the same period do not show any such marked differences, and while energy production costs are not recorded, it is safe to assume that they, too, would not vary between such wide limits. What, then, are the causes for the wide variations in track maintenance costs? Differences in maintenance standards? Yes, to a certain extent, but the trouble is largely with the bases of comparison which certainly are far from just. Way engineers have long realized this and as a result have not been induced, by comparative figures, to study each other's results with a view to improving methods and practices, setting up proper standards of maintenance and reducing costs.

That studies of unit costs have been found fruitful in other fields of endeavor, the remarkable progress made by manufacturing companies during the last few years in the way of improved methods of manufacture and the scientific selection and utilization of materials, bear witness: Are not the same principles of engineering and economics applicable to railway work?

In average figures the cost of the track of a street railway system is about 40 per cent of the total plant cost, and the cost of track maintenance, according to the United States Bureau of the Census, is about 11 per cent of the total operating expense. Track maintenance, therefore, is an important item in the annual expense budget, and every facility should be afforded for obtaining comparative cost data because it is by comparison that one strives to improve. An accepted basis of comparison would bring about the standardization of a method of arriving at comparative costs and engineers would find greater use for such costs than they do now. For example, if his cost of maintenance seemed unduly high, in comparison with standard figures, the engineer would be interested in discovering the cause and providing a remedy. High unit costs might be due to a number of causes, such as the selection of an improper type of track for the service, inefficient methods, or to a low standard of maintenance, and premature renewals owing to the fact that the paving in the street was to be renewed and it seemed desirable to relay the track at the same time. With track maintained in standard condition, low unit costs extending over a long period of time would indicate efficient management. There are very few properties on which a scientific study of reliable comparative costs would not result in improved methods and decreased annual charges.

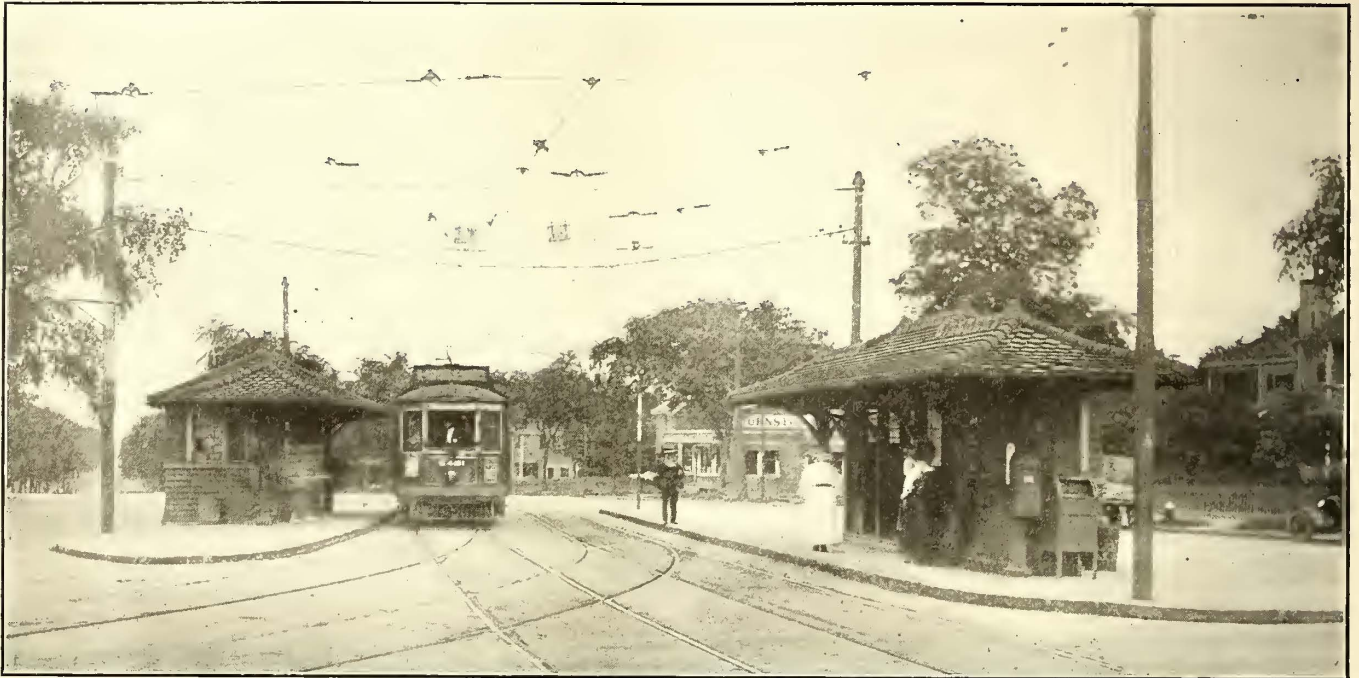
As railways are usually managed, the track is called upon to withstand the brunt of a retrenchment policy oftener than any other part of the railway physical property. And this, despite the facts that it, as much as any other element in the railway equipment, is affected by neglect, and that for each road there must be some condition of roadway which will require the minimum average annual outlay to maintain. If, therefore, more or less uniform standards of track maintenance would result from the adoption of a suitable unit for the comparison of maintenance costs, the price of compiling the necessary data would be more than repaid. Such standards would also be extremely valuable in comparing different types of track construction on the same system, for even with the modern accepted types the lack of comparative data is felt, and there is some question as to whether the increased cost represents a judicious expenditure or whether increased life is being obtained only at more than a proportionately increased cost.

But, it is argued, there are so many local conditions and special situations affecting maintenance costs that comparative costs are useless! Quite true, about the local conditions, but such factors also have entered into the unit costs for equipment and have not seriously detracted from their value. Further, it is interesting to note in this connection that the electrical and mechanical departments have far outstripped the way department in perfecting practices and equipment through the use of comparative unit costs.

In this connection it must be remembered, however, that the successful use of any sort of unit cost depends on the accuracy of the accounting methods used in the determination of that cost. From the engineering point of view, cost accounting systems are valuable only in so far as they permit an intelligent analysis to be made of their results. When an accounting system only serves as a record of expenditures made, its greatest value, namely, that of affording incentive for improvement, is lost. In other words the accounting system should be to the way department what the recording meter is to the electrical department. It must further be remembered that it is the average annual cost that is of value as a comparative unit. Deferred maintenance must always be paid for in the end by a growing concern, and a correct standard may be determined only by a painstaking analysis of expenditures and by comparisons with other railways on a standard unit basis.

In conclusion, we feel that a more satisfactory basis for the comparison of track maintenance costs would promote a more scientific study of track maintenance, which in turn would result in improved methods and practices, standards of track maintenance and greater efficiency of the way department. These things, in their turn, would result in increased safety, greater reliability of service and reduced costs. In a later issue we expect to present a brief discussion of the relative merits and demerits of some of the bases of comparison now in use or proposed for use.

# Boston Profits by Elevated Railway Station Improvements



BOSTON STATION IMPROVEMENTS—COOLIDGE CORNER CAR STATION

*Recent betterments on the Boston (Mass.) Elevated Railway include the reconstruction of several important passenger stations and arrangement of loop tracks to relieve congestion at other points on the system, the establishment of terminal storage yards for trailers, and a short but essential extension of the East Boston tunnel to the West End district, with extended studies of possible improvements in handling traffic. One hundred new center-entrance Brill and Laconia motor cars have been ordered by the company, with forty-two new pressed steel cars for the rapid transit elevated lines and one hundred Laconia center sections for articulated surface cars. These and other improvements are described in the accompanying article.*

**P**ROBABLY the most important station improvement now under way by the Boston Elevated Railway is the reconstruction of the Egleston Square station in the Jamaica Plain district for the relief of congestion at the Dudley Street station of the rapid transit lines in Roxbury. Dudley Street station was formerly the southerly terminus of the rapid transit lines. Later these lines were extended to Forest Hills by elevated structure, Dudley Street station still remaining the terminus of a large number of surface car lines operating in the Roxbury-Dorchester district. It is still the principal transfer point between these lines and the rapid transit system. About 85,000 passengers, both inbound and outbound, transfer daily in this station and about 40 per cent of these transfer in the rush hours. This large volume of travel overtaxes present facilities, especially on the east loop of the station, where about 40,000 passengers per day transfer in each direction between surface and rapid transit cars.

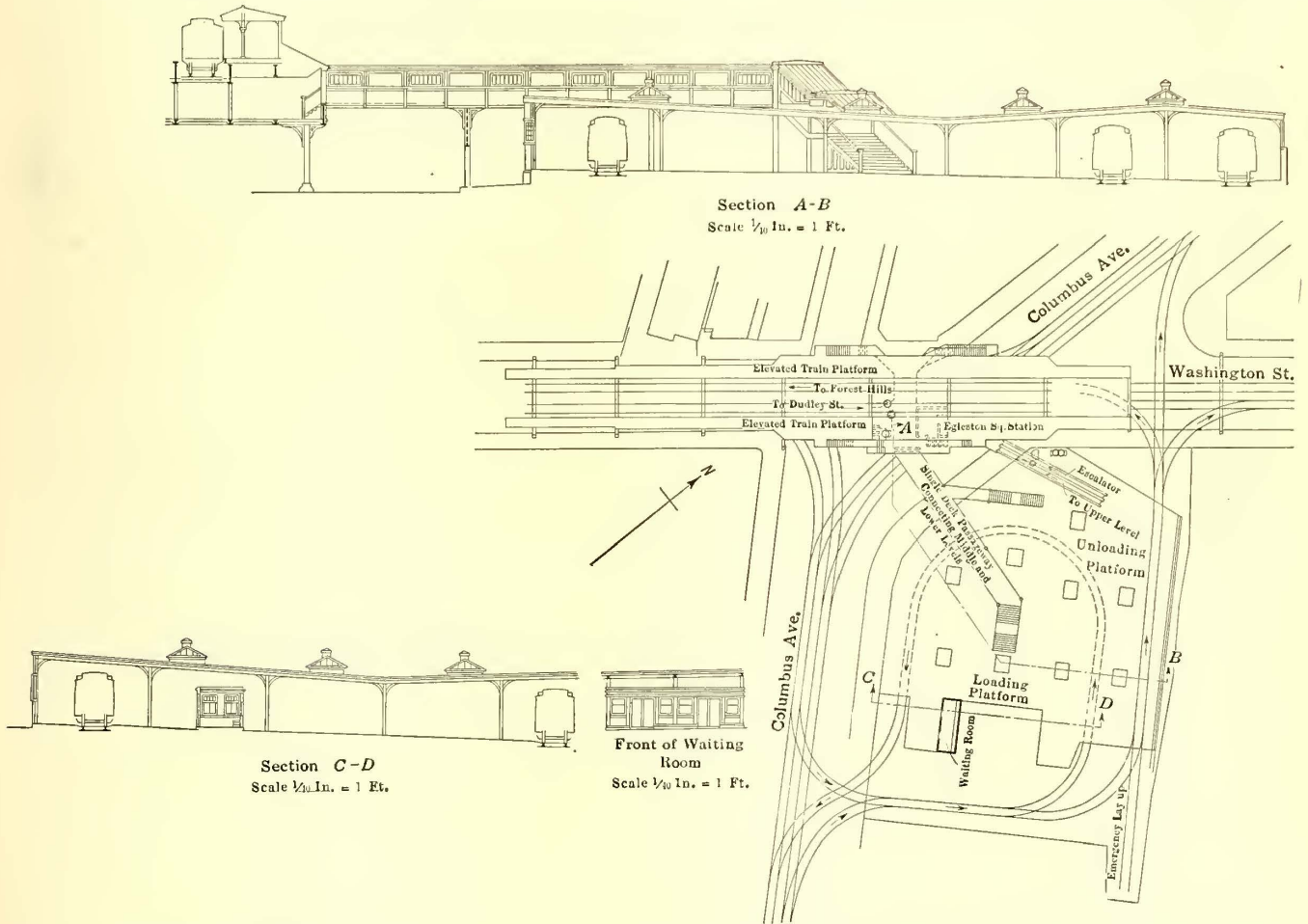
To relieve the congestion at this loop, the Egleston Square station is now being enlarged to permit the diversion of certain surface car lines from Dudley

Street to the rapid transit station at the former point, and the transfer under the new arrangements will be made within a prepayment area and without the use of paper checks. The enlarged station, which is illustrated in plan and sections, will be provided with a loading and unloading platform for surface cars, ticket office for passengers entering on foot from the street, an escalator and suitable shelter from the weather. There will also be short stairway connections between the rapid transit platforms and the outbound surface car loading platform. All surface cars passing the intersection of Washington Street and Columbus Avenue will be routed through the surface portion of the station, and the withdrawal of the present Mattapan motor-trailer service from the east loop at Dudley Street will not only reduce congestion there but will in many cases shorten the running time from Dorchester points into the business center of Boston through the making of an earlier connection with the rapid transit system farther away from the downtown district.

About 10,000 passengers now transfer daily at Dudley Street to and from the Mattapan line, which is one

of the most important of the surface trunk lines on the south side of Boston. The enlarged Egleston Square station will enable other lines to be diverted to the rapid transit system at this point, if necessary, and affords the prospect of considerable future as well as early relief of conditions at Dudley Street. It is expected that the enlarged station, with its prepayment area and surface car trackage, will be completed in about three months. The track layout enables surface cars to be routed through the station or reversed inside the prepayment area as the case requires. Short and quick connection is afforded by a double-file escalator between the unloading surface car platform and the elevated train platform, and the separation of inbound and outbound traffic is assured by the location of load-

is made there with the suburban cars of the Middlesex & Boston Street Railway, there was considerable congestion at Newton during layovers, due also in part to heavy automobile traffic and the use of Newton Corner by pedestrians. Service was rearranged by the company so that the through lines mentioned above terminate at the Watertown carhouse, and in place of the paper transfers previously issued, a free bodily transfer now enables through passengers to continue their journeys between Cambridge and Newton by a change at Watertown under shelter and within an area located on the company's property instead of in the street as formerly. Conditions at Newton have been greatly improved by this change, and the facilities for operating both normal and rush-hour service on short headway lines



BOSTON STATION IMPROVEMENTS—PLANS AND SECTIONS OF EGLESTON SQUARE STATION WHICH PROVIDES BODILY TRANSFER WITHIN PREPAYMENT AREA

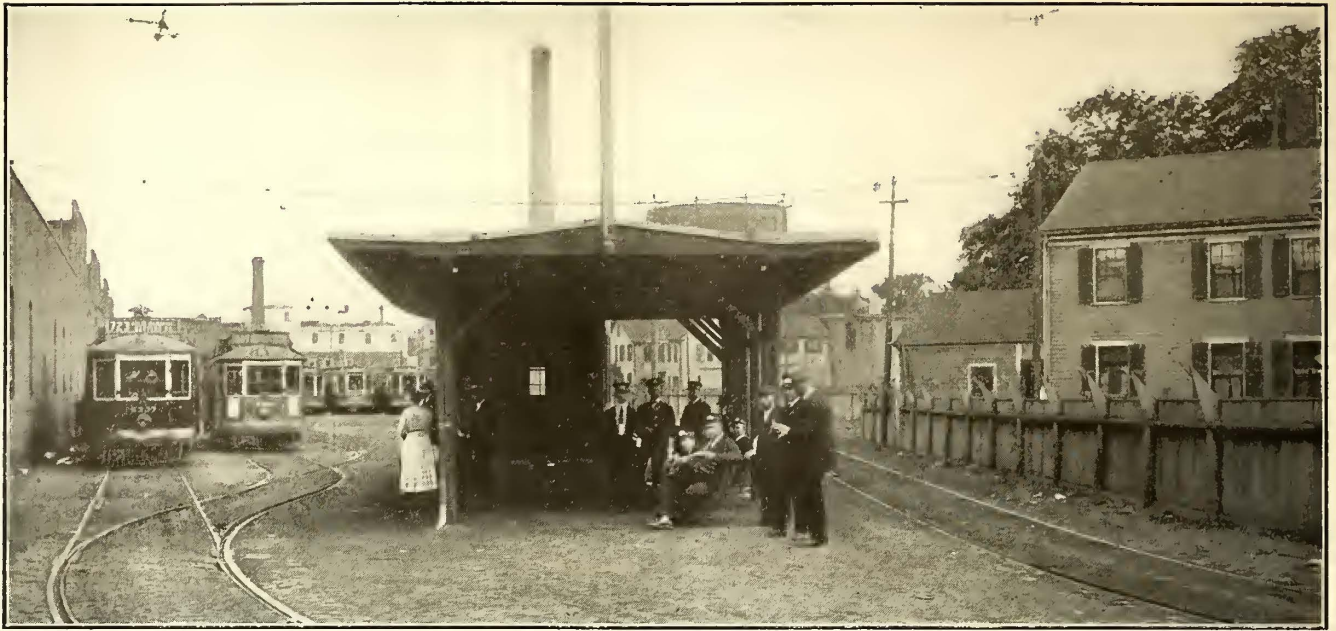
ing and discharge berths. On a smaller scale and with little modification of its original design for train service other than the addition required in connection with surface car service, the Egleston Square station is being equipped to perform similar functions as the larger station at Dudley Street.

**SURFACE TRANSFER STATION AT WATERTOWN**

Station improvements on the surface lines of the company at Watertown, Mass., are illustrated in another plan, and also by a half-tone engraving. Watertown is now the terminus of important lines operated from North Cambridge through the Harvard Square station of the Cambridge subway and Mount Auburn district westward, and from Park Street subway station in Boston through Allston, Brighton and Newton, with corresponding return service. Formerly Newton Corner was the terminus of these lines, and as connection

leading into Boston via Newton and via the Cambridge subway connection have been much improved.

On these main surface lines terminating at Watertown, trailer cars are operated during rush hours on four-minute headway, the normal headway being four and six minutes. The inconvenience of the change is thus offset by the close connections scheduled between cars; transferring is effected under safe conditions without the annoyance and abuses of paper checks, and flexibility of operation is enhanced. Despite the peculiar layout of the Watertown property, a storage yard with six parallel stub tracks and a main line loop have been completed and utilized for some months to great advantage. Nearly 1200 ft. of storage is available on the stubs outside the carhouse, there also being three main-line tracks in the yard, giving ample space for the storage of trailer cars during normal and night hours, as shown in the half-tone engraving. Passengers



BOSTON STATION IMPROVEMENTS—WATERTOWN TRANSFER STATION, SHOWING LOOP FOR MOTOR CAR AND TRAIN OPERATIONS, YARD FOR TRAILER AND OTHER STORAGE, WAITING ROOM AND SHELTER WITH FACILITIES FOR BODILY TRANSFER

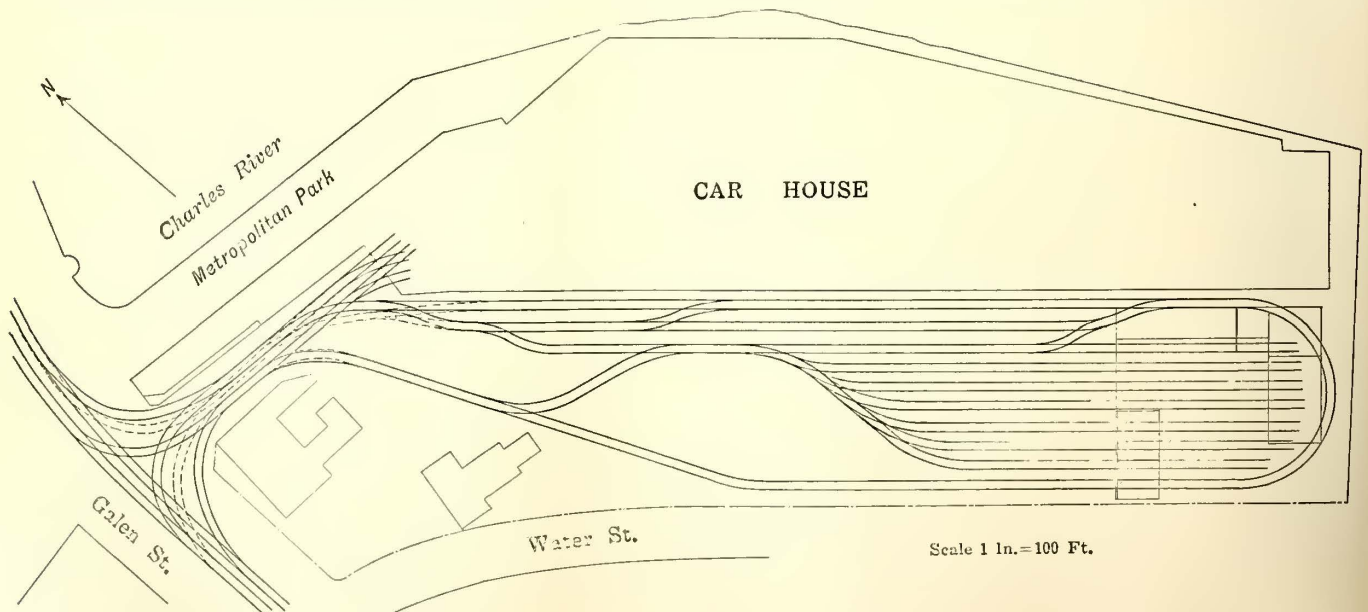
boarding cars outside the station in this case do so at the nearest stops on the street in front of the carhouse entrance, no ticket office being required as the transfer space at the north end of the yard is not a prepayment area except as regards through traffic.

In connection with the Watertown station facilities as now operated, it is noteworthy that the Massachusetts Public Service Commission not long since refused upon petition of certain patrons of the road to order the company to restore the former through service between Newton and Cambridge, the decision of the board pointing out the advantages of the new plan of operation in relation to the main flow of traffic in and out of Boston, the improvement of conditions at Newton Corner, and the better control secured by the company over its service as a result of the terminal loop installation at Watertown and the shortening of the length of trips to and from North Cambridge, with improved carhouse and yard facilities for the Brighton lines previously terminating at Newton. The commission emphasized the

part which close connections at Watertown station play in the maintenance of a satisfactory through service, and since opening the new trackage the company has paid particular attention to this point.

#### TERMINAL STORAGE YARDS

Terminal storage yards for trailers and other cars have also been laid out by the company recently at Mattapan, Arlington Heights and Jamaica Plain, the usual layout providing a loop for convenient turning of trains, with stub tracks inside for off-peak storage of rolling stock. At Jamaica Plain facilities for transfer without checks similar to those at Watertown are provided between West Roxbury cars and Center Street (trunk line) cars terminating at Jamaica Plain. The plans also include the operation of trailer cars between Jamaica Plain and Dudley Street station, an important manufacturing district being served by these lines. The looping of suburban cars at this carhouse is a step toward the betterment of service in the outlying portions



BOSTON STATION IMPROVEMENTS—WATERTOWN TRANSFER STATION. A GENERAL VIEW OF THIS STATION IS SHOWN IN THE HALF-TONE VIEW ON THIS PAGE

of the system, since irregular operation is proportional to the length of the line involved, and the shortening of routes insures better maintenance of schedules.

#### IMPROVEMENTS IN EAST BOSTON SERVICE

The termination of the East Boston tunnel at Court Street, Boston, virtually under Scollay Square, with stub-track and cross-over facilities instead of a loop, has handicapped the Boston Elevated Railway for many years. The 1911 Legislature authorized the extension of this tunnel (for surface cars) westward to North Russel Street in the West End. There are two stations provided, one at "Scollay Under," and the other at Bowdoin Square, each being of the island platform type. The extension was opened for service in March of this year, and includes a loop at Bowdoin Square for the turning back of East Boston cars, all lines except one being terminated at this point. The westerly end of the extension connects with surface tracks leading to Kendall Square, Cambridge, where connections may be made with the train service of the Cambridge subway. A switchback east of Scollay Square enables Cambridge cars to be reversed as required.

The extension was constructed by the Boston Transit Commission and the equipment was installed by the Boston Elevated Railway. The tunnel is a double-track tube and is equipped with 85-lb. A. S. C. E. rail laid on 6-in. x 8-in. x 8-ft. hard pine creosoted ties with tie plates and screw spikes. The joints are four-holed Duquesne joints, and the guard rails are of special section weighing about 90 lb. per yard. The inner rail on the Bowdoin Square loop is of the "frictionless" type to reduce flange wear, and the radius of the loop is 75 ft. The maximum depth of rail below the surface is about 40 ft., the minimum inside width of the tunnel for two tracks being 23.67 ft. The maximum grade is 4 per cent, and the interior height above the top of the rail is 14.25 ft. The length of the tunnel is about 2610 ft.

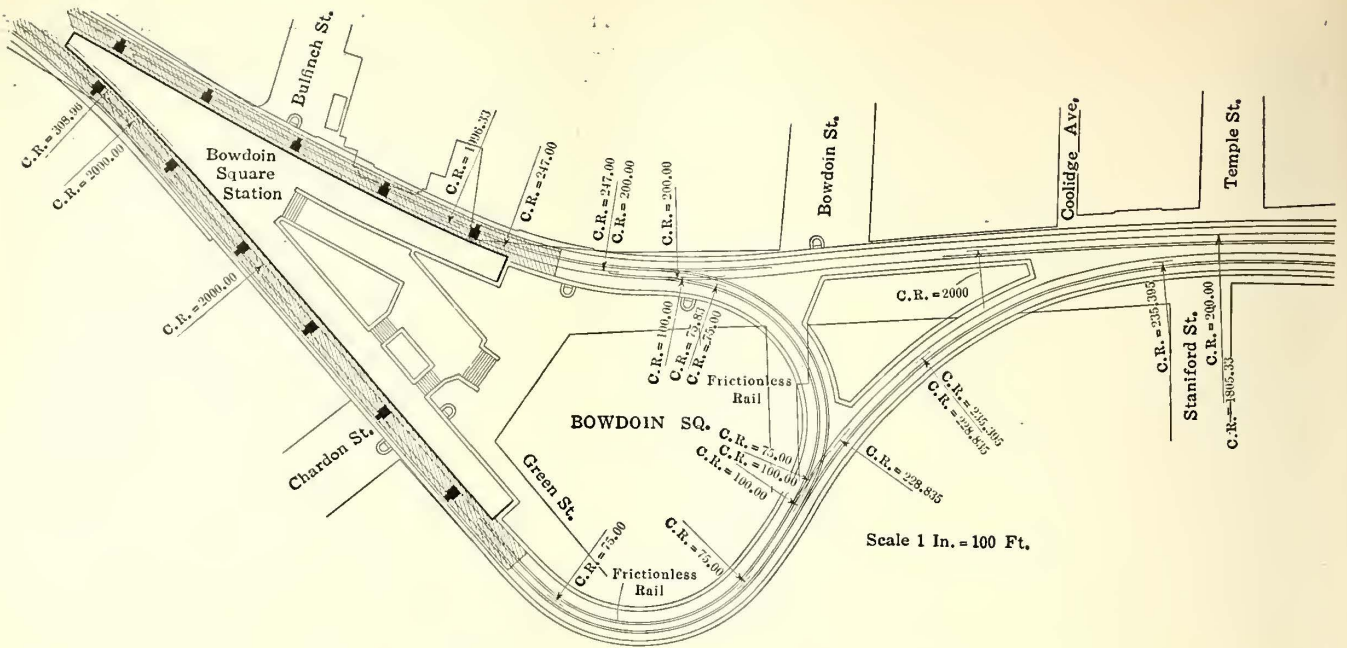
The platform of the "Scollay Under" station extends about 300 ft. along each track and varies from 16 to 52 ft. in width. It is from 38 to 40 ft. below the surface and is connected with the latter by a double-file escalator with each file independently motor-driven. The platform of the Bowdoin Square station is about 260 ft. long and from 8 to 52 ft. wide, being about 24 ft. below the surface of the street. The station walls in each case are finished with a wainscot of white terrazzo with colored tile border. The walls above the wainscot and ceiling are finished in white cement plaster. There are no floors, partitions or sheathings of wood, and with the exception of hand rails no part of the structure is inflammable. Track is laid in broken stone ballast and is equipped with Vaughn rail anchors. The station pits and platforms are of the sanitary type and are designed for flushing at frequent intervals. The space between the edge of the platform and the inner rail is filled with an anti-slipping composition forming a slight slope from the platform to the rail.

Besides affording quick connection between East Boston and the West End of Boston, as well as to and from Cambridge, the extension enables quick connections to be made between points in eastern Cambridge and the north and south Tremont Street subway lines in Boston proper and gives the Charles Street district of Boston, bordering the Charles River Basin on the east, greatly improved connections with the underground and rapid transit lines of the down-town section.

The improvement of service in the East Boston tunnel has received much attention by the company within the past year and has also been considered at length by the Public Service Commission. The problems encountered in the operation of the tunnel, especially in the face of increasing traffic following the abolition last winter of the penny tolls charged by the city of Boston, are of more than local interest. All the East Boston service of the company is operated through the tunnel



BOSTON STATION IMPROVEMENTS—INCLINE IN CAMBRIDGE STREET AT WESTERLY END OF THE EAST BOSTON TUNNEL EXTENSION

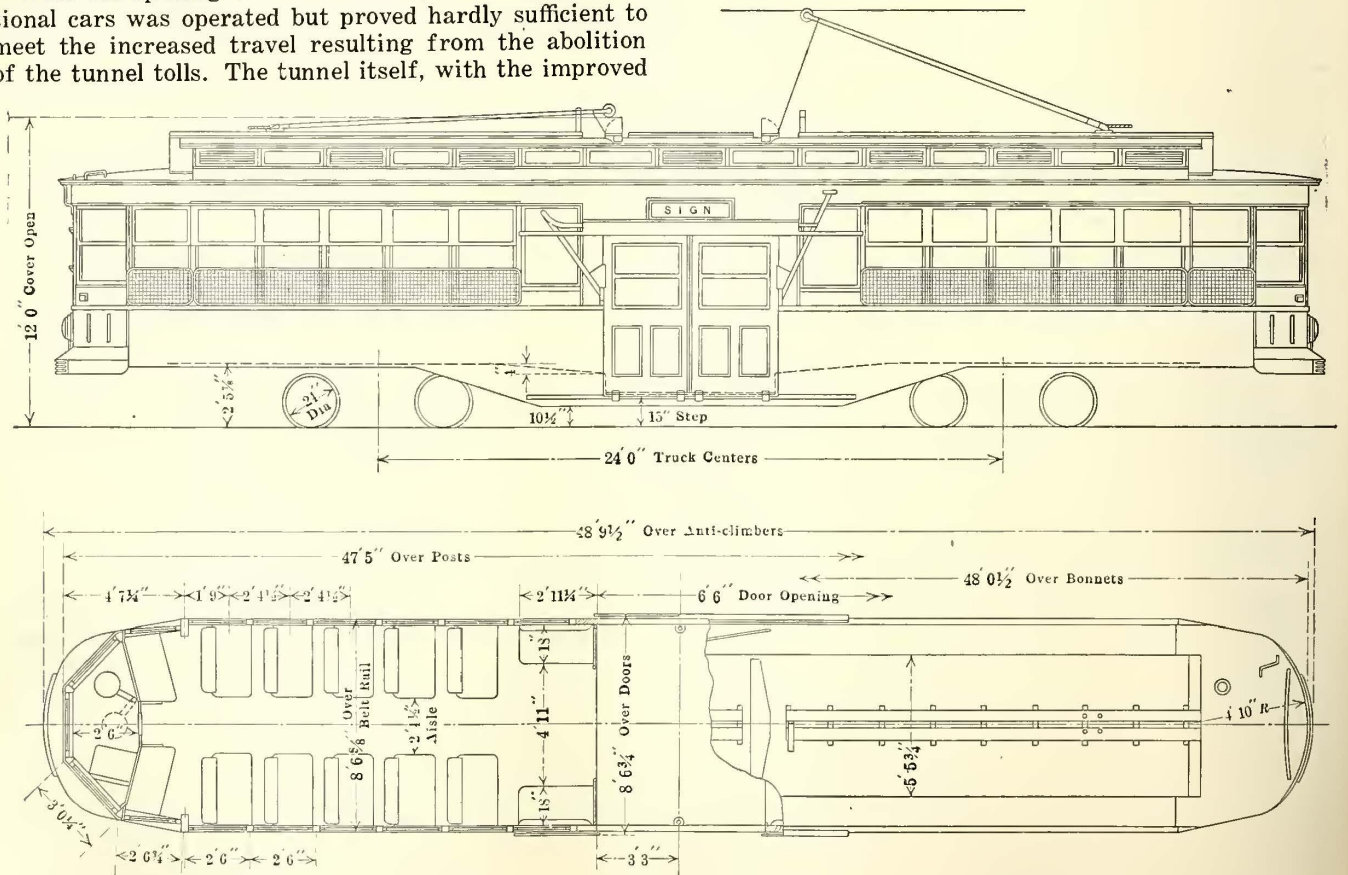


BOSTON STATION IMPROVEMENTS—BOWDOIN STATION, LOOP AND A THROUGH TRACK, ON EAST BOSTON TUNNEL EXTENSION

beneath Boston Harbor to the business district of Boston, and the service that can be rendered to this island ward of the city is limited by the capacity of the tunnel. So long as Scollay Square remained the westerly terminus, the capacity of the tunnel was limited to the number of single-unit cars per hour that could be operated to and turned back on the stub-end tracks at that point. This number proved to be inadequate for rush-hour service.

