

# Electric Railway Journal

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No. 10

## THAT PAVING BURDEN AGAIN

That the ELECTRIC RAILWAY JOURNAL is on the right track in urging the urban railways to press for relief from the inequitable taxation involved in paving requirements was indicated by the discussion at the New York Electric Railway Association meeting in New York City last week. Amid the clouds of difficulty which hang over the industry in its attempt to meet the contending requirements of public and capital a ray of light comes in the form of a hope that the paving conditions may be ameliorated and expenses thus considerably reduced. The discussion at New York, however, showed clearly that this relief will not come suddenly or without patient effort. The paving requirement is in many cases, in most cases, presumably, a contractual obligation specifically tied in with the franchise grant. It is therefore not to be expected that changes can easily be made, although with the expanding powers of commission rule in most states and under the theory held in the recent New York and North Shore decision, it may be that commissions can relieve individual companies of this burden without legislation, where the circumstances of the case warrant action. In the meantime the local public must be brought to see the light. Firm conviction as to the correctness of the contention that the present paving requirements are unjust, backed up with persistence and ingenuity in spreading this conviction to the communities served will ultimately bring relief. The outcome of such cases as that cited by T. A. Wright, Jr., referred to in the account of the New York meeting elsewhere in this issue, will have far-reaching effect, especially if favorable to the railways. The executive committee of the New York Association is planning to give this matter careful consideration. Undoubtedly the support of powerful associations like this would tend greatly to accelerate the movement.

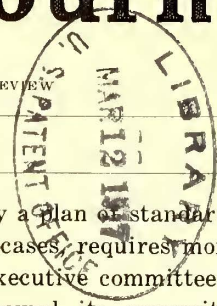
## STANDARDIZATION A TIME-CONSUMING PROCESS

The experience of the American Electric Railway Engineering Association in the matter of standards has proved several things conclusively. Probably the most important of these is that it takes more than the fiat of an association to cause standards to be adopted. It is evident that the desire for standardization is but one among a number of forces tending in the desired direction. The big problem is to coordinate these forces, and the committee on standards has this function to perform. Another lesson is that the attempt to standardize furnishes the stimulus for gathering and systematizing technical data. It follows

that, in approving recently a plan of standards adoption which, except in unusual cases, requires more deliberation than formerly, the executive committee of the Engineering Association showed its recognition of the above facts. The purpose of the new plan is, among other things, to prevent the adoption of standards too far in advance of present practice to render their early adoption probable. In the past, standards have undoubtedly been adopted in some cases on their merits without much chance of early adoption, in the hope that they could exert a powerful influence to rationalize existing practice. The result has been a general complaint, on the part of those interested in the adoption of the standards, that the industry is slow to appreciate the merits of reasonable uniformity.

## DELIBERATION WILL EXPEDITE STANDARDIZATION

The complaint that the work of the association has not produced all of the salutary effect desired, is, of course, justified in the light of the facts, but it must be remembered that there are in many cases conditions other than the desire for standardization which are controlling. There is not a shadow of doubt that standardization produces economy for the same fundamental reason that articles can be produced cheaper in a factory than they can in a repair shop. To exaggerate conditions a bit it is self-evident that each of a million articles can be made cheaper than each of a dozen, because tools and methods of an entirely different character must be employed. But complete standardization in track, rolling stock, equipment, etc., is an ideal still remote while the industry is as mobile as it yet is. The new procedure provides normally for five stages in the evolution of standards, namely; study and formulation by the appropriate technical committee, reference to the membership for comment and criticism after consideration by the standards committee, reconsideration by the technical committee and return to the standards committee for review one year after first review by this committee, and finally reference to the convention. This is the normal route for worthy recommendations which may reasonably be expected to meet with approval. Immature propositions will have to travel a more difficult road or be side-tracked en route. The new procedure will require a proposed standard to be kept before the attention of the membership long enough to have its weak spots made perfectly apparent. When it finally gets before the convention it is to be presented by the standards committee and there will be ample opportunity for discussion before it is adopted. It is expected that with the completion of the Engineering Manual re-



vision now under way and the adoption of a more deliberative procedure in making future additions, there will be less justification in the future for complaint that the association standards are not potent, because they will be closer to the field.

#### THE ADVERTISING POLICY OF "AERA"

In our issue of Feb. 24 we published the reports of the sub-committee appointed to consider the advertising policy of *Aera*, and explained why we agreed with the minority report submitted by Colonel Williams and Mr. Tripp. Further reasons against the present policy of *Aera* are presented in our department of Communications this week by Colonel Williams and Mr. Mortimer. Colonel Williams lays stress on two objectionable features of the publication. The first is "the potent but silent influence," mentioned in the Boston report, exercised by the association in securing contributions in the guise of advertising to cover the cost of publication. In his letter of this week Colonel Williams says: "I do not believe that the association should stand behind such a departure from right principles." Aside from this phase of the matter, he also questions the advisability of invasion of the field of electric railway journalism by the association in competition with private enterprise, and expresses the thought that the influence on public opinion which springs from an outside independent source is more powerful than that of a publication issued by the industry itself.

Mr. Mortimer points out that although the deficit from the publication of *Aera* last year was only a little more than \$4,000, the actual cost to the industry was, of course, the entire expense of the publication. If manufacturers have to advertise in the magazine to help defray its cost they must raise their charges for apparatus a corresponding amount, so that the railway companies ultimately foot the entire bill. This means that the railways paid for the magazine last year \$21,742.91, and since it was started the sum of \$72,918.26. Detailed figures of the expenses up to date have not been published by the association, but of the total earnings of the magazine from Aug. 1, 1912, to May 31, 1916, or \$40,881, 57 per cent, or \$23,648, had gone to pay the traveling expenses and salaries of the editor and advertising solicitor. During the twenty months ended May 31, 1916, these expenses were even higher, being 70 per cent of the total earnings. While an experienced editor would probably still be required on the secretary's staff, if the practice of carrying advertising was discontinued, much of his time could be devoted to the development of public relations and informational work, and to general publicity, so that the cost chargeable to the publication would be small. Other savings in cost of composition, paper, binding and mailing would naturally result from the elimination of advertising and technical articles from the publication. These are strong reasons for the change to a "bulletin," as recommended by Colonel Williams and Mr. Tripp in their Boston report.

The cost for printing and mailing such a monthly bul-

letin containing sixty-four pages and cover, with an edition of 5000 copies, has been estimated as \$6,000 a year. According to the majority report of the *Aera* sub-committee printed last week, the circulation of *Aera* among members of the various classes is about 5000, and the revenue at \$2 per subscription from such members for the fiscal year ended Oct. 31, 1916, was \$9,653.70. This seems to be the income against which the cost of the bulletin at \$6,000 a year could be charged.

Independently, however, of what the actual cost of *Aera* is to the industry, if it involves duplication of work now done by other agencies it represents a waste of effort and money. Waste is always expensive, no matter how little it actually costs. As Mr. Mortimer says, concentration of production and mobilization and correlation of resources are the watchwords of the day. This is as true in the activities of the association as in that of any individual company.

#### RESERVOIR STATIONS FOR SUBWAYS

In a report on the proposed rapid transit plan for the City of Sydney, New South Wales, which was published in abstract in our last issue, special consideration was accorded to the use of bifurcated tracks, or reservoir stations, for limiting the effect of the station stop upon the headway between trains. The Sydney plan seems, in fact, largely dependent upon this method of operation, because if three tracks were installed, instead of the two now proposed, the necessity for cross-overs from track to track would seriously hamper the operation of the subway loop which has to be installed in order to serve the congested business district of Sydney. Thus the two-track arrangement with reservoir stations is estimated to have actually about 50 per cent greater capacity than a plain three-track loop. In the light of this finding, a question naturally arises as to the reasons why the reservoir-station principle should have been undesirable for the new subways in New York City, since the scheme was considered in detail at the time when these lines were being planned.

Based upon the broadest of generalizations it may be said that the decision not to use reservoir stations in New York was that extreme concentration of traffic upon any particular line was considered to be contrary to the local needs. Instead, it was desired to provide separate lines serving as diversified territory as possible and collecting traffic throughout their whole length rather than at the end, and since there exists in Greater New York no central district of small area and extreme congestion around which all trains must be routed, as is the case in Sydney, intensive operating methods were not essential. On financial grounds also, examination of the reservoir-station plan as applied in New York disclosed the fact that the first cost of the installation would have been all out of proportion to any possible returns that could be expected from it with the system of separated lines that had been laid out. In addition to the difficulties of construction there was added the limited width of right-of-way (since the generally-used four-track

arrangement took up practically the whole width of street), and it was necessary in practically all cases to estimate on two-level stations with which the bifurcation of tracks would have to be made in a vertical plane instead of in a horizontal plane as proposed for Sydney. It was considered, however, that the principle of the reservoir station was perfectly practical and that, with proper safeguards in the form of automatic stops or speed control, no element of hazard could be introduced by its adoption.

Thus there would seem to be a definite place for the principle to be applied, this being in locations where track congestion is inevitable and at particular stations where, because of an abnormal extent of passenger interchange taking place regularly during the peak, the stops are unduly long.

In brief, what the scheme accomplishes is to cut in half the headway permitted by the conditions at any station where it is installed, this applying in all cases where the original headway is more than sixty seconds. For headways less than this, under ordinary conditions of acceleration, braking and train-length, a decrease in headway may be effected, but not at the same rate as when the original headway is relatively long on account of a long station stop.

#### PREPAREDNESS AS A PRACTICAL PROBLEM

Specific steps in preparedness are of interest to not a few electric railway managers who desire to set their houses in order to meet future contingencies of a military character, if such eventuate. Elsewhere in this issue we publish an account of an electric transportation preparedness program now under way in Massachusetts, which is of significance to many other companies than those directly concerned in the inquiry for data of military value. Over and beyond the points outlined are many other questions which must be answered by individual managers and superintendents, and foremost among these is the question as to how electric railway properties are to be run and how they can prepare to meet their local requirements under the stress of military conditions.

Experience abroad since the outbreak of the war furnishes suggestions to American traction companies. Obviously the demand of the field forces for men, if a general call to the colors should come, would impose a severe handicap upon operating organizations unless some anticipation of the reduction in personnel were carefully considered. If their military services were needed it is fair to assume that electric railway trainmen in this country would be as ready to go to the front as they have been in our neighbor to the north. So far as we know no statistics have been compiled to show how extensive these enlistments have been, but individual electric railway companies have reported that the quota was as high as 25 per cent of the entire force. In many respects, as we have previously pointed out, the railway trainman and official should be able to adapt themselves to military life more easily than many other civilians.

Nor will the fact that a man is beyond the usual rifle-bearing age prevent him from serving the nation in time of need. There will be a call for expert assistance in transportation, accounting and engineering problems, in which the training which railway men have received will be very useful.

In case of war, many companies now requiring applicants for employment to pass a stiff physical examination might very properly relax these standards for the conditional acceptance of men, especially with respect to those above the more desirable military ages. By endeavoring to hire men above the usual age limit, companies will not enter into competition with the government. Many conditional acceptances can doubtless be obtained from the files of street railway employment departments which record the names and addresses of applicants previously rejected on account of such causes as physical condition, poor eyesight, height, imperfect hands, etc. Immediate steps in the direction of breaking in on the front end car conductors, shifters, and other employees suitable for motormen's service are important. The employment of women in place of porters, car cleaners, conductors, clerks of various kinds, and in certain branches of shop practice is obviously a feasible program to plan for prompt adoption in case of necessity. It is useful to list all employees having mechanical ability in case it becomes necessary to draft them for car repairs, power station work, etc., in the event of an emergency.

On large systems the preparation of war timetables may well receive attention, and where agreements are in force with the unions respecting hours of labor and working conditions, conferences looking toward the temporary abrogation of such agreements in the interests of patriotism may be in order, subject of course, to the actual breaking out of hostilities. Certain industries may be ordered by the public authorities to change their hours of labor in order to break shifts in the normal hours of the day and spread out the peak, thereby making it possible to handle the traffic with a reduced service. We need not emphasize the importance of inaugurating a systematic plan for the protection of all power plants, shops, wharves, coal piles, carhouses, company storehouses, garages, substations, important junction points of main conduit lines, etc.; the photographing of all employees supplied with passes to visit these points, appointment of special police, and the like, either in conjunction with or supplementing the work of the public authorities. A point of great importance in these days is to look with the utmost care into the antecedents of all applicants for positions in power plants or other places where only loyal citizens of this country should be allowed to work; in fact a careful investigation of the nationality, history and general character of every person employed in departments where the opportunity might arise to cripple operation is highly essential. Reductions in sick leave and in the amount of maintenance work performed also suggest themselves as advantageous steps, should the country actually be forced to enter the field of hostilities.

# Recent Power Supply Developments at Manchester

The Author Describes the Extensive Improvements, Including a Steam Generating Station, Substations and Transmission Lines, Recently Completed by the Manchester (N. H.) Traction Light & Power Company to Meet a Rapidly Growing Electrical Load Throughout the District That It Serves

By F. C. DOBLE

Of Hollis French & Allen Hubbard, Consulting Engineers, Boston, Mass.

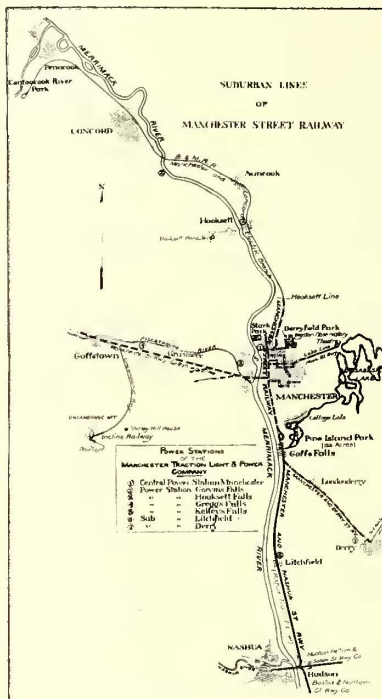
THE Manchester Traction, Light & Power Company has completed during the past year the second step in its extensive power-development project, consisting of one unit of a new steam-generating station at Kelleys Falls, Grasmere, N. H., and two 33,000-volt substations at Kelleys Falls and Garvins Falls, together with a building at Brook Street, Manchester, combining a lighting substation for alternating current and a street railway direct-current substation under the same roof. In addition, the company has built a steel-tower, 33,000-volt transmission line from Garvins Falls to Kelleys Falls, and has installed extensive underground work in the city of Manchester.

The present company is the outgrowth of a company chartered in 1881 as the Manchester Electric Light Company which, several years later, was changed in name to The Manchester Electric Company. The latter now supplies all the commercial electric power sold over a territory containing more than 1000 square miles, as well as controlling by stock ownership three street railway systems, namely, the Manchester Street Railway, the Manchester & Derry Street Railway and the Manchester and Nashua Street Railway. These properties aggregate 64 miles of track.

The single-line diagram on page 425 shows the Manchester Traction, Light & Power Company's transmission system as it existed for several years previous to the present developments. With this plant the hydroelectric stations shown at Garvins Falls, Hooksett, Greggs Falls and Kelleys Falls transmitted power over 11,000-volt, circuits to Brook Street as a center.

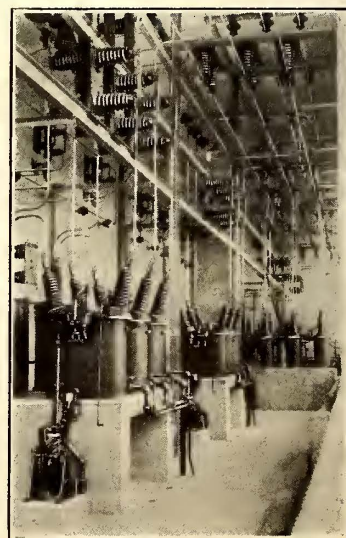
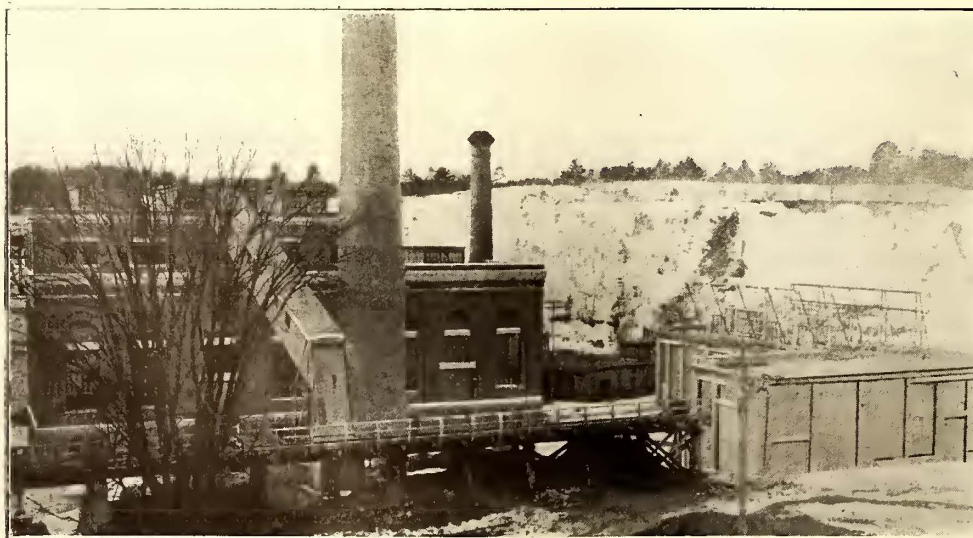
On another line-cut is shown in full lines the work covered by the two developments that have just been

completed. Of these, the 1914-1915 work, which comprised the first step in the project, consisted in the construction of 18 miles of duplicate 33,000-volt, three-phase, No. 2 copper circuits, mounted on wood poles with occasional steel towers for special conditions and terminated by substations at Kelleys Falls and Nashua respectively. There were constructed, also, 2½ miles of duplicate, three-phase, No. 00 copper circuits, run on steel towers, and designed for 33,000-volt service, but operated

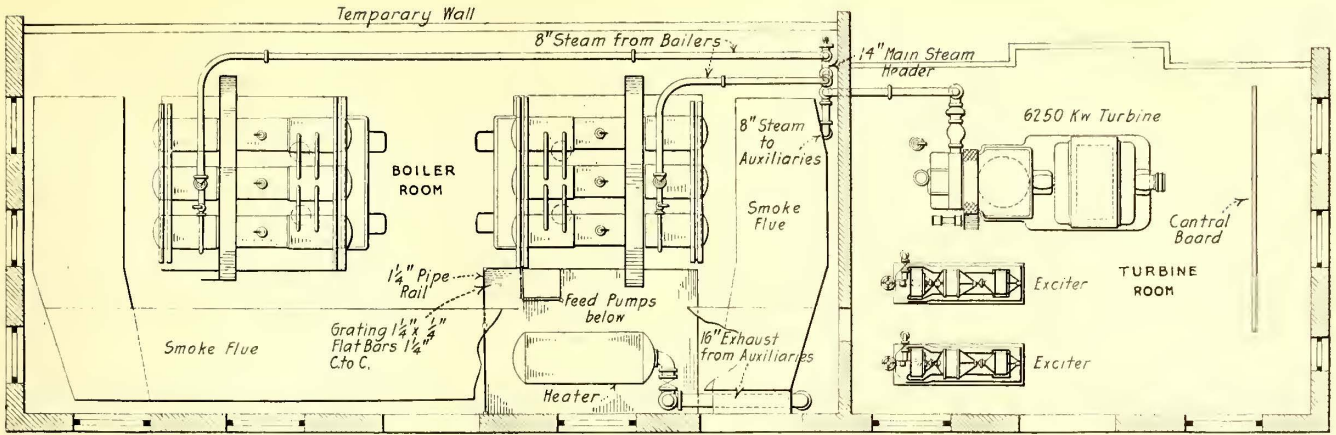


MANCHESTER POWER—MAP OF SYSTEM

temporarily at 11,000 volts. These were connected to the 33,000-volt Nashua lines at Kelleys Falls substation through three 1000-kva. transformers and were tapped directly to 11,000-volt transmission lines



MANCHESTER POWER—STEAM PLANT AND SUBSTATION AT KELLEY'S FALLS—ARRANGEMENT FOR 33,000-VOLT OIL SWITCHES



MANCHESTER POWER—FLOOR PLAN OF KELLEYS FALLS STEAM STATION

from Garvins Falls just outside their entrance to the Brook Street substation.

This first development was made necessary by the acquisition of the Nashua Heat, Light & Power Company. In order to shut down the steam station at Nashua, and to supply it with power from the hydro-electric stations of the Manchester Company, a higher voltage had to be adopted for economical transmission of power over the maximum distance of 30 miles from the main generating station at Garvins Falls.

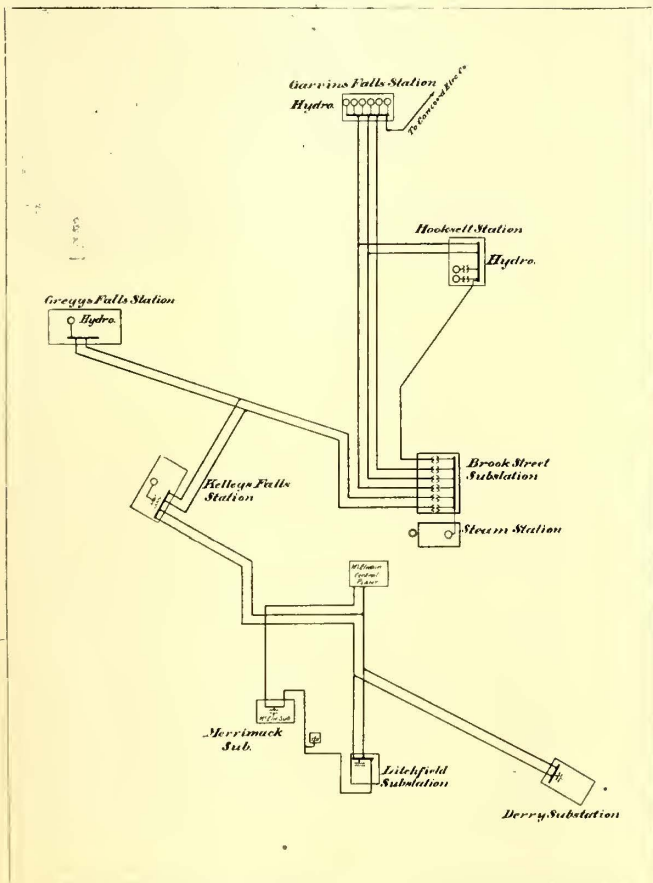
The 1915-1916 work recently completed was made necessary by the rapid growth in the Manchester Traction, Light & Power Company's sales of power, which overtaxed its facilities and called for a much greater steam reserve than had been necessary up to this time. This condition was augmented by the fact that much of the apparatus had become inadequate from age and

the transmission lines were in such a condition as to require complete rebuilding.