With the opening of the extension, a number of additional cars was operated but proved hardly sufficient to meet the increased travel resulting from the abolition of the tunnel tolls. The tunnel itself, with the improved

general railway and indication signal system recently installed and the Bowdoin Square loop in service, will accommodate from 125 to 150 units per hour, but on account of street conditions in East Boston a maximum of eighty cars per hour is about the limiting number which can be handled at present. This number is unequal to the demands of rush hour service. Accordingly, fifty additional cars of the trailer type have been purchased



BOSTON STATION IMPROVEMENTS—PLAN AND ELEVATION OF CENTER-ENTRANCE MOTOR CAR FOR SURFACE LINE AND TUNNEL OPERATION



by the company and during the present summer some of these will be operated through the tunnel from the Bowdoin Square loop through East Boston to Chelsea. To relieve the present congestion of traffic, additional cars will be run on other surface lines in East Boston.

To provide for the necessary increase of service it is estimated that at least sixteen trailers and sixteen additional semi-convertible cars will be needed. As the equipment now assigned to the company's East Boston division, exclusive of two small cars on a shuttle line between the North Ferry and Maverick Square, totals but seventy-nine, the additional cars to be provided will increase present car facilities by about 40 per cent and present seat facilities by about 45 per cent.

The institution of spacing stations on some of the company's surface lines has been described in an article by Edward Dana, "Dispatching Cars on City Lines," in the issue of this paper for April 24, 1915. One of the latest of these stations is illustrated herewith in view of the facility with which it was built into an existing passenger shelter at Coolidge Corner, Brookline. At this point two double-track lines cross, and as



BOSTON STATION IMPROVEMENTS—SCOLLAY UNDER STATION ON EAST BOSTON TUNNEL EXTENSION

the station is an important transfer center, good connections between cars are particularly desirable. Over the inbound Beacon Street, inbound and outbound Harvard Avenue tracks at this point a bullseye lamp signal is provided, controlled by a starter in the spacing station, so that any car can be held for connections or spacing as required.

#### CENTER-ENTRANCE MOTOR CARS

While this additional equipment is the best that can be provided in the immediate future, multiple-unit cars are considered preferable to trailers for use on the tunnel grades, and their availability for service permits a more flexible operation. The company has purchased 100 center-entrance motor cars and these will be placed in service as required in the tunnel and elsewhere, upon delivery. One of these new cars is shown in plan and elevation. In general appearance they resemble the trailer cars already in service at Boston. Each end is to be arranged for operation as a motorman's cab, and in each end are to be placed two seats, one of the folding and the other of the swinging type, which can be used by passengers when the compartment is not being used as a cab. These cars will be of steel construction and will seat sixty persons. Various other improvements are contemplated for the East Boston service, including the construction of a prepayment station at the mouth

of the tunnel in Maverick Square and the relocation of certain surface car routes. A new double-track surface line will be built in the reservation on Bennington Street and ultimately a cut-off line is planned on Chelsea Street from Bay Square westward. The Orient Heights line formerly operated to Central Square, Cambridge, is now operated only to the Bowdoin Square loop, the earlier service not having been satisfactory on account of the length of the line, grade crossing delays, surface obstructions and the lack of convenient carhouse facilities at the terminal points. In a recent discussion of the future of East Boston the Public Service Commission suggested that ultimately the traffic conditions in East Boston and Chelsea may require the extension of the tunnel from Maverick Square to Day Square, East Boston, and to Central Square, Chelsea. For the present, the commission does not approve the addition of service to the tunnel from Chelsea by cars of the Bay State Street Railway.

#### ENLARGEMENT OF PARK STREET STATION

Brief reference has been made in this journal to the enlargement of the Park Street station of the Tremont Street subway in Boston, one of the most important traffic centers on the entire system. These have now been fully completed, and the reduction in congestion resulting from the increase in platform length and area (from 15,258 sq. ft. to 23,672 sq. ft.) is noteworthy.

#### Traffic in Frankfort-on-Main

The annual statistical report of the city of Frankfort-on-Main, Germany, states that 104,731,494 persons were carried by the municipal street railways during the fiscal year 1914-15. This number includes 5,000,000 military persons, who were carried for half fare. The mileage for the city lines is 57.19 miles. The total number of miles covered during the year was 15,330,060. The income from the ordinary fares amounted to \$1,620,607. The income derived from the sale of weekly, monthly, and school children's tickets amounted to \$471,071. From the line operated jointly between Frankfort and Offenbach \$57,552 was realized. The total income from all sources amounted to \$2,149,468.

The fares are charged in accordance with a zone system, the most common charge being \$0.023. A reduction is now made in the case of military persons, who are being carried for \$0.011. Special inducements are offered to persons who purchase tickets, of which there are two general kinds—for one week and for one month. The former are chiefly for workmen and may be used only before 7.30 a. m. and after 4 p. m. They are not valid on Sundays or holidays. They are sold to be used either once or twice daily. The cost of this ticket depends on the distance traveled. A ticket good for one month and valid on all lines within the city proper at all times is sold for \$4.38.

For persons who wish only to ride over one special route, a somewhat complicated system of tickets has been arranged, the price depending upon the distance. A schedule on file at the general ticket office of the company enables the person desiring such a ticket to ascertain the price for the route chosen. A reduction is made in certain cases to disabled persons. Tickets for school children are sold each month at prices varying from \$0.71 to \$1.07.

It was announced recently that the Kansas City (Mo.) Railways was paying \$1,105 a month to men in militia companies now in camp. The company pays the difference between the men's wages while at work and the amounts they receive from the government.

# Selling Securities to Patrons

Partial Mutualization in the Lighting Industry Is Well Exemplified by the Practices of the Bylesby Properties—The Plan Has an Excellent Influence Upon the Improvement of Public Relations

AN innovation which has aroused considerable interest in financial and utility circles during the last year is the partial mutualization of public utilities through the sale of security issues in small denominations under a partial-payment plan to the patrons of the companies or the general public in the communities served, instead of placing the securities upon the usual distant market. Heretofore, the sale of securities upon a partial-payment basis has been a venture carried on only by brokerage houses, but the experiment thus far in the hands of various utilities seems to have proved successful. The progress recently made in selling securities direct to customers by companies such as the Northern States Power Company, the Pacific Gas & Electric Company, the Baltimore Consolidated Gas & Electric Company, the Standard Gas & Electric Company and others indicates the practicability of partial mutualization in the electric lighting and power industry. Through the means adopted by these companies, people of very small income have been enabled to use their local utilities as a combined vehicle for saving and investment and to do so with no more red tape than that required to order service or to pay monthly bills. In general the plan has elicited widespread interest, not only from the utility operators themselves but also from those to whom investment under the new policy has been made a possibility.

## WORK OF THE BYLESBY PROPERTIES

In order to bring to the attention of electric railway operators the details of this plan, the *ELECTRIC RAILWAY JOURNAL* has made an investigation of the movement along this line by the properties under the management of H. M. Bylesby & Co., Chicago, Ill., the work here by virtue of its scope, diversity and outcome being a good illustration of the possibilities involved. The principal effort by the Bylesby properties has been in the field served by the Northern States Power Company, but there has been something of the kind done at the majority of the properties and the policy is one to which the managers are fully committed.

The management first endeavored in June, 1915, to interest the citizens served by the Northern States Power Company's operating units, offering them the 7 per cent preferred stock of the company, which has paid dividends regularly since its organization in 1909.

This is the stock of the Delaware corporation, the owning and operating company being the Northern States Power Company of Minnesota. All of the capital stock of the Minnesota company is owned by the Delaware company, which has no funded or other debt. The subsidiaries consist of ten central stations, five gas works, four steam-heating plants and one street railway property, in the cities of Minneapolis, St. Paul, Stillwater, Mankato and Faribault, Minn.; Fargo, Grand Forks and Minot, N. D.; Sioux Falls, S. D., and Galena, Ill.

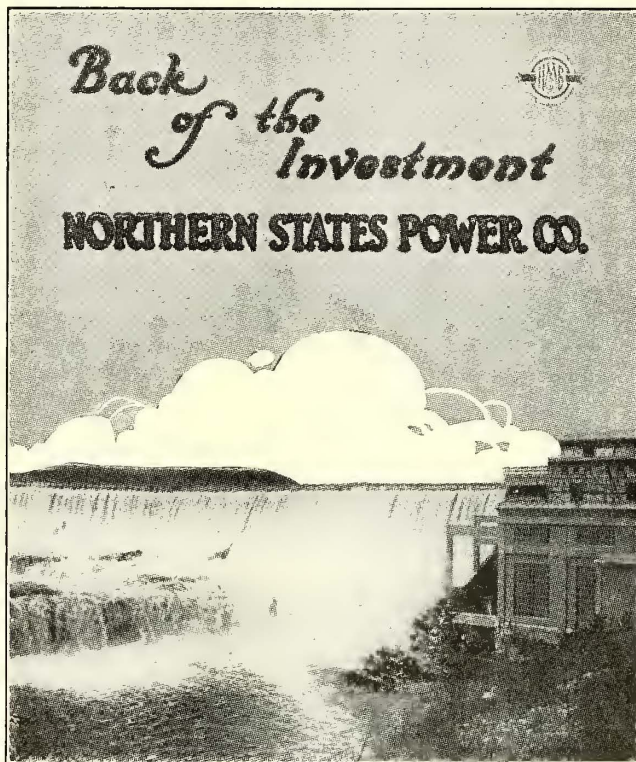
## THEORY OF THE PLAN

The purpose of the management in selling this preferred stock among consumers served by the subsidiary companies was not primarily to raise funds but to take the customers into partnership and make them feel a greater interest in the local utilities. The idea back of the work was the principle that what a man owns becomes of interest and of value to him, whether it be personal possessions bought and carried home or ten shares in the local utility, and that the sale of securities among the small investors of the community would be a most effective means of strengthening the bond of sympathy between the public and the company. In other words, he who felt a share of ownership in the utility would have a more intelligent

appreciation of the service rendered and would defend it against unjust criticism by those who did not understand. In short, it was believed that such a distribution of the securities would serve five useful purposes:

1. It would make the public and the utility actual partners in financial matters as well as partners in community advancement.
2. It would offer to citizens sound investment for surplus capital and savings in stable enterprises under their immediate personal observation.
3. It would gain a long step forward toward the popularizing of utilities that were seen to be doing their work creditably, honestly and efficiently.
4. It would bring about a practical distribution of profits among consumers.
5. It would assist in obtaining at lowest cost any part of the funds for construction purposes which it might be necessary for utilities to secure from time to time in the general investment markets.

When the sale of the stock was begun in June, 1915, no new issue of securities was available for the purpose.



DIRECT SECURITY SELLING—COVER OF BOOKLET OF VIEWS SENT OUT IN RESPONSE TO REQUESTS FOR INFORMATION

For this reason, in order to meet the demand that was created, outstanding stock was purchased by the company for resale to the consumers who applied for it. As the first step in the work, a circular letter was sent out to the customers of each company, written on that company's letterhead and signed by the resident manager. This explained the desirability of making an investment under holding company management and the general purpose of the Northern States Power Company offer.

This circular letter was followed up by advertisements in the local newspapers of each community, some of which are shown in the accompanying illustrations. Moreover, a special notice was printed on the back of the consumer's bills on the stub to be returned to the company, a space being provided, as shown elsewhere, for the consumer to indicate that he desired complete information in regard to the stock offer. The companies also distributed a leaflet showing pictures of a number of the Northern States Power Company plants with statistics in regard to the operating utilities, the purpose being to give the public a concrete idea of the

Please let me know whether I shall send you copies of the last annual report and financial circular or whether you will call at my office, where I have all information at hand to answer any special questions upon which you may wish detailed information. If you can arrange to call, it probably would be more satisfactory than if I attempted to transmit the information by letter.

We are glad to receive either large or small investments in the 7 per cent preferred stock, which may be purchased either for cash or on partial payments at the rate of \$5 per share per month.

Please let me know whether you wish me to send the financial reports or whether you will call, and if so, at what time, so that I will be sure to be at the office.

Again thanking you for your inquiry,

Yours truly, \_\_\_\_\_

THE PARTIAL-PAYMENT PLAN ADOPTED

Shortly after the first circular letter was sent out, the management decided to facilitate the sale of the stock by offering it on an installment basis, and a second letter was written to announce the plan. This feature was, of course, tied up with the newspaper advertisements, as is shown in the accompanying illustration. Under the new arrangement, the investors were offered

**Why Public Utility Investments are Desirable**

**Standard Gas and Electric Co.**  
Twenty-year 6% Notes  
Denominations \$50, \$100, \$500 and \$1000

These notes are being offered our customers toward establishing a wide distribution of securities and earnings in the communities served by the operating units of Standard Gas & Electric Co. of which the undersigned company is a part.

The Chicago Tribune, in an article printed several months ago, said:

"The great strength of public utility securities, like the strength of railway securities, lies in the fact that the utilities are necessary. The cessation of gas, electric light or water service in a large city is almost unthinkable. It would be a calamity which every resident of the place would seek to avert."

"Another point in favor of utilities is their action in times of depression. In the period from 1907 to 1911 the total earnings of gas and electric lighting companies increased 50 per cent, electric railway earnings increased 30 per cent, but steam railway earnings gained less than 10 per cent. An illustration of this is found at the present time. For a year past, nearly all railroads have been reporting decreased earnings, while a large majority of the utility companies which issue reports have shown increases. The effect of the depression on the utility companies has been shown merely in a smaller rate of increase."

Proceeds of the present \$2,750,000 twenty-year 6 per cent note issue of Standard Gas & Electric Co. will retire the company's short maturity obligations and provide funds for further extensions and improvements at the operating units, of which this company is one.

We recommend these notes as a conservative investment and will be glad to supply complete information upon request.

**The Ottumwa Railway & Light Co.**  
C. E. Fahney, Gen'l Mgr.

**New \$144,000  
7% Preferred Stock Issue**

*A Direct Investment in the San Diego Consolidated Gas & Electric Company*

This Company is now receiving subscriptions to a new issue of \$144,000 7% accumulative preferred stock.

The people of San Diego will have the first opportunity to invest in the stock.

This stock is being offered first to San Diego investors, in bringing about an increasing membership of the company and distribution of profits in the community which it serves.

The credit and standing of the San Diego Consolidated Gas & Electric Company is of the highest wherever utility securities are analyzed and bought and sold.

The \$144,000 7% preferred stock now to be issued is being sold to retire floating indebtedness incurred for construction purposes.

Subscription to the stock will be taken at par (\$100 a share), either for cash or partial payment on the basis of 20% cash, and the balance in eight equal monthly payments.

The company has no preferred stock outstanding at present. Its present capitalization consists of \$1,260,000 First Mortgage 6% bonds, due in 1928; \$500,000 6% Debenture Bonds due in 1922 and \$2,855,000 common stock.

The growth of the San Diego Consolidated Gas & Electric Company, due to progressive management, has been coincident with the growth of the community and with the constantly widening field of usefulness of electric and gas service.

Electric customers served have increased from 7,711 in 1910 to 15,078 in 1915; gas customers from 10,263 to 21,462; electric power plants connected from 220 to 1,000; horsepower from 17,000 to 100,000; the latter figure also indicating the industrial advance of the city.

Towards creating a large number of stockholders in San Diego and vicinity we are actively soliciting your interest in the new issue of preferred stock, which we recommend as a thoroughly sound investment.

**San Diego Consolidated Gas & Electric Company**  
H. H. JONES, General Manager

**Popular Ownership**

**Northern States Power Co.**  
7% Preferred Stock  
A Sound Investment with Satisfactory Returns

Our plan directed toward a wide distribution of ownership and earnings of Northern States Power Company has caused national as well as local attention and commendation.

The investor in a single share of stock at the rate of \$5 a share a month is cordially welcome at our office.

Every effort is exerted to make the financial interest of citizens in our organization simple to acquire, attractive and satisfactory. Complete information permitting the most thorough analysis of the merit of this investment may be had upon request.

The financial and operating record of the Northern States Power Company since its organization in 1909 is one which entitles it to the confidence of the public.

Management on the group principle has brought about a vast amount of physical construction enabling the organization to serve at least double the number of people possible to serve three years ago.

An investment in Northern States Power Company is an investment in Interstate Light & Power Company which you are in a position to closely observe.

The safety of this investment is grounded on the stability and prosperity of more than forty communities, to which service is rendered in Minnesota, North and South Dakota, Illinois and Wisconsin (including the largest cities in the three states first named).

We believe that popular ownership of the securities of Northern States Power Company is based on correct economic principles and will yield results mutually satisfactory to the public and the company.

Full information may be obtained direct from us or the First State and Savings Bank.

**Interstate Light and Power Co.**  
F. B. RICKEMAN, General Manager.

If interested in any of this stock, kindly fill in the coupon and mail to us.

**Interstate Light & Power Co., Galena, Ill.**

Please send me complete information relative to Northern States Power Company's 7 per cent preferred stock.

Name \_\_\_\_\_  
Street Address \_\_\_\_\_  
City \_\_\_\_\_

DIRECT SECURITY SELLING—SPECIMEN NEWSPAPER ADVERTISEMENTS USED BY VARIOUS BYLLESBY COMPANIES

magnitude of the properties. With every letter sent out a return postal card was inclosed, and to those consumers who desired further information an excellently engraved twenty-page book of views (7 in. x 8½ in.) of the various properties was forwarded. The front of this is shown in the accompanying illustration. Along with this booklet was sent the following courteous and appealing letter:

Dear Sir:

We wish to thank you for your inquiry of \_\_\_\_\_ and the interest you have in our new booklet "Back of the Investment," which we are sending you under this cover.

When you have looked through this booklet I am sure that you will be impressed with the modern, substantial and well-maintained character of these large properties, and will feel like investing in enterprises indispensable to the communities served, now numbering more than 100.

We trust you will thoroughly analyze the investment merit of the proposition in the light of the figures and information set forth in the company's complete annual report, and the descriptive circular which we are prepared to supply you. We know that the investment is thoroughly sound, and you can easily confirm our statement by a brief analysis.

the choice of purchasing the preferred stock for cash or for payment of \$5 per share per month. Subscriptions could be made for from one to ten shares, the latter being the maximum limit under the partial-payment plan.

The complete terms and conditions for stock issuance under the partial-payment plan were stated on the temporary receipt issued to buyers, as shown in the accompanying illustration. The holder of the receipt was cautioned to guard it safely and in the case of loss to report immediately to the company. He was also instructed to present the receipt monthly when making installment payments in order that such payments might be indorsed on the back. According to the agreement, the holder was not entitled to any dividends on the preferred stock and had no right or interest in such stock until all the installments were paid and the preferred stock was delivered in exchange for the receipt. If all installments were duly paid, interest at the rate of 6 per cent per annum would be allowed on the installments from the date of payment to the date of the exchange of the receipt for the preferred stock. In

case any installment was not paid when due, at the election of the company all rights to receive preferred stock should cease, and the company might on or before the date for payment of the final installment under the contract

declare the subscription in default and return to the subscriber the sum of all installments paid, together with interest at the rate of 3 per cent per annum from the date of payment of installment to the date of return payment to the subscriber. The holder might at any time anticipate the payment of future installments.

do not have time to come and see us personally. You will be pleased with our new booklet, which we will send you promptly.

Yours truly,  
\_\_\_\_\_, General Manager.

Before leaving this subject of circularizing, etc., it should be stated that all of the advertising matter, circulars, booklets, etc., have been prepared by the publicity department of H. M. Byllesby & Co., and the work has been of very great assistance in interesting prospects and also in formulating the favorable public opinion which the partnership offer has stimulated. W. H. Hodge, publicity agent, has participated quite actively in the movement and has given it considerable thought and application, keeping close watch on its development and making various suggestions from time to time. The department hopes to be able to devote several weeks this summer to personal investigation among the people at the Northern States Power Company properties, and will then work out further details for the plan.

**HOW THE SELLING WAS DONE**

From the very beginning the work of placing securities in the hands of customers was handled in a very conservative fashion. The management felt its way very cautiously and did not attempt to make any campaign or drive. There was not the slightest effort to speed up sales, inasmuch as the whole plan was to lay the foundation for a permanent source of financing which would at the same time secure the active interest of an increasing number of people in each home territory. The advertising was moderate in tone and very conservative as to earnings, prospects, etc., and, in fact, prospective earnings were dwelt upon scarcely at all.

Most of the sales were made by the company's own

**A Safe Investment**  
on  
**Small Monthly Payments**

Ask for Details Regarding  
Our Offer to Customers

**7% Preferred Stock**  
**Northern States Power**  
**Company**

If you wish complete information, mark the square :

ADVERTISEMENT ON BACK OF CASHIER'S STUB ON MONTHLY BILLS

**RECENT CIRCULARIZING**

keep the stock and partial-payment offers before the eyes of the consumers, the companies began on May 20 to send out a circular letter with the monthly bills, a return card asking for further information and the illustrated booklet being inclosed. This follow-up letter reads as follows:

As a sort of follow-up scheme to

**THE MINNEAPOLIS GENERAL ELECTRIC COMPANY**  
MINNEAPOLIS, MINN., —, 1916.  
*Partnership*

To Our Customers:

We are again calling your attention to the opportunity afforded to become financially interested and a partner in this company.

You do not need a large sum of money to do this.

You can use this company as a medium for saving and investing at the same time.

The Northern States Power Company, of which The Minneapolis General Electric Company is a part, serves more than 81,000 customers in more than 100 separate communities.

When you pay \$5 a month for preferred stock in this company you really pay the money to yourself.

In a comparatively short time you will have saved approximately \$100 and will own a share of preferred stock which will pay you \$7 a year cash dividends. While you are acquiring the stock you receive 6 per cent on your payments. If you withdraw your funds you receive 3 per cent interest.

If you wish to invest \$10 a month, buy two shares of stock; \$15 a month, three shares, and so on up to ten shares, which is the limit for a single subscription.

You are dealing with a large, responsible concern, which could not afford to treat you other than honorably and fairly.

Large banks, institutions and experienced investors eagerly purchase the securities of the Northern States Power Company. The preferred stock has paid twenty-five consecutive dividends regularly every three months since organization in 1909.

It is not at all necessary for us to come to our customers for funds. We offer you partnership on the easiest practicable terms because we want to mutualize the ownership of this company, and to have our customers share in the wages paid to the capital employed in usefully serving them.

We certainly expect to add to the popularity of our company as more and more customers become partners and security owners. We are, therefore, giving you every opportunity to share in the reasonable earnings properly following efficient and progressive management and the expenditure of large amounts for physical property.

Please consider this matter carefully. Let us answer your questions and convince you that what we propose is directly to your financial interest, and for the best interests of the whole community. Fill out the inclosed card if you

**Partial-Payment Plan**

**Northern States Power Company**

**7% Preferred Stock**

Price \$90 per share      Payments \$5 per month

*A Safe Investment With Satisfactory Returns*

The confidence expressed in the methods and management of our organization by the many customers who have become interested in the 7% Preferred Stock of Northern States Power Company is deeply appreciated. It is a marked incentive to continued progress in the efficient service of the public.

**ON and after August** our customers may invest in Northern States Power Company 7% Preferred Stock on the partial-payment plan.

This offer is made as a further step toward increasing the number of stockholders in communities served by the organization, and to secure the widest possible distribution of stock and earnings among the public.

Decision to offer the stock on small monthly payments is based upon the popularity of our recent arrangement giving investors an opportunity to purchase shares for cash, and in response to many suggestions that it be done.

Investors are now extended the choice of purchasing the 7% preferred stock for cash, or by the payment of \$5 per share per month.

Subscriptions may be made for from one to ten shares. No subscription for more than ten shares will be accepted on the partial-payment plan.

Persons interested in this plan are cordially invited to call at our office and receive any and all information they desire.

The safety of this investment is grounded on the stability of more than forty communities to which utility service is rendered in Minnesota, North and South Dakota, Illinois and Wisconsin, including the largest cities in the three states first named. Dividends have been paid quarterly at the rate of 7% per annum in July, October, January, and April since organization in 1909. Company is showing a substantial growth in business.

Complete information upon request through the Bank, direct from us.

(Name of Company)

Name and Title of Manager

DIRECT SECURITY SELLING—ADVERTISEMENT ANNOUNCING DETAILS OF PARTIAL-PAYMENT OFFER

representatives, although in nearly every city some bank or other financial institution also had the stock for sale. In general, however, the sales procedure was somewhat varied. At first, the plan was to sell the stock through the resident manager and one bank in each

of the ten principal cities. This was found absolutely impracticable in St. Paul and Minneapolis, for the handling of inquiries would more than absorb the time of the managers if they attempted to do this work personally. Therefore, a securities department, in charge of R. A. Wortman, an experienced securities salesman, was established in the Twin Cities, and this now consists of the manager and five assistants. It has been found both in large and small cities that most of the inquiries come direct to the company rather than to the local bank or investment house specified in the advertisements as a joint sales agency. It has also been found advisable to assist the resident managers by occasional visits of securities salesmen, and the sales work for the entire territory is now in charge of the manager of the securities department. The work, of course, has been and still is supervised by the bond department of H. M. Byllesby & Co. in Chicago, of which W. H. Clarke is manager. It was initiated by O. E. Osthoff, vice-president and chief engineer of the company, and has the active interest of all the company's officers.

The securities department in the Twin Cities has become a very busy one. From June 1 to Dec. 31, for instance, 951 inquiries were received in writing, and in addition to these there were quite a number of inquiries by telephone and in person. These inquiries arose in the majority of cases from the newspaper advertisements, even though not many of these were published. Many answers, however, were received

after the mailing of the letters from the managers. The advertising on the reverse side of the stubs of the monthly bills has also proved exceedingly productive, and the fact that the consumer is required to sign his name has automatically weeded out the curiosity seekers. These stubs are bringing in inquiries at the rate of from four to ten a day in some of the larger cities.

AMOUNT OF SECURITIES SOLD

Up to June 15 there had been in excess of \$600,000 par value of the Northern States Power Company stock sold to approximately 1000 residents, and of this amount only about 10 per cent was sold on the partial-payment plan. This plan for some reason did not seem to gain much popularity at first, although lately it has been growing steadily in favor as it has become more generally understood by the interested public. In the examination of the territory which the publicity department hopes to make this summer, it is expected that some plan will be formulated for building up the partial-payment response. The price for the sale of the securities has been governed by the market price prevailing in New York and Chicago, plus a nominal amount for handling, and has ranged from \$86 to \$98 per share.

OTHER SECURITIES OFFERED BY BYLLESBY COMPANIES

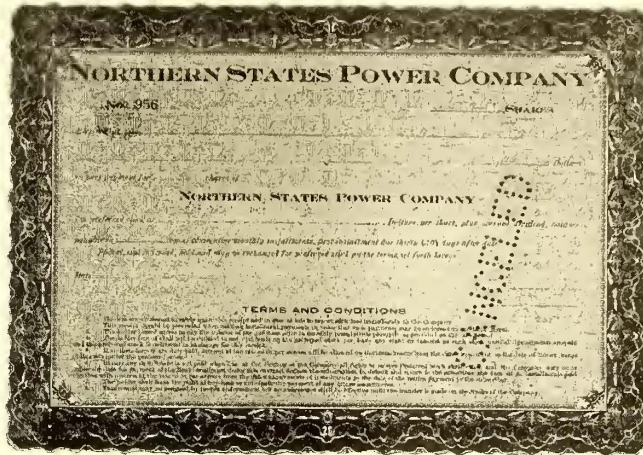
Before discussing the general result of the sale of Northern States Power Company stock to customers, brief mention will be made of other security sales. To complete the story of the Northern States Power Company first, it may be noted that the funded debt of the subsidiary companies was consolidated and refinanced in

April of the present year. At this time large advertisements were published at all the properties, giving the residents the opportunity of participating in the purchase of the new 5 per cent bonds and 6 per cent notes, and explaining just what the financing was and its bearing upon the company and the communities served. The point was made that customers might obtain the new securities direct from the company at its various offices on the same terms offered investors elsewhere, subject to the same conditions as to prior sale, etc. The response to this advertising, so far as investment in the bonds and the notes was concerned, was not heavy, it must be said, but a considerable amount of the securities was sold in the Twin Cities by investment houses.

Some readers may wonder why the bonds or notes were not selected, instead of the preferred stock, as the particular Northern States Power Company security to be recommended to the public. The reason lies in the facts that the favorite and established investment in these states is farm mortgages, generally yielding from 6 per cent to 8 per cent, and that a public utility security to compete with these farm mortgages must return at least 7 per cent. There is, of course, a considerable and growing bond market in the Twin Cities, but this is not true in the smaller cities. Moreover, the partnership or profit-sharing idea is wholly consistent only with equity ownership, or through stock. As regards common versus preferred stock issues, it may be said that while the common stock

of the Northern States Power Company was placed on a dividend paying basis in June, 1916, it has not been thought advisable to advocate it as an investment by customers, and there is no intention of departing from this policy. If a customer or any other interested citizen desires to buy common stock, his order is taken, but no sales or advertising effort is directed toward this end. There has been, as a matter of fact, a considerable amount of common stock purchased in home territory during the last year, invariably, as far as is known, by individuals entirely familiar with security values and competent to make what is usually termed a "business man's" investment.

Last autumn the Standard Gas & Electric Company, Chicago, Ill., which is purely a holding company and which has investments in all of the properties managed by H. M. Byllesby & Co., issued several million dollars of twenty-year 6 per cent notes. These notes were offered to the public at eight or nine of the properties, outside of the Northern States Power Company field, at which it was felt some investment demand could be cultivated. The management realized that it was rather difficult to expect an investment response for this kind of a security in communities where interest rates were high and farm mortgages at 8 per cent and even better were the favorite form of investment. A special effort, however, was made to interest the banks, and to secure from local investing bankers interviews in regard to the company's mutualization plan and the investment advantages of the notes offered. Moreover, a letter of suggestion was sent to the managers of the properties at Mobile, Enid, San Diego, Oklahoma City,



DIRECT SECURITY SELLING—STOCK RECEIPT ISSUED TO PARTIAL-PAYMENT BUYERS

Pueblo, Stockton, El Reno, Ottumwa and Eureka, together with four pieces of advertising copy intended to be run in the order given during the last four weeks in December. That the time element was well considered in connection with these advertisements may be judged from the fact that the first and second played up the Christmas feature, suggesting that the Standard Gas & Electric Company notes were the most desirable and substantial of Christmas gifts and one which should appeal to thoughtful people who desired to present friends or relatives with something of permanent and recurring annual benefit. The notes were offered in denominations of \$50, \$100, \$500 and \$1,000, and at a price of \$91 and accrued interest to yield 6.75 per cent. While exact figures have not been compiled, it is believed that more than \$75,000 par value of the notes have been sold in communities in which they were advertised. This was the first time that securities of this sort were offered to the resident public, and the management believes a good impression was made, as it is still receiving inquiries from prospective investors although there has been no advertising since December.

The San Diego Consolidated Gas & Electric Company, San Diego, Cal., whose common stock is entirely owned by the Standard Gas & Electric Company, formerly had no preferred stock outstanding. Recently, however, a 7 per cent preferred stock issue was authorized by the California Railroad Commission, and \$144,000 of this preferred stock was near the end of last April offered at par to the public of San Diego by means of newspaper advertising. The local public had the first opportunity to invest in the stock, and the advertisements, as shown by the accompanying specimen, explained the advantages of the offer and the earnest effort being made by the company to build up a large local ownership of stock and other securities. The stock might be purchased for cash or for partial payments on the basis of 20 per cent cash and 10 per cent a month. Arrangements were made with the banks of San Diego to carry partial-payment accounts. Although the two advertisements have been published, the number of inquiries and sales justifies the expectation that the entire amount of stock will be taken in San Diego within a very short time. In fact, on May 24 it was reported that more than half of the issue had already been sold to the residents of the community, the sales during the first two weeks being \$74,200. There were fifty-one investors, only three of whom availed themselves of the partial-payment feature. On June 2, \$105,000 of stock had been sold to seventy-nine people. By the end of the month the entire issue had been subscribed for, and more than 100 subscribers could not be satisfied because of the limited amount.

As a last example of Byllesby activity along this line, it may be said that it is proposed within a short time to offer the preferred stock of the Western States Gas & Electric Company in communities in which it had utilities, namely, Stockton, Richmond and Eureka, Cal. The advertising matter has been prepared but has not yet been published. In this case no new stock is being issued, that offered for sale having been purchased for the purpose in the Eastern markets.

The Byllesby management proposes to carry out this security-selling policy in general at all of its properties where it is possible to do so, and it believes that within two or three years the resident ownership of the majority of the companies will be very substantial. No effort has thus far been made to sell street railway securities directly to the local public in the four communities served (Fort Smith, Ark.; Ottumwa, Iowa; Fargo, N. D., and Pueblo, Col.), and the management is not prepared to suggest methods for such companies. In connection with the street railway in Pueblo, however,

it is recalled that early in the present year \$450,000 of three and one-half year 6 per cent gold notes were issued by the Arkansas Valley Railway, Light & Power Company, which owns and operates the Pueblo railway and an extensive electric service property. These notes found a ready market, more than \$100,000 being sold in and near Pueblo through one of the Pueblo investment firms and the resident manager.

#### GENERAL RESULTS SECURED

While the management is not prepared to say just what points of appeal in this effort have been most effective, it is inclined to believe that the real investment merit of the securities offered has been the point of prime importance. It has been proved satisfactorily that the public is alive to the investment value of the local public service enterprises, and is disposed to have a hand in them if some one brings the matter to their notice and makes it easy for them to buy securities. It has also been demonstrated that there is ample opportunity for any central station doing business in the right way to obtain funds easily and in somewhat surprising volume by the offer of appropriate securities to the small investors numbered among the customers. In the case of the Northern States Power Company it is interesting to note that it was the holding company stock that was sold and not the better-known local stock, which, of course, was not available. If the initial offers have worked out as well as noted above, the response in years to come ought to be much greater when the investors, if satisfied, will have led others to feel disposed to buy. Should there come another issue of securities of an attractive character backed by energetic sales and advertising methods, it will undoubtedly be found that among the cities already canvassed there will be a ready and receptive market waiting to provide the funds.

Secondary to this investment feature in tangibility and amount but not in importance is the partnership or profit-sharing feature of the plan. In the mind of the management there is no question at all but that the work has been of a very decided benefit from the point of view of better public relations. The interest of the customers in the welfare of the company in which they have become actively associated has been aroused. With more than the half-hearted interest of mere customers, they have now the welfare of their company at heart, and the tendency is toward co-operation instead of criticism. The indifference of the customer has vanished, and in its place is the desire of the stockholder to advance the company's prosperity and the quality of the service offered.

To many who have studied public utility problems, the management notes, the movement seems destined to have far-reaching and important results and to provide a fundamental solution of the question as to whether utility properties should be privately or publicly owned. It is believed that if the financial interests of a great part of the consumers can be linked with those of the public service corporation by such a plan, the result will be popular but not municipal ownership, with a retention of the engineering ability and commercial efficiency which have made American utility service rank so high. In this way, a partial mutualization plan may tend toward a solution of one of the most difficult problems confronting utility operators, that of municipal ownership.

#### THE MANAGERS ARE ENTHUSIASTIC

In order to emphasize the foregoing general statements, it may be interesting to insert herewith some remarks concerning the attitude of both the managers of the properties that have used the security-selling plan, and of particular customers who have purchased

securities. In the first place, the good influence of the sales made in the oldest and most developed part of the work, that of the Northern States Power Company, has been so conspicuous and spectacular that the managers have been moved to enthusiasm. They have observed case after case where the man or woman who purchased the stock was so impressed with the information gained about the local company that a new friend was made. The following quoted remarks by one official of the company well show the feelings of the managers:

"Recently I visited every one of the Northern States Power Company properties on matters having nothing to do with the sale of stock, but incidentally I found every manager enthusiastic over his experience and emphatic in declaring that the plan has 'made a hit with the people.' I made an effort to find out whether it had been a subject of derision or uncomplimentary remarks, but I was unable to learn of a single instance of this sort. On the contrary, I learned that hundreds of people had taken occasion to tell the managers that they thought the company was doing something of great importance and value both for itself and for the public."

INCIDENTS OF THE WORK

The attitude of the purchasers of securities is best exemplified by incidents that have been reported by salesmen engaged in the actual selling of the Northern States Power Company stock. The salesmen and managers, of course, have encountered prospective purchasers of every type and description. A great many of the purchasers have been women.

A leading business man in one of the cities made a liberal purchase of stock after carefully inspecting the properties of the company in the immediate vicinity. He looked these over simply as a guest and with no intimation that he wished to invest, but later he called for a salesman, stating that he understood it was the desire of the company to have a substantial local interest in its affairs and that this was the principal reason for the placing of his order. After the shares were delivered to him, subsequent orders were placed for a number of the members of his family. There is little doubt of the future interest of this family in the organization.

In order to meet and sell to the people who have expressed an interest in the company, it has often been necessary for the representatives to make appointments at odd hours, and very frequently to call upon the prospect in the evening. One instance is recorded where the family withdrew several hundred dollars from a postal savings bank and paid for its stock at the conclusion of an evening's call, and the company's representative went downtown with his pockets fairly stuffed with money. He was somewhat worried about its delivery, but finally deposited it in the safe of the leading hotel until the following morning. He felt quite sure that the father and daughter who thus paid for their stock invested their entire savings therein.

In one city, immediately after the announcement of the partial-payment plan was made to the public, the company received an inquiry from a hard-working citizen quite prominent in an outlying community composed mostly of foreigners. This man said that he had been instrumental in inducing the company to extend its service to his neighborhood that he had been the first customer for electricity signed up there and that he intended to have the honor of being the first purchaser of stock on the partial-payment plan. He took three shares for his wife.

Around the holidays quite a number of shares of stock were purchased for Christmas and New Year's presents, and sums received as Christmas presents were similarly invested. Up to the first of the year, there was only one instance where stock purchased either on

the cash or partial-payment plan was resold. This instance concerned a woman who resold three of her seven shares in order to raise funds on account of sickness in the family.

EXPLAINING THE PROPOSITION

It often requires a great deal of patience on the part of the salesman to explain carefully the whole proposition to the prospective buyers, inasmuch as many of them are entirely without knowledge of the fundamental principles of investment. One salesman remarked that in a number of cases "the prospects did not know the difference between a stock certificate and a newspaper." On the other hand, a great many experienced people had to be satisfied on many points of information. Most of the investors seemed to act upon a general confidence in the company, in the character of its management and in the apparent stability of the property, as well as upon their conception of the future of the utility. It was necessary from time to time for the salesmen to call upon lawyers representing people who thought that they would like to buy the stock. In such cases these legal advisers themselves were frequently found to be incompetent to pass judgment upon the merits of the investment. Painstaking work in situations of this kind often led to a double sale.

WINNING THE CRITIC

One citizen who purchased ten shares of stock had previously been considered quite a critic of the electric lighting and power service rates, and on one occasion he even had a controversy with the manager regarding the manner in which service should be rendered. Nevertheless he made inquiry regarding the stock and invested therein, since which time his entire attitude toward the company and its affairs has changed.

Moreover, one of the managers was greatly surprised one day to receive an inquiry from the most prominent socialist in the community, who stopped the manager on the street and asked for a copy of the company's last annual report. Much to the socialist's surprise, the manager said that he had no objection to sending him a report and would be glad even to have him make a careful investigation of the affairs of the company and, if he cared to, become a stockholder. After carefully reviewing the annual report, this man announced that he would shortly have \$1,000 to invest and he would certainly place it in the stock of the company. He furthermore volunteered the opinion that the security-selling policy of the company would accomplish more to prevent injury from critical agitation than anything else that it could do.

Census Report on Wire Production

According to a preliminary statement of the general results of the 1914 census of manufactures with respect to the wire industry issued by the Bureau of Census, Department of Commerce, Washington, the total production of wire in 1909 and 1914, whether made for consumption or for sale, was as follows:

	1914	1909	Per Cent of Increase or Decrease, 1909-1914
Iron and steel wire, tons.....	2,418,331	2,389,136	+1.2
Copper wire, tons.....	131,484	147,156	-10.6
Brass wire, pounds.....	38,988,613		
German-silver wire, pounds.....	749,021		
Wire of other metals and alloys (copper-clad steel, zinc, bronze, bronze, nickel and nickel alloys, etc.), pounds.....	6,175,393		
		34,822,000	+31.9

The United States Census Bureau recently stated that the result of its 1914 census shows there were operating in 1914 nearly five times as many touring cars and ten times as many auto trucks as in 1909.



PROPOSED STANDARD COLORING FOR CROSSING GATES

## Joint Grade Crossing Report

A. R. A. Committee and Representatives of National Association of Railway Commissioners Meet in Chicago and Adopt Resolutions Incorporating Safety Recommendations

A JOINT meeting of the American Railway Association committee on the prevention of accidents at grade crossings and representatives of the National Association of Railway Commissioners was held at Chicago recently and the following resolutions were adopted:

Whereas in the opinion of this joint meeting of the Committee on Grade Crossings and Trespassing on Railroads of the National Association of Railway Commissioners and the Special Committee on the Prevention of Accidents at Grade Crossings of the American Railway Association the time has come for the establishment of uniform methods of protecting all grade crossings of railroads, after a full discussion of the matter the members of both said committees have agreed upon and adopted the following recommendations:

(1) That every grade crossing should be protected by an approach warning sign, to be placed in the highway at a distance not less than 300 ft. on each side of the railroad tracks, the sign to be a circular disk not less than 24 in. in diameter painted white with a black border and black

(5) The uniform painting of all crossing gates with alternate diagonal stripes of black and white.

(6) That the railroad companies, wherever practicable, be required to maintain their property at grade crossings free of obstructions to vision; also that the highway approaches to crossings shall be so graded that the free passage of vehicles shall not be impeded.

(7) That the National Association of Railway Commissioners, the American Railway Association, and the American Automobile Association, consider the advisability of agreeing upon whatever legislation may be necessary in the several states to make thoroughly effective the protection of grade crossings; and that it is our opinion that a uniform law requiring vehicles approaching such a crossing to reduce speed to a safe limit at the warning approach sign is advisable.

The accompanying illustrations explain the descriptive matter in resolutions 1, 4 and 5. The letters on the disks are 5 in. high, those in the 24-in. disk being 3 3/4 in. wide, and those in the 16-in. disk 3 in. wide. The back of the larger disk is painted black; the smaller is the same on both sides. The photographic view of the crossing gate has a poor background, but the introduction of this feature was perhaps intentional to show the effectiveness of the stripes in making the gates visible at a distance.

The discussion developed a feeling that the American Automobile Association ought to have a prominent voice in anything that is done toward legislation or in relation to uniformity in any respect, and James B. Walker, secretary Public Service Commission of the First District of New York, and J. A. McCrea, general manager Long Island Railroad, were appointed a sub-committee to meet a committee of that association as soon as practicable.

## Outings for Utility Employees

Employees of public utility corporations in the Northwest, during the past few weeks, have participated in picnics and excursions for one day held by the companies which employ them. Perhaps the most active in this regard have been the Stone & Webster subsidiary companies, which have held picnics for employees in Bellingham, Seattle and Tacoma. The usual diversions, such as ball games, athletic events, dancing, and huge picnic lunches, were enjoyed by all the employees who could be spared from the service with their families and friends. On July 25 the Washington Water Power Company, Spokane, held its first annual picnic.

Owing to the difficulties in obtaining the necessary electrical plant, the electrification of the part of the North London Railway which is involved in the greater scheme for the electrification of the London & North-Western suburban lines is being delayed. It is hoped that by September electric service may be run between Broad Street and Kew and Richmond Stations.

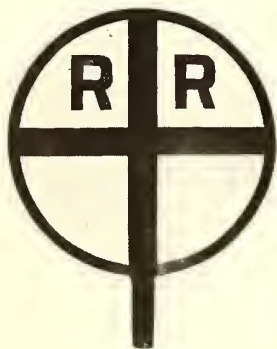


Fig. 1



Fig. 2

FIG. 1—PROPOSED DISTANT SIGNAL ON HIGHWAYS FOR AUTOMOBILISTS; FIG. 2—HAND SIGNAL FOR USE AT HIGHWAY CROSSINGS

cross lines with the letters "R R"—as shown in the accompanying drawing. Where deemed necessary this approach warning sign to be properly lighted at night.

(2) That the railroad companies maintain, within the limits of their rights-of-way, proper cautionary signs such as are now in use or authorized by law, and where deemed necessary such signs shall be equipped with a red light at night.

(3) That all lights displayed at night toward the highway at grade crossings shall be red.

(4) That all crossing flagmen use during the day a uniform disk 16 in. in diameter painted white with a black border and the word "STOP" painted thereon in black letters about 5 in. high, instead of the vari-colored flags which are now being used.



# Chicago's Congestion Problem

After an Analysis of the Causes of the Delays to Traffic in the Loop District, a Series of Remedies Is Suggested—Recommendations Are Also Made as to Desirable Service Standards Under the Conditions

TWO abstracts of sections of the report of the Board of Supervising Engineers, Chicago Traction, on traffic conditions and track capacity have been published in recent issues of this paper.\* In this concluding abstract the subjects of performance of equipment, reservoir service, sources of traffic, vehicle parking, rate of car movement and service regulations are considered.

## PERFORMANCE OF EQUIPMENT

To ascertain definitely whether the car equipment is doing its full share in utilizing the streets most efficiently, a series of tests of both accelerating and braking rates was made with a recording graphic acceleration instrument for both the free running and congested districts. The average results obtained, summarized in Table I, clearly indicate that the rates of acceleration and braking are not only carried at times to the maximum dictated by convenience to passengers, but that the average through the free running and outside districts is fairly high, viz., around 2.0 m.p.h.p.s. In the congested zone vehicle obstruction reduces this to about 1.5 m.p.h.p.s., but many motormen, at times, are obliged to use as high a rate as 3.5 m.p.h.p.s., mean acceleration and braking. A similar record taken upon a multiple unit elevated railway train indicated an average rate of

gested outside streets as Milwaukee Avenue, where the speed was reduced to not more than 6.5 m.p.h. during rush hours in either direction.

The cumulative effect of delays due to increased loading and to passenger and vehicle interference, during various periods of the rush hour, is clearly indicated by the sag in speed of cars in transit through the loading district immediately following the 5—5.30 p. m. and 6 o'clock peaks. Thus, for the first half-mile outbound on South State Street the speed of cars dropped to 4.5 m.p.h., as compared with 7.5 m.p.h. at 6.30 p. m. Observations on Wabash Avenue showed the result of using the inbound track as a reservoir track immediately preceding the maximum rush. The average speed between Harrison and Madison Streets, just after 5 p. m. dropped as low as 2.5 m.p.h. and held down below 4.5 m.p.h. for the hour, then rose rapidly to 9 m.p.h. around 6.30 p. m. As a number of through routes are operated on Wabash Avenue this meant that these through cars had to be delayed by the Loop trippers.

The great effect of good platform design in reducing cumulative delay during rush hours was also shown by these observations. Standard Chicago equipment has been found exceptionally rapid in loading, due to the large platform and wide and unobstructed entrance.

TABLE I.—ACCELERATION RATES

Compiled from Accelerometer Readings.—Miles Per Hour Per Second.

Average	Congested Zone		Outside Zone	Total 2-Mile Zone	
Milwaukee Ave. Line. Accel. . . . .	1.02	1.59	1.44	2.20	1.23
Braking . . . . .	1.42	1.87	1.83	2.31	1.63
Through Route No. 1. Accel. . . . .	1.42	1.87	1.83	2.31	1.63
Braking . . . . .	1.21	1.79	1.67	2.23	1.44
Through Route No. 22. Accel. . . . .	1.21	1.79	1.67	2.23	1.44
Braking . . . . .	1.21	1.71	1.65	2.25	1.43
Averages . . . . .	1.21	1.71	1.65	2.25	1.43
Grand Average . . . . .	1.46	1.95	1.71	2.00	1.71 m.p.h.p.s.

about 1.5 m.p.h.p.s. Thus the surface line cars may be regarded as having reached the limit of personal convenience of passengers, i.e. about 2.0 to 2.5 m.p.h.p.s., depending upon how uniformly the power is applied.

The same observation clearly indicated the difficulties of surface operation in the number of extra accelerations recorded over that required for normal stops. For example, on the Milwaukee and Through Route No. 22 lines the average number of stops and accelerations per block was found to be as given in Table II. Both trips were taken during the maximum rush hour, and the results indicate that from three to four times the number of stops were recorded than are necessary from obstruction to free car movement.

## SPEED AS AFFECTED BY VEHICLE CONGESTION AND PLATFORM DESIGN

It was found that on these rush hour trips, while the speed within the entire 2-mile zone averages about 7 to 8 m.p.h. this became reduced through the loading district to an average of about 3.5 m.p.h., for the Loop routes. The speed on through routes averaged about 5.0 m. p. h. In the free running zones a speed of about 9.0 m.p.h. was realized except on such continuously con-

TABLE II.—NUMBER OF STOPS AND ACCELERATIONS PER BLOCK  
Milwaukee Avenue Route

	Regular Stops	Total Accelerations
Inbound—North to Washington . . . . .	0.5	3.3
Inbound—Desplaines to State . . . . .	0.75	4.5
Outbound—State to Desplaines . . . . .	0.7	2.0
Outbound—Desplaines to North . . . . .	0.6	3.0
Through Route No. 22.		
Northbound—From Harrison to Lake . . . . .	1.0	3.75
Southbound—From Lake to Harrison . . . . .	1.0	6.0

Here, the problem of speed of loading is entirely one of reservoir capacity of platform. This had already been determined for various groups of boarding passengers with reasonable accuracy in the fifth annual report of the board. Thus, the accompanying diagram shows for a 40-in. entrance width an average speed of less than one second per passenger for groups of ten passengers or less. With shorter platforms the speed is correspondingly less. This phase of the congestion problem may, therefore, be regarded as more fully met than in any other large city using the prevailing types of equipment.

## ANALYSIS OF TRIP DELAYS

To determine the responsibility for these delays and transit congestion, complete operating records of all evident sources of delay were made for several rush hour trips through the terminal district. At the same time the corresponding speed of all cars preceding and following, for a total period of 10 minutes, was observed. By this means it was possible to determine whether these trips were typical or otherwise. The results for through routes Nos. 1 and 22, and for the Milwaukee Avenue line, for the one-mile (Loop) zone may be summarized in per cent of total running time as shown in Table III on page 272.

This loss is over and above the rush hour delays ordinarily encountered within the adjacent 2-mile zone outside of which is fairly free running territory, except

\*See ELECTRIC RAILWAY JOURNAL for July 29 and Aug. 5.

TABLE III.—SHOWING SUMMARY OF DELAYS IN LOOP DISTRICT ON TYPICAL LINES AND RUNS

Total time for stops.....	25 to 29%
Useful stop time.....	12 to 22%
Extra loading and unloading time over that required for normal service in outer zone.....	7 to 14%
Total extra stop time over that required for normal service in outer zone.....	16 to 24%
Time loss due to line congestion.....	19 to 28%
Total loss, line congestion and delays at stops, not including extra time for loading passengers downtown	20 to 44%

in individual instances such as North Clark Street and Milwaukee Avenue.

Therefore, it may be said that perhaps one-third of the delays in the downtown running time is traceable to congestion entirely outside of the control of the railway company. The delay due to holding cars on off-signal is also significant as it is considerably greater than that due to other cars, vehicles, or pedestrians obstructing free movement. This plainly shows the importance of the proper handling of the signal system.

As between Loop and through routes, further analysis of picked trips is required for dependable results, although the indications are clearly in favor of the through routing as furnishing the quickest transit through the loading zone, as would be expected in cases of interlocking routes.

Similar detailed analysis of the causes of slow-downs on these rush hour trips indicates that vehicles on the track immediately ahead of cars are responsible for practically half of the extra controller and brake applications. Another serious delay encountered is the present method of parking vehicles in the streets.

The rate of loading at the most important loading points downtown, as distributed through the rush period, is well shown in the second diagram. The Madison Street loop represented is typical. The 5.30 p. m. peak is noticeable at most points, also a 6 o'clock peak at State Street points only.

VEHICLE PARKING

A systematic survey of the method and extent of vehicle parking downtown was made morning and evening, partly within the rush hour and partly without, the periods chosen corresponding to the maximum combined movement of vehicles on the streets as well as car

TABLE IV.—SHOWING VEHICLE PARKING IN DOWNTOWN STREETS

Number	Total	Ave. Per Block	Max. Any Block
City blocks traversed.....	332	..	..
Vehicles parked at any one time.....	1,029	13	52
Horse-drawn .....	360	4	24
Motor-driven .....	669	9	28
Vehicles properly parked*.....	716	9	31
Vehicles improperly parked.....	313	4	..
Vehicles parked within 2-car loading berth.....	216	3	20
Vehicles parked 1 hr. or more in 2-car berth.....	24	..	..
Vehicles parked within 5 ft. of fire hydrant.....	22	..	..
Per cent of total vehicles			
Improperly parked .....		30%	100%
Idle vehicles .....		89	100
Parked within 2-car berth.....		21	47

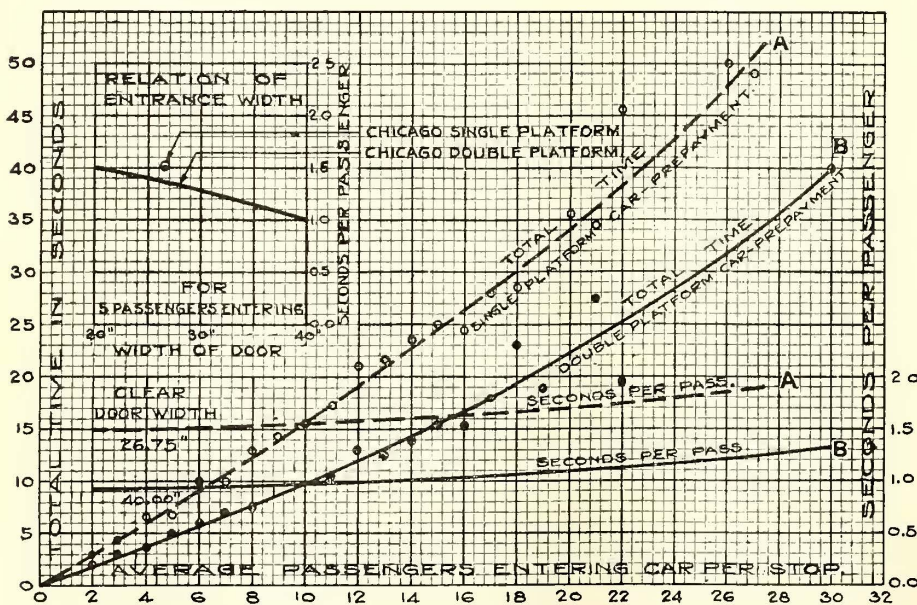
\*Note—Proper parking here means when a vehicle is parallel and close to the curb so as not to obstruct the second line of traffic, and also when not parked within any 2-car loading berth or nearer than 5 ft. to a fire hydrant. Idle vehicles are those not in charge of driver or evidently in process of loading or unloading.

movement. This maximum vehicle movement, as indicated by observations at bridge entrances, would appear to be between 9 and 11 a. m. and 3 and 5 p. m. A summary of this vehicle survey for car line streets within the elevated loop is given in Table IV.

The usual 80-ft. downtown street will conveniently accommodate on each side of the car track two lines of vehicle traffic, when not over 70-75 in. in width. However, vehicles were found on the principal thoroughfares parked or moving past congested points which were from 80 to 90 in. or more in width. Of special significance is the fact that out of over one thousand vehicles observed 89 per cent were idle, i.e. were not in charge of a chauffeur or driver or evidently loading or unloading.

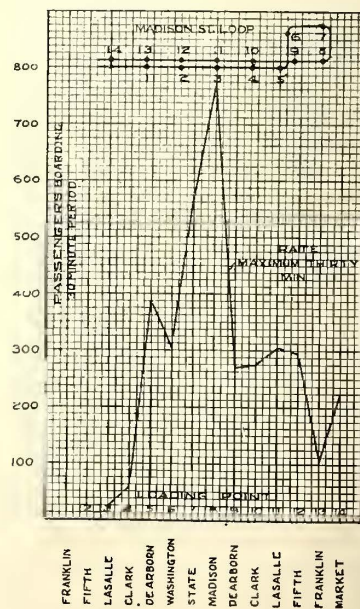
VARIATION IN RATE OF CAR MOVEMENT

While the study indicates that in certain blocks cars move at as high a rate as 150-175 per hour for 30-minute periods, this is not a true measure of the pressure of movement at certain shorter periods. For as the period of observation is shortened, the relative variation increases. The third engraving shows the 30-minute variation in total car and passenger movement at the maximum traffic during rush hours for all lines leaving the loop. The hours taken were from 4.40 p. m. to 7.10 p. m. The delay in arrival of cars in the second period resulted in a relative deficit in service in Period II, and, relatively, a surplus in Period IV. This will always



CHICAGO TRAFFIC REPORT—RELATIVE PLATFORM LOADING SPEED

A comparative study of the actual rate of loading in the single platform type prepayment car as compared with the standard double platform car of approximately the same platform dimensions. The observations were made under practically identical conditions and the results show clearly the advantages of double exit and large platform storage capacity where the most rapid handling of passengers is essential.



ORIGIN OF PASSENGER TRAFFIC ON MADISON AVENUE LOOP

These observations were taken May 24, 1915. This curve shows the observed maximum 30-minute rate and the proportion of passengers boarding at the various loading points.

occur if the car peak and traffic do not coincide. An extension of this study to 5-minute periods shows that the total variation in movement within a 5-minute period may be as great as the entire average movement during the 30-minute period which emphasizes one of the variable factors in track capacity, *i.e.* a time period must be assumed long enough for erratic movements, due to other causes than dispatching, to be smoothed out.

VARIATION IN RATE OF VEHICLE AND PEDESTRIAN MOVEMENT

Observation by hours of the composite result of all west side car and vehicle movement at the bridges shows that while the maximum vehicle peak falls for the most part outside of the rush hour, nevertheless a heavy movement is apparent during the last half of the morn-

In justice to the traffic police entrusted with this extremely complicated downtown movement of cars and vehicles, it must be said that in general they are conducting the signal system with intelligence and dispatch under extremely trying conditions. It is plain that when cars and vehicles are moving through an intersection in both directions at the rate of over 1100 per hour, any violation of the rules under which the crossing is operated will produce instant congestion that may require several minutes to smooth out. This condition was observed repeatedly, especially from vehicles attempting to cross on the wrong signal and thereby interrupting proper car movement. Also, sudden congestion developed when a heavy crossing was left in charge of a single officer, when several had been in charge.

It has become apparent from these studies that the duration and uniformity of signal intervals is the key to the problem of realizing maximum crossing capacity. While the personal element enters greatly into the dispatching, it is found that in the long run the relative interval is fairly well apportioned to the pressure of waiting cars and vehicles, considering always the plan of car movement.

The whole operation of the crossing signal system finds its mechanical analogy in that of a two-way valve or a clock escapement and has an important bearing upon crossing capacity and Loop operation. Practically all other considerations of motive power, number of cars to satisfy a given service standard, or speed of entrance into the terminal district vanish before this one determinant.

SUMMARY

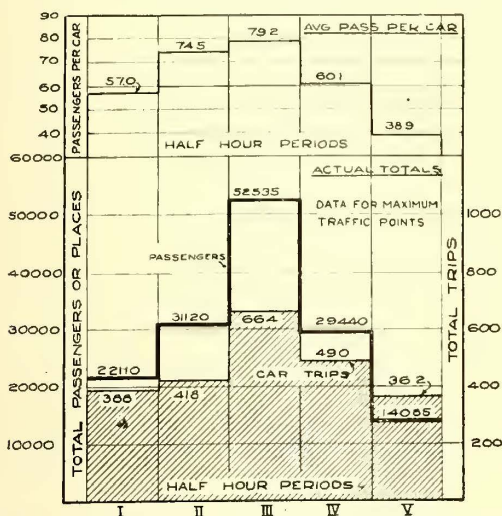
Transit operations during the past year appear to have been practically at a standstill owing to prevalent conditions traceable to the European War. However, if the few years just preceding 1915 be considered as typical of the normal in Chicago, then the fact is clear that not only is the general travel and traffic throughout Chicago increasing but that a continued and rapid increase in cars, vehicles, pedestrians and passengers must in all probability be dealt with. The results of the capacity study indicate how limited a margin of capacity remains in the downtown streets, what important parts have been exhausted and how soon the remainder will be absorbed under the normal rate of growth. The only available remedies for this situation appear to be re-routeing, more efficient traffic regulation and subways.