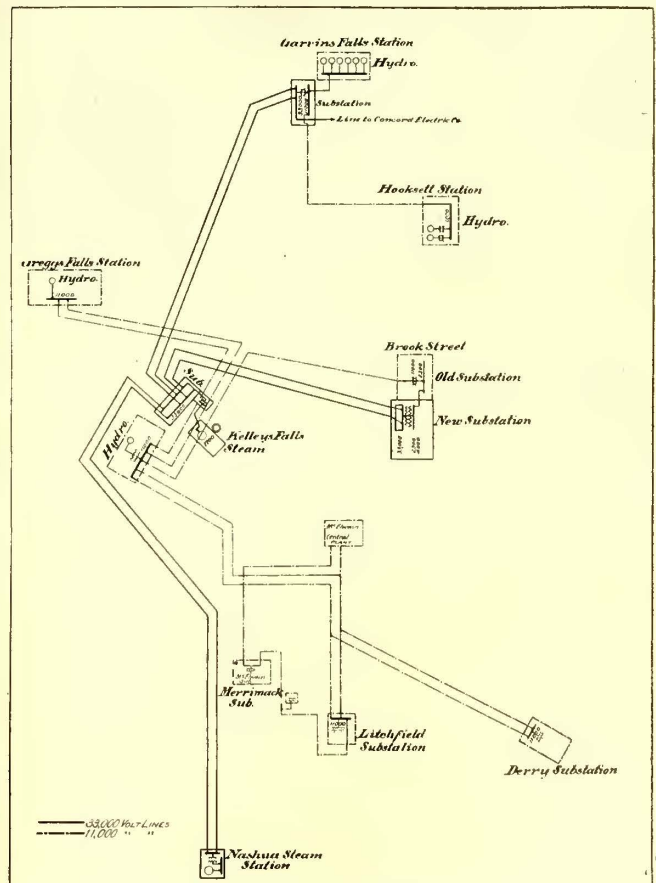
KELLEYS FALLS STEAM STATION

The feature of the second part of the project is the construction of one complete unit of a new steam station at Kelleys Falls. This building is a two-story structure, built with steel frame, brick walls, granite trimmings, concrete floors and roof and steel sash. The west side is temporarily built of corrugated iron to allow for future extensions.

The turbine room contains a 6250-kw. steam turbine made by the General Electric Company. This machine is given an extra 20 per cent capacity by drilling the shaft endwise to permit circulation of water through it to cool the armature windings. Two 100-kw. exciters are provided. Each is normally motor-driven, but has



MANCHESTER POWER—DIAGRAM SHOWING ORIGINAL EQUIPMENT



MANCHESTER POWER—DIAGRAM SHOWING NEW DEVELOPMENTS

also a Terry Steam turbine mounted on the shaft and so connected that, in case the motor fails, the steam turbine instantly picks up the load without making appreciable change in the excitation conditions.

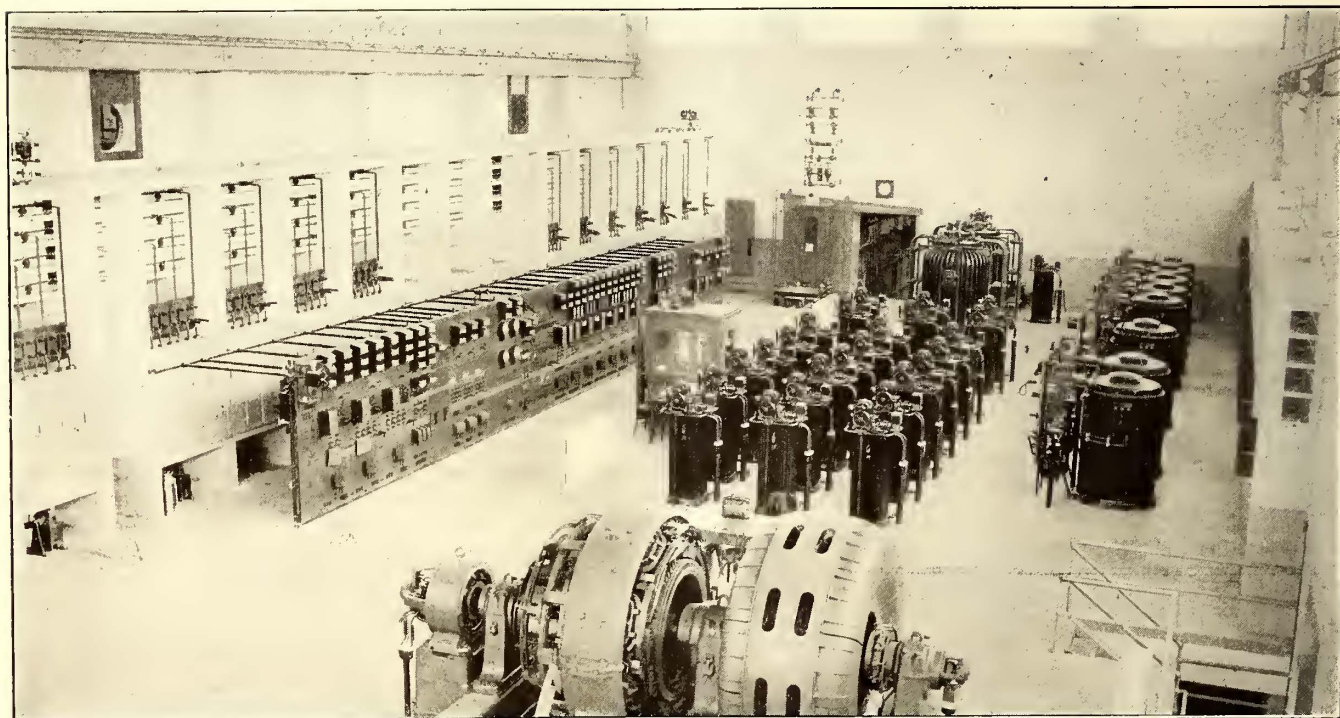
Steam is supplied at 200-lb. pressure by two Babcock & Wilcox boilers, set independently, and normally rated at 762 hp. each. By means of Taylor stokers and blowers the boilers can be operated at 250 per cent of rating. The feed pumps are of the three-stage and four-stage centrifugal type. Coal is supplied the boilers from overhead bunkers. These are supplied by belt conveyor, and the coal is fed through automatic weighing machines before reaching the stoker hoppers.

The condensing apparatus, which was furnished by the Alberger Condenser Company, is placed in a pit beneath the turbine. The condenser is of the vertical-jet type with a removal pump incorporated in the base. Circulating water is taken from the adjacent river.

entire present station is but one unit of a possible six-unit future installation. Therefore, the 2300-volt switches on a bus carrying the current of the ultimate installation would have had to be of such large capacity as to make the cost prohibitive.

It should be said here that a new substation has been erected at Garvins Falls to house apparatus for switching and transforming the current that is generated by six 11,000-volt machines in the old station. Power is transmitted at 33,000 volts through two outgoing lines to Kelleys Falls substation.

In addition to the improvements above mentioned, 12½ miles of transmission line, consisting of duplicate 33,000-volt, three-phase No. 00 copper, inverted-delta circuits, has been constructed. This is run on steel poles and towers furnished by R. D. Coombs & Company, New York, and it was installed by the construction department of the Manchester Traction, Light & Power



MANCHESTER POWER—MAIN OPERATING ROOM IN BROOK STREET SUBSTATION

One Custodis chimney has been erected. It is 11 ft. in diameter and 175 ft. high, and is of sufficient capacity to serve an installation double the size of that now in use.

This generating plant is operated in connection with new apparatus that has been installed in the Kelleys Falls substation. To house the new substation equipment two bays were added to the 33,000-volt substation that had been constructed as a part of the first development. These bays provide switching space for connecting the turbine to the high-tension system. Also, in a wing built onto the substation there was installed a bank of three 2500-kva. 33,000/2300-volt, General Electric, self-cooling transformers. The low-tension side of each of these transformers is connected directly by means of cables to the 2300-volt generator in the steam station.

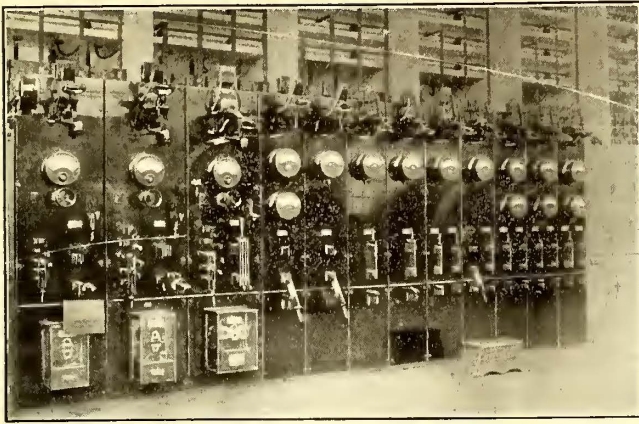
Neither 2300-volt buses nor oil switches are provided in the steam station, the turbine and its transformers being virtually one unit. The reason for the adoption of this scheme, which necessitates that all switching shall be done on the high-tension side of the transformer, becomes apparent when it is shown that the

Company. It connects the Garvins Falls and Kelleys Falls substations.

#### BROOK STREET SUBSTATION, MANCHESTER

Much more elaborate extensions than those of the foregoing substations have been made at the company's installation at Brook Street in the city of Manchester. In this substation a high-tension oil-switch room provides for two incoming three-phase, 33,000-volt circuits and connections to three banks of transformers in the transformer room, each bank consisting of three 1000-kva., 33,000-volt, delta-primary windings with 2300-volt delta and 4000-volt star secondaries. One bank of transformers is connected delta-delta and supplies three-wire, 2300-volt commercial circuits. The other two banks are connected delta-star and supply three-wire or four-wire 4000-volt commercial circuits, and also the synchronous motors of the street railway motor-generator sets located in the operating room.

One of the illustrations shows in detail the methods used in terminating the transmission lines by A-frames on the roof of the high-tension switch room and in making connections to outdoor-type aluminum-cell



MANCHESTER POWER—RAILWAY SWITCHBOARD AT BROOK STREET SUBSTATION

lightning arresters. Entrance is effected through Thomas roof bushings, and switching connections are made to 33,000-volt ring buses, and then through similar switches to the high-tension delta of the transformers, which is mounted on the wall of the switch room. From the low-tension side of the transformers conductors run through iron conduits to a transfer bus and then to the main bus structure. The concrete bus structure was built by the F. F. Jonesberg Company, Boston. It was cast in place as one solid piece and it accommodates duplicate G.E. K-12 oil switches and bus connections for all 2300-volt and 4000-volt circuits.

The twenty-nine-panel control board, high and low-tension switch gear transformers, and automatic regulators and their wiring were furnished and installed by the General Electric Company. The conduit and station lighting was installed by the Lord Electric Company, Boston.

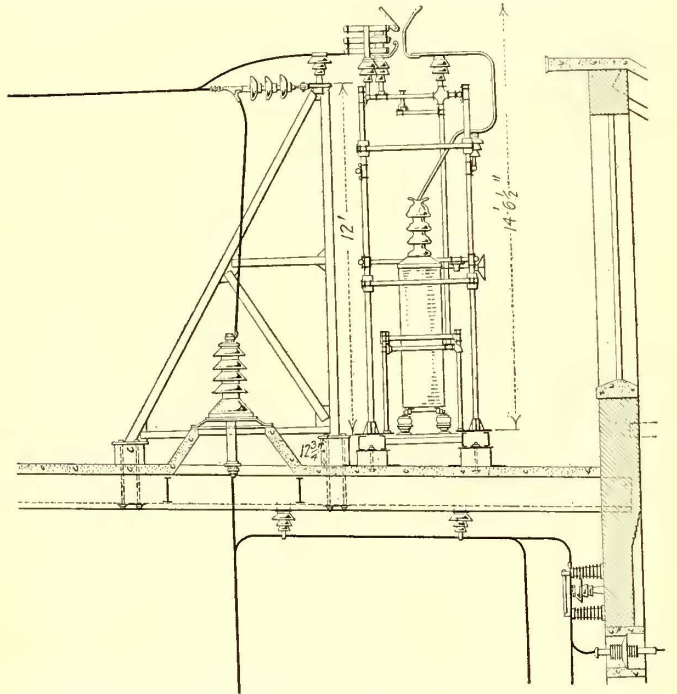
PROVISIONS FOR RELIABILITY OF SERVICE

The development as described shows to what great lengths the company has gone in order to provide at Brook Street a reliable source of power for its customers, of whom the three street railway companies are of particular importance. To serve these the company has installed a new 2000-kw., 600-volt Westinghouse motor-generator set, to supersede several small units and supplement the 1500-kw. and 500-kw., 600-volt

General Electric motor-generator sets that were previously in service. The motor of the 1500-kw. set has been rewound from 11,000 volts to 4000 volts, and the 500-kw. set has been reconstructed from a 2000-volt to a 4000-volt rating. All three motor-generator sets have synchronous motors now operating on the 4000-volt system in the new station.

The old railway switchboard at Brook Street had both positive and negative buses mounted in back of the panels, with switch connections such that the machines were equalized on the positive side. In the new substation the above-mentioned board is superseded by a modern, General Electric, single-polarity railway board arranged for equalizing machines on the negative side with equalizing buses and negative buses run directly under the machines.

A special feature of this board provides all feeders with double-throw switches which, by means of an auxiliary bus and an extra panel, permit any feeder to be operated through spare circuit breakers on the extra

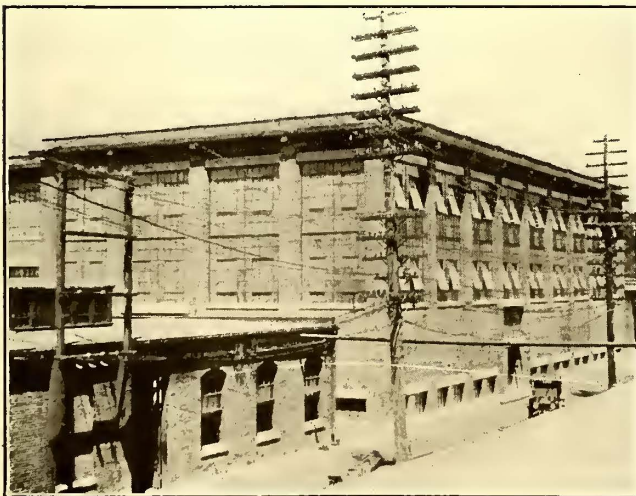


MANCHESTER POWER—DETAIL VIEW, SHOWING METHOD OF TERMINATING TRANSMISSION LINES ON ROOF OF BROOK STREET SUBSTATION

panel while repairs to the regular feeder breakers are being made. All feeder instruments are of the Western Electrical Instrument Company's round pattern.

Another feature of the present development which adds materially to the reliability of the service is a complete underground system for the business section of the city of Manchester. More than half of a long-contemplated conduit installation has been made, and at present the street railway feeders leaving the Brook Street substation run for a considerable distance in the underground system.

The above developments were planned and executed by the firm of Hollis French & Allen Hubbard, Boston, Mass., consulting engineers for the Manchester company. J. F. Wilber was designing engineer in charge of building construction. C. F. Eveleth handled the steam plant design, with the author in charge of electrical design and construction. F. S. Piper, electrical engineer, and R. W. Wilson, construction superintendent of the Manchester company, represented the latter on the entire work.



MANCHESTER POWER—EXTERIOR VIEW OF ADDITION TO BROOK STREET SUBSTATION CONTAINING CONVERTERS AND TRANSFORMERS THAT SERVE BOTH RAILWAY AND LIGHTING LOADS

# New York Meeting N. Y. E. R. A.

Taxation, Co-operation with the War Department, Fare Collection, and Surety and Indemnity Bonds Were the Principal Topics Discussed

THE twenty-second quarterly meeting of the New York Electric Railway Association was held at the Hotel Astor in New York City on March 2. The morning session was taken up with committee reports and the reading and discussion of the three papers, abstracted in last week's issue of the ELECTRIC RAILWAY JOURNAL. In the afternoon the discussion centered in discipline. The paper on "Discipline in the Transportation Department," read by H. A. Bullock, Brooklyn, is abstracted elsewhere in this issue. The banquet in the evening was a patriotic affair, with addresses by Public Service Commissioners James O. Carr and Travis H. Whitney, and a graphic account of life in the trenches on the Somme battle front by A. G. Empey, an enlisted soldier in the British Army.

## Morning Session

In opening the meeting President J. P. Barnes, Rochester, called first for the reading of reports. That of the committee on standards was presented by W. G. Gove, chairman. The report contained a brief outline or chronological summary of the progress made by the committee to date. It was considered undesirable to recommend standards which do not conform to those adopted by the American Electric Railway Engineering Association, and of these only standards should be recommended which meet the requirements of the members of the New York Association. On account of the proposed changes in the Engineering Manual it was recommended by the committee that its work be continued in order that it might make its final report after the revision of the Engineering Association standards.

For the committee on military operations, Wilbur C. Fisk, New York City, chairman, reported that the committee is awaiting an interview with Daniel Willard, chairman of the Federal Advisory Commission of the Council of National Defense. He stated that the committee had offered the services of the association, should they be needed in the national crisis, in whatever way it can be of assistance. Steps have been taken to ascertain the transportation problems which may have to be solved. Mr. Fisk read a letter which he had received from Mr. Willard in which appreciation for the attitude taken by the association was expressed and also the writer's desire for a conference with the committee. This meeting is still to be held. The association voted to extend the personnel of the committee to make it include the entire membership.

In the report presented by the public relations committee, which was read by Secretary William F. Stanton, Schenectady, the principle of fair treatment of the public was recommended and also courtesy in handling all complaints coming direct from individuals or through various representatives of the public. It was also urged that railways get in touch with the public for an exchange of ideas in order that facts may be learned by both.

For the committee on taxes and rates of fare, C. F. Hewitt, Albany, presented a progress report. He said that the problem before the committee was how the net income shall be increased. The committee does not believe that the time for asking for an increase of urban fares has yet come. Data are being compiled on the tax

situation. The inequitable character of the paving tax is realized, and the question is as to the best means of securing relief.

In discussion of this report F. A. Stratton, Mount Vernon, introduced a resolution to the effect that a bill be introduced into the Legislature to eliminate that part of the law which requires electric roads to pave between tracks and 2 ft. on each side thereof, and this was referred to the executive committee for attention. Mr. Stratton pointed out that this exaction on surface railways was due to the former use of mules and horses, but that more recently franchise and other taxes have been added to the burden of the electric railway. There would probably now be no objection to the removal of this requirement which is really a tax, and it is important that an appropriate bill be introduced in the Legislature.

## PAPERS AND DISCUSSIONS

The first paper on the program was on "Indemnity and Surety Bonds," which was read by the author, William N. Tomlins, Jr., vice-president American Surety Company, New York City. This was abstracted last week. The only discussion of Mr. Tomlins' paper consisted in a reply by Mr. Tomlins to a question of W. J. Harvie, Syracuse, N. Y., as to the status of a surety contract when an employee changes the character of his occupation. Mr. Tomlins stated that an employee may change his occupation under a contract and that the present bonds do not cover the position occupied by the person bonded.

Ticket No	Fare Paid	Return	Excess	Miles
4325	Between	Value	Collected	Travelled
Jan 1	Auburn	2	0	3
Jan 2	Car Barn	2	10	4
Jan 3	Prospect St	2	13	5
Jan 4	Stop 1	3	15	6
Jan 5	"	4	18	7
Jan 6	"	5	20	8
Jan 7	"	6	23	9
Jan 8	"	7	25	10
Jan 9	"	8	28	11
Jan 10	"	9	30	12
Jan 11	"	10	33	13
Jan 12	"	11	35	14
Jan 13	"	12	38	15
Jan 14	"	13	40	16
Jan 15	"	14	43	17
Jan 16	"	15	45	18
Jan 17	"	16	48	19
Jan 18	"	17	50	20
Jan 19	"	18	53	21
Jan 20	"	19	55	22
Jan 21	"	20	58	23
Jan 22	"	21	60	24
Jan 23	"	22	63	25
Jan 24	"	23	65	26
Jan 25	"	24	68	27
Jan 26	"	25		
Jan 27	"	26		
Jan 28	"	27		
Jan 29	"	28		
Jan 30	"	29		
Jan 31	"	30		

REDEEMABLE CASH FARE RECEIPT

R. W. Palmer, general manager Auburn & Syracuse Electric Railroad, Auburn, N. Y., next read his paper on "Redeemable Cash-Fare Receipts," an abstract of which also appeared in last week's issue of the ELECTRIC RAILWAY JOURNAL. In presenting the paper, Mr. Palmer exhibited drawings of suggested receipts which are reproduced herewith.

The discussion on Mr. Palmer's paper centered largely in the practicability of charging excess fare on the cars. Mr. Stratton asked if there is any objection on the part of the Public Service Commission to the charging of an excess fare. To this, James McPhillips, Glens Falls, said that there is not. James E. Hewes, Rensselaer, stated that on his road there were many passengers who had refused to pay additional fare on the cars. There are always "conductor baiters" who like to utilize every



occasion for oratory. The attempt by the conductors to collect an excess fare furnishes an opportunity for this purpose. Mr. Hewes considered the plan outlined by Mr. Palmer as an excellent one if it can be operated. On the Albany Southern Railroad the Ohmer system and tickets are used. The trouble with any very elaborate scheme is that too much time is required to carry it out. The giving of a small rebate to passengers who pay fares on the cars should be profitable in the reduction of "knocking down" fares which it will produce. Mr. Hewes and H. B. Weatherwax, Albany, debated briefly the subject of putting passengers off cars when they refuse to pay excess fare. The latter called attention to the fact that passengers can be put off at regular stops. With this Mr. Hewes agreed, but said that the legal department of his company had advised against doing so.

Referring to the layout of the ticket proposed by Mr. Palmer, R. M. Colt, Gloversville, called attention to the opportunity for "short changing" which exists if only the mileage made by the passenger is indicated. The chances that a passenger would be able to check the accuracy of the punching are less under this scheme than if the stations also were identified on the ticket so that the correct refund could be at once determined. Mr. Palmer said that the mileage between stations could be shown on the back of the ticket or the conductor could be required to show the passenger such mileage on request. Mr. Colt thought that the New York State Commission, Second District, had rather implied that it is unfair to charge excess fare between non-agency stations. Mr. Palmer's scheme is an excellent one, he said, if its use is permissible.

In reply to a question by Mr. Hewes as to charging excess fare from a station which is closed after certain hours, Mr. Palmer stated that excess would not be charged in this case. After the discussion Mr. Palmer's paper was referred for consideration to the committee on taxation and rates of fare for report at the June meeting.

After the discussion on Mr. Palmer's paper R. L. Rand presented the paper on "Recent Tendencies in Taxation Matters," which was abstracted in last week's issue. A discussion then arose, participated in by Messrs. Hewitt, Stratton and McPhillips as to the relation of the law and franchise regulations regarding paving. The particular point was as to the effect of a State law on franchise stipulations. Mr. McPhillips explained that the railroad law provides for the maintenance of paving not only between tracks, but for 2 ft. outside. If a franchise contract specifies the requirements this constitutes a contract obligation, which would not be superseded by law. In some cases the franchise simply specifies that the law be complied with and in this case a change in the law would automatically change the contract. It is, however, a serious question as to what the effect of a change in the law would be on this matter.

H. A. Bullock, Brooklyn, favored something in the nature of Mr. Stratton's recommendation, and urged the use of educational propaganda with the object of securing ultimate relief. The newspapers and advertising spaces in the cars afford the best opportunities to reach the public.

Mr. Weatherwax raised the question as to the disposition of the Stratton resolution and hoped that the matter would be pushed, to which Mr. Barnes replied that the executive committee will consider it. Mr. Stratton hoped that the committee would push the matter vigorously, and Mr. Weatherwax expressed his belief that legislators are approachable on the subject. Mr. Hewes spoke a good word for the State Tax Commission, which he believed to be always ready to listen to fair complaints. It had made a careful study of his property and had adjusted the taxes equitably.

In conclusion H. W. Blake, ELECTRIC RAILWAY JOURNAL, called attention to a point in the paper by Mr. Rand which had not been touched on in the discussion, namely, that attention to the expenditure of taxes is as important as raising them. Taxes should be made reasonable, but at the same time the electric railways should interest themselves in economies in the use of public money.

GREETINGS FROM OTHER ASSOCIATIONS

E. P. Coleman, Hamilton, Ont., president of the Canadian Electric Railway Association, who was present by invitation of President Barnes, was called upon at the close of the discussion on taxation. He said that his association comprises twenty-seven member companies—nearly all of the electric railways in Canada. The difficulty of conducting association work in the Dominion is great because the members are spread out over such an enormous area, operating in seven provinces under the paternal control of the dominion government. The association, however, performs an important function in acting as a bond, drawing the different parts of the dominion together. The members take a lively interest in the activities of the association.

Mr. Coleman then talked in a patriotic strain, giving the members the point of view of an American citizen residing in a country at war. He said that there seemed to be an impression in the dominion that the people of the United States were somewhat indifferent and unsympathetic in the present crisis, but after listening to the report of Mr. Fisk's committee he realized that this impression is not correct. Mr. Coleman told of the heroic work being done by the Canadians not only in furnishing supplies for their own men at the front, but also in assisting the French.

Thomas A. Wright, Wilkes-Barre, Pa., president Pennsylvania Street Railway Association, also spoke at the morning session. In commenting on the discussion of the morning, he noted that the troubles of the railways everywhere are similar. In Pennsylvania, the State owns the streets, the supervision of which is delegated to the municipalities. The assent of the municipalities is needed to permit railways to operate and this assent may include paving specifications. He questioned the wisdom of trying to secure relief from the paving burden, as a matter of policy. There are cases where injustices occur in connection with paving and he mentioned an aggravated case which is to be tried out before the courts. A city started to install a sewer in a street which had been recently paved, requiring the repaving of the street. In this case a different type of paving from that originally used was selected. The railway was asked to pay its share of the expense. It is now contesting the claim, and the outcome will be not only interesting but important.

<p>SYRACUSE AND AUBURN</p> <p>PASSENGERS HAT CHECK</p> <p>TO TICKET BEARING SAME SERIAL NUMBER</p> <p>READING BETWEEN STATIONS NAMED ABOVE</p> <p>TO BE SURRENDERED TO CONDUCTOR ON LEAVING CAR</p> <p>A &amp; S E R R C O</p> <p>NO 000 001</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);">IF PROPERLY STAMPED WITH HAT CHECK ATTACHED GOOD FOR ONE CONTINUOUS PASSAGE BETWEEN</p> <p style="writing-mode: vertical-rl; transform: rotate(180deg);">SYRACUSE AND AUBURN</p> <p style="writing-mode: vertical-rl; transform: rotate(180deg);">AUBURN &amp; SYRACUSE ELECTRIC R R CO</p> <p style="writing-mode: vertical-rl; transform: rotate(180deg);">R W PALMER Gen. Mgr.</p> <p style="writing-mode: vertical-rl; transform: rotate(180deg);">FOAM ST</p> <p style="writing-mode: vertical-rl; transform: rotate(180deg);">NO 000 001</p>
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REDEEMABLE RECEIPT AND HAT CHECK

Mr. Wright believed in the educational campaign idea for securing relief from burdens and directed attention to the method used by the telephone companies. These have formerly used a great deal of newspaper space, but of late have been utilizing moving pictures, lantern slides, etc., in schools and elsewhere. They are thus laying the foundation for future public sentiment.

### Afternoon Session

Before taking up the regular afternoon program President Barnes introduced Mr. Wright, who gave a very interesting narrative in regard to the recent fourteen-month strike on the Wilkes-Barre (Pa.) Railway. The course of this strike was fully described in the *ELECTRIC RAILWAY JOURNAL* during this period, and its entire history was summarized in the issue of Dec. 23, 1916, page 1312. Mr. Wright stated that the events in Wilkes-Barre had educated the people in regard to the value of local transportation service and also had showed the populace the instability and unsatisfactory character of jitney service. Even in such a union district as that inhabited by anthracite coal miners, there had been an entire change of sentiment on the part of merchants and the general public in favor of fair treatment to the railway, and although the strike had been costly to the management the results were well worth it.

Vice-President Hewitt, who had taken the chair during Mr. Wright's story, expressed the appreciation of the association for the light thrown upon the activities of union labor in Wilkes-Barre. He then took up the program of the meeting, which called first for a discussion of the methods of discipline in various departments of electric railway operation.

#### METHODS OF DISCIPLINE

The first speaker was B. Penoyer, Schenectady, who mentioned briefly a few points in connection with the discipline of employees in the way and structures department. After explaining how track department foremen are instructed in regard to transportation department rules, the handling of tools, the use of inflammable materials and the like, he stated that the discipline of minor offenses is handled by the roadmaster and others by the engineer-of-way, a similar procedure being followed in the case of the linemen.

In discussing discipline in the mechanical department, D. E. Crouse, Auburn, said that discipline is dependent upon the employee's frame of mind, and this can best be effected by attention to three factors, namely, equity, ambition and efficiency. Equity, which should be substituted for profanity, should be an effort on the part of the department head to keep in human touch with his men and give and take in his decisions with absolute fairness as a basis. When a workman has committed a fault, he expects to be censured and does not respect his foreman if the opportunity is neglected. On the other hand, if a good man is punished for some action for which he is not to blame, he may be converted by this injustice into an inefficient man. In mentioning ambition as a component part of discipline, Mr. Crouse referred to its educational value. In his opinion, the man who is interested in the job ahead of him will not have so much time to idle away. In many cases shop men will not voluntarily ask their foremen for blueprints, airbrake instruction books, etc., but they will study these industriously when placed in their hands by the company. The nearer a company approaches the principles of a manual training school in its shop, the more it can control discipline and efficiency. The ambition of the foreman, however, should not be forgotten, for he needs something to which he can look ahead. The master mechanic must be careful to give orders to the fore-

man and not directly to the men, for the position of the foreman should be respected from above as well as below. As for the third point of efficiency, this has a marked bearing on discipline. If modern tools are used; if car-pits are well arranged and sanitary; if materials are purchased of up-to-date makers and placed within easy reach; if armature rack, wheel track, etc., are close to the place for truck repairs—it is logical to assume that the smooth-running shop will house more contented and hence better disciplined men. Men often work themselves into a disgruntled state because they are forced to do work in such an inefficient manner that their intelligence is insulted.

W. J. Harvie, Syracuse, N. Y., in taking up the power department, said that the more opportunity a man has for advancement through efficiency the less will be the need of discipline. When men are not treated as a group in which individuality is to some extent lost to view, discipline is a matter more of education than of censure. The next speaker was Mr. Bullock, who read a paper outlining the general principles of discipline that should be followed in a transportation department, and describing their application as practised by the Brooklyn Rapid Transit System. This is published in abstract form elsewhere.

The discussion was closed by W. W. Foster, Rochester, with a statement regarding the methods of discipline in the office. Mr. Foster felt that the foundation of good office discipline is a good organization. The positions in an office should be so graded that the advancement can be continuous from office boy to chief clerk. Each clerk should be so drilled that he can hold down the position he is in, instruct the clerk below him with one hand and reach for the position ahead of him with the other. Vacations afford an opportunity for an employee to demonstrate his fitness for advancement when the opportunity is offered. Automatic advancement all along the line when a vacancy occurs under this plan produces minimum disturbance and maximum advancement.

The discipline in such an organization, Mr. Foster said, cannot be carried on by any definite set rules, but depends upon the material in the organization itself and is largely a matter of personality. Some clerks can be led to advancement, and others have to be driven. In the former case, the office manager has usually an exceptional opportunity to lend a helping hand, make suggestions and criticisms, and in general shape the personality of the men. In case a clerk must be driven, the methods generally used in other departments will not ordinarily work well. Between the reprimand and absolute discharge, there is no middle ground which does not penalize the fellow clerk more severely than the clerk disciplined. In conclusion Mr. Foster said that true office discipline is written in terms of co-operation. The office disciplinarian resorts to discharge only when the material which he is attempting to form proves itself unfit or inefficient.

### The Banquet

The meeting closed with an unusually successful banquet, to which about 300 men sat down. Mr. Barnes acted as toastmaster, introducing first Public Service Commissioner James O. Carr of the Second District, New York. Mr. Carr said that the railway men before him had never in their lifetimes had a bigger problem than to educate the public that the time might come when it would be necessary to pay more than a 5-cent fare. This increase in fare, he said, would come from the public which the railways serve, and, he believed, it was the railways' duty to enlighten the public so that it will ask, "Are the railways entitled to this increase?"

instead of opposing it from the start without looking into the merits of the case. He said there was no better example than the condition of affairs in this great city, where it was beyond the bounds of reason to expect that the railways will always be able to give the length of rides they do for as small a return as a nickel.

In meeting the problem of educating the public, Mr. Carr thought that the railways would find the commission a blessing and not a curse. The commission's functions are to aid the railways in their work as well as to serve the public, and there are many more things they could do if they had the authority. When the laws are amended to give them this power, the railways' troubles at the hands of regulatory bodies will no doubt be lessened.

Commissioner T. S. Whitney of the First District Commission of New York was the next speaker. He referred to this commission as not only a regulatory body, but a construction department as well, calling at-

tention to its work in the enormous construction plans being carried out on lines in New York City, to care for the increased traffic. The speaker said that after observing the results of the work of public service commissions he had noted a changed attitude. It is now less necessary to make formal specifications for railways, for they are willing to deal liberally with the public. In conclusion, he congratulated the association on its helpful services in effecting the better conditions.

The last speaker of the evening was A. G. Empey, first machine gunner and bomber of H. M. Imperial British Expeditionary Force in France, who vividly told of his experiences in England and France. He enlisted in London for the term of the war but was wounded on three different occasions and was finally discharged on account of disability after serving nearly two years. He was formerly a sergeant-major in the United States army, having served six years as a regular and two years in the militia.

# Discipline in the Transportation Department\*

The Principles Which Should Underlie This Discipline as a Foundation for Effective Methods of Administration

By H. A. BULLOCK

Secretary New York Municipal Railway Corporation, Brooklyn, N. Y.

THE following statements deal with the principles which should, I believe, underlie transportation department discipline, rather than methods by which such discipline should be made effective. This phase of the subject has been selected for two reasons. First, if the principles are correct, the methods are not difficult to determine, and such methods must vary somewhat according to conditions on any given railroad property and in any given branch of railroad operation. In our own system, while the principles are uniform, the methods and details differ somewhat as between the two branches of the transportation department, the surface lines and the rapid-transit lines. Similar differences would doubtless be justified in particular methods as between any two street railroad properties.

In the second place, I speak from observation and analysis rather than from practical experience in the building of any system of discipline. I have had certain experience in matters affecting the relations of our operating employees with the management of the company and have had occasion to study these relations in other street railroad systems. It is on the basis of this experience that I shall treat the subject in hand.

It is a mistake to hold that discipline begins only when an employee has been in an organization long enough to commit some violation deserving punishment. The foundation of discipline should be laid in the employment bureau. Selection of men wherever possible with regard for their physical and mental capability for the work for which they are intended is essential. This is said with an entire realization of the employment difficulties at such times as those through which we have recently been passing. But there is no excuse for not making the beginning of discipline by proper physical and mental inspection at the time of employment and the creation of records accordingly.

Similarly proper instruction is essential to successful

discipline. An employee who does not know how, cannot be expected either to accept the disciplinary requirements intelligently, or to profit by correction or punishment, should that be necessary. Instruction must not be restricted to the brief period preceding entrance into service. It must continue for some time after the employee is in service and must be repeated periodically so long as his service continues, and particularly when any violation has been committed indicating a defect of understanding or of memory.

Methods may vary, for one road may be able to afford an elaborate schoolroom while another is obliged to give most of its instruction on the cars. One road may conduct the re-instruction of its employees in service through periodical examination of all of them; whereas another road may find it more satisfactory to select the employees requiring such re-instruction from time to time by means of the violation reports rendered by its inspectors and received through its accident and other records. The principle, however, is the same. When instruction and discipline are linked together, both become part of a process of building up an efficient organization through making its constituent members individually efficient.

Right here, in my judgment, is the heart of the entire matter. Discipline is necessary in a railroad company because a great many different people are required to work together to produce a certain result under very rigidly prescribed conditions. These people represent a very large number of distinct employments. Their union is effected through the railroad organization. The purpose is to supply a commodity—transportation—to the community. The prescribed conditions involve the necessity of operating under schedules in public streets, with frequent stops, at a low uniform fare, and under the most rigid public regulation. The only way in which an equation connecting these quantities can be worked out is through the maintenance of discipline, for if everyone attempted to do his work in his own

\*Abstract of a paper read at the Quarterly Meeting of the New York Electric Railway Association, New York, March 2, 1917.

way and at his own time (even if everyone knew a correct way) the result would be hopeless confusion.

All discipline has to be cheerfully accepted by those to whom it is applied in order that it may be successful. We recognize this in speaking of the morale of an army. In the case of a street railroad, where the organization is split up into many detached units and men are sent out two by two to operate cars all over a large territory, the need for the willing acceptance of discipline by the employees is greater than in any other organization of which I can think, except possibly an army operating under modern conditions of field service. Obviously, any discipline which means only punishment must be hateful. So discipline must be coupled with instruction, and this instruction should extend not only to a knowledge of the details of the particular work to be done by the individual, but should embrace a general knowledge of the purposes of the organization at least sufficient to enable an employee to understand why discipline itself is necessary for successful operation.

For successful instruction a proper code or set of operating rules is the first requisite. This code we may divide generally into three parts.

First: The rules governing the operation of cars.

Second: The rules governing the relation of individuals in the organization in respect to the issuance and execution of orders and the method of dealing with violations.

Third: The disciplinary procedure affecting the individual violator, embracing such matters as notice of offense, opportunity for hearing, right of appeal and degree of punishment.

If discipline and instruction are to go hand in hand all of this code must be available for the information of employees, and while it may not be practical to insist upon personal instruction on all the regulations contained, still the spirit which produces the willing acceptance of a discipline founded upon belief in its fairness, requires that every man in the organization shall have opportunity to study its entire structure so far as it concerns or may concern himself.

### THREE SUB-DIVISIONS OF THE CODE

The rules governing the operation of cars must be determined for each railroad according to its own conditions. They should be issued in printed form and in convenient size to be carried in a coat pocket, so that an employee may be encouraged to study the operating rules whenever opportunity offers and may always have them at hand in order to determine the correct procedure in any perplexing situation. The issuance of such rules is now a general practice.

The rules governing the relation of individuals in the organization with respect to the issuance and execution of orders and the method of dealing with violations are next in order. One essential of successful discipline is that all should know from whom orders are to be expected and to whom orders are to be given. There is no reason why the substance of the information presented by an organization chart cannot be incorporated in any book of rules and why such a chart itself cannot be used in instruction rooms and other educational work. It is difficult to maintain a proper sense of individual responsibility unless the individual realizes his relationship to the rest of the organization. Take the matter of accident reports, for example. A car crew, feeling that accident reports serve mainly as a basis for administering punishment, will naturally avoid making such reports if possible. If the crew can be made to realize, however, that the reports are the primary means by which the company protects itself from unjust claims, and are also used in important accident prevention

studies, the foundation for a different attitude toward the reports is laid.

It is important, moreover, that intermediate officials should not get the habit of giving orders and applying criticism to men who are not responsible to them in the matters which may be made the basis for such orders or criticism. The only really successful discipline is impartial discipline, and that sort of discipline demands that orders must be issued and corrective measures administered by those whose duty it is to do these things. Supervisory officials who are required to inspect and report must understand that their work cannot be successful and their reports cannot be taken at their face value if they attempt to exercise personal authority over the men whom they are instructed only to observe and report upon.

On the subject of disciplinary procedure affecting the individual violator, and embracing such matters as notice of violations, opportunity for hearing, right of appeal and degree of punishment, the principles are easily stated. There should, of course, be proper notice, opportunity for hearing, just and uniform procedure in the administration of punishment and the right of appeal. On the possible methods by which these principles may be made effective, a long treatise might be prepared. Some of the methods employed on the Brooklyn Rapid Transit System will be given, not to imply that these are the only proper methods, but as methods which are consistent with the principles already laid down. On this system there are used the following:

First: A uniform penalty code in which violations are classified with sufficient detail to cover practically every type of operating offense. In this code all offenses are classified under four headings.

A. Admonition offenses, carrying no demerits on the first offense, but carrying a prescribed number of demerits on later offenses.

B. Demerit offenses, carrying a prescribed number of demerits for each offense.

C. "L" offenses (an arbitrary symbol), carrying demerits to the number recommended by division superintendent if and when approved by the superintendent of transportation, and

D. "D" offenses, rendering employees at once liable to discharge, but only by action of the superintendent of transportation.

The most important two effects of this code are that it eliminates suspension as a punishment, and that it minimizes the chance for discrimination by intermediate officials by prescribing uniform penalties for minor offenses, and on all offenses of major importance requiring the decision of the superintendent of transportation.

Second: A personal record card, on which the records of employees disciplined are recorded with the same detail as in the code itself, and a system of credits (which may be either for service or for freedom from demerits over a given period) but which shall in any event be sufficient to offset the demerits obtained by the average good man and shall enable a man by exceptional performance to accumulate a balance of credits. On this basis it is possible to provide that when a certain net balance of demerits shall have been accumulated an employee automatically goes out of service never to be re-employed. This does not restrict opportunities for summary punishment when that is required. Under an "L" or a "D" offense, sufficient demerits may, with the approval of the superintendent of transportation, be at any time imposed to put the offender out of service. The code provides also an automatic means of eliminating the habitual petty violator, who, if he remains long enough in service, will develop a disregard for all dis-

cipline which ultimately will produce some monstrous violation—possibly resulting in a very serious accident.

Third: With respect to all admonition or demerit offenses, a notice form should be used which not only conveys to the employee a clear idea of what he has done, but requires him to either accept his punishment by signing an acknowledgment thereof, or to appeal to higher authority. It may be thought that the right of such appeal would produce a great number of petty discussions between transportation superintendents and offending employees. In practice it seems not to do so, and if at a given time there may be what the electricians would call a "surge" of minor appeals, still the reasonable settlement of all such cases means a contented force and a belief in the fairness of the disciplinary system. With respect to the "L" or "D" offenses above mentioned, the procedure in the first instance requires the decision of the superintendent of transportation.

The question of any further appeal involves other considerations, which are in a sense outside of this discussion. In general we must agree that the door to the president's office should be open to any aggrieved employee, and certainly a general manager in charge of operation should consider the righting of any possible cases of injustice one of his most important duties. In our own organization, not being unionized, we have departmental trustees, elected by the men to take up all complaint cases first with the head of the department involved and ultimately, if necessary, with the president. On some properties where labor unions exist this function doubtless has to be left to the representatives of the union.

I do not, however, believe that it is consistent with sound discipline to leave the decision in any such case, or in any other matter between wage-earning employees and street railroad managers, to a body outside of the organization of the railroad itself. The management of the railroad is responsible for the investment in the property, and for the service which is rendered to the public. The maintenance of unbroken service, the maintenance of safety and of efficient operation depends upon successful discipline as much as upon any other single element. I am unable to see how the management of a railroad could justify itself to the stockholders or to the public if it voluntarily surrendered to any outside body the ultimate decision in these matters. I cannot persuade myself that the effect upon discipline of such surrender by the management can be anything but detrimental, for the surrender in itself may be construed as a confession that the management is not confident of its ability to have its discipline accepted by the employees as fair and just and a necessary condition of the employment they have entered. Any such confession seems to me not to provide a basis for mutual respect and confidence between management and employee. And I am wholly unable to see how any of these difficulties could be cured merely by the enactment of a law taking from the management of electric railroads responsibilities which the management would not itself be justified in surrendering.

Fourth: It will greatly strengthen the union between discipline and instruction if the form used in notifying offenders of violations is so phrased as to call their attention to the nature and consequences of the violations in a friendly and helpful way, even though discipline may be at once required. This is particularly true in violations involving discourtesy, disregard of the safety of passengers, etc.

The work of the instruction branch in the re-instruction of employees should be tied in with the disciplinary system at this point. Whether the re-instruction work is based upon a periodical examination or upon reports

of violations is a matter of detail. The important thing is that the man who receives discipline should be made to understand at the same time that his superiors are making every effort so to reinforce his memory, his judgment or his knowledge of the matters in which he has offended, that he will not be likely to commit the same offense again.

Of course, there should be a warning when a man begins to pile up a bad record, and the use of a personal record card enables the individual in charge of this work to point out the particular offenses which have brought the trainman into the "danger zone." If possible this warning should be given by some one directly associated with the superintendent of transportation so that the employee may feel that the head of his department is interested in keeping him personally in service.

Fifth: There should be a period of probation between the close of the instruction period and the commencement of permanent service. The street railroad business is one of the most intricate in the world. The average motorman or conductor comes to his job with no previous knowledge of it. His period of instruction is necessarily brief, considering the responsibility that is placed on him when he takes out his car. It is only fair, therefore, that there should be a period of probation and such period enables the management to watch a man's work for a while and then to decide, upon all the evidence, whether he is desirable for admission to actual service. In our own system the probational period is three months. A personal record is kept just as in the case of permanent employees, but if the man is admitted to regular service, his slate is then wiped clean and he starts over again.

I have attempted in the foregoing to lay down certain simple principles upon which I think all may agree as a sound basis for street railroad discipline, and to illustrate the operation of these principles by some of the experience which I have had opportunity to observe. In leaving the subject we must not forget that the object of faithful service is promotion, and that the establishment of seniority in all grades where many men are employed, and the recognition of such seniority, and of personal efficiency records in promotion, not only tends to promote the best men, but is a guarantee to all that faithful service will not be overlooked. We may mention also the importance of protecting seniority as a basis for advancing rates of pay. Here again an extended discussion might be developed, which must be waived at this time because of the limitations of our subject.