SERVICE STANDARDS

One of the objects of this study was to determine the possibilities of so operating the downtown surface lines as to satisfy a given service standard. Obviously, this depends upon the method of routeing employed to a large degree. The surface lines are now operating under an ordinance of April 8, 1915, requiring during non-rush hours as many seats as passengers (in the aggregate) for any count interval of fifteen minutes. No specified standard for the rush hour was acceptable other than that determined by what is generally known as the "limitations of track capacity downtown."

Prior to its passage, an ordinance for a rush hour standard and the various elements involved was given long and detailed consideration by the board, the companies and the city authorities.

In these proceedings it was made clear by the results of traffic counts that it would be impossible under existing conditions to satisfy the demands of the public authorities for a rush hour standard without necessitating considerable standing in the cars during the peak periods. And the important fact was brought out that had not been fully appreciated, *viz.*, that the application of the service standard to Loop routes at the boundaries



CHICAGO TRAFFIC REPORT—RUSH-HOUR CAR AND PASSENGER TRAFFIC

This graph shows the 30-minute variation total car and passenger movement during the maximum evening rush hours for all lines leaving the Loop. Observations of January, 1915.

ing and especially the first half of the evening rush, which clearly accounts for the congestion observed on the main streets. On the other hand, the morning and evening pedestrian peaks are exceedingly prominent, due to steam commuter traffic to some extent. Pedestrian movement is maximum when vehicle movement is minimum, and vice versa, except that the latter tends to hold over into the evening rush. The pedestrian traffic within the Loop being so difficult of measurement was considered in the report only in regard to its actual effect upon observed car movement.

In connection with signal observations, the exact vehicle movement at important crossings was also obtained. Considering typical congested locations at the intersection of Dearborn with Madison and Washington Streets, it appears that in round numbers from 500 to 700 vehicles per hour move across these intersections in various directions in addition to from 300 to 400 cars per hour. And at these points, from 10 per cent to 20 per cent of the cars were interfered with by this vehicle traffic, largely on curve movements. Furthermore, from 15 per cent to 20 per cent of the cars berthing in the "near-side" stop were obstructed in their berths by vehicles in the way. Analysis of these signal operations indicates also that not only the duration but the proportion of the signal interval as between the two directions of flow is dictated practically as much by vehicles as by car movement although cars are supposed to have the right-of-way by virtue of the existing city ordinances.

of the Loop would fall far short of realizing the standard desired at the points of heaviest traffic on the various lines, which usually occurred a mile or so distant from the Loop. Thus, passenger counts for the evening rush hour made during April and May, 1914, to determine the existing standards of the surface lines showed that the loading was about 18 per cent higher at these maximum points than at the Loop boundaries, thus:

	Half Mile Zone	Maximum Zone
Passengers .....	74,600	88,450
Cars .....	1,120	1,130
Passengers per car.....	66.6	78.2

Further, it appeared that the attempt to operate the large number of extra cars required on these Loop routes to satisfy these public demands would create conditions at all congested points which would largely defeat the purpose in view, either by making it impossible to pass this volume of traffic, or by reducing the running speed unreasonably.

PROPOSED STANDARDS

In the negotiations over the proposed service standard the chairman of the board presented a suggestion for a standard, based upon a definite amount of net floor area per standing passenger and 30-minute maximum and transition periods, to be applicable at points of maximum traffic.

	30-Minute Period	Sq Ft. per Pass.	Pass. per Car*
III. Maximum .....		3.5	70
II. IV. Transition .....		4.25	60
I. V. Transition .....		6.5	50

\*Equivalent passenger per standard 40 seat car.

It was discovered in the counts that some of the excess car loading was due to trippers arriving too late or too early to meet the demand, resulting in excess loading at times and under-loading at other times. The above standard, therefore, was believed to be applicable when improvements in this regard, in details of rerouteing and subways, were carried out.

The suggestion, however, was not fully concurred in by the companies, which considered it too drastic without subways. At the close of the discussion in City Council it became apparent that the standard was unacceptable under present conditions as it was regarded as too easy by the public authorities, and as too drastic by the surface lines. Therefore, in view of the impending action of the new Public Service Commission, only the non-rush standard was finally adopted by Council, which has little bearing upon this study as conditions of congestion are not generally incurred during non-rush hours.

Consideration of service improvement by the Public Utility Commission of Illinois was concluded on Oct. 4, 1915, by an order jointly imposed upon the Chicago Surface Lines and the City of Chicago, which may be briefly reviewed as follows: During non-rush hours at least as many seats must be furnished in the aggregate as passengers carried during any 15-minute interval at any point on any line or route. During rush hours (6 a. m. to 12 p. m.) eighty-five seats per 100 passengers are to be furnished during any maximum 30-minute period and ninety seats per 100 passengers during any 30-minute transition period at any point on any line or route. Turn-back service is to be instituted outside of the Loop district and trailers universally adopted.

The Commission anticipated the submission of a re-routeing plan by means of which the standard could be carried out, not indicating, however, any definite means of accomplishing this except that Washington Street should be reserved as a boulevard and all Madison and Randolph Street cars (which now include Lake Street) should be diverted to the Washington Street tunnel. The

Commission recommended that subways be begun at once, and that vehicle traffic and parking be placed under more stringent control, particularly that a clear track should be reserved for cars during rush hours. However, sixty days were allowed for the equipment of trailers and the submission of a rerouteing plan.

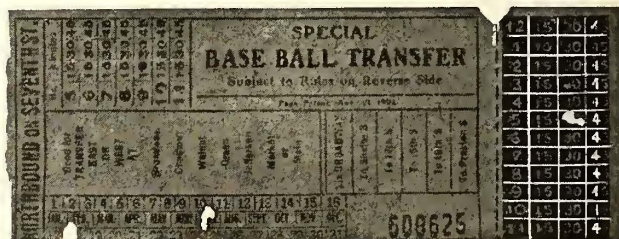
This order is now being contested by the railway companies with the object of determining their relative responsibilities under the terms of (1) the 1907 contract ordinances with the City of Chicago and (2) the Public Utility Commission's law of 1912 respectively.

LEGAL CONSIDERATIONS

Before reaching conclusions as to the possibilities of improvement with respect to the various phases of the problem in mind, the existing ordinances and restrictions were reviewed in detail and also, in some cases, the history of successive modifications that have led up to ordinances now in force. This was considered necessary to a proper understanding of the conditions now encountered and the improvements to be recommended. Traffic regulations and ordinances for Chicago and other cities are cited.

Time-Saving Transfer Used by Louisville (Ky.) Railway

A time-saving transfer slip shown herewith is being used by the Louisville Railway on the Seventh Street line for the convenience of patrons returning from the baseball games at the local American Association park. This transfer is similar in size and in other respects to many other transfers but instead of being arranged for punching at stipulated crossings it entitles the passenger to transfer to any of the lines crossing Seventh Street from Broadway to Main Street. It saves the time of the



LOUISVILLE RAILWAY'S TIME-SAVING TRANSFER

conductor and obviates the necessity of putting more than one conductor on each car. The baseball fans leave the park in throngs immediately after the game and crowd onto the waiting cars. The cars start immediately and with only three squares to the first transfer point, Broadway, the conductor would be unable to make out the usual transfer slips and at the same time collect the fares. With these slips it is only necessary to tear off the transfer slips, already punched as to date and hour, and give them out to the passengers. The plan is an exceedingly good one for handling crowds where the run to transfer points is a short one.

Some time ago the underground railways, London, England, exhibited in their cars a series of photographs of places of interest in and around London. This scheme has since been greatly extended, states the *Electric Railway and Tramway Journal*, so that photographs now form part of the permanent decorations of the car. The practice is to take some place served by the underground system and make known to the public the actual attractions of the place by means of an excellent enlarged photograph, the original snapshot being also shown.

# Organization Allowed—Union Not Recognized

Strikes in Westchester County and Four New York Boroughs Settled on Compromise Basis by Public Officials—Wages and Working Conditions to Be Adjusted by Mutual Agreement or Arbitrated

THE general tie-up of electric railway transportation that was threatened by union agitators in New York City when this paper went to press last week developed during Friday night and Saturday into strikes upon all surface lines in the metropolitan district with the exception of those of the Brooklyn Rapid Transit Company. The companies involved were the New York Railways or "green-car" system and the Second Avenue Railroad or "blue-car" line, which with the Third Avenue Railway or "red-car" system comprise all surface lines in Manhattan; the Union Railway or Third Avenue Bronx lines; the New York & Queens County Railway in Queens, and the Richmond Light & Railroad Company in Richmond. Thus only the elevated and subway lines of the Interborough Rapid Transit Company and the Brooklyn Rapid Transit Company and the surface lines of the latter were left in regular service to serve the more than 5,000,000 riders of the city.

This condition lasted through Monday, with the strike-affected companies in the meantime doing their best to operate with loyal employees and furnishing from 40 to 60 per cent normal service. On Monday night the efforts of Mayor Mitchel and Oscar S. Straus, chairman of the Public Service Commission for the First District, resulted in the ratification of an agreement that brought a complete restoration of service to the New York Railways and the Third Avenue Railway,

and on the following morning negotiations brought a similar result on the other lines.

Under the terms of the first settlement, that between the New York Railways and its employees, the right of the men to organize without molestation was freely acknowledged, but the right of the company to treat with a committee of its employees without recognizing the domination of the union was also provided for. Thus the company granted the first issue, the right of organization, while the employees backed down on the second issue, the question of recognizing an alien organization, the Amalgamated Association of Street and Electric Railway Employees of America. The third issue, that of adjusting wages and working conditions, was settled on the basis of mutual adjustment or arbitration. The full text of this agreement, which formed the basis for the settlements on all the other railways, is reproduced herewith.

## HOW THE STRIKE SPREAD IN NEW YORK

On Friday evening, Aug. 4, after the refusal of the New York Railways and the New York & Queens County Railway to treat with the union leaders, a strike by a number of malcontents was declared on each line. At about the same time some employees of the Second Avenue Railroad began to leave their cars, although no demands had been presented to the company. About 6

## TERMS OF STRIKE SETTLEMENT IN NEW YORK

1. The employees shall have the legal and moral right to organize, and the company pledges that it will not interfere with the employees in their exercise of these rights. Nor shall employees interfere with other employees in exercising their rights to decline to organize, either by intimidation or coercion, and that this applies as well to members of the Amalgamated Association of Street and Electric Railway Employees, whether they be employees of the New York Railways or not.

2. The company shall receive and treat with a committee of the employees upon any and all questions that may arise between them. This committee to select such spokesmen or advisers as they may choose to represent them, without any objections on the part of the company, and the company will in no way interfere with the selection of the committees of employees, it being understood that if the committee shall select to represent it the officers or other representatives of any particular organization, their appearance on behalf of the committee shall not be deemed to be a recognition on the part of the company of the organizations of which they are the officers or representatives.

3. That the question of wages and working conditions between the employees and the company shall be taken up by and through a committee of the employees with the officials of the company on a date to be agreed upon between them—such date not to be later than Aug. 20, 1916.

The committee and the company, in conference, shall attempt to reach a satisfactory settlement upon all questions of wages and working conditions, and upon such points as they may fail to reach an agreement they shall submit to a board of arbitrators—the board of

arbitrators to be composed of three disinterested persons, one to be selected by the officials of the company, one to be selected by the committee representing the employees, and these two arbitrators to select a third.

In case the arbitrator selected by the officials of the company and the arbitrator selected by the committee representing the employees shall fail within ten days to select the third arbitrator, then such third arbitrator shall be selected by the Hon. Oscar S. Straus.

Both sides shall be given full opportunity to present all evidence and argument in connection with their points submitted to arbitration, and the award of the majority of the arbitrators, in writing, shall be final and binding.

It is also agreed that all disputes that may arise between the company and the employees in the future, on which they cannot mutually agree, shall be submitted to arbitration as herein provided.

4. In the interest of public safety and public service, the company wants it clearly understood that the direction and control of employees in all matters looking to efficiency in the service remains with the company and is not to be the subject of conference or arbitration, but if a dispute should arise as to whether a particular case falls within the above class, that question shall be subject to conference and arbitration as above provided for.

5. If the above is agreed to and accepted, it is further agreed that the employees shall declare off the strike and return to work immediately, in the positions they occupied prior to the time of going on strike, without prejudice.

p. m. Saturday the employees of the Richmond Light & Railroad Company, which serves Staten Island, joined the strike. By Saturday night, therefore, all the important transportation lines in the metropolitan district were affected by the strike with the exception of the Brooklyn Rapid Transit Company and the Interborough Rapid Transit Company.

Although the number of employees of the companies involved in the strike was approximately 6500, a much smaller number would represent the actual strikers. A large majority of the employees of the New York Railways and the New York & Queens County Railway had pledged their loyalty to the companies, and most of these were ready to operate cars if adequate protection was provided by the police. Officials of the New York Railways estimated that about 20 per cent of the men had struck because they wanted to strike, and about 20 per cent more because of fear or intimidation. On the New York & Queens County Railway only 200 out of the expected 560 employees failed to report on Saturday. The trouble on the Second Avenue Railroad was caused by about a dozen men, the others being restrained from operation only because of fear.

SERVICE KEPT UP WELL

Some violence was displayed after the strike declarations on Friday night, and service was mostly suspended during the night. It was resumed in the morning, however, and in general it held up well during the day. Police figures on the number of cars in operation, together with the normal number of cars in service, were reported as follows for Saturday:

	Normal	9 a. m.	3 p. m.	6 p. m.
New York Railways.....	1,291	536	398	401
Union Railway (Bronx).....	252	109	103	99
Third Avenue Railway (Manhattan).....	505	73	90	46
Second Avenue Railroad.....	115	100	27	22
New York & Queens County Railway.....	131	81	69	84
*Richmond Light & Railroad Company.....	..	..	..	..

\*Men struck at 6.15 p. m., all traffic ceasing until Monday.

As Saturday passed it became apparent that the entire problem of restoring normal traffic on the lines of the New York Railways was a matter of police protection. Early in the morning the company had resumed service with 62 per cent of its cars in operation. It gradually became evident, however, that one uniformed policeman to a car was not sufficient, for he protected only the motorman. The number of cars sent out depended entirely upon the number of motormen and conductors who were willing to take cars out, and the decrease in operation during the day came from the success which attended the efforts of the strikers to terrorize those remaining loyal. The company therefore asked for two policemen to a car, so that the conductors would be protected against intimidation and violence.

On Saturday, after a meeting of the principal officers of the company, double pay was announced for all loyal employees. Motormen, conductors, starters and inspectors, commencing that day, were to receive double pay for each day they remained on duty, and all other employees in other departments who went to work were to be compensated with substantial amounts in addition to their regular wages.

On Saturday evening the traction officials called in their cars, fearing violence and intimidation of men. As a result, no surface cars were in operation during the night in Manhattan, the Bronx, Queens and Richmond. On Sunday morning service was generally resumed, though naturally not to so great an extent as on the preceding week day. Police figures on the number of cars in operation on Sunday, together with the normal number of cars in service on such a day, were as follows:

	Normal	9 a. m.	3 p. m.	7 p. m.
New York Railways.....	328	197	286	98
Union Railway (Bronx).....	260	95	104	..
Third Avenue Railway (Manhattan).....	160	81	80	62
Second Avenue Railroad.....	100	16	29	..
New York & Queens County Railway.....	155	31	61	..

On Sunday two uniformed policemen were placed on each car instead of on cars in only the worst zones. They were instructed to prevent all disorder, but not to take sides in the strike or to prevent lawful picketing. Some persons were injured and considerable damage was done to rolling stock on some of the lines, mostly the crosstown ones, but as a rule the police at all times kept the situation well in hand. At night the cars were stopped as before.

INTERVENTION OF PUBLIC OFFICIALS SUCCEEDS

The first break in the situation came on Sunday as a result of efforts by public officials to relieve the public of any transportation inconvenience whatsoever, and to secure a settlement of the strike situation before the trouble could spread to the rapid transit lines. All day conferences were held by Mayor Mitchel and Mr. Straus with William D. Mahon and William B. Fitzgerald, the union leaders, and Theodore P. Shonts, president New York Railways. In the evening the Mayor and Mr. Straus announced that they had submitted to both sides certain proposals for a settlement, and that these would be recommended by Mr. Shonts to his board of directors and by the union leaders to the strikers for ratification. Upon ratification of the proposed settlement by both sides, the men were to return to work immediately.

After various sessions that took up most of Monday, the street car strikes in Manhattan, the Bronx and Westchester County were settled in the evening by the ratification of the agreement proposed by the Mayor and Mr. Straus. The discussion of the board of directors of the New York Railways was long, but after a further conference with the Mayor and interpretations of certain points by the union leaders, the tentative agreement was accepted at 9.35 p. m. Shortly thereafter Edward A. Maher, Sr., vice-president and general manager Third Avenue Railway, who had earlier in the day been authorized by his board of directors to act in the matter, signed a similar agreement for his company. The striking employees immediately began to return to work, and the lines began more complete operation with the expectation of having a normal amount of rolling stock in motion by early morning. As a rule little confusion marked the resumption of full service.

STATEMENTS ISSUED BY THE NEW YORK RAILWAYS

After the ratification of the agreement, the officials of the New York Railways issued a communication to the employees stating their belief that the interests of the employees, the company and the public would in the long run be better served if all matters of common interest were settled without outside intervention. The plan of settlement, it was said, left such a method of procedure open to the men, and it would be the policy of the company to make the procedure so attractive to every man that no one would want to deviate from it.

At the same time the board of directors of the New York Railways issued the following statement, in part, to the public:

"In the interests of public order and convenience this board has agreed to the plan of settlement. We have protected the rights of the men to join as well as not to join any organization. While conceding the privileges of the men collectively to take any steps to improve their wages and working conditions, we have felt and still feel that it is contrary to the interests of the transportation of this city that employees engaged in that service should be affiliated with organizations with

interests in other cities and not responsible, as we and our employees are, to this community.

"We believed and still believe that a majority of our men want to be loyal to the company and to settle their relations with the company without the intervention of outsiders. Under this agreement the men will have ample opportunity to make felt their real desires on this subject.

"We have asked the co-operation of the Mayor and the Public Service Commission in assisting us to meet such increased expenses as may be due to carrying out the agreement now arrived at."

#### LAST OF THE STRIKES SETTLED

The last of the strikes was settled on Tuesday morning, when the New York & Queens County Railway, the Second Avenue Railroad and the Richmond Light & Railroad Company signed agreements of the same terms as the New York Railways settlement. The officials of these companies, with the exception of President William O. Wood of the Queens road, who was ill, appeared in the office of Mayor Mitchel to affix their signatures. Mr. Wood signed the agreement at his home. The employees promptly ratified the agreements, and normal service on all the lines was gradually restored.

Following the announcement of the actions of the strikers President Wood issued a statement to the public which said, in part:

"The men are free to join any organization or not join any organization, as they please. We propose to run an open shop as far as this question is concerned. Our opinion is that the public is best served by the men not joining any outside organization, and we think the late unpleasantness has demonstrated that our belief is correct. We wish to assure the public that we have not officially recognized any unions.

"This settlement will probably place a severe additional financial burden on this company, which has for years done a pioneer work without profit. The public and the public officials, the latter of whom assisted in bringing about this settlement, will, we trust, aid the company to meet these increased expenses if a way be found for reasonable readjustment of existing burdens."

#### PUBLIC SHOULD HELP PAY

On Tuesday evening Mr. Shonts, in amplification of his previous reference to the desired assistance of public officials in meeting increased expenses arising from the settlement, gave out the following:

"The Mayor and the chairman of the Public Service Commission were very insistent upon the point that the interests of the public of New York demanded immediate settlement of the controversy. But we recognized very clearly that settlement upon the terms they proposed would probably involve increased financial burden upon this company.

"The New York Railways has outstanding approximately \$18,000,000 of 4 per cent bonds and approximately \$30,000,000 of 5 per cent income bonds. Under the terms of the mortgage the company must pay out all of its net earnings after necessary working reserves, in the form of interest on these 5 per cent income bonds. Yet in no year since the reorganization of the New York Railways has it paid or earned full interest on such bonds. No dividends whatever are paid on the company's stock. The property, as a matter of fact, has never yet yielded a fair interest on its conservative bond issue.

"We felt it only fair, therefore, to bring the financial aspects of the situation immediately to the attention of these officers representing the public. If wages are to be increased somebody must pay the bill and that fact

ought to be candidly considered when the obligation is being incurred.

"Though the company is absolutely limited to charging a 5-cent fare, the purchasing power of that nickel is constantly decreasing. The price of nearly everything we buy is going up. Nor does the street railway actually receive a 5-cent fare for every passenger carried. The New York Railways in 1915 carried 251,000,000 passengers who paid full fare and 100,000,000 passengers who traveled on free transfers. The result was that our actual receipts per passenger instead of being 5 cents per trip were actually a little under 3.5 cents per trip.

"It being impossible to increase the 5-cent fare, one possible other way by which the company can meet increased financial burdens is through relaxation by the city of some of the burdens it imposes upon the company. We are required by the city to pay out, for instance, every year, approximately \$400,000 to \$500,000 for paving the streets inside and alongside our tracks. We are also required to remove the snow on the streets where our tracks run. That expense averages over \$100,000 a year. We also pay the city as a license fee for running our cars approximately \$20,000 a year. Our taxes amount to more than \$1,000,000 a year. That is required of us by the public.

"If, therefore, public officials, in their capacity as representing the broad interests and convenience of the public, place upon us additional burdens, we do not think it is asking too much to request the co-operation of these officials in assisting us to meet the increased expenses incident to carrying out the strike settlement which, in the public interest, they urged us to accept."

#### SITUATION ON I. R. T. AND B. R. T.

Although during the strikes numerous predictions were made as to the spread of trouble to the subway and elevated lines of the Interborough Rapid Transit Company and the surface and other lines of the Brooklyn Rapid Transit Company, no demands were made upon the employees of these lines and no tieup was attempted. It was asserted that some employees of the former company had drawn up demands covering the right to organize, the recognition of the union and an increase in wages of from 10 to 30 cents a day over the new scale voluntarily granted by the company on Aug. 2, but no demands were received. On Sunday, Aug. 6, before it was known that a settlement of the surface car strikes might be effected, the Interborough company announced that, owing to traffic on the subway and elevated lines being temporarily increased by disturbed surface railway conditions, thereby putting extra burdens on the employees, all men in every department would receive \$1 a day extra pay until further notice. This was continued in force for three days.

Contrary to union claims of organization, T. S. Williams, president Brooklyn Rapid Transit Company, on Aug. 4 gave out a statement asserting that 98 per cent of the motormen and conductors had signed pledges of loyalty. On Aug. 8 Mr. Williams announced a new policy for the adjustment of differences between the company and its employees, and promised to recommend a substantial increase in wages to all transportation employees. Mr. Williams said in part:

"Our superintendents have made considerable progress in ascertaining the sentiments of the men as to time tables, and as rapidly as the ideas of the men are gathered new time tables will be announced, which, so far as consistent with the requirements of public service, will recognize what now appears to be a general sentiment in favor of shorter swings.

"In order that there may be continuous co-operation

between the workers of our system and in order that officers may be kept more closely in touch with the feelings of the men, we will propose a modification of the organization of the Employees' Benefit Association, whereby each department in the system will by secret ballot elect an additional number of trustees, and the representatives of each department thus elected will form a committee to voice any changes in conditions desired by the men of such department. In case of any failure to agree as to the proper method of adjusting differences between such committees and the head of the department, the president of the company will give a hearing to both sides and will determine the matter in a fair and impartial manner.

"I do not expect that resort to his decision will ever be necessary. Inasmuch as the constitution and by-laws of the association cannot be altered except by a two-thirds vote at a special meeting, the making of the changes herein suggested will, of course, be entirely subject to the approval or disapproval of its members, who now number more than 10,000 men."

The proposed increase in wages has been ratified by the executive committee of the board of directors. The matter will be submitted to the full board of directors and then to the directorates of the various subsidiaries when they meet later this month.

#### COMMISSION BLAMES MR. WHITRIDGE

On Friday, Aug. 4, the Public Service Commission stated in a preliminary finding on the strike situation that Frederick W. Whitridge, president Third Avenue Railway, was to blame for the strikes in New York. The commission found that Mr. Whitridge "either intentionally violated" an agreement he had made in 1913 to arbitrate all future labor troubles with his Yonkers employees, "or that he was so negligent in his duties to his stockholders, his employees and the public as to forget entirely his important agreement." But for this oversight or negligence on Mr. Whitridge's part the city would not have been confronted with the present transit situation resulting from the spread of the strike from Westchester County.

Alfred A. Cook, special counsel for the company, protested against the finding as unfair in the absence of Mr. Whitridge. He thought that if any such agreement had been made, Mr. Whitridge misunderstood it, and he called attention to the fact that the committees of employees which recently called on Mr. Whitridge never recalled any such agreement, and mentioned it for the first time only after he had left for Europe. On Aug. 6 Mr. Whitridge, through the Associated Press, from Scotland denied that he had at any time made any such agreement as the commission charged him with having violated or forgotten.

An examination made by this journal into the official minutes of the hearing before the Second District Commission in the Yonkers strike case in 1913 shows that Mr. Whitridge then informally agreed to allow the strikers to return to work without prejudice, promised to arbitrate the questions in dispute, and said that he would take the conclusion of Mr. Stevens, chairman of the commission, as to whether or not the disputed questions should be deemed arbitrable. The labor leader at the time insisted upon a formal arbitration agreement applicable to all future disputes, but Mr. Stevens failed to press the point explicitly, and in drafting an informal agreement gave no conclusive evidence of an intent to provide for arbitration covering any other matters than the "conditions and matters in dispute which now exist." Likewise Mr. Whitridge seemed to make no specific promise regarding the arbitration of all future questions. The impression one gets in read-

ing the record is that there was much diplomatic fencing without any desire on the part of either the commission or Mr. Whitridge boldly to face the future and to extend the arbitration arrangement definitely over more than the settlement of the questions then in dispute. As the summary of the commission in regard to the hearing contained no reference to future disputes, it was not questioned by Mr. Whitridge, except as to the statement that he had agreed that the determination of what questions were arbitrable should be submitted to arbitration. On this point, according to a telegram now given out by Mr. Cook, he called Mr. Stevens' attention to the fact that this was an erroneous conclusion to which he did not assent.

## COMMUNICATIONS

### Power-Driven Devices in Maintenance Work

THE CONNECTICUT COMPANY

NEW HAVEN, CONN., July 31, 1916.

TO THE EDITORS:

I have read with great interest the description, by S. L. Foster, chief electrician of the United Railroads of San Francisco, of the admirable machine which he modestly calls a reeling machine, although as a matter of fact "general utilities machine" would express more clearly its broad field.

It was my privilege last fall to be shown this machine by Mr. Foster, who also showed me many other exceedingly interesting labor saving devices in use on the United Railroads, where he has more successfully made the available forces about him do his work than has been done on any other railway property with which I am familiar. The trolley wire offers in maintenance an almost unlimited power supply. The engines of the automobiles of a railway system provide another fruitful source of power and one entirely independent of the "overhead"; but for some unknown reason the large majority of the trolley companies seem to prefer to let the men do the work.

Mr. Foster has been generously describing many of his special devices in the columns of the *ELECTRIC RAILWAY JOURNAL*. Quite a few of these obviously were developed to meet the extraordinary conditions resulting from the great fire, but these special devices are to a large extent, with some slight modifications, applicable to less unusual service. The reeling machine would "earn its bread and butter" on almost any road of any size, used purely as a reeling device, to say nothing of the possibilities of combining it with a pole-setting device and thus getting sufficient service from it to warrant its purchase for many of the smaller lines.

CHARLES RUFUS HARTE,  
Construction Engineer.

### Button-End Axles Reduce Wear

ROCKFORD & INTERURBAN RAILWAY COMPANY,  
ROCKFORD, ILL., Aug. 2, 1916.

To the Editors:

In the *ELECTRIC RAILWAY JOURNAL* of July 29, page 193, I noticed the article by J. S. Mills, foreman Electrical Department Morris Park Shops, Long Island Railroad, on reclaiming worn button-end axles. The Peckham Manufacturing Company used to make trucks with check plates similar to the one he describes.

I agree with Mr. Mills that this is a great deal better



plate to use, as far as the check plate itself and the axle are concerned, than the one with the button-end axle and the U-shaped check plate. However, it was my experience while employed by the Fort Wayne & Northern Indiana Traction Company, where we used a great many of the Peckham No. 11 and No. 14 trucks which had the plain-end axles, that the thrust of the axle was only on one check plate at a time, while with the button-end axles and the U-shaped check plates the thrust was on both check plates at all times.

The principle is the same with button-end axles as with the standard M. C. B. axle, where there is a button on the outer end of the journal and a shoulder on the inner end. Where the plain-end axle and the solid check plate are used all of the wear is on the inner guides of the journal boxes and the inner side of the truck pedestals, whereas with the button-end axles the wear is divided and, as the wearing surface of both journal box and truck pedestal is doubled, the journal boxes will last twice as long. Using my scheme described in your issue of Jan. 8, page 89, after the axles are once bored and tapped it is a very small job to renew the buttons, thus assuring a maximum of life of the journal boxes.

J. N. GRAHAM,  
Master Mechanic.

### Various Values of a Nickel

Baltimore Railway Gives Interesting Data on the Size of a Five-cent Piece

THE service which a passenger now gets for his nickel as compared with what he got a few years ago and the present purchasing power of the nickel in the hands of the company as compared with what it was formerly, are strikingly brought out by the circular printed below which was recently issued by the United Railways & Electric Company, Baltimore, Md.

Everyone has heard the old adage about money growing on trees, but who has actually seen money grow?

Yet money has really grown in at least one instance, the particular coin which assumes greater proportions being the ordinary nickel—Uncle Sam's 5-cent piece.

A few years ago the distance you were carried on the street cars for your nickel might have been represented as of this size—



To-day 5 cents will give you a ride much longer, so you can readily see that your nickel has grown to this size—



A few years ago you were carried as fast as the horses could go, or at the uniform rate of the cable, for your nickel, which could have been considered this size—



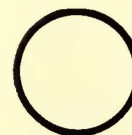
To-day you are whisked along by electricity at many more miles per hour. Time is money, and in time saving your nickel has reached these dimensions—



A few years ago accommodations that were well worth it were bought for your nickel of this size—



To-day you have cars of the most modern type, with the latest approved appointments and many times as comfortable and convenient as those of the olden days, so your nickel, in service purchasing power, has become even bigger than this—



Is there anything else of which you get more for your nickel than you did five, ten, fifteen or twenty years ago?

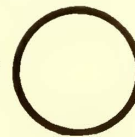
No, but on the contrary, there has been a tremendous increase in the price of practically everything but postage stamps and the United Railways & Electric Company's charge for carfare.

### II

Now let us take a look at the nickel from another angle and see it fade away, all of which emphasizes the magic character of the little coin.

The nickel you pay the railways company is used by it to purchase labor, material and equipment for its lines.