I hope that the conception which I have given of a system of discipline is fair enough and wise enough to serve as a basis for mutual confidence between street railway wage workers and the managements of street railway companies. I can think of no more vital basis for the development of such confidence, and without it we can hardly expect to secure that united and determined effort of both managers and wage earners through which alone street railway companies seem able to meet the many and varied problems which are at the present time confronting them.

Two-wheel automobile trailers which carry all materials required for making line repairs are being used by the San Diego Consolidated Gas & Electric Company so that any line difficulty may be attended to without the delay usually caused by waiting for an available construction truck. One of these trailers is always kept at the store yard fully loaded and ready for instant use. Each is equipped with pneumatic-tire wheels and a coupling by which the drawbar may be attached to any one of the company's thirty-five automobiles.

# Chicago Traction for 5,000,000 in 1950

## Traction and Subway Commission Issues Supplemental Report Containing Estimate of Future City Growth—Its Possible Effects Upon Transportation Earnings and Needs Are Studied

**I**N order to form a basis for estimating the gross earnings of the consolidated traction system in Chicago in the future, and also the number of passengers which the system will be expected to serve, the Chicago (Ill.) Traction and Subway Commission has made an elaborate study of the characteristics, growth and development of the city insofar as these have a direct bearing on its transportation problems. This study forms Chap. 1 of the supplement to the commission's report, the main section of which was abstracted in the *ELECTRIC RAILWAY JOURNAL* for Dec. 9 and Dec. 23, 1916. In the present addition the commissioners reach the general conclusion that it is reasonably safe to assume that Chicago's growth will continue at a rate which will produce a population of not less than 5,000,000 persons by about 1950, or about double the present population.

### GROWTH AND DENSITY OF POPULATION

Since its incorporation as a town in 1834 with a population of about 300, Chicago has grown steadily and at times very rapidly until, in 1916, the school census indicated a population of more than 2,500,000, distributed quite unevenly over the city.

The manner in which this present population of Chicago is distributed over the city area, which has a material bearing on the financial possibility of any transportation plan, is illustrated in a density contour map shown opposite. The most densely settled districts, as the commission points out, are located between the north and south branches of the Chicago River and Western Avenue. Within this area the population reaches a maximum density of 160,000 persons per square mile (250 per acre) for a few city blocks. About half of this area shows a density of 100,000 or more per square mile (156 per acre). Only two other small sections of the city are as densely populated as this one, one located adjacent to the stock yards and the other north of the loop district between Wells Street and Halsted Street and Chicago Avenue and North Avenue.

These heavily populated districts, however, are not so dense as those in some other cities, notably the East Side of New York, which has 410,000 persons per square mile (640 per acre) with certain blocks reaching a maximum of more than 1000 per acre. The average number of persons per square mile in Chicago is 12,787 (twenty per acre), while that for New York (Manhattan Island) is 105,000 per square mile (164 per acre), or more than eight times as great. A comparison of ten of the largest American cities for the year 1910 indicates that while Chicago is second in population it is seventh in density.

### OUTWARD RESIDENTIAL MOVEMENT

The level nature of the topography of the city and the ease with which sections can be opened up for building purposes, together with certain provisions in the building laws which practically limit the economic height of apartment buildings, have led to a distribution of the residential population over very wide areas. The construction of surface and elevated lines, which have constantly reached out into new territory, has also stimulated the outward movement of population.

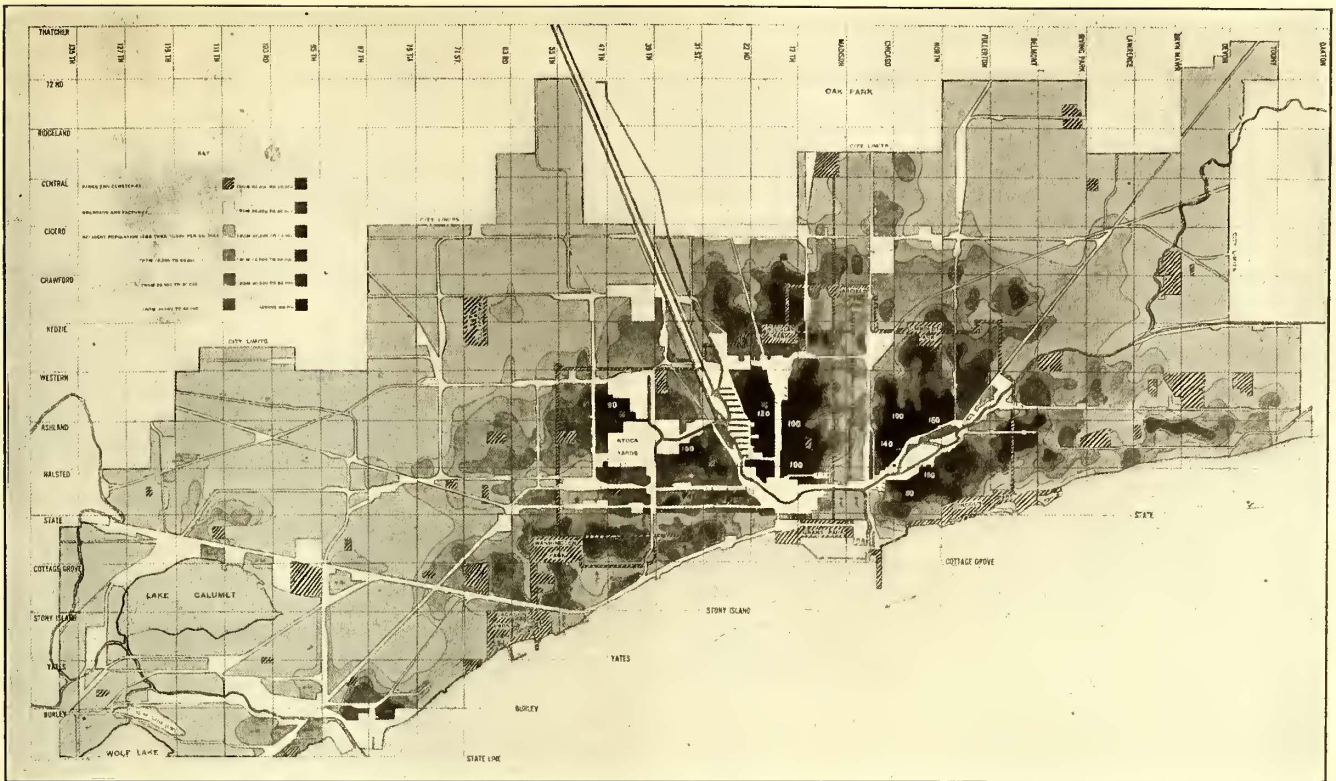
The rapidly growing sections of the north and northwest seem to have followed the development of rapid transit into those districts; as, for instance, those along the Northwestern Elevated north of Lawrence Avenue and in Ravenswood, some of which have increased tenfold since the 1900 census. On the south side, the Hyde Park, Woodlawn and Englewood districts have also shown a remarkable increase since 1900. On the west side the increase in the sections along the rapid transit lines is also apparent. An important fact in this connection is that since 1900 the inlying district bounded by Twenty-second Street, Halsted Street and Chicago Avenue has recorded a decrease.

The center of population for Chicago in 1900 was located at Racine Avenue and Eighteenth Street. Since then it has moved gradually westward until in 1916 it was located at Ashland Avenue and Sixteenth Street, about one-half mile northwest from the 1900 point. For 1860, 1870 and 1880 the greatest number of persons lived between 1 and 2 miles from the center of the city, taken to be the corner of State Street and Madison Street. In 1890 the maximum number shifted 1 mile outward, where it remained until 1910. The 1916 school census indicates that there has been a further expansion outward of 2 miles, placing the maximum of 421,000 persons between 4 and 5 miles from the center. Thus, in the last six years the maximum number of persons residing in a zone 1 mile wide has moved outward 2 miles, with a consequent increase in population in all zones beyond this maximum zone.

According to the commission, the low average density of twenty persons per acre for the whole city area is largely due to the wide distribution of its principal residential districts, the lack of uniform building in these districts and the large areas still undeveloped. The separation of the residential population into many districts and the relatively low average density of the areas tributary to practicable transit routes, promise a volume of traffic sufficient to support certain high-speed elevated lines at the present time, but insufficient to support corresponding subways with their much greater cost until development has proceeded further.

### ESTIMATING THE FUTURE RIDING HABIT AND EARNINGS

With the increase in population estimated through the year 1950, the commission attempts to derive from this the number of total revenue rides which may be expected. Any increase in traction gross receipts depends upon either a growth in population or an increase in rides per capita, or both. No hard and fast rule, it is said, can be deduced from the experience of one city when growing from 1,000,000 to 1,500,000, for instance, that can be applied to another city when growing between the same limits, if, as is usually the case, this increase in growth occurs at widely separated periods and under different traction and economic conditions. From a comparison of the traction receipts and population increases of Chicago during the last twenty-five years, however, with those of other large cities during the same periods, the general limits within which probable future earnings may be estimated can be seen.



CONTOUR DENSITY MAP SHOWING DISTRIBUTION OF CHICAGO'S 1916 POPULATION

Table I shows the population, passenger revenue per capita and the rides per capita per annum for the twenty-six-year period from 1890 to 1916 inclusive, including all surface and elevated lines for the entire city. The figures for 1917 and 1950 are those adopted by the commissioners as the basis for their financial plan.

TABLE I—TOTAL REVENUE RIDES PER CAPITA FOR CHICAGO SURFACE, ELEVATED AND SUBWAY LINES

Year	Population	Annual Passenger Revenue Per Capita	Annual Revenue Rides Per Capita	Annual Increase in Revenue Rides Per Capita
1890	1,099,850†	\$8.20	164	4.8
1895	1,399,215‡	9.42	188	5.4
1900	1,698,575‡	10.74	215	7.6
1905	1,941,929‡	12.66	253	13.4
1910	2,185,283‡	15.98	320	...
1916	2,544,249*	17.05	341	...
1917	2,539,559	16.70	334	...
1950	5,000,000	\$20.00	400	2.0

†United States census enumeration.  
‡Interpolated on basis of yearly uniform increase.  
\*School census estimate.

In the financial plan presented in another part of the commission's report, which will be abstracted in these columns later on, the number of revenue rides per capita was arbitrarily assumed to increase at the rate of two rides per annum, that is, from 334 in 1917 to 400 in 1950. The latter figure, together with the estimated population of 5,000,000 for the same date, results in a passenger revenue of \$100,000,000 and gross receipts of \$104,500,000, including such additional income as other revenue from transportation, revenue from other railway operations, non-operating income and profit and loss credits. The gross receipts and increases by decades as estimated for the period are shown in Table II.

ESTIMATES ARE CONSERVATIVE

In concluding this chapter, the commission calls attention to the fact that its conservatism is evident from the column of average annual increases when compared with past years' growth. Thus, for two decades of extraordinary growth, the combined surface and elevated system showed an average increase of nearly 10 per

cent per year. Similarly, the entire surface and elevated system of Greater New York, which now earns approximately \$100,000,000 per year (about the same as the estimate for Chicago in 1950), maintained a compound rate of increase of 5 per cent per year from 1906 to 1914. Yet the commissioners' estimate for Chicago for the last decade, 1940' to 1950, results in a rate of only 2.3 per cent per year.

TABLE II—GROSS RECEIPTS—SURFACE, ELEVATED AND SUBWAY

Year, Actual	Gross Receipts	Increase	Average Per Cent Increase Per Annum
1890	\$9,200,000		
1900	18,636,324	\$9,436,324	10.3
1910	35,629,912	16,993,588	9.1
1916	*44,372,764	8,742,852	4.1
Estimated:			
1917	44,010,635		
1920	48,979,995	13,350,083	3.8
1930	66,286,814	17,306,819	3.5
1940	84,658,809	18,371,995	2.8
1950	104,500,000	19,841,191	2.3

\*Includes miscellaneous earnings estimated at \$1,000,000.

This conservatism in predicting future growth in Chicago, it is stated, is believed to be justified on account of the comparative absence of large population centers outside of the city limits, whereas New York City's transportation system daily serves a large suburban population and, in addition, a transient or floating population variously estimated at from 200,000 to 500,000 persons. The commission feels, therefore, that the basic estimate of revenue may be regarded as reasonable, and that any construction program depending for its support on gross receipts as conservative as \$104,000,000 by 1950 may be expected to prove financially sound.

The Public Service Commission for the Second District of New York has just issued Volume II of its ninth annual report, for the year ended Dec. 31, 1915. This contains organization, financial, operating and miscellaneous figures for the operating and lessor electric railways under the jurisdiction of the commission for the fiscal year ended June 30, 1915.

## For National Defense

### Massachusetts Street Railways Asked to Co-operate with Public Safety Committee on Preparedness

**M**ATTHEW C. BRUSH, president of the Boston Elevated Railway and chairman of the sub-committee of street railways of the transportation committee, Massachusetts Committee on Public Safety, has addressed a letter bearing upon preparedness issues to all the principal electric railways of the state. In transmitting the letter, which is designed to further the compilation of data and suggestions relative to defense and co-operation of the roads addressed with the government in case of hostilities, Mr. Brush outlines the scope of the committee's work as recently mentioned in this paper, and requests the information outlined below as an aid to the committee, to be placed on file with the proper authorities after its reception.

The transportation committee has agreed:

A. That the protection, under proper public authority, of critical points like powerhouses, sources of power, bridges, carhouses, etc., in their order of importance, is the first and most essential thing to be accomplished in order that in the event of outbreaks by riot or by hostilities, speedy transportation of troops, munitions, supplies, etc., may not be impeded.

B. As to possible demands on steam and electric roads for transportation, the companies are asked to furnish the executive committee with the names of the officers of all steam and electric roads to whom applications should be made for such transportation. The steam roads have furnished such information, and the electric railways are requested immediately to prepare it.

The following additional data are requested:

1. Indicate the manner in which and the extent to which power stations and power lines should be protected or intercommunication arrangements made for assistance by various power sources in case of local failure. This list should also indicate for each station the kilowatt capacity, together with the coal storage facilities and should also show what steps might be necessary to secure an adequate coal supply.

2. The sub-committee is offering to the transportation committee the experience in cities where unusual demands have been placed on electric railway transportation, because an abnormal increase in manufacturing activities has shown that arbitrary action must be taken to meet the unusual situation in carrying on regular business as well as transporting such additional business. Companies are asked to indicate in what respect this matter should be regulated and how it is to be accomplished on individual properties.

3. Supply maps showing all electric lines controlled or operated by each company with their relation to armories, manufacturing industries, existing connections with steam railroads, docks, electric railways, power houses, spur tracks, etc.

4. Supply maps to show possible or emergency connections between electric railways controlled or operated by individual companies and the steam roads, as well as electric railway connections with manufacturing and industrial plants, all to facilitate the movement of troops or material. This map should also show portions of each company's lines over which steam railroad equipment could be handled.

5. Supply lists of all rolling stock on each road, passenger, freight, service, coal, work cars, etc., giving for each type overall dimensions, length, width and height, distance center to center of trucks, type of couplers, gross weight, etc. Lists are also desired of limiting clearance points on each system and for what clearance they are determined and lists of bridges ex-

ceeding 10-ft. span with the maximum weight they will carry.

6. Supply copies of any freight tariffs in effect on the system.

7. Supply lists showing any surplus above the individual company's anticipated needs, of power station or shop facilities, as well as any like surplus of machinery, tools or supplies which might be immediately released for government uses.

8. Indicate in what further respect, if any, electric railways can be of service in the work of the committee on public safety.

Replies were requested in duplicate by March 8 to inquiries A, 1 and 2, the balance to be furnished by March 15. Companies were requested to forward such data as are ready on the dates mentioned, accompanied by an explanation of when delayed answers, if any, will follow.

## Illinois Association Committees

President C. F. Handshy of the Illinois Electric Railway Association has made the following committee appointments for the current year of the association:

Membership committee—Frank E. Johnson, the Ohio Brass Company, Chicago, chairman, and Marshall E. Sampsell and G. T. Seely.

Engineering committee, electrical—John Leisenring, signal engineer, Illinois Traction System, Springfield, Ill., chairman, and Charles H. Jones, G. W. Welsh and E. S. Gillette.

Engineering committee, mechanical—H. A. Johnson, master mechanic, Chicago Elevated Railway, chairman, and J. M. Bosenbury, John Sutherland and J. N. Graham.

Engineering committee, way—B. J. Fallon, engineer maintenance of way, Chicago Elevated Railway, chairman, and John B. Tinnon, C. J. Jones and W. F. Carr.

Traffic committee—R. Breckenridge, traffic agent, Aurora, Elgin & Chicago Railroad, chairman, and W. P. Potter, O. C. Shockley, F. W. Shappert and C. S. Dar-rach

Safety committee—Henry B. Adams, safety supervisor, Aurora, Elgin & Chicago Railroad, chairman, and W. H. Heun, Joseph O'Hara, W. J. Fillmore and J. H. Mallon.

Publicity committee—E. E. Soules, manager publicity, Illinois Traction System, Peoria, Ill., chairman, and J. M. Strasser, H. E. Weeks, F. C. Eckmann, R. H. Hayward, and W. W. Crawford.

Program committee—L. E. Gould, *ELECTRIC RAILWAY JOURNAL*, Chicago, chairman, and H. J. Kenfield, J. W. Busch, A. P. Jenks, F. E. Fisher, and W. V. Griffin.

The next meeting of the Illinois Association will be held March 23, at Chicago.

## American Electric Cars in Barcelona

The electric railway running from Barcelona, Spain, to Sarria, a distance of nearly three miles, has recently been extended as far as Las Planas, about  $3\frac{1}{2}$  miles farther, according to the *Bureau of Commerce Reports*. The new section starts from the station of Sarria, passes through a tunnel 653 ft. in length, follows the mountain stream Pomaret, the course of which has been partially diverted, passes through a second tunnel 1194 ft. long, and farther on through a third tunnel 564 ft.

The rolling stock for the line comprises electric motor cars and trailers. The cars were built in America and are provided with four motors of 125 hp. The passenger cars are closed and are 56 ft. long, designed for single and double-end operation.



# C. E. R. A. Holds Annual Meeting

First Day of Indianapolis Convention Evidenced Community of Interest and Worth of Co-operation—Good Spirit Prevailed and Encouraging Aspects of the Business Were Emphasized—Past-Presidents Talked on History of Association

**A**N unusual spirit of optimism and lighthearted fellowship prevailed at the first day's session of the Central Electric Railway Association's annual meeting at the Claypool Hotel, Indianapolis, on March 8.

C. N. Wilcoxon, first vice-president, presided over the morning and afternoon sessions in the absence of President A. Benham, who was detained in Springfield because of urgent company matters. The latter's annual address was read by Mr. Wilcoxon and appears elsewhere in part. The meetings were well attended.

The conviction was evident that the association had come to a more definite state of accomplishment than ever before. The results of the eleven years of co-operation of the member companies in the association work, as reviewed by several of the past-presidents, seemed to give ample reason for congratulation over the difficulties overcome and the splendid progress made in the industry.

The gloom which has been in evidence at so many electric railway meetings was missing, and in its place was a decided air of anticipation of better days ahead. Five of the nine past-presidents of the association were present and addressed the meeting, relating some of the trials and struggles in the early existence of the association and reviewing the accomplishments and pleasantries of their terms of office. The past-presidents who spoke included H. A. Nicholl, Anderson, Ind.; George Whysall, Marion, Ohio, and E. B. Peck and C. L. Henry, Indianapolis, Ind. A. W. Brady, Anderson, Ind., was also present and was scheduled to address the meeting at the Friday session. A short address from E. C. Spring, Allentown, Pa., first president of the association, was read, as was also a telegram from F. D. Carpenter, Lima, Ohio, third president, who was detained at home owing to the serious illness of his wife.

## REMINISCENCES OF THE PAST-PRESIDENTS

Mr. Nicholl, second president of the association, stated that there were only twenty electric railway members when he was elected and that after every effort had been put forth to induce more companies to join, the year ended with only twenty-two members. The small mileage represented and the consequently small working capital greatly hampered the progress of the association work. It was not until the organization of the subsidiary traffic association that the parent association could afford to have a permanent headquarters and a secretary devoting all of his time to the work, which were the things most needed. The membership has since grown to include sixty-nine railway companies, operating practically 4900 miles of track, and two important city properties in addition. Thinking back over the work done by the association and referring to the capability of its personnel, Mr. Nicholl said that the progress of the industry in the Central West was assured and the future was bright.

Mr. Whysall recalled a meeting of the association in Fort Wayne at which only four members were present. There was no money in the treasury and it looked as if the association must fail. At this juncture Mr. Carpenter said, "Well, boys, we can't give up. Let's put in enough to carry it through another year." He quoted the secretary, A. L. Neereamer, who was one of the four present, as saying, "Just pay me enough to buy groceries

and pay rent, and I will stick it out with you." That was only one of many instances in which Mr. Neereamer had demonstrated his great value to the association, and Mr. Whysall gave him credit for its principal accomplishments. This tribute was enthusiastically endorsed by the meeting.

Mr. Henry expressed his particular interest and liking for the Central Association because of its ability for both work and play. He said there was no reason why electric railway men should be going around with their chins hanging down, since, in the short time in which the city and suburban railways had been growing, they had increased the convenience and happiness of the public more than any other industry.

Speaking of competition the railways have had he said that the real menace of the automobile was fast becoming less because of the fact that the "fad part" of this kind of riding is disappearing. Its use for business purposes was a permanent institution, but the farmers and suburban residents were coming to ride upon the electric lines into cities because they could not drive their cars back and forth as cheaply.

They are beginning to consider the relative economy of the two means of transportation and are consequently turning to the electric lines and using the automobiles for business purposes in communities which the trolley lines do not reach. "All we have to do," said Mr. Henry, "is to keep up our service to a high standard and the traffic will come back." He said he was not discouraged at the outlook and did not expect to be, and that he found considerable pleasure in being able to furnish not only transportation on his line, but many other conveniences as well. Among these were the lighting of the streets and roadways, and the supply of power to farmers and for grain elevators and industries closely allied to the farmer. What he liked best about the Central Association was that the success it had attained came from a determination of the members to work together to bring results as a body.

## THE JOINT INTERLINE FOLDER

E. B. Peck, Indianapolis, Ind., chairman of the joint interline folder committee, reported the completion and very favorable reception of the new folder.

The committee had arranged for its distribution in ninety-five cities located in seven different States, involving a total of 750 racks. In Chicago the folder was distributed in 122 racks, as well as in forty-seven racks in Detroit, thirty in Louisville, nineteen in Pittsburgh, and twenty-two in Cleveland. In Indiana 72 per cent of the electric lines were subscribers to the folder, representing 80.5 per cent of the total mileage. In Michigan 100 per cent of the electric railways had subscribed. In Ohio 45.5 per cent had subscribed and these represented 75.5 per cent of the mileage. In all, for the association territory, 55 per cent of the roads were subscribers to the folder, representing 81 per cent of the total mileage. Following the report a number of the delegates expressed appreciation and indorsement of the joint folder as the greatest accomplishment of the association or, for that matter, of any railway organization.

The first order of business after the noon luncheon was the unanimous approval of the following telegram

addressed to His Excellency, President Wilson: "The Central Electric Railway Association, composed of the electric railways of the north central States, now in session assembled, begs to extend to you the assurance of its undivided loyalty and support in upholding the rights of our countrymen and the nation and to offer the services of this branch of the nation's transportation facilities for the rapid movement of troops and supplies in the event of war."

Following this there was read G. G. Roberts' paper on the revival of pure wrought iron, which will appear in a later issue. In the discussion, H. H. Buckman, New Albany, Ind., said that, in the safety first work in Evansville, which had been rather rigorously pushed, wrought iron had played quite an important part. He had first adopted it for brake rods and later for truck swing links, swing-link pins, car body transoms and other parts. He had tried all manner of steel bolts for the split gears on thirty-two cars, and while he had reduced the breakage he was able to eliminate it only when he had resorted to pure wrought-iron bolts. He had found that the wearing life of a piece of wrought iron subject to friction could be lengthened by hardening the wearing surface with cyanide.

R. N. Hemming, Anderson, Ind., told of his experience with steel brake rods and how his company had several very narrow escapes due to their breaking. He was now using pure wrought-iron rods altogether. He had found that any slight nick on a steel brake rod, resulting from a blacksmith's tool mark or from a blow in service, caused a weak spot and that the rod would break there. He had also substituted flat wrought-iron brake rods for round ones to avoid any forging. He asked Mr. Roberts how one could be assured of always getting pure wrought iron, and the latter replied that if the chemical means were not available to test it, he would try it out by a nick and bend test. Further assurance could be obtained by a visit to the manufacturer's mill, where one could see what material went into the puddle and could make sure by this means that absolutely no scrap was used. He said that any mill would give every opportunity to watch the process. Mr. Roberts was asked about the use of pure wrought-iron car axles and he said that, although he knew of some which had been unsatisfactory, they had not been properly made. He predicted that wrought iron would come back and displace its offspring—steel—for axles, as it was doing for other members. The original steel axles, he said, had broken and then were made larger. These broke also, due to granulation, and the process of increasing the size was continued until we now have the 6-in. and 7-in. axles. Yet these still break. He said that if every axle, after it had been in service six months, was tested by Mr. Hemming's process, which was described in the *ELECTRIC RAILWAY JOURNAL* for Nov. 11, 1916, practically all would show some slight fracture. He ventured the statement that this would not be the case with wrought iron provided the pure metal was used.

The association was made the guest of James H. Drew, president Drew Electric & Manufacturing Company, Indianapolis, for the Thursday noon luncheon, at which Harry B. Smith, Adjutant General of the Indiana National Guard, addressed the members. Mr. Smith said that the greatest need in the army organization was for the assistance of such men as those present who were experts in the business of transportation, and knew how to move troops and supplies by the most direct routes and with greatest efficiency.

The annual banquet on Thursday evening was attended by more than 200 members and guests. Mr. Wilcoxon acted as toastmaster and J. A. McGowan and

C. L. Henry made short talks. The dinner courses were interspersed with various entertainment features and dancing followed.

#### REPORT OF SECRETARY-TREASURER

A. L. Neereamer, secretary-treasurer of the Central Electric Railway Association, presented his report for the year ended Dec. 31, 1916. He said that the interurban membership now includes sixty-seven interurban lines, operating a total of 4890 miles, and two city lines. The increase in mileage over last year is due to the Michigan roads affiliating with the association. There are 153 supply members. The receipts amounted to \$7,851, not including cash on hand of \$978 at the beginning of the year. After paying expenses, the association had \$1,644 in cash and had made an addition to its investment account of \$571. The present investment account is \$2,697.

#### REPORT OF TRAFFIC ASSOCIATION

As chairman of the Central Electric Traffic Association, Mr. Neereamer submitted a report of the work done during 1916. Five new lines now participate in the central electric interchangeable mileage ticket, the number of lines now using this ticket being thirty-five. During the year just past 5600 of these tickets were ordered and placed in the hands of the agents, making a total of approximately 39,000 tickets issued since the adoption of this form of transportation eight years ago by the interurban lines of the association. Reference is also made to joint and local baggage tariff No. 8, which has not been changed during the year, although changes are now under consideration; to official classification No. 43, covered by the association's I. C. C. No. 17, which was filed for thirty-eight companies. Sixteen supplements have been issued to this publication and filed by the chairman.

Of the thirty-eight lines appearing in official classification No. 43, thirty-four are now party to official classification No. 44, as filed by the chairman of the official classification committee. Joint freight tariff No. 13, covering exceptions to official classification, was issued Aug. 1, 1916, and has had two supplements. Joint passenger tariff No. 14 is now undergoing a process of revision, and it will be completed and reissued as early as possible.

### The Future of the Interurban \*

It Is Now Carrying the Burden of Early Optimism, but Has Become a Public Necessity—Concrete Suggestions for Improvement of Conditions

BY A. BENHAM

General Manager Ohio Electric Railway and President Central Electric Railway Association

**I**N addressing you to-day, I shall not go into a detailed review of the activities of this association during the past year. The secretary will set forth the condition of the membership and give in detail the financial condition of the association. I shall devote more attention to the interurban because in my opinion it has reached a crisis in its history, the intelligent treatment of which at this time may mean much to its future.

The interurban railroad, as an industry, had its beginning as extensions of the city railways and the first lines were short. The city properties of those days collected a 5-cent fare so that, when these lines were extended,

\*Abstract of annual address, presented at annual meeting of Central Electric Railway Association at Indianapolis, Ind., March 8, 1917.

the rate of fare was fixed at some multiple of five, that is to say, the line was divided into 5-cent fare zones. When the work of procuring a roadway was taken up, the notion of a privately owned right-of-way was probably not considered at all. As the street railroad was constructed on public property with satisfactory results, why should good money be spent for expensive real estate?

From the success of this new venture in electric railroading was born the idea of an inter-town service through territory which the steam roads did not reach or where steam road service was inadequate, and entirely new roads without any connection with city street properties were prospected all over the country. But the promoters were either men formerly associated with the street car service at one place or another, or were new Wallingfords seeking to build something that could be sold either before it was finished or very soon afterward. At any rate, for some reason they not only fell into the same error as did the pioneer suburban railway builder in the matter of roadway and fares, but they loaded the proposed system with other gigantic blunders which were to be fully as embarrassing and hurtful to the future owners and operators of the property and to the development of the property itself.

Having determined upon the terminal cities, our promoters then set about the work of selecting the route between, which was usually done by locating on the most thickly settled highways connecting the more important towns. There being a real demand for the character of the service promised, the work of interesting county road authorities and municipal councils was not difficult, and the promoter, out to get something for nothing, was willing to take almost anything that was offered. The one thing he insisted upon, and the last he should have wanted, was the occupancy of the principal streets in towns and villages. With that concession granted, he made but little objection to any other condition that might be imposed. The result was that for each town on the road map there was a franchise different from all others in practically every important detail, and in the franchises for the terminal cities there was fully as wide a variance. Some required an hourly service, some six cars each way every day. Nearly all provided for a city service with the rate of fare fixed and the cars were to stop at each intersecting street.

The contracts were usually for twenty-five years, and practically all bound the company to pay a large portion of future street improvements. Before another decade passes all of these original franchises will have expired. The task of securing renewals will be much more difficult than was the work of securing the originals, provided the contracting power remains as it is now, in the hands of municipal councils. When these lines were being promoted the towns and cities wanted them. Now they have them, the difference is obvious.

One of the things which the promoter failed to foresee, and which he could not have foreseen had he been ever so wise, was the advent of the automobile, and the profound if not positively disastrous effect it was to have upon the future of his road, especially its local business, and it is up to those who are charged with the operation of the properties now to make up this loss from what other sources they can. About the only avenues of possible new business that seem to be available at this time are three, namely, long-haul passenger business, a larger development of the freight traffic and the sale of electric current for light and power. All of these have been exploited with fairly encouraging results.

Other changes have taken place that materially affect the welfare of all carrying companies, and especially the

interurban. They include new laws relating to employers' liability, changes in the attitude of the courts in personal-injury matters, creating new rules of negligence and the like, increased cost of everything that enters into railroad operation, and more exacting demands of the public, rendering the use of the most modern equipment necessary. All these things have put the interurban end of our business in a position that no man can predict with any degree of certainty the ultimate outcome. We do know, however, that we have become a positive public necessity to a very large portion of the public, and that we are each year growing in the public estimation, and I believe that eventually we will come out of our difficulties, but there is much to be done.

#### THE REMEDY LIES WITH THE COMMISSIONS AND PUBLICITY

The law-making bodies of the country, both state and national, have deemed the railroads, both steam and electric, of sufficient importance to the public at large that boards and commissions have been appointed to, in a measure, control their operations, and the experience of railroad men before such boards has been in the main very satisfactory. In the first place the boards are composed of men whose business it is to understand general conditions and general needs. They can just as easily understand local needs when considered in connection with general requirements. Why, then, if it is proper to empower such boards and commissions with the control of a part of the affairs of public service corporations, would not all concerned be better served if this power should be enlarged to cover the entire field of railroad affairs, and this to include the granting and renewal of local franchises, etc. In short, grant to the utilities commissions and public service commissions of every kind the power to decide all matters of every kind in controversy between the railroad company and the public.

It occurs to me that associations of this character should take an active interest in legislative matters affecting the interests of its members, both for offense and defense. Thus, in Ohio, there are now five or six measures before the General Assembly for which there is absolutely no public demand, but, if passed, they will inflict new and unnecessary hardships on the street and interurban companies. It is gratifying to note that the interests affected are making a strong opposition to these proposed laws, and with a fair prospect of success.

The men who have had the development of the interurban railroad in hand have done wonders for it in the way of physical improvements in the less than twenty years of its history. This association has done much to aid this progress, but much remains to be done. I am a firm believer in the wisdom of the public service corporation taking the public into its confidence in all of its affairs which affect the public. I believe, also, that we should make determined and organized effort to protect our interests against vicious legislation and that the association is in better position to take the initiative in these matters than are the members acting independently.

The accident problem is always with us. The companies are all doing what they can to reduce the number of accidents and with much success, but, unfortunately, these efforts do not to any great extent reach beyond their own organization. The traveler on the streets and highways is outside our range of effort. With this element, the association can be useful both in an educational campaign directed to the public in general, and in efforts to impress upon legislative assemblies the

justice of a more equal division of responsibility in accident matters between the railroads and the public everywhere.

## Power Bids Approved in New York City

New York Municipal Railway Corporation to Purchase Power for Operation of Its Portion of the Dual System of Rapid Transit—Building of New Power Station Thus Deferred Until Prices Become Normal

The New York Municipal Railway Corporation, a subsidiary of the Brooklyn Rapid Transit System and under contract with the city of New York to operate part of the new subways in Manhattan and Brooklyn, has been under negotiations with the Public Service Commission since February, 1915, looking toward the purchase of the necessary power for operating its Manhattan and Brooklyn lines. For the Manhattan lines the commission has approved and the company has accepted the bid of the Interborough Rapid Transit Company of 0.7 cent per kilowatt-hour for alternating-current energy and 0.825 cent per kilowatt-hour for direct-current energy at substation bus in both instances, and under certain definite load specifications given in detail later in this article. The price is also subject to modification in accordance with variation in the price of coal. For the Brooklyn lines the accepted bid is that of the Transit Development Company, a subsidiary of the Brooklyn Rapid Transit Company, and the price is 0.9 cent per kilowatt-hour for alternating-current energy at substations and for direct-current energy delivered to the third rail 1 cent per kilowatt-hour for the first six years and 0.99 cent for the last four years of the ten-year contract period. An adjustment, details of which are given below, is provided to take care of changes in the price of coal.

While negotiations were under way a careful study was made of all the available data in connection with the generation of power in the district through which the lines will operate. It was found that there were but four sources from which sufficient power could be obtained. These were the New York Edison Company, the Brooklyn Edison Company, the Interborough Rapid Transit Company and the Transit Development Company. The bid of the New York Edison Company for power in Manhattan and of the Brooklyn Edison Company for power in Brooklyn was 1.305 cents per kilowatt-hour when reduced to the same terms as the two accepted bids.

### REASONS FOR PURCHASING POWER

In recommending the acceptance of the bids of the Interborough Rapid Transit Company and the Transit Development Company, Commissioner Hodge said they were the lowest prices at which power could be purchased in the desired amounts in this territory, and that they were lower than any other prices known to the commission or to its experts for steam-generated power supplied by public utility companies under similar conditions. He also called attention to the fact that the purchase of power at these rates will prove more advantageous to the city than the construction of a new plant at this time for the following reasons:

(a) An investment of over \$10,000,000 will be deferred for ten years and the expenditure of \$2,500,000 of this amount will probably be avoided altogether by the return to normal of market conditions in the meantime. (b) Power can be obtained sooner from existing Interborough and Transit Development sources. Tem-

porary supply at higher rates during the construction of new power plant would partly or wholly offset the savings from the new plant. (c) By deferring the construction of the new plant for ten years it will be possible to design it to meet definite known load conditions, full operation having been established. As a result of future improvements in the art of power production it is reasonable to expect that greater economy can be obtained in a plant built at that time than at present. To build a plant now would probably fix the cost of power for many years to come, and leave little chance for a reduction ten years hence. (d) It is very probable that still more favorable rates for purchased power will be obtainable at the end of the ten-year period, making it unnecessary for a further period to invest a large sum in a new plant. (e) The existing New York Consolidated Railroad Company's system is now supplied largely from the power houses and substations of the Transit Development Company. To replace these now by a new plant would be an unnecessary duplication of plant and expenditure of capital.

### POWER FOR MANHATTAN

The energy which will be required to operate the Manhattan lines and upon which the Interborough based its prices of 0.7 cent for alternating-current energy and 0.825 cent for direct-current energy is given by the following tables, which also specify the load factor and the maximum energy that may be used in any given hour:

#### DIRECT-CURRENT ENERGY REQUIREMENTS FOR MANHATTAN

(Energy to be Metered at Substation D. C. Bus)			
Year Beginning	Maximum	Kilowatt Hours	Load Factor
May 1	Hour	for Year	of Load
1917-1918	13,310	46,900,000	40.2
1918-1919	20,500	75,750,000	42.2
1919-1920	22,340	82,650,000	42.2
1920-1921	23,990	88,800,000	42.3
1921-1922	24,950	92,300,000	42.2
1922-1923	25,970	96,000,000	42.2
1923-1924	26,970	99,800,000	42.2
1924-1925	28,600	105,750,000	42.2
1925-1926	30,320	112,100,000	42.2
1926-1927	32,120	118,800,000	42.2
Average	25,000	91,885,000	42.0

#### ALTERNATING-CURRENT ENERGY REQUIREMENTS FOR MANHATTAN FOR LIGHTING AND SIGNALING

(Energy to be Metered at High Tension 11,000-Volt Bus)			
Year Beginning	Maximum	Kilowatt Hours	Load Factor
May 1	Hour	for Year	of Load
1917-1918	820	4,235,000	58.7
1918-1919	1,010	5,190,000	58.7
1919-1920	1,280	6,541,000	58.2
1920-1921	1,390	6,902,000	56.8
1921-1922	1,390	6,902,000	56.8
1922-1923	1,390	6,902,000	56.8
1923-1924	1,390	6,902,000	56.8
1924-1925	1,390	6,902,000	56.8
1925-1926	1,390	6,902,000	56.8
1926-1927	1,390	6,902,000	56.8
Average	1,280	6,428,000	57.3

If the load conditions specified in these two tables are not met, the charge for energy is to be increased as follows:

a—When maximum hour of the year is equal to or greater than 95 per cent of the figures given in the tables, and when the load factor of load is less than 95 per cent of these figures, the estimated cost of fixed charges per kilowatt-hour at the substation bus (including profit) which was used in determining the charge for energy, namely, 0.325 cent for direct-current and 0.255 cent for alternating-current energy, is to be increased by the ratio of load factor of load given in tables to the load factor of load actually obtained. The difference between this new figure for fixed charges and the figure originally estimated will be added to the total charge for energy per kilowatt-hour.

b—When both maximum hour of the year and the kilowatt-hours per year actually supplied are less than 95 per cent of the figures given in the tables, the estimated cost of fixed charges per kilowatt-hour at the

substation bus (including profit) which was used in determining the charge for energy, is to be increased by the ratio of the kilowatt-hours per year as given in the tables to the kilowatt-hours per year actually supplied. The difference between this new fixed charge figure and the figure originally computed will be added to the charge for energy per kilowatt-hour.

The actual maximum hour of the year is to be determined by averaging the maximum three hours of the year occurring on separate days.

The charge for energy is also to be increased or decreased according to any increase or decrease in basic cost of coal as compared with the price upon which the cost of power is based, namely, \$3.23 per long ton of 2240 lb., containing 14,250 B.t.u. per pound of dry coal. The revised cost of coal per kilowatt-hour is to be determined by multiplying the cost of coal per kilowatt-hour at the substation bus (including profit) which was used in determining the charge for energy, namely, 0.310 cent for direct-current and 0.290 cent for alternating-current energy, by the ratio of original basic cost to new basic cost, both expressed in basic B.t.u. per dollar. The difference between this figure and the cost of coal per kilowatt-hour originally used in determining the charge for energy is to be added to or subtracted from the total charge per kilowatt-hour until the next change in basic cost of coal.

#### POWER FOR BROOKLYN

The Transit Development Company's price of 0.9 cent per kilowatt-hour for alternating-current energy at the substation bus at 6600 volts, and for direct-current energy 1 cent per kilowatt-hour for six years and 0.99 cent for the next four years is to be adjusted to take care of changes in the price of coal. The revised cost per kilowatt-hour is to be determined by multiplying the cost per kilowatt-hour which was used in determining the charge for energy, namely, 0.285 cent, by the ratio expressed by the fraction of which the numerator will be the average B.t.u. per dollar obtained by the Transit Development Company during the year 1916, amounting to 10,860,000 B.t.u., and the denominator of which fraction will be the average B.t.u. per dollar that will be obtained during any respective year of the life of the contract. The difference between this figure and the estimated cost of coal per kilowatt-hour used in determining the charge for energy is to be added to or subtracted from the quoted price for power. This rate will be the correct rate for energy for the preceding year.

### American Fare Systems and Cars Urged for Edinburgh Congestion

Councillor M'Laren of the Edinburgh (Scotland) Town Council, according to the *Edinburgh Evening News*, is endeavoring to secure something approaching uniformity in regard to carfares in that city in order to reduce the overcrowding in the center of the city and redistribute some of the population in the suburbs. This Scotch newspaper has reproduced data on the fare system used in Winnipeg, Manitoba, and in Cleveland, Ohio, also an extract of a letter from Peter Witt in regard to the Cleveland front-entrance, center-exit car. Mr. Witt's letter reads as follows:

"Since the necessities of the war have placed women on your cars, and it being my belief that when the war is over these women will remain in the jobs they now occupy, I am sure that this car is the car that you need. Arranged as it is, it makes the collection of fares a simple matter. In fact, a person stationed at the fare box in a car of this design is in reality occupying a posi-

tion such as women occupy in the handling of cash registers, which, no doubt, is the system employed in the stores of your city for the payment of goods."

## COMMUNICATIONS

### Classification of Trucks

THE J. G. BRILL COMPANY,

PHILADELPHIA, PA., March 6, 1917.

To the Editors:

I have been interested in reading the complimentary criticisms of S. A. Bullock's article on a standard classification for trucks which have appeared in recent issues of the *ELECTRIC RAILWAY JOURNAL*. I read this article with a great deal of interest when it was published and am very much in sympathy with any movement that will result in some standardization of names and classes and that will indicate alike to the builder and the purchaser the identical character of trucks that may be under consideration. There is no doubt that some such movement should be undertaken.

Outside of the individual shop confusion that would result from a change in the nomenclature, I can see nothing but advantage from such a scheme. The name or method of identification of the truck to the outside world (or, more properly speaking, to the purchasing fraternity) should definitely mean one thing. But there is no particular reason why the inside manufacturing name and designation should not be another.

I firmly believe something can and ought to be worked out of Mr. Bullock's suggestion.

W. H. HEULINGS, JR., Vice-President.

### The "Aera" Policy a Departure from Right Principles

BROOKLYN, N. Y., March 7, 1917.

To the Editors:

I appreciate the reluctance of the *JOURNAL* to use its columns for urging upon the members of the American Electric Railway Association the adoption of any action which might incidentally be of financial benefit to the *JOURNAL*, but inasmuch as your publication reaches all members of the association I trust you will give me space to express the hope that the matter of continuing the present policy of the association in the conduct of the *Aera* will be brought before the annual convention next autumn by appropriate preliminary action on the part of the president and the executive committee.

There is a strong feeling in the association that pecuniary advantage to the association arising out of the *Aera's* advertising patronage ought not to be a consideration as against a question of ethical principle and sound policy. If, as I believe, the prevailing sentiment among the manufacturing members of the association is that *Aera* is not a desirable advertising medium, but that advertisements are continued therein by manufacturers and sellers of railroad apparatus in order not to incur any prejudice in the minds of the buyers of such apparatus, the association is certainly put in the position of silently using its influence in an improper direction, and what none of the member companies would justify for a moment in its individual corporate attitude is collectively upheld by the association. The issue, therefore, comes down practically to a request on the part of the association that in this indirect manner the manufacturing members should under the guise of advertising contribute largely to the cost of the association's publication. I do not believe that the

association should stand behind such a departure from right principles.

Moreover, aside from the question of principle, there is the broad question of policy as to whether it is wise for the association to invade the field of electric railway journalism in competition with private enterprise. Certainly the interests of the railroad industry, if intelligently and adequately voiced by an independent outside journal, can be better subserved in the influence on public opinion which springs from such an outside independent source than by a publication by the industry itself, and to the extent that our competition diminishes the usefulness of technical journals we are injuring our own interests.

There is field enough for an association publication without entering upon this competitive undertaking, and the ability which has been shown in the conduct of *Aera* might well be directed along lines free from the criticisms which I have suggested. T. S. WILLIAMS.

### The Advertising Policy of "Aera"

THE MILWAUKEE ELECTRIC RAILWAY & LIGHT COMPANY  
30 BROAD STREET,  
NEW YORK, March 1, 1917.

To the Editors:

The reports of the sub-committee appointed by the executive committee of the American Electric Railway Association, charged with the consideration of the advertising policy of *Aera*, published in your issue of Feb. 24, 1917, are of great interest to all members of the association. The high standing of all the members of the sub-committee and the evident careful thought which they give to the questions submitted to them make their views of deep import. The subject under discussion has already created considerable literature, and I rather hesitate to add to this rapidly growing compendium of views. The conduct of *Aera* in its present form involves an expenditure at the rate of about \$22,000 per annum, and as such is contributed either directly or indirectly by the members of the association the subject is possessed of a direct financial interest to the electric railway industry. The cost at the present time does not seem to be of large moment, but involves a question of policy that may just as well be discussed at this time as later, when *Aera* may have attained that financial success which some of its more enthusiastic sponsors hope for. Knowing the breadth of view of the members of the sub-committee of the executive committee, I feel certain that they will encourage good-natured discussion of *Aera's* editorial and commercial policy.