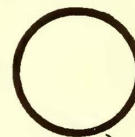
A few years ago your nickel purchased labor for the railways company to the extent represented by this circle—



But the price of labor has gone up, and to-day your nickel buys for the railways company, as compared with a few years ago, this much labor—



A few years ago your nickel bought this much material—



But the price of material and equipment of every character has increased, so that the nickel now buys only this much—



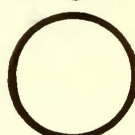
And that certainly makes it very clear that a nickel may shrink as well as expand.

Now we will take a last look at the magic nickel. Viewing it in every light

the coin whose value to you in carfare a few years ago may be represented by—

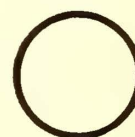


has now assumed this size for you when spent for the same purpose—



And by the same token—

the nickel that meant to the street car company a few years ago a value represented by—



has, through the increased cost of labor, material and equipment, been reduced in value to the company to this size—



In other words, your five-cent piece buys for you more than ever in distance traveled, in time saved, and in comfort and convenience, and safety, and—

It buys less for the company that has given you improved facilities for travel in and around the city.

And that's the whole story of the magic nickel.

### Decision in Double-Liability Case

The Travelers Insurance Company, Hartford, Conn., has paid \$11,000 to the estate of Samuel A. Rockwell, who was killed on May 20 when the jitney running between Hartford and Willimantic struck a car of the Shore Line Electric Railway on Main Street in Willimantic. This case raised the question of whether a jitney is a public conveyance under the double indemnity clause of accident policies. The first case of this sort arose in Los Angeles, Cal., and was decided by D. N. Case, chief adjuster of the Travelers, in favor of the beneficiary. Mr. Rockwell had an accident policy for \$5,500. In the collision he received a compound fracture of the skull and died in twelve hours without recovering consciousness.

1916 CONVENTION  
ATLANTIC CITY  
OCTOBER 9 TO 13

## ASSOCIATION NEWS

1916 CONVENTION  
ATLANTIC CITY  
OCTOBER 9 TO 13

Secretary Burritt Announces a Provisional Program for the American Association—The Atlantic City Train Committee Met in Chicago and Tentatively Decided Upon a Schedule for the Convention Special—  
A List of Companies to Which Exhibit Space Has Been Assigned Is Published

### Program of the American Association

The 1916 convention of the association will be held as in 1914 on Young's million-dollar pier at Atlantic City, N. J. Secretary E. B. Burritt has announced the provisional program as given below of the American Association, those of the other associations being not yet quite complete.

### Convention Activities

The Chicago Atlantic City train committee met in Chicago on Aug. 10 with the following in attendance: G. T. Seely, Metropolitan West Side Elevated Railway, Chicago, Ill., chairman; R. B. Stearns, Milwaukee Electric Railway & Light Company; J. V. Sullivan, Chicago Surface Lines; E. E. Soules, Illinois Traction System, Peoria, Ill., and L. E. Gould, *ELECTRIC RAILWAY JOURNAL*, Chicago, Ill.

It was tentatively decided to run a counterpart of the Broadway Limited over the Pennsylvania Lines, leaving Chicago at 5 p. m., Saturday, Oct. 7, arriving in Atlantic City Sunday at 4 p. m. Excursion rates will be in effect and there are prospects of a big train.

Secretary E. B. Burritt reports the list given below of companies which have definitely engaged exhibit space. A number of others are planning to exhibit, but have not yet "signed up." Mr. Burritt states that he anticipates a record exhibit partly on account of the improving business conditions, and partly because he expects an unusually large number of railway men,

many of whom could not get to the convention at San Francisco. Order blanks for furniture and flowers have been sent out, and the secretary is particularly concerned about the former, as this year's contract has been made with a new dealer.

### MEMBER COMPANIES WHICH HAVE BEEN ASSIGNED EXHIBIT SPACE FOR THE 1916 CONVENTION

Acme Supply Company	Chicago Varnish Company
American Abrasive Metals Company	Chicago Pneumatic Tool Company
American Brake Shoe & Foundry Company	Columbia Machine Works & Malleable Iron Company
American Engineering Company	Cooper Heater Company
American Mason Safety Tread Company	Consolidated Car Fender Company
American Railway Guide Company	Consolidated Car Heating Company
American Railway Supply Company	Corliss Carbon Company
American Steel Foundries	Curtain Supply Company
Albert & J. M. Anderson Manufacturing Company	Davis-Bournonville Company
E. C. Atkins & Company	Dayton Fare Recorder Company
Atlas Railway Supply Company	Drew Electric & Manufacturing Company
Baldwin Locomotive Works	G. Drouvè Company
Bayonet Trolley Harp Company.	Duff Manufacturing Company
J. G. Brill Company	Du Pont Fabrikoid Company
Buda Company	Eclipse Railway Supply Company
Carnegie Steel Company	O. M. Edwards Company
Cheatham Electric Switching Device Company	Electric Railway Improvement Company
	<i>ELECTRIC RAILWAY JOURNAL</i>

## Provisional Program for 1916 Convention, American Association

TUESDAY, OCT. 10.

Convention called to order at 9:30 a. m.

Annual Address of the President.

Annual Report of Executive Committee.

Annual Report of the Secretary-Treasurer.

Appointment of Convention Committees.

(a) Resolutions.

(b) Nominations.

(c) Recommendations in President's Address.

Reports of Committees.

(a) Subjects.

(b) Education.

ADDRESSES—"Electric Railways and Preparedness."

(a) Major-General Leonard A. Wood, U. S. A., Commanding the Department of the East.

(b) Brigadier-General Erasmus M. Weaver, U. S. A., Chief of Coast Artillery.

Reports of Committees (Continued).

(c) Representing Association at American Good Roads Congress.

(d) National Joint Committee on Overhead and Underground Line Construction.

(e) Company Membership.

(f) Valuation.

PAPER—"Unit Costs and Overhead Charges." Prepared by the Committee on Valuation and presented by a member thereof.

Reports of Committees (Continued).

(g) Federal Relations.

(h) Compensation for carrying United States Mail.

WEDNESDAY, OCT. 11.

Reports of Committees.

(a) Electrolysis.

(b) Company Sections and Individual Membership.

(c) Award of Company Section Medal.

(d) Conditions of Award of Anthony N. Brady Medal.

(e) Public Relations.

ADDRESS—"Publicity"—Ivy L. Lee, New York, N. Y.

Reports of Committees (Continued).

(f) Aera Advisory Board.

(g) Changes in Constitution and By-Laws.

(h) Operation of Motor Vehicles.

(i) Insurance.

(j) Standards for Car Loading.

THURSDAY, OCT. 12.

Reports of Committees.

(a) Taxation Matters.

ADDRESS—"The Physical Development of Electric Railways."—(Speaker to be announced).

ADDRESS—"The Financial Development of Electric Railways."—(Speaker to be announced).

Reports of Convention Committees.

(a) On Recommendations in President's Message.

(b) Resolutions.

(c) Nominations.

Unfinished Business.

Election of Officers.

Installation of Officers.

Adjournment.

Electric Service Supplies Company  
 Elcon Company  
 Galena Signal Oil Company  
 General Electric Company  
 Globe Ticket Company  
 Gold Car Heating & Lighting Company  
 Goldschmidt Thermit Company  
 Griffin Wheel Company  
 Hale & Kilburn Company  
 Heywood Brothers & Wakefield Company  
 Holden & White  
 Imperial Car Cleaner Company  
 Indianapolis Switch & Frog Company  
 International Register Company  
 International Steel Tie Company  
 Jennison-Wright Company  
 Johns-Manville Company  
 Johnson Fare Box Company  
 Kenfield - Davis Publishing Company  
 Lackawanna Steel Company  
 Laconia Car Company  
 Lord Manufacturing Company  
 Midvale Steel Company  
 McQuay-Norris Manufacturing Company  
 Nachod Signal Company  
 National Brake Company  
 National Car Wheel Company  
 National Lock Washer Company  
 New Haven Trolley Supply Company  
 R. D. Nuttall Company  
 Ohio Brass Company  
 Ohmer Fare Register Company  
 Oxweld Acetylene Company  
 The Pantasote Company  
 Pratt & Lambert, Inc.  
 The Q. & C. Company  
 Rail Joint Company  
 Railway Improvement Company  
 Railway Materials Company  
 Railway Roller Bearing Company  
 Railway Signal Engineer  
 Railway Track-work Company  
 Railway Utility Company  
 Rooke Automatic Register Company  
 St. Louis Car Company  
 Sangamo Electric Company  
 E. P. Seymour Portable Rail Grinder Company  
 Sherwin-Williams Company  
 Simmen Automatic Railway Signal Company  
 Peter Smith Heater Company  
 Smith Ward Brake Company  
 L. Soineborn & Sons  
 Southern Exchange Company  
 Standard Underground Cable Company  
 Star Brass Works  
 Taylor Electric Truck Company  
 Trigger Lock Reversible Controller Finger Company  
 Trolley Supply Company  
 United States Electric Signal Company  
 Universal Lubricating Company  
 Valentine & Company  
 Van Dorn Coupler Company  
 Western Electric Company  
 Westinghouse Electric & Manufacturing Company  
 Wheel Truing Brake Shoe Company  
 The White Company

President, E. P. Coleman, general manager, Dominion Power & Transmission Company, Ltd., Hamilton, Ont.; vice-president, C. L. Wilson, assistant manager, Toronto & York Radial Railway, Toronto; honorary secretary-treasurer, Acton Burrows, re-elected for the tenth consecutive year.

Executive committee, the president, the vice-president, the immediate past president, J. D. Fraser, the honorary secretary-treasurer, and the following: A. Eastman, vice-president and general manager, Windsor, Essex & Lake Shore Rapid Railway, Kingsville, Ont.; H. G. Matthews, general manager, Quebec Railway, Light, Heat & Power Company, Quebec, Que.; G. Gordon Gale, general manager, Hull Electric Company, Hull, Que.; A. Gabboury, superintendent, Montreal Tramways Company, Montreal; J. S. Mackenzie, purchasing agent, Winnipeg Electric Railway, Winnipeg.

## Solving Problems by Graphics

Graphical Solutions of Some Familiar Railway Problems Are Described in New University of Illinois Bulletin

Bulletin No. 90 entitled "Some Graphical Solutions of Electric Railway Problems," published by the Engineering Experiment Station of the University of Illinois, and written by A. M. Buck, assistant professor of Railway Electrical Engineering at that university, contains matter that should be of interest to electric railway engineers. Graphical solutions of a number of the more familiar problems of electric railway engineering are presented. While some of the solutions have been published before, the majority of them have been developed by the author in connection with his classroom work. The collection of the solutions into a single volume makes them convenient for reference and of particular value to the engineer who prefers graphical methods.

The author points out that in the solution of railway problems involving the characteristics of the motive power, it is sometimes difficult to use analytical methods, principally because it is impossible to obtain a satisfactory equation for the curves of the motor. In a series motor, for instance, the relation between speed and tractive effort is so involved that any attempt to obtain a formula leads to assumptions that are sometimes far from true. It is suggested that graphical methods, in contrast with analytical, form an easy and at the same time accurate means of attack applicable to almost any combination of characteristics and range of conditions which may be met with in practice.

The various solutions are grouped under the headings, motor performance with varying potential, motor performance with resistance, starting resistance for series motors with rheostatic control, series-parallel control, starting resistance for shunt motors, plotting speed-time curves, plotting distance-time curves and the heating value of a variable current. The methods of solving problems dealing with motor performance are those described by the author in an article in the ELECTRIC RAILWAY JOURNAL for Sept. 18, 1915, page 595, and the solutions of starting resistance problems were described in part on page 330 of the Feb. 13, 1915, issue of the same publication.

Copies of this bulletin may be obtained for a nominal sum by addressing the Engineering Experiment Station, Urbana, Ill.

The twentieth anniversary of the opening of the Milford & Uxbridge Street Railway, Milford, Mass., between Framingham and Milford, was celebrated recently by a group of veteran employees who were in the service of the company on May 13, 1896, the day the first car was run over the road.

## Canadian Association Holds Annual Meeting in Toronto

Acton Burrows Gave Exhaustive Report on the Activities of the Association During Past Year—Officers for Ensuing Year Elected

The Canadian Electric Railway Association held its annual meeting at the Royal Canadian Yacht Club, Toronto, Ont., July 26 and 27. President James D. Fraser, director and secretary-treasurer Ottawa (Ont.) Electric Railway, presided. A detailed report covering the work of the association during the past year was presented in an able manner by Secretary-Treasurer Acton Burrows, managing director, *Canadian Railway & Marine World*.

Papers which are copyrighted by the association, to be distributed only to officials of member companies, were read as follows:

Traffic Conditions in Vancouver and Their Relation to Street Car Traffic, by W. G. Murrin, general superintendent, British Columbia Electric Railway; Gearing and Gear Ratio for Railway Motors, by W. G. Gordon, transportation engineer, Canadian General Electric Company; Dispensing with Juries in Damage Actions Against Railways, by F. B. Griffith, superintendent, Interurban Railway Division & Claims Agent, Dominion Power & Transmission Company; Problems Confronting Electric Railway Officials, by F. S. Livingston, traffic manager, Toronto & York Radial Railway.

Officers for the ensuing year were elected as follows:

# Some Recent Advances in EQUIPMENT AND ITS MAINTENANCE

New Type Bond for Third Rail      Standard Weights for Electric Cars  
Change of Wheels Adapts Automobile for Railway Use  
Fan Ventilation of Old-Type Motors      Insulation Test on Feeders  
Other Articles of Interest and Value

## New Type Bond for Third Rail

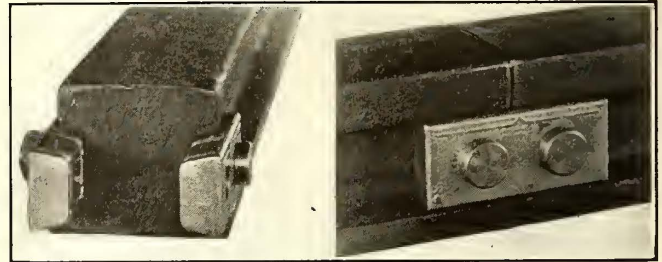
Joint of Excellent Conductance and Strength Developed for New Rapid Transit Lines of Brooklyn, N. Y.

BY H. H. FEBREY  
Engineer, American Steel & Wire Company

A NOVEL type of third rail joint has been developed for the New York Municipal Railway Corporation for use on the 150-lb. third rail which is being installed on its portion of the Dual System of rapid transit for New York City and Brooklyn. The new joints have been installed on the New Utrecht Avenue elevated line between Thirty-ninth Street and Coney Island. Excellent results are being obtained, tests made after subjection to actual service showing that they are maintaining a conductance equal to that of the rail.

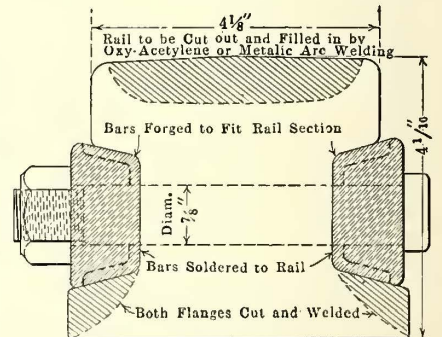
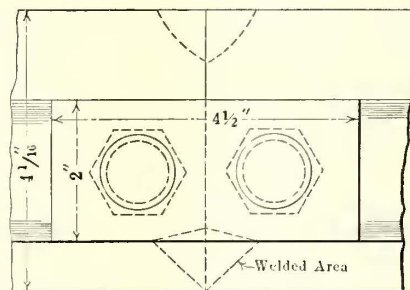
This railway has adopted a type of third rail construction which differs from that commonly used in that the rail is divided into 1000-ft. rigid sections, expansion joints being provided between sections. Each section is anchored at the center in order to provide uniform movement at the expansion joints.

The new joint consists of two drop forged copper splice bars bolted and soldered to the rail. In addition, a portion of the rail-head and both flanges is cut out and welded by means of an oxy-acetylene flame, or metallic arc. The gas-welding outfit consists of the usual oxy-acetylene blowpipe connected by about 15 ft. of hose to the oxygen and acetylene tanks. The acetylene used is that manufactured by the Prest-O-Lite Company, Indianapolis, Ind. The gas is generated at a central charging station and is washed, dried and purified to remove any elements

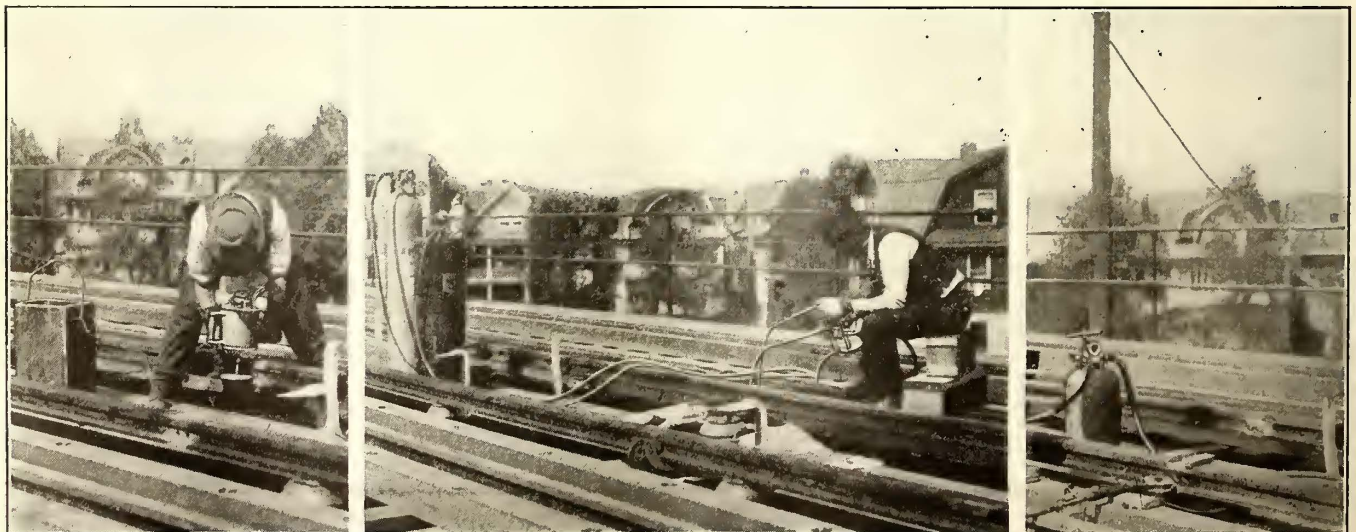


THIRD RAIL JOINT SHOWING DETAILS AND POSITION OF SPLICE BARS—WELDING AND SOLDERING OF JOINT ARE NOT SHOWN

which would be injurious to the weld, and is then compressed into the steel cylinders in which the contractor receives it. The removal of the impurities is an important matter as they not only weaken the weld but also clog the welding torch. This welding of the rails imparts to the joint the requisite amount of rigidity to resist flexure stresses. No part of the rail is shunted by the bonds so that the current distribution is practically as uniform throughout the joint as in the solid rail. This adds materially to the conductance and is accomplished with the use of a small weight of copper.



SIDE VIEW AND CROSS-SECTION OF THIRD RAIL SPLICE AND BOND



BONDING OF NEW YORK MUNICIPAL RAILWAY CORPORATION THIRD RAIL NEAR CONEY ISLAND—SHOWING OPERATIONS OF GRINDING, WELDING AND SOLDERING

The rail has a cross section equivalent to approximately 2,700,000 circ. mils of copper. The fact that the conductance of this joint is more than 100 per cent of the conductance of an equal length of continuous third rail and that this result is obtained by the use of only 5 lb. of copper are striking features of the new bond.

It is essential in this third-rail system that there be no projections below the base of the rail so that there shall be nothing at the joints to interfere with the movement of the rail on the insulators. This feature is of marked advantage in the erection of the rail, as the joints may occur at the insulators without any interference. Where the bonds project below the base of the rail, care is necessary in erecting the rail to have the insulators clear the bonds, and this necessitates cutting of the rail or relocating the insulators. The new joint keeps well within the limiting dimensions of the rail itself, and at the same time provides maximum conductance.

The joint has the advantage of being easily repaired with small portable equipments which are in the possession of the maintenance department. There is complete salvage of the copper bars and bolts in the case of failure of the solder or rail changes. If the welds break, the bars are sufficiently strong to hold the joint in place. If for any reason it is necessary to break the joint this can be done readily by using the oxy-acetylene cutting flame.

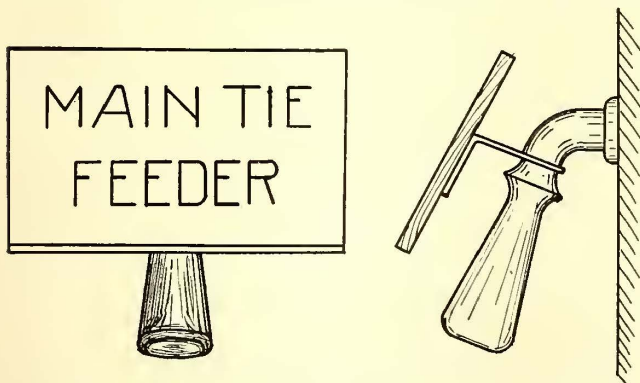
The soldered and bolted contact is an excellent one, and has been used with marked success on the B. R. T. system for over fifteen years for connecting jumpers and feeders to both the third and running rails.

Details of the new splice and bond and views of the bonding operations are shown in the accompanying illustrations.

## Safety First at the Switchboard

BY G. B. TANIS

The accompanying illustration shows an exceedingly safe method of labeling a high-tension feeder which has been observed by the writer. Switches controlling feeders are usually designated by either names or numbers painted on the switchboard. With this method there is always a chance of an operator looking at the



NAME PLATE FOR REMOTE CONTROL HIGH-TENSION SWITCH HANDLES

wrong name or number sometimes causing the most dire consequences. The name plate shown here is attached to a remote control switch-handle, making it impossible to operate this circuit without seeing its name.

Another safety scheme is the numbering of the machine panels controlling the rotary converters. The rotaries are numbered consecutively and the corresponding numbers painted on the machine panels in large

figures on a white circular background 5 in. in diameter. These methods are by no means too precautionary to keep operators from accidentally operating the wrong switch.

## Standard Weights for Electric Cars

Operating Companies Should Consider Standards for Different Classes of Service

BY W. J. CLARDY

Engineer, Westinghouse Electric & Manufacturing Company

The possibility of establishing standard weights for electric cars in city, suburban and interurban service is something to be considered seriously, because there can be no doubt that such a move would represent a distinct advance in electric traction. Probably it lies with the operators to make the first move toward establishing standard cars, since it has always been the aim of railway men to work for standardization. Considerable initiative has been shown on their part to make such a move, but the work has been done individually rather than collectively, and each manager seems to desire to keep his local standards.

At present practically every electric railway has a different type of car, and is either indifferent to the question of standards or prefers to maintain its own. If a manager is asked why he does not accept some improvement developed by another company, he usually states that it is not suitable for his local conditions. In some instances when a railway company adheres to a certain type car, it may be that the ideas of only one man are entirely responsible for such practice. Fads and personal likes or dislikes have proved to be expensive, and so long as railway men continue to be influenced by them the price of rolling stock will be high and any effort to obtain standardization of cars will not be successful.

However, some electric railways are beginning to realize that it is to their advantage to accept designs of other companies. Recently a large number of low-floor center-door cars of very similar construction have been put in operation in different sections of the country for city and combined city and suburban service. These cars represent one of the latest designs, and show a remarkable reduction in weight below those which were common a few years ago. They have proved to be entirely successful under widely different service conditions, and there seems to be no definite reason why cars generally similar to this type should not be made an established standard for this class of service. Interurban cars necessarily differ considerably from city cars, but it should be possible to establish standards for them, with one general type serving for average conditions and a second type for conditions approaching steam railroad service.

Standardization of car types and weights would result in quite a number of economies and advantages to the operator, car builder and electrical manufacturer. If only a few types of cars were built and the weights of each type were fixed within comparatively narrow limits, car building would be put on a more efficient basis and there would no doubt be a reduction in the cost of manufacturing cars. Car builders could work together and standardize the details of car designs, for such matters as side post spacing, roof contour and the like are not of vital importance to any one car.

It is likely that some operators might desire to adhere to special designs, but since the car builders would be in a position to offer a standard car at a lower price, it is almost certain that operators eventually would cast aside any prejudices they might have. Standard cars could be built on comparatively short notice from stock

parts, and thus railway companies would be able to secure them in much less time than is required to build cars to conform to special designs.

The electrical manufacturer, especially, would welcome the establishment of standard-weight cars. This would put an end to the expense required to design and build electrical equipments for the numerous special designs. Specialization on a few standards would enable motors and electrical equipment to be manufactured with greater efficiency, and without doubt this would reduce the cost of their production.

That it is entirely practicable to establish standard cars is shown by what the steam railways and the Pullman Company have done. Electric railways can do likewise, and though their standards would have to be more flexible they could take care of all classes of service with about five standard cars. It is obvious that no exact figures can be taken for car weights, but standards could still require the weight of a car for certain service to be within reasonable fixed limits.

In general, there are three classes of electric railway service, namely, city, suburban and interurban. In many cases the same cars that are used in the city are also operated through suburban sections, so these two classes may be considered together. For such service a classification of car weights would include three types, as follows: First, 5 tons to 8 tons; second, 9 tons to 13 tons, and third, 14 tons to 19 tons. The lighter cars would, of course, be single-truck, while the heavier double-truck cars could be similar to the new low-floor, center-door designs, which represent the latest successful developments where weight has been reduced to a minimum.

For the average interurban service there would be a fourth class with weight between 20 tons and 28 tons. Many interurban cars are now considerably larger and heavier than necessary, and by giving particular attention to design the weight could be kept within the limits indicated. The fifth type of car would weigh from 38 tons to 45 tons, and this would be applicable to high-speed service where traffic demands accommodations and service equal to or better than those given by competing steam lines.

With cars of such standard weights the question of motor equipment would be greatly simplified. Conditions as they are at present force electrical manufacturers to build a multiplicity of motors, which vary more or less in design and size, and this means that it is necessary to have an excessive variety of motors in order to meet demands of the trade. If car weights were standardized according to the five classes given the different cars could be handled by only five types of motors. The sizes required would be 25 hp., 40 hp., 50 hp., 65 hp. and 120 hp., at 600 volts, and these equipments could be operated under the most severe conditions likely to be found anywhere in this country.

The following tabulation indicates the classes and weights for cars and suitable motor equipments for each class:

Class	Weight, Tons	Double Equipment	Quadruple Equipment
A	5—8	25 hp.	.....
B	9—13	40 hp.	25 hp.
C	14—19	50 hp.	40 hp.
D	20—28	120 hp.	65 hp.
E	38—45	.....	120 hp.

Doubtless in the future, railway men will take fuller advantage of what is being done by others and will confine themselves less to their own ideas, thus accomplishing more toward standardization. The railway companies will, unquestionably, reap the greatest benefit from the establishment of standard cars, and they should work together and combine their forces to en-

courage such a movement. The successful operation of light-weight, center-door cars in New York, Brooklyn, Pittsburgh, Denver, Cleveland and other cities serves as a guide to railway men when purchasing new equipments, and provides a basis for making an initial move toward standard equipment, because all of these cars have shown remarkable savings in operating expense.

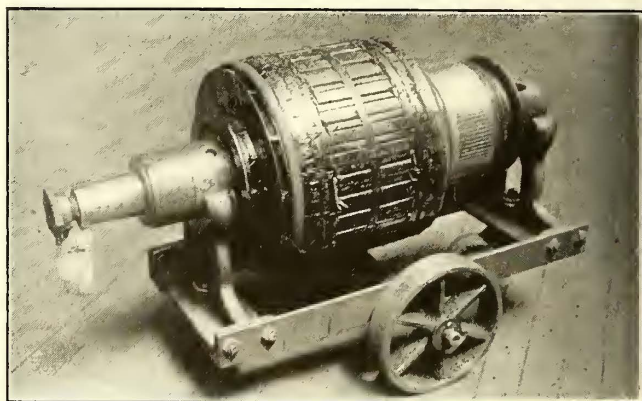
## Fan Ventilation of Old-Type Motors

### Simple Device Lowers Temperature 10 Per Cent on Old Motors Used on Heavy Grades

BY F. P. MAIZE

Master Mechanic Portland Railway, Light & Power Company, Portland, Ore.

The illustration herewith shows a ventilating fan attached to a GE-58 armature. This fan is composed of a plate of No. 22 gage sheet steel, 14 in. in diameter with a 8¼-in. hole, riveted to the back head of the armature with twelve vanes ¼ in. thick, 27⁄8 in. long, with an axial width 9⁄32 in. at the bottom and 7⁄32 in. at the top. The inside corner has a 5⁄16 in. fillet. The air is taken from the inside of the shield and from the

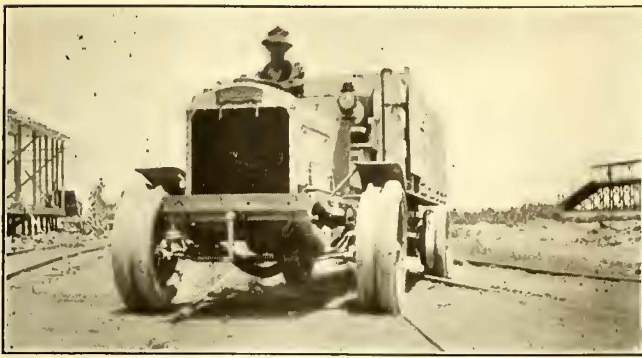


VENTILATING FAN EQUIPMENT ON OLD ARMATURE

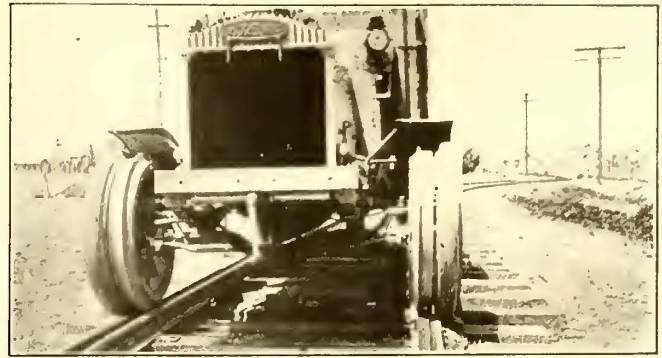
clearance between the armature and the frame, and is thrown over the top of the armature, coming out of either the commutator well or the inspection hole on the commutator end of the motor. Tests made on motors with commutator covers on showed a considerable suction of air around the pinion bearing end. The air was discharged through the commutator end handhole with the armature making 500 r.p.m.

Armatures were placed in motors on a car weighing 39,460 lb., equipped with magnetic brakes and running on the hardest service grades up to 10 per cent. A test was made after the car had been in service from 5.38 a. m. to 9.03 p. m. The first motor on No. 1 circuit, not equipped with the fan but with both handhole plate and commutator cover removed, showed a temperature of 100 deg. C. on top of the armature. The first motor on No. 2 circuit equipped with a fan with both handhole plate and commutator covers removed, showed a temperature of 90 deg. C. on top of the armature, the fan lowering the temperature on the motors 10 deg. Other tests showed that in all cases the temperature was lowered.