Some of the points not heretofore discussed or only lightly touched upon and to which attention may be properly directed are the following:

1. The member companies of the association are in large part paying for the entire cost of conducting *Aera* now running at the rate of about \$22,000 per year. About 82 per cent of this expense is covered by revenues derived mostly from the sale of advertising. This advertising comes in substantial part from the manufacturers and dealers in equipment and materials used by the electric railway industry. It has to be paid for, and is accordingly represented in the cost of business done by such dealers. It, like the commercial traveler's barber bills, is thus largely borne by the member companies, although they may not readily recognize it. The financial statement of deficits, set forth in the majority report on page 340 of your issue of Feb. 24, accordingly does not represent the over-all account as between the member companies and the magazine.

2. I have no doubt that the merits of *Aera's* advertising space are presented without regard to any desire to influence the prospective advertiser through fear of exhibited unfriendliness to the association or the industry. Manufacturers recognize the advantages of advertising, but naturally do not care to spend money on the purchase of any space to reach fields which they feel are adequately served. They naturally assume that *Aera* reaches the hands of only those prospective purchasers already reached by other journals carrying more comprehensive advertising of the complete lines. Manufacturers and dealers will naturally be somewhat cautious about expressing their views on such advertising because such would defeat one of the purposes which they might hope to accomplish through the purchase of space in *Aera*. In this discussion they should be encouraged to publicly state their views, and I am sure that the executives of the railway industry are broad enough not to hold the interests of manufacturers when so expressing themselves, as opposed to those of the association.

3. The privately owned papers in the electric railway field are edited by able staffs. The business of technical journalism is one calling for special training and supervision. The association cannot hope to develop *Aera* to the same high standard as the magazines referred to without involving itself in expense which the promoters of *Aera* in their good judgment would long hesitate to recommend. Without an extended staff, *Aera* will necessarily remain a Class "C" magazine in this particular field. There should be nothing but Class "A" magazines, provided their publishers are competent and desirous of serving the entire field.

4. There was a time when some public utility corporations owned newspapers in order to get their views before the public. Some one figured out that it was cheaper to purchase advertising than it was to maintain a kept newspaper, and the industry thereupon made an important advance in public relations. If the association had difficulty in getting its news into print in the technical journals now serving the industry, it might be cheaper to purchase space than it is to maintain a separate magazine. Concentration of production and mobilization and correlation of resources are the watchwords of the day.

5. The originators of the plan of company sections did not contemplate that the movement was to be a source of expense to the association not fully covered by the dues of section members. Some means of maintaining contact between the association and the section members is necessary, but it seems that such should readily be effected and yet not prove a source of expense to the association. It has not so far been possible to do this by *Aera* without outside aid, such as contributions of advertising. This part of the company-section movement yet remains to be properly developed.

6. The association has done great work in the past, but it has its future ahead. The industry is confronted with more serious problems than at any time in its history. We require the united effort of all the people who live by and do business with the electric railways.

All the brains in the association should be concentrated on the study of the solution of our difficulties, and should not be dissipated on ideals, previous conditions and precedent. There are other lines of activity in which the association can spend its spare income which will be as productive of good results as have been the bulk of expenditures in the past. The association really requires a much larger income than it now has if it is to do for the industry what many believe can be done, and it has no present income to waste.

J. D. MORTIMER, President.

## Recent Tendencies in Taxation

TAX DEPARTMENT, STATE OF NEW YORK  
ALBANY, N. Y., March 8, 1917.

To the Editors:

In a paper on "Recent Tendencies in Taxation," presented by R. L. Rand before the New York Electric Railway Association on March 2 and abstracted in the *ELECTRIC RAILWAY JOURNAL* of March 3, certain statements were made which I have challenged in a letter written to Mr. Rand under date of March 8. A copy of this letter follows. You have my permission to publish this letter.

Your article on "Recent Tendencies in Taxation," published in the March 3 issue of the *ELECTRIC RAILWAY JOURNAL*, has been read by me with special pleasure and interest. It is gratifying to note your expressed view in respect to the centralization of taxing authority, a view that is in harmony and accord with the efforts of the State Tax Commission to mold public opinion in favor of such centralization. The *ELECTRIC RAILWAY JOURNAL*, by opening its pages to the discussion of problems relating to taxation, and the New York Electric Railway Association, in availing itself of that opportunity for disseminating such discussions, are performing a real duty to the public as well as to the corporations directly interested. If, however, through this medium substantial results are to be expected, the discussions must be fair and unbiased and the pro and con of a debatable proposition must be presented.

Your statements in reference to the net-earnings rule invite the observation that not by the rule, by the courts, or by the State Tax Commission is any fixed rate of return arbitrarily established, much less a 6 per cent return upon investment, as you state.

While your discussion of negative intangible may seem logical from an academic point of view, the tax law of the State of New York clearly states that tangible property must everywhere be assessed at full and actual value. A negative intangible allowance would be analogous to reducing the assessment on a tenement because the owner thereof had failed to rent the same, even though the house were of exactly the same value as several others adjoining whose owners were more successful.

Possibly from lack of information you mis-state the fact when you say, "Not only is the compensating benefit of paving not considered, but the State Tax Commission actually penalizes the railways for their compliance with franchise obligations. For in figuring the intangible value of franchises, it allows an earning capacity of 6 per cent on all property excluding paving, and in so doing it has been sustained by the courts." The only inference to be drawn from this quotation is that no consideration whatever is given by the State Tax Commission to the element of paving in determining the value of the special franchise under the net earnings rule. On the contrary, while the court denies the right to treat paving as tangible property, it explicitly states that the cost of paving may be considered in connection with the intangible element of the special franchise. The State Tax Commission in its application of the net earnings rule does take into account the original cost of paving.

The court having ruled that such investment does not represent tangible property owned by the railroad but is on the contrary the property of the municipality, it is clear that such cost is a burden imposed upon the railroad by law and contributes nothing to the earnings of the railroad. Under these conditions the pavement cannot be taxed as tangible property. The compensation for this expenditure is made under the methods of valuation employed by the State Tax Commission by amortizing the original paving cost through a period of years representing the life of the paving. The annual amortization (or depreciation) of paving, together with all other properly deductible amounts, is deducted from the gross operating receipts before arriving at the amount of set earnings for capitalization for the intangible special franchise.

Noting your statement regarding valuation—"Their (the Bureau of Special Franchises') methods at present are exceedingly crude and in addition disagree with those of the Public Service Commission"—while thanking you for your frankness of expression in what may be with you an honest opinion, the writer, with no feeling of resentment, though in pardonable disagreement, cordially extends to you the opportunity of obtaining by personal investigation through the deputy of the Bureau of Special Franchises, first hand information as to the methods employed. It is to be expected, however, that after such personal investigation your

sense of justice to the staff of experienced engineers and accountants in the Bureau of Special Franchises will impel you to express as frankly and as publicly the opinion you may thus gain as to the methods of valuation employed by the Bureau of Special Franchises, as you did the grossly unfounded statement as to their crudity.

P. B. WITTMER,  
Deputy State Tax Commissioner.

## AMERICAN ASSOCIATION NEWS

### Power Distribution Committee

Representatives of manufacturer members of the association are being added to the technical committees of the Engineering Association. Secretary Burritt writes that to date only the committee on power distribution is complete in this respect.

The following have accepted membership on this committee: C. C. Beck, chief commercial engineer, the Ohio Brass Company, Mansfield, Ohio; James H. Drew, president Drew Electric & Manufacturing Company, Indianapolis, Ind., and Francis J. White, the Okonite Company, New York City.

### Standard Classification of Accounts

At the time of the October convention of the American Electric Railway Association the committee on a standard classification of accounts of the Accountants' Association, together with F. W. Sweney, chief examiner of accounts, and George Geekie, examiner of accounts of the Interstate Commerce Commission, held a somewhat protracted meeting and discussed accounting matters. At that time it was decided that as there had been so many questions submitted since the publication of Bulletin No. 9, by the Interstate Commerce Commission, it seemed advisable to get out a supplementary bulletin, and the representatives of the Interstate Commerce Commission agreed to formulate the questions and answers in the usual manner for publication. This they did and submitted a proof to the members of the committee in order that each member might have an opportunity to consider every case.

It was decided that the only way that everyone's views could be properly considered was to meet together and weigh any differences of opinion that might exist.

A meeting was accordingly called to be held in Boston on Wednesday and Thursday, Feb. 14 and 15.

At the meeting there were present Alexander Wylie, assistant chief examiner of accounts, and George Geekie, examiner in charge of electric railway accounts, representing the Interstate Commerce Commission, as Mr. Sweney, chief examiner of accounts, found it was impossible for him to leave Washington any time during the month of February. All the members of the committee were present, and not only were the cases for which proof had been submitted carefully considered, but there were several cases where no final decision had previously been rendered owing to the fact that it had been found impossible through correspondence to reconcile all differences of opinion.

At this meeting the representatives of the Interstate Commerce Commission agreed that instead of issuing a supplementary bulletin, embodying only decisions on cases submitted since the publication of Bulletin No. 9, they would issue a new and complete bulletin embodying all of the old cases previously published as well as all the new cases. The old bulletin consisted of 346 cases and the new bulletin will contain about 450 decisions. It is hoped that the new bulletin will be published in time for issue before the next convention.

# Practical and Economical Solutions of Problems in EQUIPMENT AND ITS MAINTENANCE

Relays Serve Important Purposes on Alternating-Current Transmission Lines—Placing the Responsibility for “Off” Trolley Poles—Fastening Track Rails to Bridge by Arc-Welding—Trolley Wire Erection Costs, V—Stoker Problems Discussed on Witness Stand—Other Equipment Articles and New Devices

(Contributions from the Men in the Field Are Solicited and Will Be Paid for at Special Rates.)

## Transmission Line Troubles Localized by Means of Relays

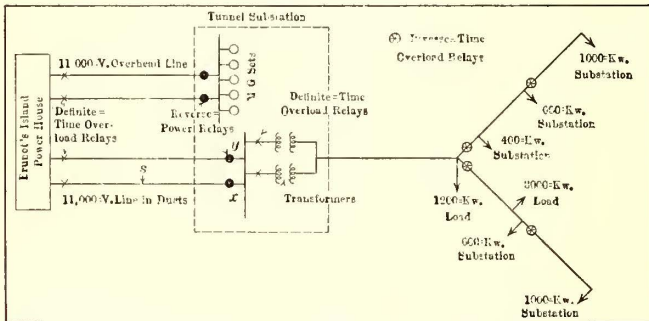
Use of Definite-Time-Limit, Inverse-Time-Limit and Reverse-Power Relays Described

BY J. W. WELSH

Electrical Engineer and Traffic Agent Pittsburgh Railways, Pittsburgh, Pa.

In railway work the rigid requirements of continuity of service together with the complicated alternating-current transmission lines have made necessary the use of relays in order to localize at once any short-circuit or other disturbance in the system so that the power can be kept on as many lines as possible.

The accompanying diagram, which represents part of the layout of the alternating-current transmission lines of the Pittsburgh Railways, shows how three types of relays are used to protect the system. The three types are the inverse-time-limit relay, the definite-time-limit relay, and the reverse-power relay. The first named is set to operate after a certain minimum time after the overload occurs, and when this minimum period has elapsed the heavier the overload the quicker the relay will act. The definite-time-limit relay operates at a definite time after the overload occurs, and



PART OF A. C. TRANSMISSION SYSTEM, PITTSBURGH RAILWAYS, ILLUSTRATING USE OF RELAYS

the reverse-power relay acts in the same way as the inverse-time-limit relay, except it will only open the circuit if the power is flowing in reverse direction.

Beginning at the end of the system furthest away from the generating station, the time limit on each successive relay is increased by a sufficient amount to allow time for the preceding relay to act and open the circuit breaker. In this way any section on which trouble occurs is automatically disconnected from the line without interrupting the power on parallel feeders or on sections between the faulty section and the power house.

The most useful application of the reverse-power relays is for parallel feeders, such as the 11,000-volt transmission lines shown in the diagram. Should a severe short-circuit occur on one of these parallel lines, say at S, it would of course be fed from both directions.

The current passing through the reverse power relay *x* would open the circuit at that point, and thus the other parallel line would be relieved of the effect of the “shorted” line, and power on the former would not be interrupted. Without the use of the reverse-power relays the circuit breaker at *y* would probably be tripped, and thus both parallel feeders would be cut off and the power beyond that point would be interrupted.

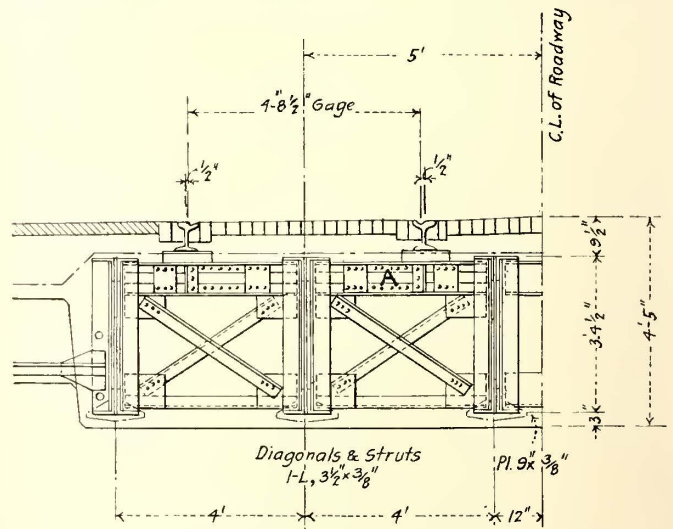
## Arc Welding Rails to a Bridge

Drilling of Large Number of Holes Through 3½-In. Steel Avoided by Spot-Welding

BY R. C. CRAM

Assistant Engineer Way and Structure Department Brooklyn Rapid Transit System

New ways in which the arc welder may be used are constantly being reported and they are naturally of considerable interest to those who have welders in service. It may not be out of place, therefore, to describe another instance in which the welder helped to solve a



PART OF BRIDGE STRUCTURE, SHOWING RAILS AND CHAIRS TO WHICH THEY WERE SPOT-WELDED

problem which, at first, appeared to be somewhat difficult.

It became necessary to install new rails on a new bridge recently built by the New York Connecting Railroad to carry a street over its new right-of-way at Grand Street in the Borough of Queens. As will be seen in the illustration, the bridge plans provided that the street railway rails were to rest on chairs which in turn were rigidly fastened directly to the top flanges of the top struts between the three main girders under each track. Incidentally the chairs were made up of plates of a thickness sufficient to make a total depth of chair of 3¼ in.



When the bridge was in place ready to receive the rails, it was found that no provision had been made for fastening the rails to the chairs either by bolts or clips. Apparently it was expected that the drilling in the field of the necessary vertical holes through about 3½-in. steel at the edges of the rail bases in severe winter weather would be a simple task, to say nothing of the fact that some eighty holes would have been required to install the rail with bolts or clips.

The suggestion was finally made that the rails be held in place by spot welding the rail bases to the chairs. An Indianapolis welder was used, and two spots, each about 1½ in. long, were placed at the edges of the base of rail and staggered so they would not come directly opposite each other.

Standard 2-in. by ¾-in. flat tie rods were also installed on 6-ft. centers and at a height above the rail base substantially level with the top of the concrete paving base when laid flat. This was to prevent their interference with the paving surface.

There were no rail joints upon the bridge as the span is about 34 ft. while the rails are in 62-ft. lengths placed so that the joints will be about 14 ft. away from the faces of the abutments.

## Why Does the Trolley Wheel Leave the Wire?

The Author Puts Part of the Trouble Up to the Mechanical Department and Urges Co-operation Between the Departments Concerned

BY S. L. FOSTER

Chief Electrician United Railroads of San Francisco

When, as sometimes happens on the best regulated roads, a trolley pole leaves the wire either at a frog, in a curve or on the straight line, there are three classes of observers: the general public, which takes only passing interest in the occurrence; the representatives of the operating department, who usually promptly assign the blame to the lineman, and the embryo inventors, who at once begin to worry over the problem of devising something that would have automatically replaced that pole on the wire.

The would-be improvers of the present rigidly simple overhead contact mechanism have invariably come from some occupation other than electric railroading, and have been quite numerous in the past twenty-eight years. But all have failed of pecuniary success in this field, because, after perfecting their devices and securing their patents, they have found it impossible to overcome the practical railroad man's two simple objections. He refuses absolutely to adopt anything that will put additional weight or additional bulk on the end of the trolley pole. The former would necessitate an increase in the strength of the trolley-base springs and in the damage done to the overhead construction when the wheel leaves the wire, while the latter would increase the hazard of the wheel catching in overhead "traps" and pulling the wires down. Then he clinches the matter by pointing out that he has no call for such a device anyway, for if every pole leaves at a particular frog it is clearly the fault of the frog, and if the pole of a particular car comes off at every frog it is clearly the fault of the car. In either case or in intermediate cases the fault is readily remedied much more cheaply than by putting an additional weight on the end of every pole on every car on the system as the inventor logically aims to do. Nothing has yet been found to beat the crudely simple operation of stopping the car and replacing the wheel on the wire by hand, the danger to overhead wires being meanwhile minimized by the use

of retrievers or trolley catchers to restrain the pole from rising to a too-erect position.

We now come to the questions of why the pole came off, who was to blame and how a repetition could be prevented? Those responsible for the maintenance of the overhead wires get most of the blame and are the ones generally expected to remedy the trouble.

The frog may be badly constructed, but that is not likely in 1916 unless an improperly angled frog has been installed. The general usage now is for smaller degree frogs than in the past. Twenty-degree frogs are out of date, 15 deg. is a more suitable angle for all city "point-on" work, and even 12-deg. frogs are possible. For country work and trailing frogs everywhere 8 deg. is the preferred angle. One practical railroad engineer said nothing wider than 10 deg. was required anywhere.

The frog may be badly located, but that is not likely, either, unless the type of car has been changed since the frog was installed and the lineman has not been notified. After setting a frog linemen usually observe the results with numerous cars before leaving it. If a frog was located for a single-truck car and then double-truck cars have been substituted on this line or alternated with the single-trucks trouble is to be expected. Here the obvious remedy is to relocate the frog for best average results with the two types of cars and then to have all cars turn out slowly when passing that frog.

If the frog is badly worn on the pan by the flanges of cars passing straight through, the flanges of the turning-out wheels will be apt to follow the scores, to pass the frog and to come off the through wire beyond the frog. The remedy here is to install a new frog or, better, a case-hardened steel wearing plate to provide a new flat riding undersurface for the pan of the frog. Sometimes the trouble is due to one of these wearing plates being cut into by the wheel flanges or loosened, which calls for a new plate. Again, the frog may be out of level, the sides worn down, or the whole frog distorted by some accident.

In the troubles so far cited the lineman is the man to call on and he readily remedies them, but there are cases where he is sadly puzzled by inter-actions between frogs and trolley wheels which are altogether inexplicable until he begins to investigate the condition of the car equipment. Behind these baffling phenomena there may be a defect in trolley wheel, pole, harp, retriever or trolley base. Sometimes trolley wheels are allowed to wear until one flange parts company with the rest of the wheel altogether. This loose ring of brass cannot escape from the harp, and the "rattletrap" goes jumping along the line doing all sorts of highly improper things to the overhead. Thrifty carhouse men, when they find a trolley wheel wearing entirely on one side of the score, reverse it and let it wear on the other side. Such a wheel finally becomes so wide at the bottom of the score that it will "split" a frog and take the wrong direction in a most disconcerting manner. Trolley wheels often develop flat spots, making the wheels bounce and arc as they proceed. Such wheels often fail to act normally at frogs. Then graphite bushings burn out and contact springs lose their elasticity, allowing a wheel great freedom to jump elsewhere than it is supposed to go.

In locating the frog the lineman figures on a normal car. When a prudent shop man repairs a broken trolley pole, leaving it a foot or two shorter than standard, he is not sending out a normal car, but very few linemen will detect the cause of this car's pole leaving the wire while the other cars of the same type do not.

Retrievers also take a hand in complicating the situa-

tion. Some are located near the center of the dash while others are located far off center. Some exert a pull of 2 lb. while others bind the rope so that a man cannot pull it out of them at all. An off-center retriever exerts a different pull on the wheel, depending on whether the car is turning off to the right or to the left. On a rainy day, when the trolley rope is stiffer than on a dry day, the retriever yields up the rope more slowly, while some retrievers actually pull the rope off the wire on curves by failing to yield up rope fast enough. All retrievers exert an appreciable tendency in that direction. The best safeguard seems to be to adjust the retriever to the least tension compatible with rolling up the slack rope when the pole is down under the roof hook, and to proceed around curves at reduced speed. The trolley base should, if possible, be located so that when the wheel is on the wire the trolley rope will clear the edge of the roof. If that is not feasible the edge of the roof should be provided with half-round or half-oval iron, so that the rope can slide readily along it as the car passes around curves.

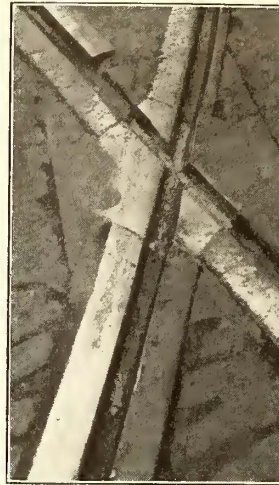
There are modern trolley bases, obsolescent bases and obsolete bases. The modern base with ball or roller bearings certainly gives the overhead frog and the trolley wire on curves a square deal as to adapting itself to what is expected of it. The older base with its vertical shaft, which relies on periodical lubrication for free action, is not always so dependable. If not recently lubricated or if the face has passed through a period of rainy weather it has a tendency to hold the pole in the same vertical plane as the longitudinal center line of the car, whether on the straight line or on curves. The result is that the trolley wheel leaves frogs unexpectedly and even comes off in the middle of curves. When there is full freedom of action due to the bearing surfaces being well lubricated or provided with anti-friction appliances, there may be still trouble caused by lack of sufficient upward pressure between wheel and wire, due either to lack of sufficient tension in the base springs or excess of pull from the retriever. Opinions differ as to what is the most desirable net pressure to maintain between the trolley wheel and the trolley wire. For city work probably between 20 lb. and 30 lb. is the general practice. If the pressure is too low the wheel may bounce downward at the overhead special work, and if the base has free action and the retriever pull is enough when the wheel again reaches the level of the wire it may have moved slightly sideways. The result may be either that the wire lands between the wheel and the side of the harp or misses the harp altogether. In the former case the wheel will slide along to the next splice in the trolley, where it will bounce off the wire mysteriously.

New types of cars continue to come upon the scene, and probably will keep on appearing with different roof heights, wheel bases and car-body lengths. The cars of each type should, however, agree among themselves. The wheel bases of the trucks and the roof heights cannot be changed, but the location of the trolley base on the roof and the length of the trolley pole can be and are sometimes changed. The overhead work is located for a certain standard car, and to have the trolley base on one end of a car 6 in. or a foot further away from the car center than the base on the other end secures no advantage to those maintaining the cars, and really handicaps those maintaining the overhead construction.

Where the road is small and one man looks after both cars and overhead all things will be adapted to produce the best results for all parts. Where the system has a different head in charge of each department there is need of intelligent understanding of each other's problems and co-operation to secure the best results.

## Old 60-lb. Rail Used to Repair Special Work

The Puget Sound Traction Light & Power Company, of which E. J. McIlraith is superintendent of way and structures, is practising many economies in track maintenance.

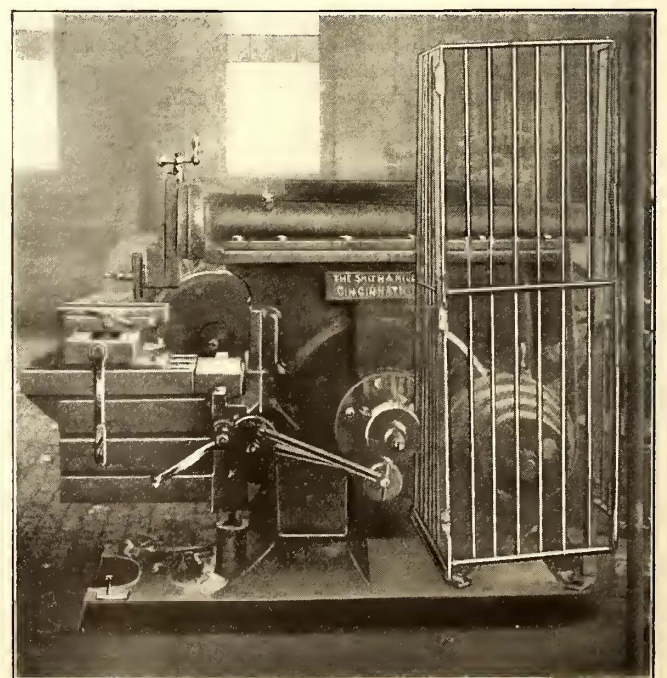


SPECIAL WORK ON CURVED TRACK REPAIRED

The illustration shows one of the ways in which special work, some parts of which have worn out, is repaired so that three or four years more of life are secured. The guard rail just beyond the crossing is the original rail and shows considerable wear. On the near side of the crossing it has been replaced by old 60-lb. A. S. C. E. rail. The base of this rail is cut away to clear the casting which holds the manganese steel insert, and the casting is also trimmed to provide a good bearing surface. Then, with the head of the rail supported on the casting, molten zinc is poured around it and between the rail and the casting. The illustration also shows how the ends of the running rail adjacent to the crossing have been built up by electric welding.

## Window Guards to Protect Belts

In the shops of the Beaver Valley Traction Company, New Brighton, Pa., old window guards are used to protect exposed pulleys and belts. The accompanying illustration shows three of these guards fastened together and bolted to the base of the shaper. These make very substantial guards, and they are stronger and more satisfactory than wooden strips or wire screening which are used in many shops. Since the railway had the old guards the expense of using them in the protection of apparatus in the shop was small.



BELT PROTECTED BY OLD WINDOW GUARDS BOLTED TO FRAME OF MACHINE

# Cost of Erecting Overhead Work—V

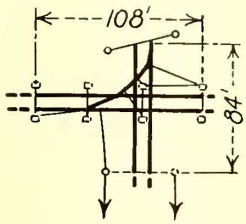
(From the records of a large Eastern company)

The following is the fifth group of a series of diagrams with figures to show the actual costs of erecting the various types of overhead construction described under conditions of light, ordinary and

congested traffic. The preceding groups of this series were published in the issues for Jan. 20, page 127; Jan. 27, page 173; Feb. 10, page 260; and Feb. 24, page 355.

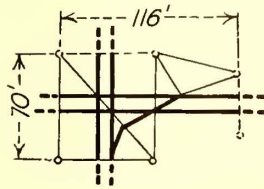
## LABOR REQUIRED FOR CONSTRUCTING VARIOUS TYPES OF OVERHEAD TROLLEY SPECIAL WORK UNDER VARIOUS TRAFFIC CONDITIONS

Double track crossing double track with single track connecting curve crossing two main line tracks, 90 deg.



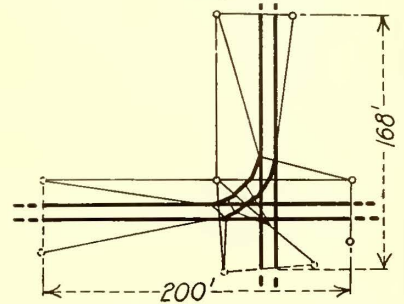
No.	LIGHT		ORDINARY		CONGESTED	
	Labor	Truck- ing	Labor	Truck- ing	Labor	Truck- ing
32*	\$27.23	\$19.80	\$32.67	\$23.76	\$43.56	\$31.68

Double track crossing double track with single track connecting curve crossing one main line track, angle 90 deg.



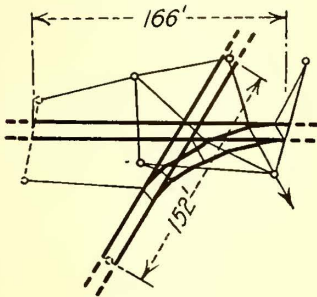
No.	LIGHT		ORDINARY		CONGESTED	
	Labor	Truck- ing	Labor	Truck- ing	Labor	Truck- ing
33*	\$27.23	\$19.80	\$32.67	\$23.76	\$39.93	\$29.04

Double track crossing double track with double track connecting curve, angle 90 deg.



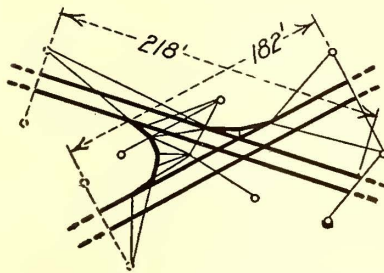
No.	LIGHT		ORDINARY		CONGESTED	
	Labor	Truck- ing	Labor	Truck- ing	Labor	Truck- ing
34*	\$36.30	\$26.40	\$45.38	\$33.00	\$54.45	\$39.60

Double track crossing double track with double track connecting curve, angle 60 deg.



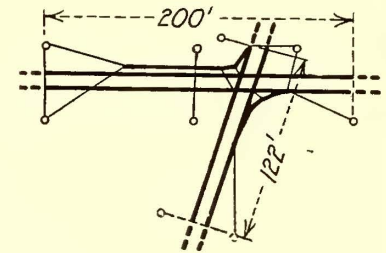
No.	LIGHT		ORDINARY		CONGESTED	
	Labor	Truck- ing	Labor	Truck- ing	Labor	Truck- ing
35*	\$36.30	\$26.40	\$45.38	\$33.00	\$54.45	\$39.60

Double track crossing double track with single track connecting curves in two adjacent corners, angle 45 deg.



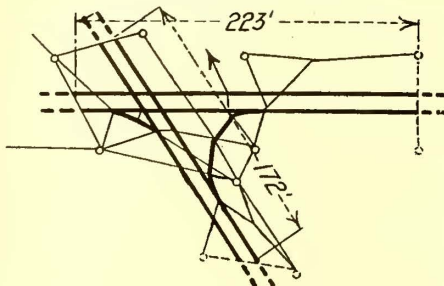
No.	LIGHT		ORDINARY		CONGESTED	
	Labor	Truck- ing	Labor	Truck- ing	Labor	Truck- ing
36*	\$36.30	\$26.40	\$45.38	\$33.00	\$54.45	\$39.60

Double track crossing double track with two single track connecting curves in opposite corners, angle 75 deg.



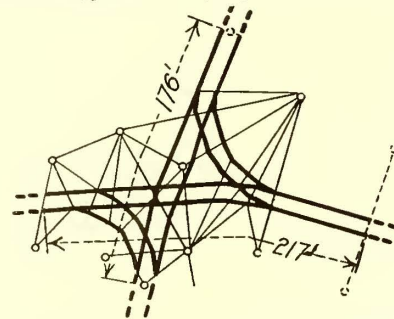
No.	LIGHT		ORDINARY		CONGESTED	
	Labor	Truck- ing	Labor	Truck- ing	Labor	Truck- ing
37*	\$32.67	\$23.76	\$41.75	\$30.36	\$50.82	\$36.96

Double track crossing double track with single track connecting curves in two adjacent corners, angle 60 deg.



No.	LIGHT		ORDINARY		CONGESTED	
	Labor	Trucking	Labor	Trucking	Labor	Trucking
38*	\$36.30	\$26.40	\$45.38	\$33.00	\$54.45	\$39.60

Double track crossing double track with double track connecting curves in opposite corners, angle 60 degrees.

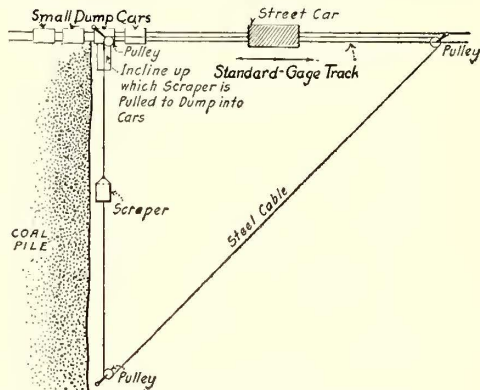


No.	LIGHT		ORDINARY		CONGESTED	
	Labor	Trucking	Labor	Trucking	Labor	Trucking
39*	\$54.45	\$39.60	\$72.60	\$52.80	\$81.68	\$59.40

\*Trucking includes cost of extra reel truck. None of the figures on this page includes cost of superintendence and engineering.

## Street Car Used as Tractor for Loading Coal

To transfer coal from the power station storage pile to the small dump cars which, in turn, carry it to the boiler room, the scheme shown in the accompanying illustration is used in Moline, Ill. A scraper, attached to a steel cable and drawn by an old street car, takes the coal from the pile, drags it up the incline and dumps it into the small cars which run on an adjoining track.



SCHEME FOR LOADING COAL WITH SCRAPER DRAWN BY OLD STREET CAR

The street car is then backed up, pulling the scraper back into the coal pile where it gets another load.

Another case in which a street car served the purpose of a tractor was described in the *ELECTRIC RAILWAY JOURNAL* for Jan. 6, 1917, page 44. In that instance a car hauled a scraper which was used in distributing ballast.

## Combustion in the Underfeed Stoker

Former Interborough Rapid Transit Company Engineer Discusses This Subject on the Witness Stand

An interesting discussion of the relative merits of overfeed and underfeed stokers was a feature of a recent hearing before the Massachusetts Gas and Electric Light Commission. Reginald J. S. Pigott, power superintendent of the Remington Arms Company, Bridgeport, Conn., in discussing the adequacy of the Boston Edison Company's generating station, said that the underfeed stokers improve the combustion greatly, and that in burning soft coal there are two distinct operations that are performed. One is the gasifying and burning of volatile matter in the coal, and the other is the combustion of the remaining fixed carbon. In the old overfeeders the coal was pushed upon a coking plate. At the top of the grates, where it came underneath a brick arch, where it received the heat from the more intensely heated portion of the oven, the combustion would distill the volatile matter, and that would float off in the coking arch mixed with a certain amount of air and would burn as a gas in the furnace. The coke which remained after the expulsion of the volatile matter would continue down at the grates and would burn in much the same manner that a hard coal burns.

The difficulty with that process, as explained by Mr. Pigott, is that there are practically three zones in the fire. The first zone is in front of the coking arch, which is usually under the front end of the boiler, and as a rule the mixture at this point is rich in gas and lean in air. The second is the middle section, where there is still some gas flowing over from this rich zone, and where the burning of fixed carbon on the grate begins

to take place at a rapid rate. Here the mixture of air and combustible is the best. The third section is at the lower end of the grate where the volatile matter is all gone and the coal burns to ash. In this section there is usually an excess of air. To obtain the best results from every heat unit in the coal you should have two conditions—a thorough mixture of the volatile matter with the air and the completion of combustion before the mixture of air and gases is chilled by being thrown against any duller surface which extinguishes the flame. In an overfeed stoker the long flame that may be seen going through the breeching means that each molecule of combustible goes a long way to meet its molecule of oxygen.

Mr. Pigott further testified that the process with the underfeed stoker is essentially different. In this stoker the green coal comes from underneath, and as it approaches the surface the air which is blown through from the cast-iron portions of the support mixes with the coal and passes through the interstices between the lumps of coal. As the green coal comes nearer and nearer the surface it is heated and distills off its gases. The gases and air pass toward the surface of the fire, and every lump of coal acts as a means of mixing them. Furthermore, the gas and air have to pass through the bed of burning coke on top, and have the finest chance in the world to complete their combustion at that point. The proof of this is shown by an examination of the length of flame, which with the underfeed stokers is noticeably shorter than with the overfeed. The net result is a gain in economy of 10 to 12 per cent in favor of the underfeed stoker. Also the temperature is apt to be higher because the combustion conditions are better than with the overfeed.

Another feature is the tremendous forcing capacity of the underfeed stoker. Mr. Pigott said that he had run a 520-hp. boiler at the Seventy-fourth Street station of the Interborough Rapid Transit Company, New York City, at 400 per cent rating for one hour without any distress of the boiler. The only reason for his stopping was that he did not have draft enough to take the furnace gases from the boiler. It is common practice not only with the Interborough, but with the New York Edison and other companies, to make use of this high forcing capacity, particularly for peak-load stations, with this advantage, that you install less equipment to carry your peak load. As an instance of this the installation of 30,000-kw. turbines at the Seventy-fourth Street station was cited. The original installation consisted of eight 520-hp. boilers and one 7500-kw. engine. In 1913 Mr. Pigott put in the first 30,000-kw. turbine, occupying the same floor space as the engine and driving it with the same eight boilers that were used for the engine.

## Pneumatic Switch Cylinder Oil

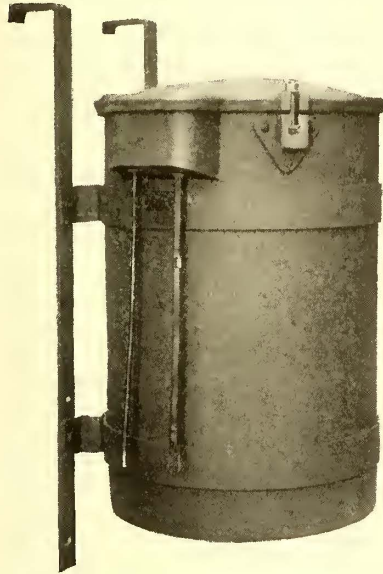
To insure the proper operation of pneumatically operated unit switch cylinders for railway control the Westinghouse Electric & Manufacturing Company has brought out a lubricant suitable for this purpose, known as HL oil. For general lubrication No. 2 grade is used. This oil is sufficiently liquid to permit its being used in an ordinary oil can. It is applied without disassembling the switch group, by injecting in the hole in the top of each cylinder casing about  $\frac{1}{4}$  oz. (two teaspoons) for every 10,000 miles traveled by the car under ordinary operating conditions. If this does not produce sufficient results the oil can be used more frequently but only the minimum amount that will give free operation should be used.

## Constant-Current Transformer Suitable for Pole-Mounting

Series street lighting systems require constant current, and constant-current transformers have always required a substation with control panels and an attendant. On that account it has been difficult to provide street lighting for smaller towns and villages where the revenue derived would not be sufficient to warrant such an installation. To meet this difficulty the General Electric Company, Schenectady, N. Y., has just perfected the

first automatic, pole-type, constant-current transformer for use at points distant from the power station.

This is known as the type R. O. transformer and does not require a substation or an attendant. The transformers possess current regulation as close, and through as wide a range as is given by the best station type of constant-current transformer. The current from full load to no load is maintained within 1 per cent of normal. This feature materially prolongs the



CONSTANT-CURRENT TRANSFORMER  
SUITABLE FOR POLE MOUNTING

life of Mazda lamps operating on the circuit which it controls. The efficiency is the same as for the station type transformer and the high power factor is high.

As shown by the illustration each transformer is mounted in a cylindrical steel tank with leads brought out through bushing holders similar to those of a standard potential transformer. This tank is filled with the same high grade insulating oil used in GE standard type-H transformers. All precautions have been taken to make the type R. O. transformers weather-proof and they should require no more attention than a constant potential pole-type transformer.

## Varied Functions of a Railway Chemical Laboratory

Extensive use of a well-equipped chemical laboratory is proving indispensable as a source of economy to the United Railways of St. Louis, Mo. This company, besides making tests to determine the grades of various purchased materials, also has facilities for manufacturing many products.

Tests are made to determine the heat value, amount of ash, moisture, etc., in samples of all the coal used, which sometimes exceeds 300 cars per month. About 20,000 gal. of lubricating oil are used monthly and 4000 gal. of gasoline. The color and viscosity of the oil are noted and its flash and fire points are determined. The vaporization points of samples of all the gasoline are found by a system of distillation which is replacing the gravity determination. The laboratory is equipped to make tests on steel rails and ties, and has a machine for testing cement.

The company manufactures its own paint removers, disinfectants, roofing cement, metal polishes and soft soap for cleaning cars. Paints are compounded and

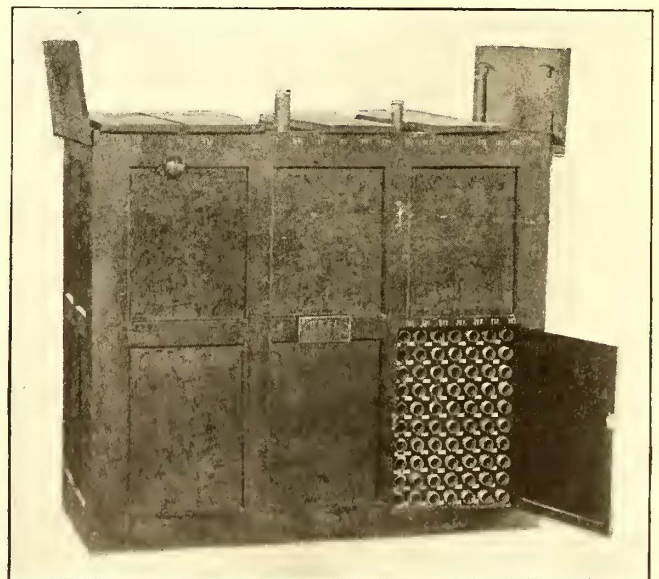
tested, and fire extinguishing liquids are prepared as well as cutting compounds for use in the shops and body polishes for autos and trucks. Used oils are cleaned chemically or mixed with coal oil for very rough work, and a great saving is made also by distilling old paint remover for reuse.

## Dynamite Reduces Cost of Excavating

Contractors and engineers, feeling the shortage of common labor for general excavation work, have been eager to adopt various labor-saving methods. Among these is the use of low grades of dynamite. A high-grade, quick-acting explosive, giving a shattering force necessary to blast rocks is not satisfactory for general use. Manufacturers have prepared a slow-acting, insensitive and low-freezing dynamite which is safely handled and can be used in conjunction with mechanical excavators to give more satisfactory results in earth work. It is used to blast obstructions ahead of steam shovels to secure a maximum efficiency of the machinery, and has assisted in plowing and in the use of hand tools on smaller projects. Its low-freezing quality enables the work to be prosecuted when necessary regardless of weather conditions. The method generally pursued has been to do the firing at a time when it will not interfere with other operations.

## Magazine for Filing Blueprints

A map-filing magazine which affords a handy method of filing blueprints, has been developed by E. C. Deal, vice-president North Carolina Public Service Company, Greensboro, N. C. It consists of several rows of tubes in which are filed the removable pasteboard tubes containing the maps. Each tube holds six maps, and the magazine, occupying much less space than that required for drawer files, contains a total of 1620. The tube protects the map from damage while it is removed for use and also when other maps are being selected. All maps are listed in an indexed book which gives their numbers corresponding to numbers on the filing case and the tubes where they are filed. The use of numbers instead of titles greatly facilitates the work of filing, especially if the maps or blueprints are numbered on the back of all four corners. The magazine has a lock for each part and all are operated simultaneously by a single key. It is not yet on the market but letters patent were secured.



MAP OR BLUEPRINT FILING MAGAZINE, SHOWING COMPACT  
ARRANGEMENT OF TUBES

# News of Electric Railways

Traffic and Transportation

Financial and Corporate

Personal Mention

Construction News

## Thompson Committee Reports

### Inquiry Into New York Commissions Results in Suggestions for One Commission of Seven Members

Senator George F. Thompson, chairman of the joint legislative committee that investigated the Public Service Commissions of New York, submitted the committee's report to the Legislature on March 5. It contained a severe arraignment of the commissions, declared that there had been no concentration of power or authority, and consequently no responsibility, and, because the commissions did not have sufficient jurisdiction to enforce their policies, they became careless of what they did. Senator Thompson's report reads:

"Impotent as a body, they [the commissions] apparently readily succumbed to their immediate surroundings and carried out no permanent policy, but the record of the investigation shows an almost uniform line of inconsistent conclusions. While not all of these have favored the corporation's contention, yet the neglect of enforcement has made it appear as though the whole line of conclusions recorded were without exception in the interest of the corporation sought to be regulated. This has produced a lack of confidence in the whole system, and consequently both commissions have been inefficient when measured by correct standards."

#### ONE COMMISSION SUGGESTED

To make the commission efficient it is suggested in the report that instead of two commissions divided by territorial lines there should be but one, to consist of seven members, six to be elected by the people and a chairman to be appointed by the Governor. The chairman and the two commissioners should sit in Albany to hear appeals from the decisions of the other four, who should have control over the various public utility corporations in fixed districts.

In the opinion of the committee the public interests would be better conserved by this method, and the cost of the work would be decreased \$400,000 a year, which is now paid for "needless salaries." In referring to the building of subways in New York City, the report said that this work should be under the control of high-class engineers and executives and that "the planning and building of rapid transit facilities has no natural place in any proper scheme of governmental supervision and regulation of public utilities." The report also says:

"The committee believes that somewhere a provision should be made whereby a trial of all issues involved in any investigation or proceeding had before the commission should be heard before an unbiased and competent tribunal and that ample and adequate power should be reposed both in the commissioners who shall investigate and in the tribunal that shall render final determinations. The committee further feels that the procedure in both instances should be definite, expeditious and available alike to all persons, corporations and municipalities affected. Without question a reorganization of the commissions must be had if these results are to be achieved."

In a preface Senator Thompson said:

"If the public can be informed sufficiently to insure itself against that class of public officials who blatantly espoused virtue in seeking office, and, being successful, used the office for personal satisfaction or ambition while hypocritically making a superficial record apparently proper, then this investigation will not have been in vain."