The Long Island Railroad has been ordered by the Public Service Commission for the First District of New York, to install immediately a non-automatic emergency lighting system in its passenger cars operated on the Atlantic Avenue division from Flatbush Avenue, Brooklyn, to Jamaica. The lights must have at least 8 cp. each, and three lights are to be installed in each car.



AUTO TRUCK USED ON HOLTON INTERURBAN RAILWAY IN COMMON ROAD OPERATION



AUTO TRUCK AS OPERATED ON RAILS BY HOLTON INTERURBAN RAILWAY

## Change of Wheels Adapts Automobile for Railway Use

Touring Cars and Auto Trucks Equipped with Flanged Wheels Promise Success on California Railways in Combating the Jitney

Automobiles adapted for operation on steel rails have long been in use in the West for emergencies and official inspection service, particularly on steam roads. Several California railroads and electric railways, in casting about for some means of effectively meeting jitney competition, seized upon this idea, fitted automobiles with special wheels and are now operating them over the company's tracks in passenger service. Interest therefore attaches to the cost of operating such vehicles and the mechanical changes which are necessary in converting the ordinary automobile.

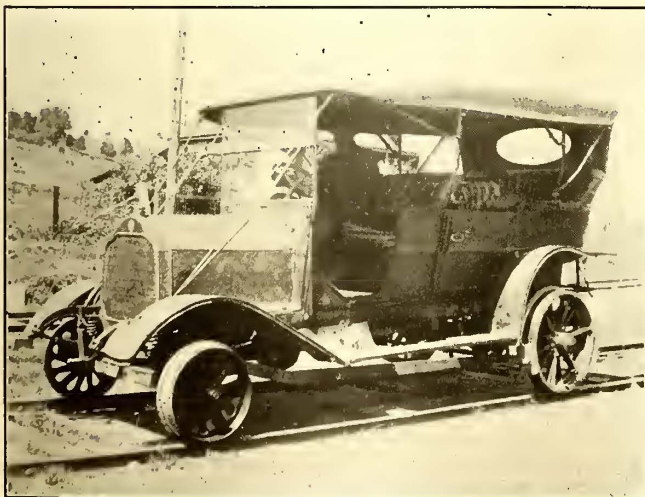
The Amador Central Railroad, a steam line in northern California, has been using a 1909 model Studebaker-Garford car in passenger service for about a year. This car makes a daily round trip between the two principal cities on the company's system. The rear wheels of the car are the original rims on which were shrunk tires from a Shay engine that had first been turned down to a suitable thickness. The front wheels and axle were taken from a Buda push car.

When this car was first put in service there was considerable difficulty with the ball bearings in the hubs of the rear wheels as they frequently broke. After some study it was decided to take out the differential and put in a solid axle which the master gear could directly engage. This necessitated the use of a sub-frame to

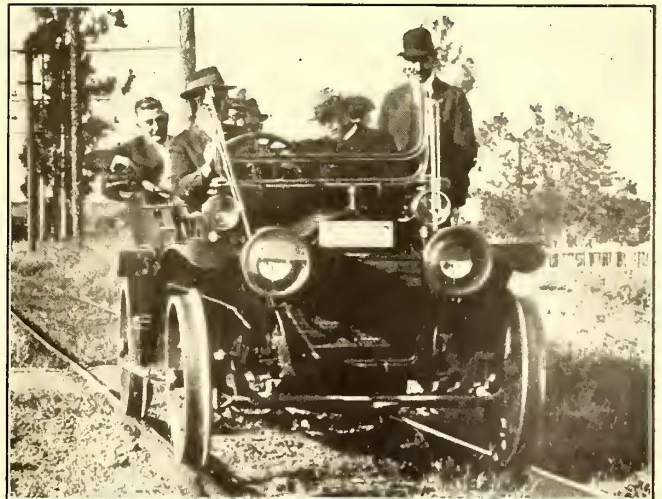
which the journal boxes were riveted, and in making this readjustment the rear wheels were fixed firmly to the axle. Since these changes were made the operation of the car is reported as entirely satisfactory.

More recently experiments have been made by F. E. Chapin, general manager of the Peninsular Railway Company, who attached a set of steel flanged rims to an automobile in such a way that they could be changed back to regular automobile wheels in thirty minutes. The experimental car so equipped is reported to have made its first round trip to Alum Rock Park, 8 miles from San José, on 1½ pints of gasoline and 1 pint of oil.

On the Holton Interurban Railway in southern California an automobile equipped with steel-tired wheels has been in use for several years. It was believed, however, that no vehicle limited to operation on rails could adequately compete with jitneys and motor trucks. W. F. Holt, president and general manager of the company, pointed out that the urgent need was for a vehicle that could pick up passengers or freight at any point about town, get onto the company's track at the nearest point, and after arriving at the next town leave passengers or freight at any point in the town. To accomplish this he developed the wheels shown in the accompanying illustrations, which are designed for running on both railroad tracks and highways without any change. An earlier type of wheel designed by Mr. Holt for this purpose was described in the *ELECTRIC RAILWAY JOURNAL* of May 27, page 1007. Although there has not yet been time for trying out these wheels very fully under service conditions, the officials of the road state that thus far they have been able to do successfully the work for which they are designed.



AUTOMOBILE USED ON AMADOR CENTRAL RAILROAD—SHOWING SUBFRAME AND TYPES OF WHEELS USED



TRACK AUTOMOBILE WITH STEEL FLANGE-RIMMED WHEELS OPERATED BY PENINSULAR RAILWAY

## Rules for Insulation Tests on Underground D.C. Feeders

One of the large Eastern street railway companies has issued rules for conducting insulation tests on underground d.c. feeders as follows:

1. The underground d.c. feeder cable tests will be made by the power and substation foreman or operator under the direction of the line department.
2. In making insulation tests of d.c. underground feeder cables where several cables from one station terminate in the same switchbox, a pilot or signal feeder will be used to signal the man stationed at the switchbox that the station foreman or operator is ready to test certain feeder cables in accordance with a schedule to be furnished him by a representative of the line department.
3. Upon arriving at the station the line department representative will deliver to the station foreman or operator a schedule showing the feeders to be tested, and this schedule will give the pilot feeder of each group and the order in which the test is to be conducted.
4. The line department representative will then call the chief operator and notify him that he desires to test the underground cables from that station. The chief operator having received a schedule showing the manner in which tests are to be conducted

### Electrical Department TEST OF UNDERGROUND FEEDERS

Station _____ 191				
Cable Number	RUNNING TO	VOLTS	Cable Number	RUNNING TO
1			36	
2			37	
3			38	
4			39	
.....				
32			67	
33			68	
34			69	
35			70	

Remarks: \_\_\_\_\_

Voltmeter No. \_\_\_\_\_ Tested by \_\_\_\_\_  
 Resistance ohms. \_\_\_\_\_ Station \_\_\_\_\_  
 Station Voltage \_\_\_\_\_  
 Weather past 24 hours \_\_\_\_\_ Line Dept. \_\_\_\_\_

### FORM FOR RECORDING UNDERGROUND TENDER TESTS

after having checked the date of issue of the schedule will, if conditions are normal, instruct the station foreman or operator to proceed with the tests in accordance with the schedule.

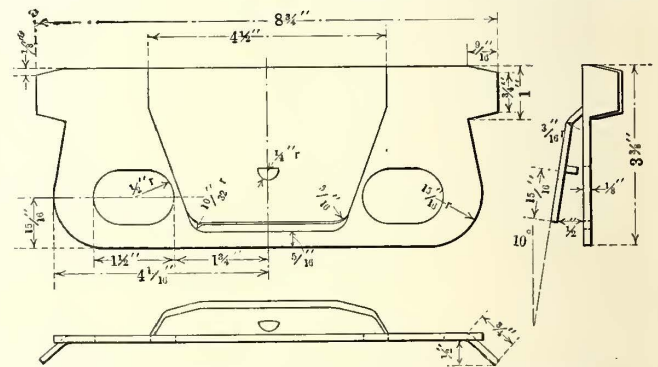
5. Before proceeding with the test the station foreman or operator should notify the chief operator and receive his permission to proceed with the test as shown in the schedule furnished by the line department representative.
6. After permission to conduct the test has been granted by the chief operator the line department representative will go to the first location on the list and proceed according to the rules as stated below in paragraph 9.
7. As soon as the line department representative leaves the station for the first switchbox, the station foreman or operator will open the breaker on the pilot feeder, then open the switch and hang a test cluster or circuit (one end of the test cluster or circuit being connected to the ground) on to the switch blade. When the lamps go out it will be the signal that the line department representative has opened the switch in the box at which the cable terminates. The station foreman or operator will then remove the lamp cluster or test circuit and test the pilot feeder with the portable voltmeter, the positive lead from the meter being connected to the positive 550-600-volt station bus, and the negative lead of the voltmeter connected to the switch blade of the feeder to be tested. After making the voltmeter test on the pilot feeder the station operator will open the second switch on the list, hanging the cluster on it. He will then close the pilot switch, which will signal the man in the box to open the second switch. When the foreman or operator sees the lamps on the second switch go dead he will test it with the voltmeter. The third switch on the list is opened next. He will then open the pilot switch three times, leaving it closed after signaling. When the second switch becomes alive, he will pick up the load on it. After the third switch goes dead, voltmeter test is made. He will open the fourth switch on the list and will then signal for the third switch to be picked up at the switchbox, etc. After the last switch is tested he will open the pilot switch six times. Before closing it the last time, he will wait until the switch becomes alive before finally closing it. In all cases except single-fed feeders the station operator will wait until the feeder is made alive before picking it up. Single-fed feeder switches should be closed immediately after making the voltmeter test.
8. After all feeders in one group have been tested the station foreman or operator will immediately open the pilot switch for the test of the next group of feeders.
9. The line department representative at the switchbox before opening up the pilot switch will hang a lamp cluster on the knife of the switch, the other end of the cluster being connected to ground. He will pull the switch and if lamps go dead he will lift the lead to give the man in the station a chance to test it. He will tap the knife of the switch at intervals of five seconds. When the lamps light he will hang the lead of the cluster on the knife of the switch, leaving the pilot switch open. Then he will pull the second switch. After the lamps go out three times on the pilot switch he will close the second switch, then he will open the third switch on list, etc. After the last switch in the box has been tested and the lamp circuit is opened up six times, he will close the last switch. The pilot switch will then be closed.
10. Before leaving the switchbox the line department representative will check the switches in this box to see that all of the switches which he has opened have been closed again. He will

then go to the next switchbox on the list and proceed immediately with the test of the second group.

11. Under no conditions will single-fed feeder switches either in the station or in the switchbox be left open for more than one minute.
12. Any exceptions to the general method of testing as outlined in paragraphs 7 and 8 will be noted on the individual station sheets issued before the test by the line department.
13. Should there be any mix-up in signaling due to station trouble or any other cause, the man at the switchbox will close all switches and return immediately to the station. At the station the foreman or operator will close all switches and wait until the line department representative returns to the station.
14. After the test on a group of feeders has been completed the operator will note the ammeters on the feeders, and in case the ammeter on any feeder indicates no load the foreman or operator will open the breaker and the switch on this feeder and test with the bank of lamps to make sure that the switch on the other end of the feeder is closed. In case of single-fed feeders, if the ammeter indicates no load, the ammeter should be watched for one minute, and if the ammeter still continues to read zero the chief operator should be notified at once. Also in case any switch is found open or in case of any abnormal conditions the same should be reported to the chief operator at once.
15. After testing all cables in accordance with the schedule, the line department representative will return to the station, receive the print from the foreman, and will return it with his copy to the line department. The station foreman or operator should notify the line department representative of all leaks on cables, and if there are any cables that need immediate attention, the line department representative should in turn notify his superintendent. Before leaving the station the line department representative shall notify the chief operator that the tests have been completed and that conditions are the same as before the tests were made, which also should be verified by the foreman or operator of the station.
16. A record of these tests shall be made on a form and sent to the superintendent of the line department.

## Inexpensive Anti-Theft Bond Shield

A sheet steel bond shield is being used on the lines of the Illinois Traction System to prevent the theft of exposed rail bonds. The accompanying drawing shows the design and dimensions of this shield which the engineers of the road have made at a cost of 12½ cents



DESIGN OF BOND SHIELD WHICH IS USED ON ILLINOIS TRACTION SYSTEM

each. These shields are held in place by two track bolts and they are used on outside bonds in territory where trouble has been experienced on account of stolen bonds. The shield is designed so that it will fit over a brazed or a gas-welded bond, and is installed along with the regular bonding work. It is stated that the total cost for bond and shield complete is less than that for a concealed bond placed under the splice bar. Practically all of the bonds being applied are the rail-head type and this shield is reported to render them practically safe from theft.

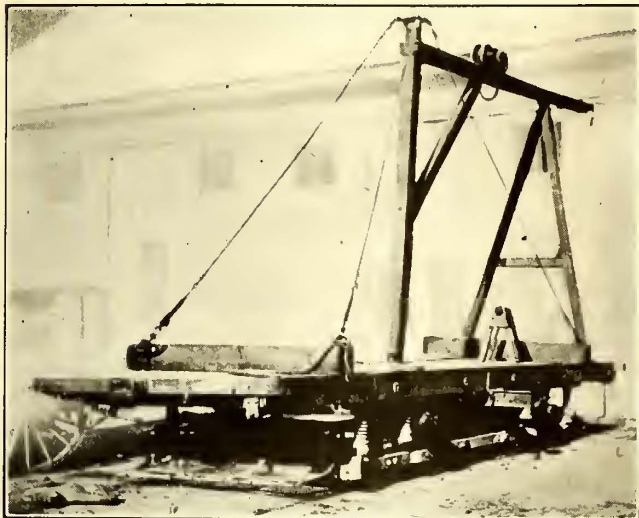
The mechanical department of the Springfield Consolidated Railway Company, Springfield, Ill., has found that it is of extreme importance to mate worn gears and pinions when it is necessary to replace armatures. Experience has shown that where the pinion is worn more than the gear, the life of both is greatly reduced, and they are noisy. To obviate these difficulties gears and pinions showing equal wear are mated, or a pinion is provided which is not worn as badly as the gear. This practice applies to cases where armatures are repaired without removing the pinions, or where the pinions are pressed on the armature shafts immediately following repairs.



## A Home-Made Derrick Car Makes Good in Yard and Shop Work

In the Sacramento, Cal., shops of the Pacific Gas & Electric Company's railway department it was found desirable to construct from scrap material a small derrick car which could handle the heavy loads that it was occasionally necessary to move around the shops, more particularly old wheels and heavier scrap material.

The car shown in the accompanying illustration was



PRACTICAL DERRICK CAR FOR YARD AND SHOP USE

therefore built up and has proved to be a great labor saver. The picture does not show the differential block which is supported from the loop under the trolley that operates on the boom. The A-frame supporting the boom is used only for very heavy weights that would threaten the strength of the rig if operated as a cantilever. The mast is pivoted at top and bottom to give free play in swinging the boom from side to side.

The Sacramento railway department of the Pacific Gas & Electric Company is operated under the supervision of N. J. Hullin. G. C. Snider is master mechanic.

## Coal Rate Controversy Up to I.C.C.

The Kansas City (Mo.) Railways and other large users of steam coal in Kansas City are urging the Interstate Commerce Commission to disregard protests against a low rate for coal recently filed by the Chicago & Alton Railroad effective on Aug. 22 between Springfield, Ill., and Kansas City. The rate is \$1.25, against the former rate of \$1.90, and against 75 cents from the Kansas field and 60 cents from the Missouri mines. The granting of this rate would allow of the Illinois steam coal being sold considerably below Kansas and Missouri coal at the mines, to be landed in Kansas City at attractive prices to the users. Nearly all the largest industrial companies have signed a petition to the commission, asking for the retention of the rate, and urging that Missouri operators have not in the past taken advantage of their proximity to Kansas City to supply the steam coal desired. They say, too, that Kansas operators have had contracts under which they could supply any kind of coal they had available, and when steam coal was lacking the industrial users have had to buy other coal at high prices to keep going. Kansas City has had a perilous experience the past winter and spring, when strikes, shutdowns due to storms, car shortage and other causes have resulted in sharp stringency in coal supplies, and lump and Arkansas anthracite slack had to be purchased to make steam.

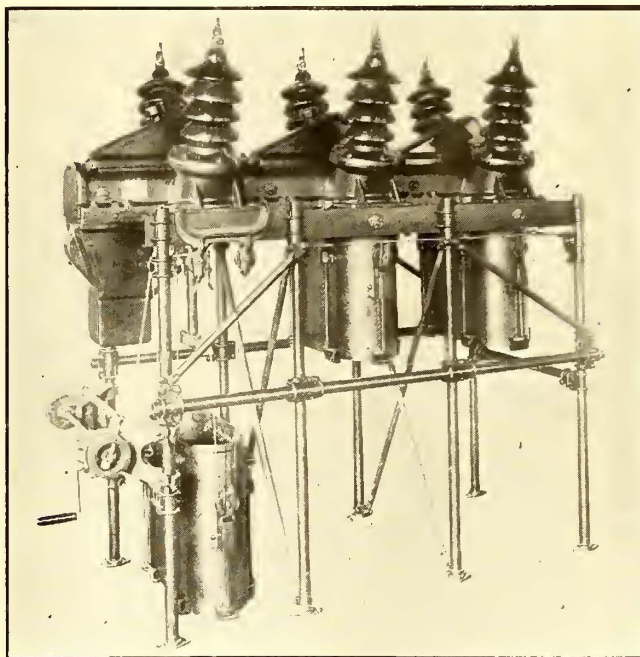
## Large Capacity Tank Type Circuit Breakers

The illustration herewith is of a 22,000 volt, 300-amp. oil circuit breaker which has recently been put on the market by the General Electric Company, Schenectady, N. Y.

The main changes that have been made recently in tank type oil circuit breakers have been introduced to make the circuit breakers more accessible for inspection and repairs. The tank lifter, which was noted in the Aug. 5 issue of the *ELECTRIC RAILWAY JOURNAL*, consists of a detachable frame with shaft, handles, worm gear and winding and unwinding drums. This device is readily detached and can be moved by one man from one switch to another, thus making it a very simple operation to lower or raise an oil tank, and also making it easy to align, inspect oil and contacts and replace contacts if necessary.

The oil circuit breaker shown is of the outdoor type. It differs from the indoor type in the addition of a few parts to render it mechanically and electrically serviceable under all weather conditions. The operating mechanism and bushings are secured to the cast-iron cover of the heavy sheet steel tank. Each bushing extends through the switch cover into the oil and is so clamped to the cover that the throwing of oil is impossible. These bushings are so constructed as to be easily removable and interchangeable.

There are two fixed contacts in each switch element between which one phase of the circuit is made and



OIL CIRCUIT BREAKER MOUNTED ON PIPE FRAMEWORK WITH TANK LIFTER

broken by a horizontal contact blade. Each contact blade is connected to the operating mechanism by a specially tested hard wooden rod, which passes through the cover of the switch in an insulated bushing. The stationary contacts consist of widely flared fingers and long arcing tips of drop-forged copper, secured to the contact block by flat steel springs, copper laminations and screws. This breaker can be closed by hand, solenoid or air.

When they are solenoid or air operated, the breaker may be located where desired and controlled from the switchboard or other convenient place by a pull control switch or air valve.

# NEWS OF ELECTRIC RAILWAYS

## 300 PHILADELPHIA MEN STRIKE

Places of Disturbing Element Quickly Filled—Full Service Continued Without Interruption

On Aug. 7 approximately 300 men of the Philadelphia (Pa.) Rapid Transit Company holding regular runs signified that they were not satisfied with the conditions of employment by going out on strike. The other 5900 conductors and motormen refused to leave the service of the company, thereby expressing their satisfaction with the so-called co-operative plan under which they participate in the increased earnings of the company by corresponding increase in their wages, and in addition have direct representation through their own accredited representatives selected by secret ballot.

As is generally known, the management of the company is working with its motormen and conductors under the terms of the co-operative plan, by which wages have been increased 35 per cent during the last five years and working conditions improved to the limit consistent with affording adequate service to the public. Approximately 6200 conductors and motormen are employed, of which number about 5000 have regular runs with pay ranging from \$18 to \$26 a week. The remaining 1200 are "extra" men who are guaranteed a minimum wage of \$12 a week, but who on occasion earn as high as \$20 a week and are eligible for regular runs as vacancies occur.

The company has had no difficulty at any time since the strike was called in maintaining its normal service to the public. In fact, the earnings on Aug. 7, the day on which the strike was declared, showed an increase of nearly \$6,000 over the earnings of the corresponding day of the previous year, thus conclusively showing the public appreciation of the service rendered and lack of sympathy by the public with the cause of the strike.

Of the 1200 extra men in the employ of the company at the time the strike was called, 300 have benefited by being advanced to the regular runs vacated by the men who went out on strike. The places of the 300 extra men so advanced have been filled by competent and experienced men selected from the numerous applicants desirous of entering the service. The company's force of motormen and conductors is full and complete and the strike may therefore be considered a closed incident so far as the maintaining of satisfactory operating conditions on all the lines is concerned.

At the incoming of the Stotesbury management a very much disturbed condition of labor was evident among the conductors and motormen. Strikes had occurred with alarming frequency, destroying both the efficiency of the service and the peace and well-being of the community. The men responsible for the agitation provoking the strikes which preceded the incoming of the present management continued thereafter to show a disposition of fault finding and stirring up unrest. In fact, they made themselves so obnoxious as to bring forth repeated requests from those men who were satisfied with conditions that these dissatisfied men be dismissed for the good of the service. The management, however, persevered in its efforts to convert these men by fair treatment and increased wages, but without avail. These dissatisfied men have now by their own voluntary act in going on strike eliminated themselves.

The management of the company felt that it had borne with these dissatisfied men during the past five years beyond a point of reasonable forbearance and that it would not be just or fair to the owners of the property or to the public if it permitted this nucleus of discontent and strike disorder to re-enter its system. The officers of the company, therefore, after careful consideration, determined not to permit the dissatisfied men to re-enter the service and concluded that their jobs should be retained by those who were so well satisfied to receive them.

## MR. LILIENTHAL REWARDED

His Liberal Policy Toward Employees Accepted as Reason for Failure to Stampede a Strike

The work of Jesse W. Lilienthal, president of the United Railroads, San Francisco, Cal., in behalf of the employees of that company is familiar to the readers of the *ELECTRIC RAILWAY JOURNAL* through the articles that have appeared dealing with his activities in instituting pensions for the men, arranging plans under which they may own their own homes, releasing them from the machinations of the money lenders and otherwise bettering their conditions. In February, 1915, Mr. Lilienthal, then in New York, told for the first time in an interview in the *New York Evening Post* the conditions under which he accepted the presidency of the company. He said then that the offer of the presidency tempted him because he saw the possibilities of running a public service corporation that would stand as a pattern. He accepted the position on condition that he was to have, without any question, a free hand in the management and operation of the corporation. The interview was republished substantially in full in the *ELECTRIC RAILWAY JOURNAL* of Feb. 20, 1915, page 398. Mr. Lilienthal justly feels that the policies which he instituted have paid, and paid well, in increased loyalty and efficiency among the men, and in substantiation of this has written a letter to the editor of the *Post* citing the attitude of his men in the recent attempt to stampede them into a strike noted in the *ELECTRIC RAILWAY JOURNAL* of July 29, page 203. In his communication to the editor of the *Post* Mr. Lilienthal said:

"Recently an effort was made by outside agitators to induce the men to form a union, and to strike. At an appointed time the agitators, assisted by employees of the municipal lines and by members of the union of carmen operating across the bay, endeavored to stampede our men. Municipal cars were thrown across our own rails, temporarily blocking traffic, and for nearly an hour everything was in confusion, but our employees stood by their cars to a man. It was a unique example of loyalty to an employer and appreciation of considerate treatment, and one that has been so characterized in all directions throughout the community.

"That this is a correct interpretation of the outcome of the fracas is confirmed by the fact that, when it was announced in the press that at the appointed time 90 per cent of our men would quit, representatives of our employees asked permission to hold a mass meeting at which they would be able to make it plain to the public how unfounded this contention was. I deemed it advisable to disapprove the holding of such a meeting, because I feared that it would be said that it had been inspired by the company itself. The men then signed a memorial addressed to me which is almost monumental in the history of labor disputes, in which they declared that they were absolutely satisfied with the conditions of their employment, that they did not need a union, and would not have one.

"This was followed up by a call from a committee of employees, who earnestly requested that this memorial be given publicity in justice to the men themselves. Under these circumstances I deemed it my duty to advertise this address, and the sincerity of its words was amply vindicated by what transpired when the stampede was attempted.

"I should be glad to have this communication or the substance of it published in the *Evening Post*, because of the evidence which it affords that the conventional labor union organization is not essential to the welfare of employees, and perhaps not the best form of securing it.

"As already stated, the things that we have been doing for our men have been done without any organization of the men, and, therefore, under no compulsion whatever."

In the *United Railroads' Magazine* for August Mr. Lilienthal said:

"At about 9 o'clock of the evening of July 14, the day on which Mooney and his wife, assisted by employees of the municipal lines and members of the Oakland carmen's union, attempted by threats and by the actual show of force to stampede our platform men into abandoning their cars, I received this telephone message from the office of one of our prominent daily newspapers:

"We are sitting around the table here wondering if you realize what a demonstration of loyalty to the company and appreciation of considerate treatment this stand of your men represents."

"I told them that I did realize what it meant, but was glad to see that others interpreted it in the same way. Since then I have been assured by dozens of people that nothing of the kind had ever occurred in San Francisco before, and that it marked the beginning of a new era for the city—an era of good-will and sympathetic co-operation. In this time of strikes and disorder, dynamiting and other violence, the incident stands out with special prominence and significance.

"I do not believe that the attempt to pull off our men failed because the men believed that the company had taken such precautions as would make the walkout unsuccessful. On the contrary, I believe that the men meant just what they said in their memorial to me—that they were satisfied with existing conditions; that they did not need a union; that they did not want one, because they were better off without any.

"No man with any heart in him could fail to respond to such a pledge of loyalty. The presidency of this company, during the three years that I have filled the office, has not been any bed of roses, because the company has been beset by one trouble after another. But I felt on that night of July 14 that I had been repaid for everything. Not alone that, but that to the extent of our ability the conduct of the men deserved some recognition and reward.

"We are now engaged in reorganizing the financial affairs of the company. One of the things that I hope for, if such reorganization should succeed, is still further improvement of the treatment of our employees, and that a way may be found to allow them to participate, as they should, in any improvement in the earnings of the company. You may be assured that that hope is as near to my heart as it can be to your own.

"And once again, I thank all of you who stood by the company for your loyalty and courage."

#### CONTROVERSY OVER BRIDGE APPROACHES

A three-cornered controversy has developed at Cleveland, Ohio, which may delay the completion of the subway approaches to the new bridge across the Cuyahoga River, connecting Superior Avenue and Detroit Street. Both the County Commissioners and the city officials refuse to pay the expense of relocating the tracks of the Cleveland Railway in order to begin construction, and J. J. Stanley, president of the company, says that it would be impossible for the company to stand the expense under the Tayler grant. Street Railway Commissioner Sanders is opposed to the company assuming the expense, because it would endanger the 3-cent fare. The cost is estimated at \$168,000.

Mr. Stanley declared that it was up to the county to lay the tracks in the subway and across the bridge. Assistant Prosecuting Attorney Green said that if the county was forced to lay the tracks the company would be charged a rental for the use of the subways and the bridge. He said, however, that the county was under no obligation to pay for relocating the tracks. It is claimed the city agreed to see that all obstacles in the way should be removed at the expense of the owner or at least to release the county from any obligation.

Following the payment of taxes on the valuations made by the State Tax Commission recently, that body has announced the addition of \$2,744,620 to the tax valuation of the Cleveland Railway's property, making the total \$27,219,970. Henry J. Davies, secretary of the company, and T. P. Kilfoyle, auditor, went to Columbus on Aug. 3 and again requested the commission to explain its methods of arriving at the valuation of the property, but as usual they

did not get the information. The company resisted the payment on the basis fixed by the commission for the last three years, but was defeated in the lower courts. As the company preferred to pay the amount instead of carrying the suits to the Supreme Court, it recently forwarded a check for the net amount, which was accepted.

#### A PLEA FOR THE PUBLIC UTILITY CORPORATION

The La Grande, Ore., *Evening Observer* contained recently the following excellent editorial presentation of the case of the public service corporation:

"Someone has very truthfully said, 'time works wonderful changes.'

"Not long ago to be at the head of a public service corporation was an ace-high position; it was a position that elevated one in the public mind; made the man holding that position a ruler, a dictator, a community guide post, to a large extent. But that was in the days when it was considered a high honor to ride on a railroad pass.

"Now, how is it? The head of the public service corporation is a servant in every sense of the term. He is straining every nerve to please his patrons. 'No public be d——d' with him. Some of his predecessors might have been sufficiently entrenched to utter such a remark, but not the corporation man of to-day. He gets up in the morning feeling his hold slipping. Many times it is through wilful misrepresentations by the demagogue who wants to build his own popularity by tearing down others with untruths. He goes to lunch with a troubled look fearing that his position to a committee of patrons has been misunderstood. He trudges home to his family at night time feeling that he has done the best he could on all problems during the day, and still there is a lurking feeling that unjustifiable clouds hang over his administration.

"We are speaking now of the square, manly men who are directing honest corporations and not the guilty 'slip-one-over on the public' kind, of which there are some still in existence.

"Who is to blame for this condition?

"No, not the public—not the consumer.

"Not the honest corporation, nor the honest man who directs the honest corporation.

"It is first of all, the selfish politician and selfish agitator who points to crooked work on the part of some particularly dishonest corporation and then classes all public utilities with the dishonest one. The public finds upon investigation of the dishonest corporation that the charges of the agitator are true and without further investigation places everything under corporate seal in the same class. The fireworks start, the howl grows louder and finally public opinion gets in its work and honest investment is shattered. Earnings are decreased, damage suits of every description follow. And this is why the head that directs the public utility corporation of to-day rests uneasy.

"Very recently we received a letter from a good friend who is a man among men; who directs an honest corporation. And in that letter he said, 'Being a public utility man nowadays is very much like being a prize fighter placed in the ring with both hands and feet tied, and called upon to meet all comers with the principal rules of the game being that no restrictions be placed upon the character of the attack, but the hog-tied defender must fight according to schedule made for him by others.' He is right to a very great extent.

"The only thing for the corporations of Oregon to do is to join with the honest people who are not seeking office, nor trying to run party organizations and make a clean cut, open-handed fight against the selfish politician, the blatant demagogue. Take the public into confidence and defy the traducers to produce proof of the inflammatory statements made against all public service corporations, forcing them to specify just which one they mean.

"We believe the people are fair, and when once the situation is correctly understood capital will be perfectly safe in Oregon and permitted to earn a proper return on the investment.

"There never will be an improvement until the agitator is squelched and the corporations openly appeal to the public for the fair play that is due them."

### FIRST-AID KITS FOR BOSTON EMPLOYEES

The Boston (Mass.) Elevated Railway on Aug. 7 began the distribution of first-aid kits to each of its employees. More than 10,000 of the kits are to be distributed. The kits contain a small rolled bandage and tube of ointment and a bottle of alcohol-iodine solution inclosed in a box small enough to be carried in a pocket and provided with a hanger by means of which it may be hung upon a wall. Inside of the cover are printed instructions for the use of the materials in connection with minor injuries. The distribution of these first-aid kits is made in connection with the safety and welfare work of the company. Many serious and sometimes fatal accidents originate in trifling cuts, scratches and other injuries that would not be serious or even troublesome if properly treated at the time of the occurrence. The kit places in the hands of employees the facilities for taking care of such minor injuries and giving first-aid treatment until a physician may be called when more serious injuries occur. A circular signed by Russell A. Sears, general attorney, accompanies each outfit. This circular is concluded as follows:

"We have a two-fold duty: first, for our own sakes and for the sakes of our families not to get hurt ourselves, and, secondly, not to hurt others through our thoughtlessness or carelessness.

"The first: We are operating a great railway and there are 9000 of us trying to do it with *credit* to ourselves. We must necessarily at times be in places of some danger—that goes with almost every occupation. When we are at work or at home or on the streets we must *look after ourselves*, and in all places use common sense and keep from being injured. In the carhouses, the shops, the power houses, in track and wire work, and in the offices we should be at first thoughtful and careful about being injured, and by making it a point to do this continuously we soon get the safety habit—one of the *best* habits a man can have.

"The second: And while we are operating this great railway we have not only ourselves to look after, but thousands, yes, millions, of others who are passengers on our cars, pedestrians, people riding or driving in vehicles and our fellow employees. Others are apt to be more careless than we; at least all do not have the advantages of safety committees and safety instruction, so we are often called upon to do more than our share. Selfish, careless or ignorant drivers of vehicles may act the hog on the street and cause us to be irritated, and right here is the situation when the capable motorman proves himself the gentleman and a man worthy of his responsibilities; he can be the careful one. Thoughtless men and women attempt to leave or board the car before it comes to a stop. Here is the opportunity for the conductor to do a good turn—and he knows it is a good turn even if the other person doesn't. The careful man in the shop who sees a thing likely to cause injury to some of his fellows and who removes or guards that danger is living in the safety spirit.

"In the future when you receive any communications from the company concerning safety, remember there is a reason—and not a selfish reason—why all should be interested in the safety subject and each earnestly try to do his part.

"During the year just finished there were nine employees killed, 1814 employees injured who lost 18,864 days to date, not including the death cases.

"Use the safety devices. Take no chances."

### WOMEN EMPLOYED IN POWER HOUSES ABROAD

Women are being used in the tramway department of the Glasgow Corporation, not only as drivers and conductors, but as assistants in the power station. Several months ago four women were employed to assist the electrical engineer in the power station and they are now in full charge of a substation, while four others are at work on the power station switchboard. Women are also being employed for cleaning the electrical switch-pillars in the streets. The Glasgow tramways department in addition employs about 100 women as drivers, and they have been found to be very keen and enthusiastic, standing up to the work after a very short time as coolly and confidently as the most experienced motormen. At present it is impossible to say whether the employment of women has affected the current consumption and repairs, but the general im-

pression is that women are, if anything, more careful in their driving than the men.

Interesting and highly satisfactory statistics indicating the steady expansion of the Liverpool tramways service have been submitted to the tramways committee by C. W. Mallins, the general manager. Despite the prevailing war conditions, necessitating the withdrawal of thousands of men from the city, there were increases in every branch of the service. Taking the period from Jan. 1 to June 24, the statistics were very satisfactory. The passengers carried numbered 73,358,533, an increase of 2,334,862 over the same period last year. The receipts amounted to £341,787, as compared with £326,863, an increase of £14,923. In this period the number of miles run decreased to 6,113,547 from 6,166,817.

The Ashton Town Council has decided to promote a bill in the next session of Parliament to obtain powers to enable the corporation to acquire the tramways belonging to the Oldham, Ashton & Hyde Electric Tramway within the areas of Waterloo and Bardsley. It is not necessary to get powers to purchase the lines in the borough. By acquiring the line in Waterloo and Bardsley it will be possible to open out to Oldham. This will benefit both towns.

A reply has been received from the Edinburgh Tramways to the Edinburgh Town Council's demands for extensive improvements. The demands included the relaying of some 33 miles of track. The company's reply is understood to fall considerably short of the Town Council's requisition. The relaying of some 6 miles of track is all that the company is understood to have offered under this heading. It also expresses a willingness to effect repairs and improvements on other portions of the tramway lines referred to in the Council's communication. The communication is of interest chiefly in relation to the larger question of the determination of the company's tenure of the tramway system, and the arrangements for the new control. The company's reply is regarded by those intimately associated with the negotiations as affording small hope of progress toward an amicable and satisfactory agreement. It is likely that before the situation reaches a point of development where such an agreement is possible, the Town Council's powers under the lease may have to be brought home to the company by such effective means as are available under the contract. It is obvious that some arrangement, advantageous to both sides, might be made, under which regard would be had not only for obligations under existing documents, but for the transformation of the system, which is inevitable on the expiration of the lease on June 30, 1919.

### NEWSPAPER PRAISES JOLIET SERVICE

An editorial which appeared in the Joliet (Ill.) *Herald* concerning the Chicago & Joliet Electric Railway follows in full:

"The Chicago & Joliet Electric Railway and its management are in need of attention. Corporations, especially those corporations engaged in the work of public service, are more or less the target for the ire of a populace. It's a relief to let loose a stream of criticism at something or somebody at intervals, and the public service corporations usually are the handiest.

"So it would appear to be with the street railway. During the last two years we find the Joliet company doing the following things which deserve the attention of the public: Operating a new class of cars that are clean, sanitary and comfortable. Maintaining a time schedule that is scrupulously exact. Laying better tracks and paving the intervening space in the street in the most approved fashion, giving the motorists some very badly needed strips of good pavement for driving. Attempting to operate (at a loss) one of the finest amusement parks in northern Illinois. Keeping up a standard of equipment and maintenance supremacy second to none in the country.

"For these, and many other things, the Chicago & Joliet Electric Railway is deserving of many thanks from Joliet. And Joliet must give these thanks either willingly or grudgingly. Why not give them willingly and give some little attention to the work this company is doing in Joliet to make the life of the street car patron more bearable and the pleasures of the motorists who must use car tracks for smooth riding more keen?"

### FULL SERVICE IN HARRISBURG

There has been little change in the strike situation in Harrisburg, Pa. Cars of the Harrisburg Railways are now running on nearly regular schedule, and few out-of-town men are being employed in their operation. J. J. Thorp of the Amalgamated Association claims that there are still 171 men on strike. At the onset of the strike 218 men quit work.

On Aug. 5 Patrick Gilday, chief of the Bureau of Mediation of the State Department of Labor and Industry, wrote letters to F. B. Musser, president of the railway, and to the strikers, urging mediation. On Aug. 7 Mayor Meals endeavored to get the opposing sides together. The following day Mr. Gilday met Mr. Musser, who informed him that the company "had no strike on" and that it had sufficient men working to operate all cars.

During the week both the company and the strikers caused paid advertisements to be printed in all Harrisburg dailies. The company pointed out that a few of its employees were trying to prevent the majority from earning a living and were causing the public much inconvenience and expense. The strikers urged people to use the jitneys, and also replied to statements made by the company. The State Federation of Labor ran paid advertisements declaring that the company's stock was watered and that action against the company would be taken before the Public Service Commission. No such action, however, has yet been started. One of the company's feature advertisements gave in detail the wages paid to the members of the strikers' committee, and pointed out how fair these wages were compared with those of other classes of workmen.

On Aug. 9 the situation remained unchanged. The cars are being well patronized, and indications are that little trouble will be experienced when the jitneys are taken off the streets.

The company declared on Aug. 8 that no men on strike after noon on Aug. 9 would be re-employed.

Mayor Meals has ordered the police to arrest all jitney operators who continue to operate after Aug. 10 without a license.

On Aug. 3 the labor leaders called on Governor Martin G. Brumbaugh and asked him to help adjust the differences. The Governor promised to use his influence to get the men and the company officials together for a conference.

The Valley Railways, Lemoyne, which operate in Cumberland County and run over certain tracks of the Harrisburg Railways in Harrisburg, announced on Aug. 3 an increase in wages of 2 cents an hour. The Amalgamated has been making efforts to unionize the employees of this line. The men, however, have agreed to deal with Superintendent Sensemen through a grievance committee. The company has agreed at all times to arbitrate grievances with this committee.

**Loans to Kansas City Employees.**—The Kansas City (Mo.) Railways has established a loan fund as part of its welfare department work, through which employees may borrow money without interest.

**New Albany Employees Ask Increase in Pay.**—Representatives of the employees of the Louisville & Southern Indiana, Louisville & Northern Railway & Lighting Company and the city railways of Jeffersonville and New Albany, Ind., have presented a petition to the company asking for an increase in pay averaging 5 cents an hour.

**Increase in Wages on Maine Road.**—The Rockland, Thomaston & Camden Street Railway, Rockland, Me., has granted another increase of wages. First-year men are to receive \$1.90 a day instead of \$1.80; second-year men are advanced from \$2 to \$2.10, and third-year men are advanced from \$2.10 to \$2.25. The raise was made voluntarily, as was the increase granted by the corporation last February.

**Trenton Wage Agreement Signed.**—The agreement between the New Jersey & Pennsylvania Traction Company, Trenton, N. J., and Local No. 564 of the Amalgamated Association has been signed after several conferences. The men asked for an increase in wages from 27 to 34 cents an hour and the company granted 29 cents. A few minor changes were made in the working conditions. The agreement runs for three years. The company issued a state-

ment in which it praised the men for the manner in which they performed their duties, and stated that following a "check up" not a fare was found to be missing.

**Survey Completed for Cincinnati Loop.**—The survey made for the purpose of fixing the location of the line of the rapid transit loop at Cincinnati, Ohio, was completed on Aug. 2 and James A. Stewart, assistant engineer, in charge of the field work, reported to Frank S. Krug, chief engineer, that it varies only slightly from the preliminary survey which was submitted to the voters at the April election. The work of taking the levels has also been started, and this will be followed by a property survey. The line will be approximately 16 miles in length. A model of the rapid transit loop will be exhibited at the Sinton Hotel during the convention of the Investment Bankers' Association of America Oct. 1-5, inclusive. It will include a detailed map of the proposed loop, drawings showing sections of subway and elevated construction and plans of the proposed stations.

**Memphis Wage Readjustment Terms.**—On Aug. 1 the Memphis (Tenn.) Street Railway made a new contract with its employees, establishing a ten-hour day, with time and a half for overtime; establishing a standard wage scale of 21 to 28 cents an hour, the maximum to be reached in the seventh year; granting a flat increase of 1½ cents an hour for shopmen; providing for arbitration of future differences and for various minor improvements in working conditions. A closed shop is not specified in the contract, but one article provides that a probationary employee may be admitted to the union after or during his first ninety days in the service. The agreement is to continue for three years from Aug. 1, 1916, but any time prior to sixty days before Aug. 1, 1918, either party may demand a readjustment. The old scale follows: First six months, 18 cents an hour; second six months, 20 cents; second year, 21 cents; third year, 22 cents; fourth year, 23 cents; fifth year, 24 cents; sixth year, 25 cents; seventh year and thereafter, 26 cents.

**Injunction to Prevent Stirring Up of Damage Suits.**—Application of the San Antonio (Tex.) Traction Company for an injunction has been granted by District Judge W. F. Ezell restraining an individual from "stirring up" damage suits against the company. Testimony showed that about 60 per cent of the claims presented the company were made by the defendant. Many of the witnesses testified that after receiving slight injuries on the cars of the company they were approached by the defendant, who promised them large indemnities for the privilege of handling a suit against the company. It was announced by the defendant that appeal would immediately be made to the Fourth Court of Civil Appeals. Judge Ezell said: "I do not believe that it can be successfully contended that the defendant has the right to engage in and carry on the scheme of going out, either by himself or through his agents, and soliciting, instigating and encouraging or stirring up presentation of claims and the bringing of suits thereon, and of trying to induce the claimants to present claims for exaggerated injuries or feigned injuries which do not exist in fact, and to that extent the plaintiff is entitled to the relief sought."

### PROGRAM OF ASSOCIATION MEETING

#### Railway Signal Association

The twenty-first annual convention of the Railway Signal Association will be held at the Grand Hotel, Mackinac Island, Mich., Sept. 12-15, 1916. Reports from the following committees will be presented and discussed: Signaling practice, mechanical interlocking, power interlocking, direct-current automatic block signals, standard designs, wires and cables, storage battery and charging equipment, maintenance and operation, direct current relays, electric railway and alternating current signalling, electrical testing, and harmonization of specifications. In addition, there will be considered a proposed amendment to Article IV, Section 1, of the constitution, covering dues of members of the association. During the convention the Grand Hotel will be closed to the public, all rooms being reserved for the exclusive use of the members of the association and their guests, and arrangements have been made for an elaborate entertainment program, including, on Sept. 15, a boat trip to Sault Ste. Marie to visit the government locks there.

# Financial and Corporate

## ANNUAL REPORT

### United Light & Railways Company

The statement of income, profit and loss of the United Light & Railways Company, Grand Rapids, Mich., and its subsidiaries for the year ended Dec. 31, 1915, follows:

Gross subsidiary earnings (including \$804,466 of inter-company business).....	\$6,308,776
Operating expenses and taxes (including \$804,466 inter-company charges).....	3,827,262
Net subsidiary earnings.....	\$2,481,514
Interest and dividends on subsidiary bonds, preferred stocks and notes.....	1,387,155
Net earnings on stocks.....	\$1,094,359
Net earnings due others than United Light & Railways Company.....	14,794
Earnings available on stocks owned by United Light & Railways Company.....	\$1,079,565
Dividends and interest receivable.....	424,115
Miscellaneous earnings.....	122,511
Gross earnings—United Light & Railways Company....	\$1,626,192
Expenses and taxes.....	127,315
Net earnings—United Light & Railways Company....	\$1,498,876
Interest.....	520,136
Balance available for dividends.....	\$978,740
Dividends—first preferred stock—6 per cent.....	525,789
Dividends—second preferred stock—3 per cent.....	\$452,951
Surplus earnings.....	\$421,321

From the surplus \$265,519 was credited to the depreciation reserve (of which the United Light & Railways Company proportion prorated on its stock holdings of its subsidiaries was \$260,235), and in addition the subsidiary companies expended or set aside from maintenance the sum of \$394,903. This was carried directly to operating expenses, making the total expended or set aside for maintenance and depreciation \$660,423 or more than 12.5 per cent of the gross earnings received from the sale of gas, electricity, heat and transportation. The operating expense of the subsidiaries included \$261,374 accrued for payment of general federal taxes, an increase of \$11,421 for the fiscal year. They also included substantial increases in wages paid to the street and interurban railway employees.

During 1915 the business in the gas and electric departments showed satisfactory increases, but on account of the industrial depression and the jitney competition during the spring and summer months of the year, the railway department showed a decrease in receipts. The gas sales for the twelve months were 1,369,004,700 cu. ft., an increase of 6.07 per cent. Electric sales amounted to 93,276,013 kw.-hr., an increase of 2.66 per cent. In the railway department, however, revenue passengers of all classes totaled 33,528,933, a decrease of 5.88 per cent. Yet during the last quarter of the fiscal year the railway receipts showed substantial increases over the same period of the preceding year. The following table presents a full comparison of the sources of revenue, both gross and net, and the percentage that each class of service bore to the total during 1915 and 1914:

	1915	Per Cent of Total	1914	Per Cent of Total
Gross earnings:				
Gas.....	\$1,318,922	20.91	\$1,267,019	20.55
Residuals.....	122,934	1.95	199,174	3.23
Electric.....	2,322,983	36.82	2,079,145	33.71
Railway—city lines....	1,599,459	25.35	1,690,660	27.41
Railway—interurban..	791,361	12.55	790,392	12.82
Heat.....	81,004	1.28	86,533	1.40
Miscellaneous.....	72,109	1.14	54,033	.88
Total.....	\$6,308,776	100.00	\$6,166,959	100.00
Net earnings:				
Gas.....	\$611,353	24.64	\$538,101	22.71
Electric.....	1,101,701	44.40	1,004,568	42.40
Railway—city lines....	439,867	17.73	523,676	22.10
Railway—interurban..	254,143	10.24	237,499	10.03
Heat.....	19,732	.79	26,996	1.13
Miscellaneous.....	54,714	2.20	38,582	1.63
Total.....	\$2,481,514	100.00	\$2,369,425	100.00

During the year \$826,104 was expended for additions to properties and extensions of service. Of this total, \$171,814 was expended on gas properties, \$318,816 on electric properties, \$321,292 on railway properties and \$14,181 on steam properties. Expenditures on the railway lines completed all the requirements of franchise provisions previously agreed to, and the expenditures for this department will in the future be normal.

A comparative statement for the year ended March 31, 1916, shows that the gross and net earnings of the subsidiary companies are increasing over the calendar year 1915 and over the year ended March 31, 1915. The share of the various divisions, however, in regard to making up this increase is not stated. The comparative figures for the three periods follow:

	Twelve Months Ended		
	March 31, 1916	Dec. 31, 1915	March 31, 1915
Gross earnings.....	\$6,502,663	\$6,308,776	\$6,163,865
Operating expenses and taxes.....	3,913,441	3,827,262	3,777,619
Net earnings.....	\$2,589,222	\$2,481,514	\$2,386,246
Interest and preferred stock dividends.....	1,394,014	1,387,155	1,330,740
Net profit.....	\$1,195,208	\$1,094,358	\$1,055,506

## PLANS FOR MEETING MATURING OBLIGATIONS

### Chairman of San Francisco Committee Outlines Financial Needs of United Railroads

Frank B. Anderson of the Bank of California, who has been elected chairman of the committee of local bankers at San Francisco, Cal., to protect the holders of the securities of the United Railroads, made a statement recently, as follows:

"William H. Crocker, Herbert Fleishhacker, I. W. Hellman, Jr., J. D. McKee and myself have been approached by a great number of the security holders of the United Railroads to investigate the situation and undertake a reorganization. These bankers have consented to serve in the capacity of a protective or reorganization committee, and will send out a circular letter explaining the necessity for a reorganization and requesting the holders of the United Railroads 4 per cent bonds to deposit their bonds with the Union Trust Company or its agents in New York.

"There are approximately \$24,000,000 of these bonds now in the hands of the public. It will be necessary for the holders of these securities to respond promptly to the circular request of the committee, for the reason that on Oct. 15, 1916, \$1,800,000 of Market Street Cable Railway 6s will mature, and on Dec. 20, 1916, \$400,000 of Ferries & Cliff House Railway 6s also will fall due. These underlying bonds have been extended from time to time and cannot be extended further on account of the statute of limitations, and the United Railroads has no money with which to pay this maturing indebtedness, together with its interest, nor any means, under existing conditions, to raise such money. On Oct. 1, 1916, \$470,800 of interest on the United Railroads 4s also will fall due.

"The Market Street Cable Railway 6s and the Ferries & Cliff House bonds are a first lien upon the properties, and unless they are paid, a receivership would seem inevitable.

"The bonded and other indebtedness of the United Railroads and its constituent companies is as follows:

Market Street Cable 6s.....	\$1,800,000
Ferries & Cliff House 6s.....	400,000
Omnibus Cable Company 6s.....	2,000,000
Sutter Street Railway 6s.....	1,000,000
Market Street Railway 6s.....	7,098,000
San Francisco Electric Railway 5s.....	329,000
Gough Street Railway 6s.....	45,000
Equipment notes.....	280,000
United Railroad 4s.....	23,542,000
Notes and bills payable.....	3,665,000
Total.....	\$40,159,000

"After making a careful study of the affairs of the company, the purpose of the committee is to propose a reorganization that will do justice to the present holders of the company's bonds and other securities, and at the same time place the company in a sound financial position. It goes, of course, without saying, that any final plan of reorganization must be approved by the Railroad Commission before it can become operative.

"In any event, the Market Street Cable Railway 6s and the Ferries & Cliff House Railway 6s will have to be paid in cash, and the transaction will have to be financed through the issuance of bonds, which will be junior to any of the present outstanding underlying bonds."

**American Railways, Philadelphia, Pa.**—The Board of Public Utility Commissioners of New Jersey has approved the application filed some weeks ago by the American Railways to purchase all the capital stock of the Electric Company of New Jersey, of the Pennsgrove Electric Lighting & Power Company, the Clementon Township United Electric Improvement Company, the Williamstown Electric Company and the Woodstown Ice & Coal Company, with a combined capitalization of \$157,500.

**Boston (Mass.) Elevated Railway.**—A quarterly dividend of 1½ per cent has been declared on the \$23,879,400 of stock of the Boston Elevated Railway, payable on Aug. 15 to holders of record of Aug. 4, contrasting with one-half of 1 per cent paid last May.

**Chicago (Ill.) Elevated Railways.**—The plan for the extension of the two-year notes of the Chicago Elevated Railways, which matured on July 1, 1916, for a period of three years, has been declared effective by the trustees, a large percentage of noteholders having deposited their notes under the plan. Owing to the advantages offered to noteholders to accept the extension, it is declared that noteholders who have not yet assented will find it to their advantage to do so. No provision has been made for the payment of such notes. Deposited notes stamped as "extended" and with new 6 per cent coupon attached will be returned to depositors with checks covering \$15 for each note deposited.

**Milwaukee Electric Railway & Light Company, Milwaukee, Wis.**—The Milwaukee Electric Railway & Light Company has been granted permission to purchase the Commonwealth Power Company of Milwaukee for \$1,100,000. It has also been authorized to sell \$300,000 of its notes to pay part of the purchase price and \$1,000,000 of notes to reimburse the treasury for cash used in the purchase. The notes are to be secured by bonds of the Milwaukee Electric Railway & Light Company.

**Oakland, Antioch & Eastern Railway, Oakland, Cal.**—A report of the Oakland, Antioch & Eastern Railway for the eleven months ended May 31, 1915 and 1916, shows that this company has not suffered adversely from the suspension of exposition traffic in the San Francisco districts. The gross revenue for the eleven months ended May 31, 1916, amounted to \$568,457, an increase of \$73,065, or 12.85 per cent, over the corresponding period for 1915, while the operating expenses of \$389,032 showed an increase of only \$10,112, or 2.6 per cent, so that the net earnings of \$179,425 gained \$62,953, or 35.1 per cent. For the month of May, 1916, the gross revenue at \$51,526 displayed an increase of \$5,589, or 10.84 per cent, over the same month in 1915, while the net earnings at \$15,454 increased \$3,205, or 20.7 per cent.

**Ogdensburg (N. Y.) Street Railway.**—Interests connected with the Aluminum Company of America are reported to have taken over the Ogdensburg Street Railway, the Ogdensburg Power & Light Company and the Ogdensburg Gas Company.

**Toledo, Bowling Green & Southern Traction Company, Findlay, Ohio.**—The annual meeting of the stockholders of the Toledo, Bowling Green & Southern Traction Company was held at Findlay on Aug. 1. The directors chosen were as follows: F. H. Rothier, F. C. Lawson, B. L. Kilgour, A. J. Becht, Charles Kilgour, Charles F. Smith, Morris McGrew, C. H. Blackburn and H. J. Buvinger. The gross earnings of the company were \$431,739, as against \$393,878 for the previous year. The operating expenses were \$230,941, while for the previous year they were \$223,016. The gross earnings were greater than for any previous year, but the operating expenses also showed an increase. At the close of the year, however, a surplus of \$72,194 was shown. A portion of this was used for improvements, betterments and equipment. The revenue for the period from Jan. 1, 1916, to June 30 showed a gain of \$24,821 over the same period last year, which indicates that the results for the present year will be much better than last. The passenger revenue

for the year was \$267,510, as compared with \$249,651 for the previous year; the freight revenue was \$46,579, as against \$41,061, and the express revenue was \$10,952, as against \$8,868 for the previous year. The sale of power for commercial purposes was \$5,599, while the year before it amounted to \$1,027. The receipts from electric light service were \$68,986, as against \$64,328 the year before, while the revenue from the hot-water service amounted to \$23,062, as compared with \$19,732. The floating debt was reduced from \$68,000 to \$53,000 during the year.

**West Penn Traction Company, Pittsburgh, Pa.**—The West Penn Traction Company has called for payment on Sept. 1 at par and interest the entire issue of \$6,000,000 of 6 per cent collateral trust gold notes of March 2, 1914, payable at the office of the Continental & Commercial Trust & Savings Bank, Chicago, Ill.; Kountze Brothers, New York, N. Y., or at the London City & Midland Bank, Ltd., London, England. The cash was provided for by the sale of bonds of the West Penn Power Company last March.

**Youngstown & Southern Railway, Youngstown, Ohio.**—Randall Montgomery, Harry Hamilton and J. W. Fawcett, appraisers appointed by the court, have placed a value of \$975,000 on the property of the Youngstown & Southern Railway, now in the hands of a receiver. The property will be offered for sale on Sept. 2. The road operates between Youngstown and Leetonia, where it connects with the Youngstown & Ohio River Railroad. The court action was brought by the New York Trust Company, representing holders of the company's bonds.

#### DIVIDENDS DECLARED

Boston (Mass.) Elevated Railway, quarterly, 1½ per cent.  
Pacific Gas & Electric Company, San Francisco, Cal., quarterly, 1½ per cent, original preferred; quarterly, 1½ per cent, first preferred.  
Tampa (Fla.) Electric Company, quarterly, 2½ per cent.

#### ELECTRIC RAILWAY MONTHLY EARNINGS

		CHATTANOOGA RAILWAY & LIGHT COMPANY, CHATTANOOGA, TENN.					
	Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m.,	June, '16		\$102,680	*\$63,375	\$39,305	\$29,992	\$9,313
1 "	" '15		87,846	*60,831	27,015	30,371	†3,356
12 "	" '16		1,182,352	*748,054	434,298	357,341	76,957
12 "	" '15		1,042,100	*707,321	334,779	349,613	†14,834
		CLEVELAND, PAINESVILLE & EASTERN RAILROAD, WILLOUGHBY, OHIO					
1m.,	June, '16		\$43,527	*\$22,519	\$21,008	\$11,467	\$9,541
1 "	" '15		40,750	*22,612	18,138	10,952	7,186
6 "	" '16		210,615	*122,061	137,996	68,163	20,391
6 "	" '15		189,937	*112,096	77,841	65,724	12,117
		COLUMBUS RAILWAY, POWER & LIGHT COMPANY, COLUMBUS, OHIO					
1m.,	June, '16		\$280,350	*\$160,497	\$119,853	\$42,875	\$76,978
1 "	" '15		244,059	*150,250	93,809	39,341	54,468
12 "	" '16		3,307,957	*1,934,061	1,372,996	501,734	871,262
12 "	" '15		3,059,929	*1,826,643	1,233,286	468,369	764,917
		COMMONWEALTH POWER, RAILWAY & LIGHT COMPANY, GRAND RAPIDS, MICH.					
1m.,	June, '16		\$1,322,295	*\$742,346	\$579,949	\$419,968	\$159,981
1 "	" '15		1,115,495	*623,533	491,962	360,096	131,866
12 "	" '16		15,841,539	*8,445,477	7,396,062	4,847,814	2,548,248
12 "	" '15		14,033,334	*7,536,389	6,496,945	4,321,269	2,175,676
		EAST ST. LOUIS & SUBURBAN COMPANY, EAST ST. LOUIS, ILL.					
1m.,	June, '16		\$244,082	*\$142,965	\$101,117	\$62,714	\$38,403
1 "	" '15		193,293	*118,402	74,891	63,906	10,985
12 "	" '16		2,702,763	*1,612,650	1,090,113	752,691	337,512
12 "	" '15		2,466,923	*1,460,641	1,006,282	755,812	250,470
		GRAND RAPIDS (MICH.) RAILWAY					
1m.,	June, '16		\$108,702	*\$72,645	\$36,057	\$13,036	\$23,021
1 "	" '15		92,411	*70,399	22,012	13,961	8,051
12 "	" '16		1,255,468	*834,096	421,372	166,667	254,705
12 "	" '15		1,226,269	*834,703	391,566	163,156	228,410
		NASHVILLE RAILWAY & LIGHT COMPANY, NASHVILLE, TENN.					
1m.,	June, '16		\$190,109	*\$123,400	\$66,709	\$42,512	\$24,197
1 "	" '15		165,511	*102,583	62,928	42,101	20,827
12 "	" '16		2,251,525	*1,393,930	857,595	515,237	342,358
12 "	" '15		2,180,942	*1,282,296	898,646	492,793	405,853
		PORTLAND RAILWAY, LIGHT & POWER COMPANY, PORTLAND, ORE.					
1m.,	June, '16		\$473,664	*\$262,100	\$211,564	\$181,032	\$30,532
1 "	" '15		474,569	*256,295	218,274	185,559	32,685
12 "	" '16		5,456,967	*3,074,746	2,382,221	2,192,060	190,161
12 "	" '15		5,737,866	*3,122,692	2,615,174	2,208,889	406,285

\*Includes taxes. †Deficit.

## Traffic and Transportation

### REVIEW OF JITNEY CONDITIONS IN CALIFORNIA

#### Forty-one Out of Forty-six Editorials Favorable to Electric Railways—Jitney Ordinances Reviewed

W. V. Hill, manager of the California Electric Railway Association, has reviewed the jitney situation in California in a communication to members of that body. He said that out of a total of forty-six editorials appearing in papers throughout the State from June 18 to July 20, forty-one were favorable to the electric railways, most of them calling for state regulation and taxation of motor vehicles to meet the losses in state revenue due to jitney operation. He reviewed very briefly the terms of the new jitney regulatory ordinances in Redondo Beach, Alameda, Oakland, Santa Barbara and San Francisco. The ordinance in San Francisco, noted previously in the *ELECTRIC RAILWAY JOURNAL*, excludes the jitneys from Market Street in the congested districts between 10.30 a. m. and 4 p. m., cuts the number to 700, requires the cars to operate to the end of their routes and establishes two points within each block to take on and discharge passengers. It is said that Superior Court Judge Works has sustained the Santa Monica ordinance, which had been attacked by the interurban jitney bus operators on the ground that the emergency clause was unlawful and the license fee of \$100 prohibitory. Mr. Hill also said that the validity of the San Joaquin County ordinance had been sustained by Superior Court Judge Young, and that the plaintiff had been denied the right to amend his complaint. This ordinance required a definite route to be followed, fixed the fare, provided for a \$50 deposit and made obligatory the payment of 5 per cent of the gross receipts as taxes. It also required the execution of a \$10,000 maximum bond satisfactory to the Board of Supervisors.

In Los Angeles on April 24 there were 364 cars and on June 27 there were 403 cars in that city. Mr. Hill gave the number of passengers carried in jitneys in Los Angeles on April 24 as 21,026 and the earnings as \$2,051, and the number of passengers on June 27 as 46,675, and the earnings as \$2,233. Of the 403 cars operating in Los Angeles 104 were of the large bus type with a seating capacity ranging from ten to fifteen passengers. He said that Los Angeles was practically the only place in the State where the large bus was becoming a factor. Notwithstanding that no regulatory ordinances were sought in Sacramento, the number of jitneys there had decreased about 33 per cent in three months. Mr. Hill also reviewed the states which had placed the jitneys under the jurisdiction of their Public Service Commissions. With respect to California, he said that State had been petitioned to exercise jurisdiction over the jitneys, but that the Supreme Court of California had not yet rendered its decision on the question on whether or not the Railroad Commission had such jurisdiction under the present act.

### HEARING HELD ON JITNEY REGULATION

#### Meeting in Seattle to Consider Regulatory Measures Adjourns Without Action

The City Council of Seattle, Wash., at a recent hearing on the proposed regulation of jitney operators in that city, voted six to three to continue the hearing until Aug. 21. The Council reported progress on the petition of sundry citizens asking for the imposition of regulatory measures and set the date above named for further hearing. The petition asked that jitneys be prevented from operating longitudinally on streets upon which street cars are now operating; that the jitneys pay into the city treasury a proportion of their gross receipts; that passengers be prohibited from riding on the doors of jitneys, and that the cars should operate between the hours of 6 a. m. and midnight. None of the members of the Council favored such legislation that would tend to drive the jitney entirely out

of competition with the street railway. Councilman R. H. Thomson, former city engineer of Seattle, stated at the hearing:

"What we had hoped for was a fair presentation of both sides. The Council does not desire to destroy the jitney. No one who has studied the problem of transportation will deny that the omnibus will be the urban passenger carrier of the future. The legislation aimed at is to remove any reasonable complaint that the city is not adequately protecting itself by the fair and proper regulation of the jitney. I express the hope that the representatives of the improvement clubs may come back and make a report that is fair to all parties concerned."

The petition calling for jitney regulation was signed by 1700 people, and the counter petition protesting against regulation by about 21,000. The petition asking for regulation of jitneys was filed six weeks ago, and the jitney drivers and owners, and friends, filed a counter petition about five weeks later.

### ANOTHER COMPANY PUBLICATION

The Memphis (Tenn.) Street Railway has begun the publication of *Safety First Topics* in the interest of its employees. The first issue is dated August. It contains thirty-two pages including the cover. The paper is 6 in. wide by 9 in. high. The editor is C. B. Proctor, chairman of the safety committee. The paper will be issued the first of each month in the interest of the safety first movement. The columns are open to all the employees of the company for the discussion of topics of interest to them. The editorial foreword follows:

"In this, the first issue of *Safety First Topics*, we think it not amiss to state fully to the employees of The Memphis Street Railway the purposes of this magazine. These purposes are:

"First—To keep all employees fully advised as to the workings of our safety committees.

"Second—To give to all the benefits of the papers read and talks had at these meetings.

"Third—To make known to all the results of our campaign for safety first.

"Fourth—To provide a medium for the discussion (by all employees) of matters of interest to this company, particularly those referring to our safety first campaign.

"We have long felt the need of such a magazine, and hope to make this one supply that need. We urgently request the aid and co-operation of every employee of this company to that end.

"This issue of the *Safety First Topics* may well be treated as a souvenir number. On account of our banquet it probably will be larger and may contain more matter than subsequent issues."

### STATE-WIDE APPEAL FOR SAFETY

A circular addressed to automobilists is being sent out to all of the members of the California Electric Railway Association by W. V. Hill, manager of the association, with the idea that it can be used most effectively by making it a personal appeal from the local company addressed to local automobile owners, their addresses being secured, presumably, through the State automobile license bureau. Primarily, the letter conveys a message and gives some real information in an interesting way, instead of being simply a placard or warning. Secondly, it is developing the idea and then showing the individual member companies how they can use it as a personal appeal addressed to so-called "classified circulation." The letter, addressed "To drivers of 200,000 automobiles in California," follows:

"We want to save the lives of your family, your friends, yourself and the public in general. The record of accidents at grade crossings is increasing, according to the Railroad Commission's report for 1915. This report says:

"The record of accidents at highway crossings continues to require attention, and notwithstanding the great number of protective devices that have been installed by the railroads, both on their own initiative and upon the recommendation of the commission, the number of fatalities and injuries is increasing. The investigation of the accidents in which automobiles or motor driven vehicles have been in-



volved at highway grade crossings since such investigations have been instituted by the commission and covering a period of over two and one-half years, has not revealed a single instance where a fatality has occurred due to negligence on the part of the railroad.'

"The same report shows that during the three-year period 249 persons were killed and 1093 persons were injured at grade crossings in this State.

"We are doing our part by abolishing grade crossings as rapidly as practicable, employing crossing flagmen, installing automatic signals and devices, gates and signs at enormous cost.

"In a recent address, Commissioner Gordon said:

"We are horrified at the waste of life going on in Europe, but we hardly give a thought to the absolute waste of life which is going on around us unless we happen, in a measure, to be charged with responsibility for it.'

"We are doing our part. Won't you do yours?"

"Stop! Look! Listen!

"California Electric Railway Association."

**Trade-mark Wanted by Ohio Road.**—The Mahoning & Shenango Railway & Light Company, Youngstown, Ohio, has offered prizes to its employees for the best suggestion for a trade-mark to be used by the company as representing its various activities, railway, light and power branches. The ideas are to be submitted either in drawings or carefully worded descriptions. The road has been known by various names, but the designation "Em-an-Ess" system has been most frequently used of late.

**New Denver Traffic Circulars.**—The Denver (Col.) Tramway has issued "What to See in Denver" and "Prize Picnic Places," designed to encourage a more liberal use of the facilities of the company. Each circular is 4 in. wide by 7 in. high. "What to See in Denver" contains forty pages. "Prize Picnic Places" contains fourteen pages. Forty-four different trips are listed in the first-mentioned circular. In addition there are included many facts about the city of great help to both the occasional visitor and the resident.

**Traffic Check Made in Seattle.**—A check of traffic in the Capitol Hill and Broadway districts of Seattle, Wash., served by the Puget Sound Traction, Light & Power Company, made by the Public Utilities Department of the city of Seattle on Aug. 2, showed that street cars carried 523 passengers to the down-town districts, while the jitneys carried 747. This check covered a three-hour period, from 9 a. m. to 12 noon. In the same period, the street cars carried 440 outbound passengers, and the jitneys 402. The average number of passengers on each street car during the three-hour period was fifteen. The company recently reduced service on the Capitol Hill line.

**Traffic Semaphores Supplied in Louisville.**—The police department of Louisville, Ky., has supplied semaphores at the various street intersections attended by traffic officers. These are of the stamped metal type, with sockets providing for lamps with red and green lights and using the words "Stop" and "Go." They are portable, in sections, the base and hollow upright being surmounted by the revolving standard. A specially designed wagon gathers the signal arms as well as the safety zone flags at night. The use of the semaphores has been attended by one accident. A boy who put his head out a window of a car was struck by a semaphore and suffered a gash on the head.

**Election Asked on Houston Jitney Ordinance.**—Jitney-men of Houston, Tex., have presented to the City Council a petition for an election on an ordinance regulating jitney traffic. The ordinance was prepared by the attorney of the jitney association. The petition bears the names of the necessary 15 per cent of the qualified voters of the city. In the ordinance submitted provision is made for the creation of a \$20,000 fund out of which damages, both personal and property, caused by the jitney operators will be paid. The fund is to be collected by charging each operator \$30 a month; the city is guaranteed \$4,000 yearly in taxes; the employment of a board of examiners and physicians is provided for; jitneys are restrained from operating near restricted districts; persons not in good health are prohibited from operating buses.

## Personal Mention

E. K. Pedler has been elected secretary and treasurer of the Northern Electric Railway, Chico, Cal., to succeed Harold Jewell.

J. B. Rowray, who has been superintendent of the Northern Electric Railway, Chico, Cal., has been appointed general manager of the company to succeed W. A. McGovern, deceased.

Wallace W. Brendel has been appointed chief clerk of C. E. Morgan, general superintendent of the Michigan United Traction Company, with headquarters at Jackson, Mich. Mr. Brendel has been serving as chief train dispatcher of the Union Traction Company of Indiana, Anderson, Ind.

C. A. Werber, formerly purchasing agent of the Atlanta (Ga.) Gas Light Company, has been appointed general storekeeper of the Georgia Railway & Power Company, Atlanta, and allied companies, including the gas company. W. H. Smaw, heretofore purchasing agent of the Georgia Railway & Power Company, has been appointed general purchasing agent, and from now on will do all the buying of supplies for the gas company as well as the power company and its allied companies. This change in the duties of Mr. Werber, who has been identified solely with the gas company until now, will give him supervision of the stores and supplies on hand in all the stockrooms in Atlanta and the north Georgia territory covered by the company. For the last five years Mr. Werber has been purchasing agent of the gas company, and for four years before that was assistant in that office. He has been connected with the Atlanta Gas Light Company for the last twenty-five years and is its oldest employee.

E. P. Coleman, general manager of the Dominion Power & Transmission Company, Ltd., Hamilton, Ont., was elected president of the Canadian Electric Railway Association at its meeting at the Royal Canadian Yacht Club, Toronto, on July 26 and 27. Mr. Coleman was born in Taunton, Mass., on June 14, 1867, and was educated at the public schools in Taunton. From Feb. 9, 1885, to Feb. 9, 1896, he was employed in the Huber Printing Press Company's drafting office at the Taunton Locomotive Manufacturing Company's shops. From Jan. 1, 1896, to Sept. 1, 1900, he was treasurer and general manager of the Attleboro Steam & Electric Company, Attleboro, Mass. During the Spanish-American war he served as second lieutenant and battalion adjutant in the Fifth Massachusetts Infantry. From July 1, 1899, to Sept. 1, 1900, he was general manager of the Plymouth (Mass.) Electric Light Company, and from Sept. 1, 1900, to June 1, 1905, he was vice-president and general manager of the Consolidated Lighting Company, Montpelier, Vt. From June 1, 1905, to March 1, 1907, he practised as consulting engineer in electric light, power, railway and quarry work and served as treasurer and manager of the Wetmore & Morse Granite Company, Montpelier, Vt. From March 1, 1907, to Jan. 1, 1909, he was general manager of the Great Northern Power Company, Duluth, Minn. He has been manager of the Dominion Power & Transmission Company, Hamilton, Ont., since March 1, 1909.

### OBITUARY

Will Christy, vice-president of the Northern Ohio Traction & Light Company, Akron, Ohio, died on Aug. 9, following an operation for relief from appendicitis. He had been ill only two days. Mr. Christy was one of the most prominent men in electric railway work in the State. With his brother James, Ira Miller, W. M. Morlin and others, Mr. Christy started the first horse railway in Akron. He was also interested in the Cleveland Construction Company, Cleveland, which has built a number of electric railways. Mr. Christy was president of the Central Savings & Trust Company, Akron, and a director of the Citizens' Savings & Trust Company, Cleveland. He was born in 1859 and was educated in the public schools of Akron. For ten years he was interested in the tanning and leather business. He then turned his attention to transportation matters.

## Construction News

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

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

### FRANCHISES

**Hot Springs, Ark.**—The Little Rock & Hot Springs Electric Railway has received from the Council of Hot Springs an extension of time on its franchise in which to begin construction until July 1, 1917, and the time for completion until Feb. 26, 1921. [Feb. 5, '16.]

**Long Beach, Cal.**—The Pacific Electric Railway has asked the City Commission for permission to abandon its line on Seventh Street.

**Nampa, Idaho.**—The Boise Valley Traction Company has received a franchise from the Council to construct a line on Third and other streets.

**East Liverpool, Ohio.**—The East Liverpool Traction & Light Company has received permission from the Council to construct a cable line from First Street and back of Chester to Fairview to supply electrical service in that vicinity. The company also plans to extend the cable line to Weirton via Fairview and New Cumberland.

### TRACK AND ROADWAY

**San Diego & South Eastern Railway, San Diego, Cal.**—Work has been resumed by this company on the construction of an extension to Chula Vista via Potash and Marmarosa. The cost of the extension will be about \$70,000.

**Pacific Electric Railway, Los Angeles, Cal.**—Work on this company's elevated line from Sixth and Main Streets to San Pedro Street will be completed by Sept. 1. The line, which is being constructed at a cost of \$350,000, will be the chief unit in a loop system to relieve the congestion on Main and Seventh Streets. The elevated will carry seven tracks from the station to Maple Avenue and two tracks from there on to San Pedro Street. A dirt fill will be laid on top of the steel and concrete and tracks will be laid on this fill, thus eliminating noise. A bridge is to be constructed across Los Angeles Street from the waiting room. A tunnel will be built under the tracks at the present point of departure at the Sixth and Main Streets station with a view to making it easier to handle passengers both going and coming.

**Visalia Electric Railroad, Exeter, Cal.**—Locating engineers are now in the field and it is expected that construction will be started at an early date on a 43.6-mile extension of the Visalia Electric Railroad which will serve the orange districts of Exeter, Porterville and Lindsay.

**Denver & Interurban Railway, Denver, Col.**—This company is laying three blocks of new single-track construction at Fort Collins, using a 65-lb. T-rail.

**Arkansas Valley Railway, Light & Power Company, Pueblo, Col.**—This company reports that it expects to build 1200 ft. of double track, material for which is already on hand.

**St. Petersburg-Tampa Railway, St. Petersburg, Fla.**—This company plans to construct a 3½-mile bridge across Old Tampa Bay. George S. Gandy, Sr., St. Petersburg, president. [July 22, '16.]

**Jacksonville (Fla.) Traction Company.**—It is reported that this company will construct a 1½-mile extension on Eighth Street and Talleyrand Avenue.

**Miami (Fla.) Traction Company.**—Surveys have been begun by this company for an extension on Waddell Street and Biscayne Drive.

**Aurora, Mendota & Western Traction Company, Aurora, Ill.**—This company is now laying ties in the concrete bedding of the new pavement on South Broadway, Aurora, so that it will be necessary to remove only the brick surfacing when the company is ready to lay its rails. [July 15, '16.]

**Bloomington & Normal Railway & Light Company, Bloomington, Ill.**—This company will lay new rails on its North Center Street line.

**Urbana & Champaign Railway, Gas & Electric Company, Champaign, Ill.**—This company is reconstructing the track on its Walnut Street line, an entire new track being laid.

**Galesburg Railway, Lighting & Power Company, Galesburg, Ill.**—It is reported that this company plans to construct a new line between Galesburg and Rock Island via Alexis and the northern part of Warren County.

**Illinois Traction System, Peoria, Ill.**—This company has reopened its gravel pit at Mackinaw, Ill., and is rebalasting the right-of-way between Springfield and Peoria and between Bloomington and Peoria. The maintenance of way department of the company is rapidly replacing all wooden trestles with steel and concrete structures. One of these replacements has just been completed at King's Bridge, between Bloomington and Danvers, where the wooden trestle has been superseded by 45 ft. steel girders on concrete abutments and carrying a concrete and ballast deck. The work of wrecking the wooden trestle and rolling the girders into place on the concrete abutments was done in three hours without interfering with traffic. Similar replacements are under construction at Sugar Creek, between Lincoln and Mackinaw; and also at a point between Edwardsville and Granite City. Ten smaller wooden bridges are being taken out and replaced with concrete arches.

**Tri-City Railway, Rock Island, Ill.**—This company will soon begin work on the construction of new track on Forty-third Street for the arsenal stub line.

**\*Fort Madison, Iowa.**—C. W. Petsch, St. Paul, Minn., is interested in the construction of a line from Fort Madison, Iowa, to Nauvoo, Ill.

**Tri-City Railway Company of Iowa, Davenport, Ia.**—This company will lay double track between Center Station and Sears, Ill.

**Joplin & Pittsburg Electric Railway, Pittsburg, Kan.**—This company is considering the construction of an extension from Columbus to Commerce, Okla.

**Cumberland & Manchester Railroad, Manchester, Ky.**—The first section of 12 miles on this company's proposed line from Barbourville to Manchester has been opened for freight traffic. M. E. S. Posey, Barbourville, chief engineer. [July 29, '16.]

**Newport & Alexandria Interurban Electric Railway, Newport, Ky.**—The Newport & Alexandria Interurban Electric Railway has secured the right-of-way over Grand Avenue, Newport, and purchased 0.8 mile of the Alexandria Pike between Fort Thomas Avenue and Main Avenue. Right-of-way will be secured on the roads at Fort Thomas to join these two sections. It is said that work on the line will be begun within a short time. [June 3, '16.]

**Detroit (Mich.) United Railway.**—Progress is being made in the construction of several street railway extensions within the one-fare zone in Detroit. On the Grand Belt line excavating has been completed as far west as Riopelle Street and the concreting is complete to Chene Street. All the work between Mt. Elliott and Chene is expected to be finished by Aug. 15. On the Forest Avenue extension grading is finished and the line is completed from Gratiot to Baldwin. The lower bed of concrete has been laid practically the whole distance and one track is in position. Construction of the foundation on the Kercheval extension, which on Kercheval Avenue is built by the city, has been started.

**Butte (Mont.) Electric Railway.**—J. R. Wharton, vice-president and manager of the Butte Electric Railway, reports that with the completion of about 150 yards of double-tracking the Walkerville line residents will be afforded a ten-minute service during the hours when the travel is heaviest. The Walkerville line is being double-tracked from Dewey's Point around the hill and under the Eveline mine to the Northern Pacific Railway crossing. This section of the city is now receiving a twenty-minute service, and the ten-minute service promised will be a welcome innovation. Mr. Wharton announces also that his company contemplates double-tracking the line from Waukesha

Street, down Excelsior Street. This work will not be carried out until next year, because of urgent need of other changes.

**Auburn & Syracuse Electric Railroad, Auburn, N. Y.**—A report from the Auburn & Syracuse Electric Railroad states that it has purchased twelve Nachod type N automatic block signals.

**Buffalo & Lake Erie Traction Company, Buffalo, N. Y.**—George Bullock, receiver for the Buffalo & Lake Erie Traction Company, has received an order from Supreme Court authorizing him to negotiate with the city of Dunkirk, through which the line passes, for the abandonment of the belt line. The order also provides that the receiver, in the event of being unable to make satisfactory arrangements with the city, may construct a connecting line from Fredonia to Sheridan, thus cutting Dunkirk off the direct main line service. The belt line around Dunkirk has been a losing venture for many years.

**\*Tulsa, Okla.**—It is reported that plans are being contemplated for the construction of an electric railway to connect Tulsa with Oklahoma City, Okmulgee, Henryetta and McAlester. The Chamber of Commerce of Tulsa may be able to give further information.

**Houston (Tex.) Electric Company.**—The Houston Electric Company will begin work within a few days paving between its tracks on Houston Heights Boulevard for a distance of about 1 mile.

**Dallas Consolidated Street Railway, Dallas, Tex.**—This company has announced that it will soon begin laying new rails on Tremont Street, as ordered by the City Commission of Dallas. The reason this had not been done earlier was due to the fact that the company was unable to get steel rails. It has been able to purchase enough rails in Fort Worth from the Northern Texas Traction Company to relay its tracks on Tremont Street.

#### SHOPS AND BUILDINGS

**Douglas Traction & Light Company, Douglas, Ariz.**—This company plans to construct a new ice and cold storage plant in Douglas. The proposed plant will have an output of 100 tons daily and will cost about \$100,000.

**Tri-City Railway Company of Iowa, Davenport, Ia.**—The Central Engineering Company, Davenport, has been awarded the contract for the construction of the new carhouse of the Tri-City Railway, at Fifth Avenue and Thirty-fifth Street, Rock Island, Ill. The actual cost of the four new bays which will be erected will be \$70,000. New equipment will be added to the amount of \$19,000.

**International Railway, Buffalo, N. Y.**—Plans and specifications for the construction of a new passenger terminal at Lockport, N. Y., have been completed by the International Railway, Buffalo, N. Y., and will be submitted to the City Council for approval, according to E. J. Dickson, vice-president of the International Railway. The new station will replace the present frame structure used by the Buffalo & Lockport and Lockport & Olcott divisions and by the Buffalo, Lockport & Rochester Railway. The new terminal will be of brick and will be two stories high.

**Hershey (Pa.) Transit Company.**—The carhouse being erected by the Hershey Transit Company at Hershey is rapidly nearing completion. It is a concrete and steel structure, 96 ft. by 275 ft., with room for forty cars. Included in its features are rest rooms for the employees, shower baths, private offices, etc. The building is located at the central point of the Hershey lines now constructed and others planned.

**Pittsburgh (Pa.) Railways.**—This company will construct a new brick and steel carhouse at Carrick at an approximate cost of \$83,000.

**Nashville-Gallatin Interurban Railway, Nashville, Tenn.**—Plans have been drawn by Thomas W. Gardener, Stahlman Building, Nashville, Tenn., for remodeling the station of this company.

**Montreal & Southern Counties Railway, Montreal, Que.**—Work has been begun by this company on the construction of a carhouse at Granby. The building will be 230 ft. x 62 ft., of concrete, steel and brick construction, with a storage capacity for six cars.

## Manufactures and Supplies

### WHAT IS DELAYING WIRE AND CABLE PURCHASES?

#### Scrap Copper Wire and Aluminum Feeders Sold at High Prices

According to the observations of the electrical engineer of one of the largest city systems, the purchase of new trolley wire and heavy feeder cables is being delayed just as long as possible in anticipation of a possible break in the copper market. The delivery on 500,000 circ. mil rubber-insulated 600-volt armored railway feeder cable was placed at sixteen weeks by one manufacturer.

The electrical engineer quoted above bought in July, 1915, a relatively large quantity of trolley wire. The wire was not installed until the winter months of 1915 and 1916, and then it replaced old copper. The copper which was replaced was sold at a scrap value of more than the first cost of the new wire. Now this road is holding off on the purchase of 8 to 14 miles of trolley wire to see if the reported break in the copper ingot price is followed by a reduction in trolley-wire prices.

When the price of copper began to rise abruptly in July, 1915, this road sold about \$30,000 worth of old copper cable. Then the increase in the price of scrap aluminum came, and it sold \$68,000 worth of aluminum feeders at 55 cents a pound. These feeders had been in service for seventeen years, and cost originally but 30 cents a pound. It is pointed out, however, that at the present prices the differential between the values of copper and aluminum, when the relative electrical conductivities are considered, will hardly justify scrapping old aluminum and installing new copper.

#### ROLLING STOCK

**Gary & Interurban Railroad, Gary, Ind.**, is contemplating the purchase of ten or twenty cars.

**Chicago, Lake Shore & South Bend Railway, Michigan City, Ind.**, is considering purchasing ten interurban cars.

**Ottumwa Railway & Light Company, Ottumwa, Iowa.** has ordered five all-steel, front-entrance, light-weight, semi-convertible cars from the American Car Company.

**International Railway, Buffalo, N. Y.**, as noted in the ELECTRIC RAILWAY JOURNAL of Aug. 5, has ordered two funeral cars from The J. G. Brill Company. These cars are to be delivered about Oct. 15 and will be 36 ft. 6 in. long, 8 ft. 6 in. wide with eight transfer seats on each side of the main compartment of the car. This will provide seating capacity for forty persons. The casket compartment will seat six passengers. The seating will be covered with dark green Fabricoid. The cars will be equipped with four 1000-hp. G. E. motors and K-6 control, Brill 27-A trucks with a 5 ft. 10 in. wheelbase and 30 in. wheels. Contracts for thirteen cars of the near-side pay-as-you-enter type, duplicating those recently destroyed by fire, will be let within the next few weeks. President Connet's private car Tatonka will not be rebuilt at present. The contract for the all-steel coaches for the new Buffalo-Niagara Falls line will not be awarded until fall.

#### TRADE NOTES

F. M. Murphy, formerly sales manager of the Bates Expanded Steel Truss Company, Chicago, Ill., has resigned to enter other business.

**Standard Forgings Company, Chicago, Ill.**, announces that E. W. Richey has been appointed assistant to the president with headquarters at Chicago.

**Philadelphia Holding Company, Philadelphia, Pa.**, has recently received orders for Radial trucks from the Elmira Water, Light & Railroad Company and the Chambersburg, Greencastle & Waynesboro Street Railway.

The Pullman Company, Chicago, Ill., has started on a reconstruction program which will extend over five years, and contemplates the replacement of its older building with modern shop structures of increased size. This means practically a remodeling of the entire plant, gradually and without disturbance to business.

Sangamo Electric Company, Springfield, Ill., is distributing Bulletin No. 44 devoted to the mercury-type d.c. watt-hour meter. This thirty-two-page book is of interest to the railway electrical engineer because it presents a detailed illustrated description and discussion of the principle of the mercury-motor watt-hour meter. This supplements the technical description of the meter itself.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., reports the receipt of a number of orders for switchboard apparatus for the initial equipment of new generating stations and also some orders for additional equipment, among which is one from the Northern Ohio Traction & Light Company, Akron, Ohio, for the Gorge generating station, additional capacity 44,400 kva, equipment for three control desk sections, two type E-4 and one type C-1 oil circuit breakers.

Lord Manufacturing Company, New York, N. Y., reports the receipt of orders for air cleaners from the Westinghouse Electric & Manufacturing Company for the cars being built for the Cortland Traction Company and the Union Street Railway of New Bedford, Mass., and orders for Giant brakes from the Washington-Virginia Railway and the American Car Company for the cars they are building for the Southwestern Interurban Railway. This company has also received an order for ratchet handles for the seventy storage-battery cars being built for the New York Railways by the Southern Car Company.

Acme Supply Company, Chicago, Ill., announces the opening of its own offices in Eastern and Southwestern territory on Aug. 15. William M. Wampler has been appointed Eastern sales manager and Franklin M. Nicholl Eastern and Canadian sales representative, with headquarters at 50 Church Street, New York City. F. N. Grigg has been appointed Southeastern sales manager with headquarters in the Virginia Railway and Power Building, Richmond, Va. E. S. Sullivan, Monadnock Building, San Francisco, Cal.; Bell & Jamison, Hellman Building, Los Angeles, Cal., and W. F. McKenney, 54 First Street, Portland, Ore., have also been appointed the official sales representatives of this company on the Pacific Coast.

Peter Smith Heater Company, Detroit, Mich., announces that there are now in use over 8000 of its forced ventilation hot-air stove heaters. The following are a few of the users of this type of heater: Cleveland Railway, 1430; United Railways of St. Louis, 1419; Detroit United Railway, 1198; Cincinnati Traction Company, 289; Milwaukee Electric Railway & Light Company, 279; Louisville Railway, 242; Winnipeg Electric Railway, 230; Toledo Railways & Light Company, 185; New York State Railways-Rochester, Syracuse and Utica Lines, 172; Des Moines City Railway, 171; Northern Ohio Traction & Light Company, 116; Lehigh Valley Traction Company, 108; Calgary Municipal Railway, eighty-five; Edmonton Radial Railway, eighty-two; Indianapolis Traction & Terminal Company, seventy-eight; Pittsburgh Railways, seventy-five; Sioux City Service Company, sixty-nine; Schenectady Railway, fifty-two; Empire United Railways, fifty-two; Ohio Valley Electric Railway, forty-seven; Tri-State Railway & Electric Company, forty-seven; Washington, Baltimore & Annapolis Electric Railroad, forty-seven; Regina Municipal Railway, thirty-nine; Toronto Civic Railway, thirty-eight; Oklahoma Railway, thirty-eight; Omaha & Council Bluffs Street Railway, thirty-six; Saginaw-Bay City Railway, thirty; Port Arthur & Fort William Street Railway, twenty-six; Rockford & Interurban Railway, twenty-five; Texas Traction Company, fifteen. The Peter Smith hot-air forced ventilation heater was brought out in 1908, and the first installation was made Jan. 26, 1909, on the Cleveland Railway.

#### ADVERTISING LITERATURE

American Electrical Works, Phillipsdale, R. I., has issued a new price list dated Aug. 2.

Haese Track Sander Company, Milwaukee, Wis., has issued a circular which describes and illustrates its sander.

Laclede-Christy Clay Products Company, St. Louis, Mo., has issued an illustrated circular which lists the uses for the five brands of fire brick made by it.

Chicago Pneumatic Tool Company, Chicago, Ill., has issued bulletin 34 N. This booklet illustrates and gives the details

of construction of its steam and power driven single compressors.

New Jersey Foundry & Machine Company, New York, N. Y., has issued catalog 88, which describes and illustrates its varied line of hand and electric cranes, monorails, trolleys, hoists and other overhead carrying devices. A number of illustrations show installations of this company's products.

Griffin Wheel Company, Chicago, Ill., has issued a pamphlet entitled "Five Minutes on Chilled-Iron Car Wheels," which tells of the safety, low cost, maintenance cost and guarantee of the chilled-iron wheel and also of its effect on brake efficiency, brake-shoe wear, rail wear and flange wear.

Prest-O-Lite Company, Inc., Indianapolis, Ind., has issued an instruction book which presents in non-technical language a brief description of the practical applications of oxy-acetylene welding and cutting. Only such facts are given that were considered necessary to give the welding operator a clear understanding of the process with the least amount of reading.

Western Electric Company, New York, N. Y., prints an article entitled "Guiding Trains by Telephone" in the August issue of *Western Electric News*. This briefly tells of train dispatching by telegraph from 1850 to 1907, at which time the telephone and selector were first introduced for this work. A detailed description of the selector and its work is then given, and finally the article points out the advantages of the telephone over the telegraph for train dispatching.

Edison Storage Battery Company, Orange, N. J., has just issued a booklet on storage batteries in railroad service entitled "Train Lighting Batteries, Edison." This booklet is profusely illustrated with photographs showing the battery in actual service and as well the construction of the individual cells. The text gives a thorough description of the manufacture of the cells, their characteristics, battery troubles and their elimination and gives special attention to the chemical changes involved on charge and discharge.

Joseph Dixon Crucible Company, Jersey City, N. J., in a recent issue of *Graphite* shows the power plant of the Indianapolis & Cincinnati Traction Company, Rushville, Ind., where Dixon's silica-graphite paint has been in service for six years. A testimonial letter from S. C. Waggoner, chief engineer, is also given. The Dixon Company reports that it is having a world-wide success in manufacturing and furnishing a protective paint for metal work. This paint is an American product, based on a flake silica-graphite mined by them and prepared as a paint film for over fifty years.

N. W. Halsey & Company, New York, N. Y., have issued a booklet entitled "Essentials of a Standard Public Utility Bond." They discuss as qualifications of a well selected or standard issue the questions of the community in which the utility operates, the value of the property, the earnings, maintenance, escrow provisions, the sinking fund, the management and control and the franchises. As meeting all the requirements which they lay down under these various heads, Halsey & Company cite the case of the bonds of the Topeka Railway & Light Company, an Illinois Traction Company property, handled by them. They are in denomination of \$1,000, \$500 and \$100, and are due in 1933.

Robert W. Hunt & Company, Chicago, Ill., have just issued a pamphlet containing all of the standard specifications for steel rails, so arranged and indexed that they are in readily usable form. The specifications of some twenty-six associations and manufacturers are condensed into five specifications known as the American Railway Association Specifications for Carbon Steel Rails; the American Society for Testing Materials, Standard Specifications for Carbon Steel Rails; the Manufacturers' Standard Specifications for Open Hearth Rails; the Manufacturers' Standard Specifications for Bessemer Steel Rails, and the Colorado Fuel & Iron Company Standard Specifications for Open Hearth Steel Rails. The specification of the American Society for Testing Materials is the same as that of the American Electric Railway Engineering Association covering plain and grooved girder rails.