Senator Thompson, on March 6, gave out a special report, just completed by that committee, on the proposed West

Side improvement in New York City. The report attacks the contract which the city is now considering, on the ground that it gives the New York Central Railroad a monopoly of terminal facilities, and recommends the repeal of the law, passed in 1911, authorizing the Board of Estimate to conduct negotiations with the railroad for the removal of its tracks from grade and their electrification.

## Decision in Extension Case

### Missouri Supreme Court Declares Public Service Commission Has No Power to Order United Railways Extension

The Supreme Court of Missouri, in a decision rendered on Feb. 26, held that the State Public Service Commission had no authority to order the United Railways, St. Louis, to extend its tracks on streets on which it held no franchise, and ruled that two sections of the new city charter are inoperative and of no effect. These sections of the charter conferred upon the city the power to regulate its public utilities. The court held that when the Legislature enacted the Public Service Commission law, four years ago, giving to that body the power to regulate all public utilities in the State, the State assumed direction of them and city authorities were stripped of regulatory powers.

One section of the city charter, nullified by the Supreme Court's ruling, is Clause 13, Sec. 1, Art. 1, which states that the city shall have power to regulate the construction, maintenance, equipment, operation, service rates and charges of public utilities, and compel from time to time reasonable extensions of facilities for such service. The other section affected is Sec. 2 of Art. 19, which says: "The Board of Aldermen shall at all times have full power to be exercised by ordinance, over all public utilities now or hereafter existing in the city, and may regulate the charges for the use, service or product thereof and establish whatever requirements may be necessary to secure efficient use, service or products, and no terms or conditions contained in any grant shall limit or impair this power."

#### DECISION ON APPEAL

The decision by the Supreme Court was rendered on an appeal by the United Railways from an order of the State Public Service Commission, directing the railway to apply to the city within thirty days for franchises to extend its lines on new streets and into new territory.

The United Railways had first appealed to the Circuit Court in St. Louis which upheld the Public Service Commission. The case was then taken to the Supreme Court. The United Railways agreed to comply with all parts of the commission's order except the extensions, and the company's position was that the commission had no right under the Constitution to make such an order. This view was upheld by the Supreme Court, and in effect means that the Public Service Commission cannot compel the city to grant franchises to the United Railways on petition of the company, and cannot compel the company to seek franchises on new streets.

The city charter was not an issue in the case when it was before the Public Service Commission, but the conflict between the city charter and the public service act was raised in the United Railways' brief on appeal.

The Public Service Commission's order to the United Railways affected service, heating, ventilation, headway and extension of territory to accommodate better all sections of the city. An abstract of the conditions sought to be imposed by the order of the commission was published in the *ELECTRIC RAILWAY JOURNAL* of May 15, 1915, page 961.

## Track Department Rearranged

### Two Former Divisions of Brooklyn Rapid Transit Divided Into Three Sections

Important changes have been announced by C. L. Crabbs, engineer of way and structures, bearing upon the supervision of work in the surface track division of the Brooklyn (N. Y.) Rapid Transit Company by which the two former divisions, northern and southern, of the surface system have each been divided into three sections. Each of these sections will be directly in charge of a supervisor, who will report to a division roadmaster.

In the northern division F. Dunkak has been appointed roadmaster, with Supervisor A. J. Stratton of the bridge section, Supervisor R. C. Miller of the Maspeth section and Supervisor D. M. Connard of the Ridgewood section under him. In the southern division Roadmaster W. Dow will be in charge; with Supervisor E. H. Thomas of the Prospect section, Supervisor N. A. Parks of the Flatbush section, and Supervisor J. Dow of the Gravesend section under him. The line between the northern and southern divisions remains substantially as before, following Fulton Street and Jamaica Avenue.

In discussing these changes with a representative of the *ELECTRIC RAILWAY JOURNAL*, Mr. Crabbs said:

"In fixing these sections consideration was given first to area, with the intention of making the territory as compact as possible; second to track mileage included, and third to the amount of special work. Under these three general considerations, the sections are approximately equalized.

"The principal feature of this change consists in allotting certain territory to each of the assistants reporting to the roadmasters, instead of fixing initial responsibility upon the roadmasters themselves, as under previous conditions. The particular advantages gained are in the assignment of territory to each assistant or supervisor of an area small enough to permit him to become intimately acquainted with changing conditions without having his interest or attention distracted by other responsibilities and to permit closer supervision by him of any work under way in his territory. Other than by division of responsibility as indicated, this change does not interfere to any considerable extent with methods previously in use relating to plans for work, assignment of forces, handling of material and other divisional routine.

"It is believed that this change will result in increased efficiency, particularly in the direction of correlating our work and in anticipating maintenance requirements in the interest of ultimate economy, and it is hoped that all concerned will interest themselves in making the plan successful."

## New York Subway Extension Opened

The Interborough Rapid Transit Company began operation on March 3 as far as 219th Street of the White Plains Road extension of the West Farms branch of the first subway. Operation is by means of four-car trains composed of composite cars formerly operated on the underground portion of the first subway. A change is necessary to and from the White Plains Road trains at the 177th Street station on the West Farms line. The remaining stations north of 219th Street to the terminal at 241st Street will be placed in operation within the next few months, when an express service, which will not be attempted at first, will be begun. The White Plains Road extension is a three-track elevated railroad branching off from the West Farms division near 179th Street, crossing the Bronx River, extending over streets and private property along the east side of Bronx Park and thence by White Plains Road to 241st Street or Baychester Avenue near the northern city limits. The line is 14.6 track miles in length or the equivalent of 4.8 linear miles. There are eleven stations on the line. The line has cost to construct approximately \$2,750,000, exclusive of the equipment which is being installed by the operating company. The contracts for the construction of the extension were let early in 1914 and the line has required approximately three years to complete.

## Compensation Laws Legal

### Supreme Court Holds New York and Iowa Compensation Act Constitutional

The United States Supreme Court, on March 6, held constitutional the New York workmen's compensation law in an appeal brought by the New York Central Railroad against Sarah White. Justice Pitney in handing down the decision of the court held "that the New York law cannot be held to be arbitrary and unreasonable from the standpoint of national justice; that it applies only to disabling or fatal personal injuries received in the course of hazardous employment in gainful occupation, that is, where employer and employees, by mutual consent, engage in a common occupation, where in the nature of things there is a probability that the employee must lose his life through some accidental injury, leaving his widow or children deprived of their natural support, or that he may sustain an injury not mortal, but resulting in his total or partial disablement with corresponding impairment of earning capacity, that the loss of earning power arising in such a case is a loss arising out of the business, and an expense of the operation as truly as the cost of repairing broken machinery or any other expense ordinarily paid by the employer."

The workmen's compensation statute of Iowa, which provides for an industrial commission and other elaborate machinery for compelling compensation by employers of injured workmen, was also held constitutional by the Supreme Court on March 6.

The court has also held the Washington act to be constitutional. This measure is compulsory, and contains the radical feature of refusing to permit of compensation through funds established by insurance companies or cooperative associations of employers—there is a single State fund.

## Monorail Plan Offered to Chicago

A Chicago architect, Jarvis Hunt, has submitted to the Mayor a new plan of transportation for Chicago, including the use of an American monorail system which is claimed to be a "manifold improvement over the German type now in operation for more than fifteen years." The architect proposes to remove all east and west car lines from the surface in the loop district and put them into as many subways. He would leave the north and south lines on the surface. The elevated loop would be eliminated by running the north and south-bound trains into a subway at Chicago Avenue on the north and Sixteenth Street on the south. The Oak Park Elevated would be put under ground, and the Metropolitan Elevated run into a subway at Halsted Street. His plans and maps include the construction of a great many rapid transit lines, nearly all of which are to be of the monorail type. His estimate of the total cost of his "complete system of subway and rapid transit" is placed at \$113,763,000, based upon the assumption that a monorail car would be used. He adds, "In case elevated railway is used instead of a monorail system, add \$84,000,000 to the above estimate." Just what these figures include is not clearly set forth.

## "Thirty-Twenty" Year Franchise

The local transportation committee of the City Council of Chicago, Ill., approved on March 6 a bill providing for a thirty-year franchise for the surface and elevated lines with a provision that it is to be extended twenty years in case the city does not take over the property at the end of the thirty-year period. The bill is to be recommended to the City Council, but before final action is asked, a public hearing will be held. The bill in its present form is not satisfactory to the railways, since it contains no provision for any definite per cent of amortization before the end of the thirty-year period. This is considered essential to the financing of the work. The matter is being pushed in order that it may be placed on the State legislative calendar for disposal during the present session.

## Minneapolis Seeks Expert

Messrs. Maltbie, Wilcox, Bemis and Allison Suggested as Experts for the City

Milo Roy Maltbie, New York; Delos F. Wilcox, New York; Prof. E. W. Bemis, Chicago, and James E. Allison, St. Louis, are the names that have been recommended by the central franchise committee to advise the street railway committee of the Council of Minneapolis, Minn., in connection with the franchise negotiations that are pending with the Minneapolis Street Railway. Chairman Heywood, of the committee, has accordingly been instructed to correspond with the men mentioned.

The names were presented by Stiles P. Jones, executive secretary of the central franchise committee, who will collaborate with City Attorney Gould in drawing up a franchise for the consideration of the Council. Mr. Jones is reported to have said:

"This task calls for the services of one who has had thorough training in the economic phases of valuation-making, and who is familiar with appraisal methods, accounting, the practice of the state commissions, and decisions of the courts, rather than one with knowledge only of the engineering side of the subject. It is important that the man chosen be one whose record and professional associations indicate that he can approach the subject without prejudice with the sole purpose of presenting the facts with impartiality.

"The so-called 'cost of service' form of franchise which City Attorney Gould and I will prepare admits of two provisions as regards rate of fare and profits. One is predicated on a fixed fare with a division of profits between the company and the municipality. This is in force in Kansas City and Chicago. The other plan assumes a fixed rate of income to the company with the rate of fare fluctuating, dependent upon the accumulation of surplus and the actual cost of operation. Cleveland has the latter form. Both are planned to eliminate the speculative features of the old forms of franchise and to protect both the company and the city. Under the second plan, fares are reduced when the surplus exceeds the minimum fixed in the franchise, and raised when the surplus falls below this amount. Des Moines has a street railway franchise which is somewhat of a modified form of these two. Oakland, Toledo, Cincinnati, St. Louis and Philadelphia have this form of franchise under consideration at the present time."

## Council Accepts Compromise

Cleveland Body Agrees to the Advance of 1 Cent a Mile in Cleveland Railway Operating Allowance

At a recent meeting the City Council of Cleveland, Ohio, accepted the compromise agreement arranged by its street railway committee and Fielder Sanders, street railway commissioner of the city, to take care of the deficits of the Cleveland Railway and increase the operating of the company allowance 1 cent per car-mile. Both Commissioner Sanders and Councilman Reynolds of the street railway committee told Council that there was no immediate danger of an increase in the rate of fare, as a result of the arrangement made.

Mr. Sanders' report shows that the expenses of his office for 1916 were \$41,863. Of this, \$3,743 was paid for what he terms secret service. He said that this expenditure was made for the betterment of the railway service.

Mr. Sanders recommended the purchase of 100 all-steel cars and 100 trail cars and suggested as a means of relieving congestion that stores, factories and offices close at different hours. He said that, under trying circumstances, the company had furnished much better service than was provided in most other cities and at a rate of fare 40 per cent lower. He announced that fifty new trail cars would be ready for use on July 1.

Mr. Sanders has announced that he will ask Council to provide for the payment of \$40,000 by the Cleveland Railway toward the construction of public comfort stations at the entrances to the subway approaches to the new Superior-Detroit bridge. The county will pay the remainder.

The operating report of the Cleveland Railway for January showed the operating revenue to be \$831,925, while

the allowances for operating and maintenance, including the \$100,000 paid from the interest fund to reduce the operating deficit, amounted to \$512,747. The expenses were \$450,172, which indicates that the operating deficit would have been still further increased in January, had not the extra amount for allowances been received. As it was, the operating deficit was reduced \$62,575.27, instead of \$100,000, as was expected at first. The operating deficit balance is now \$132,500. Although \$10,000 was paid on the overdraft of \$268,918 in January, the additional overdraft for the month permitted a credit of only \$594. The surplus to go to the interest fund for the month was \$2,871. The total number of passengers carried in January was 32,575,104, an increase of 12.97 per cent over the same month last year. Transfer sales yielded \$72,763.

## Strike Settlement Fails

Amalgamated Association Insists on Unreasonable Terms at Springfield, Mo.

The attempt to negotiate a settlement of the strike of the employees of the Springfield (Mo.) Traction Company, in effect since last fall, has failed. The effort at an amicable adjustment of the matter had its beginning in a visit made on Feb. 3 by W. D. Mahon, president of the Amalgamated Association of Street & Electric Railway Employees, to Springfield. At that time both E. N. Sanderson, president of the Federal Light & Traction Company, and J. J. Bodell, a director of the Federal Light & Traction Company, were present in the city. Several conferences were held.

### MR. MAHON'S PROPOSAL

Mr. Mahon's proposal included a demand for the discharge of all of the motormen and conductors, shop and carhouse men now in the service of the company and the reinstatement of every man who was on strike. He also demanded an increase in wages and a closed shop. These demands were made notwithstanding that the company has been operating all of its cars for several months on the regular schedule with the exception of one car on a stub line, and has had in its employ for a long time seventy-five residents of Springfield, trained in the service of the company and to whom the company had definitely promised permanent positions. In view of its pledge to these men it was obviously impossible for the company to accede to the demand for the replacement of these men. Moreover, the company was opposed to reinstating all of the men who went out on strike on account of their conduct toward passengers and patrons since the strike. As for the demand of an increase in wages the company's finances would not permit this, due largely to the strike.

### COUNTER PROPOSAL OF THE COMPANY

As a counter proposition the company offered to take back as many men as their record showed deserved reinstatement and to permit these men to retain their membership in the union should they so desire. In addition it agreed to place on the waiting list all other men who deserved reinstatement. This offer was refused and the negotiations were broken off on Feb. 8. When officials of the company complained to Mr. Mahon in regard to the violence in which ex-employees had participated, he is said to have remarked that there were a great many things which were worse than violence, and that one of these was "subdued humanity."

The acts of violence stopped during the period of the negotiations, but on the night of the day immediately following the end of these negotiations some strikers, strike sympathizers or their agents, placed dynamite on the Nichols Street track just outside of the city limits. This dynamite was exploded by the first car out and the car was almost completely destroyed. A labor paper contended that this act had been committed by the company's own employees, and accused the men on the car of perpetrating the dynamiting, claiming they were not on the car when the explosion occurred. As a matter of fact, both the conductor and the motorman were riding on the front platform, and the conductor on the car was cut by flying glass and his head and neck had to be dressed by a physician. Since this explosion there has been no serious violence, except the attacks on cars in outlying sections.



**Bill Against One-Man Cars.**—Representative Charles F. Franz has introduced in the Illinois House a bill compelling street railways in cities of 10,000 population or more to provide for each car a crew consisting of a motorman and a conductor.

**Toronto to Vote on Municipal Ownership.**—The Board of Control of Toronto, Ont., has decided to submit the question of the city taking over the Toronto Railway to a vote on Jan. 1, at the time of the civic election. The franchise of the company has until 1921 to run.

**\$13,000 Loss in Carhouse Fire.**—One double-truck car, valued at \$7,000, was destroyed in the fire which damaged the carhouse of the Jamestown (N. Y.) Street Railway, on Feb. 25. Several other cars were damaged and the total loss is estimated at approximately \$13,000, covered by insurance.

**Union Traction Men Get Increase.**—The Union Traction Company, Anderson, Ind., has voluntarily increased the wages of its interurban conductors and motormen by 2 cents an hour, effective on April 1. The advance affects 300 men. The present wage scale is from 22 to 32 cents an hour and will now be increased from 24 to 34 cents.

**Sweeping Abolishment of Grade Crossings Urged.**—A bill has been introduced in the New York State Senate, which provides for the issuing of bonds to the amount of not to exceed \$25,000,000 for the purpose of eliminating the grade crossings in the State, and providing for a submission of the bill to the people to be voted upon at the general election to be held in the year 1917.

**New Los Angeles Elevated Terminal Opened.**—The new elevated structure of the Pacific Electric Railway back of the station at Sixth and Main streets, Los Angeles, Cal., has been placed in operation and all trains which used the surface tracks in the Los Angeles Street terminal now operate on the new elevated. The only exceptions to this rule are the newspaper trains that carry papers to the outlying sections of southern California.

**Additional Authority Sought for Commission.**—Additional legislation which would increase the authority of the State Railroad Commission and empower it to regulate rates, rules, services and practices of the railways of the State will be asked of the next Legislature by the Railroad Commission of Kentucky. This is the effect of statements made in the annual report of the commission to the Governor. The California law is cited as a desirable model.

**West Side Project Opposed.**—The New York Central Railroad's proposed west side contract has been recommitted to the committee on port and terminal facilities of the Board of Estimate of New York City after again being assailed by many critics. On March 6 representatives of the Public Service Commission for the First District conferred with the committee on port and terminal facilities with respect to the improvement, which involves an important electrification project.

**Report of Hearings on Tentative Valuations.**—The Presidents' Conference Committee has issued a 320-page volume giving the full report of the hearings on Jan. 29-Feb. 3, 1917, before the Interstate Commerce Commission in the matter of the tentative valuations of the Atlanta, Birmingham & Atlantic Railroad and the Texas Midland Railroad. The report, which brings out in detail the objections of the carriers to various parts of the valuation procedure may be obtained from H. C. Phillips, general secretary, Commercial Trust Building, Philadelphia, Pa.

**Service of Electrical News for Dailies.**—To accommodate many newspapers which have requested the Society for Electrical Development, Inc., New York, N. Y., to furnish illustrations of new inventions and electrical progress the society has decided to issue a regular news-pictorial service. The subjects covered will be of current interest and will be authoritative. A proof sheet of the first issue has already been sent to the newspapers. The society will send out similar sheets hereafter cast in half-page mats once a month. The service will be supplied free of charge to one newspaper in a city.

**No Amendments to Valentine Anti-Trust Law.**—Senator Hugh R. Gilmore, having learned that his proposed amendments to the Valentine anti-trust law will have an effect which he had not foreseen, has decided not to push it. This

means that it will be allowed to die, since the Legislature of Ohio will adjourn very soon and there will be no time to reconstruct the bill and remove the objections. Had the bill been written in such a way as to have only the effect desired by its author, objectionable features would have been removed from the Valentine law and at the same time it would have accomplished its legitimate purpose.

**Arbitration of Labor Trouble at Hamilton.**—The Ohio Electric Railway, operating the Cincinnati, Dayton & Toledo Traction Company, Hamilton, Ohio, has selected Charles S. Thatcher, a member of its board of directors, as its arbitrator in the labor disagreement with the motormen and conductors on the local line at Hamilton, while the men have selected City Solicitor Harry J. Koehler, Jr., to represent them. They are to agree upon a third member within a period of five days. The final settlement, as noted in the ELECTRIC RAILWAY JOURNAL of Feb. 17, page 317, is to be subject to approval by the court having jurisdiction over the property.

## Programs of Association Meetings

### New England Street Railway Club

The seventeenth annual meeting and dinner of the New England Street Railway Club will be held at the Hotel Somers, Boston, Mass., on March 22, 1917. The annual meeting will be held at 3 p. m., the reception at 6 p. m., and the dinner at 6.30 p. m. Officers will be elected, reports for the past year heard, and other routine business transacted at the annual meeting. The speakers at the dinner will be Samuel W. McCall, Governor of the Commonwealth of Massachusetts; James M. Curley, Mayor of the city of Boston; E. K. Hall, vice-president of the Electric Bond & Share Company, New York, N. Y., and Lucius E. Wilson, manager of the American City Bureau, New York. The toastmaster will be Arthur A. Ballantine, Boston.

The tickets to the dinner will be \$5 each. The seats and tables will be assigned on the principle of "first come, first served." No refunds will be made on tickets unless returned to the secretary on or before March 19.

### Pacific Claim Agents' Association

At the meeting of the executive committee of the Pacific Claim Agents' Association, held in the office of B. F. Boynton, claim agent of the Portland Railway, Light & Power Company, Portland, Ore., on Feb. 19, referred to briefly in the ELECTRIC RAILWAY JOURNAL of March 3, page 406, there were present: H. K. Relf (president), claim agent of the Spokane, Portland & Seattle Railway, Portland, Ore.; Thomas G. Aston, claim agent of the Washington Water Power Company, Spokane, Wash.; F. M. Hamilton, claim agent of the Puget Sound Traction, Light & Power Company, Seattle, Wash.; A. M. Lee, claim agent of the Northern Pacific Railway, Seattle, Wash.; W. H. Moore, claim agent of the San Diego (Cal.) Electric Railway; H. G. Winsor, claim agent of the Tacoma Railway & Power Company, Tacoma, Wash.; and B. F. Boynton, claim agent of the Portland Railway, Light & Power Company, Portland, Ore.

At this meeting it was decided to hold the next convention in Portland on July 18, 19 and 20. The subjects to be discussed and papers to be written for that meeting comprise the following:

"Prevention of Grade Crossing Accidents," "Automobile Accidents in Cities and Towns, Causes and Means to Their Prevention," "Investigation and Adjustment of Claims Arising from Automobile Accidents," "The Value of Courtesy," "What Is Being Accomplished in Accident Prevention," "Some Methods of Interesting the General Public Along Safety Lines," "What Public Service Corporations Can Do to Maintain the Confidence of the Public, and the Effect on Claim Departments," "Psychology of Claim Adjustments."

It was voted to ask R. G. Dilworth, attorney, San Diego, Cal., and C. H. Winders, attorney, Seattle, Wash., to prepare a paper for the next convention, the subject of which is to be selected later.

This will be the ninth annual convention of the association, and the committee expects it to be the most interesting one that has been held by the association.

# Financial and Corporate

## Annual Report

### Detroit United Railway

The comparative consolidated income statement of the Detroit (Mich.) United Railway and its subsidiary companies for the years ended Dec. 31, 1915 and 1916, follows:

	1916		1915	
	Amount	Per Cent	Amount	Per Cent
Gross earnings from operation:				
Passenger .....	\$15,069,980	93.9	\$12,381,829	93.6
Express .....	907,772	5.7	800,527	6.0
Mail .....	11,828	0.1	12,162	0.1
Special car .....	47,089	0.3	41,033	0.3
Total .....	\$16,036,669	100.0	\$13,235,551	100.0
Operating expenses .....	11,215,802	69.9	9,331,804	70.5
Net earnings from operation ..	\$4,820,867	30.1	\$3,903,747	29.5
Other income .....	351,334	2.1	286,815	2.2
Gross income .....	\$5,172,201	32.2	\$4,190,562	31.7
Interest on funded and floating debts and taxes .....	2,291,409	14.3	2,229,801	16.9
Net income for the year before providing for depreciation or contingencies .....	\$2,880,792	17.9	\$1,960,761	14.8
Amount credited to depreciation reserve .....	\$800,000	4.9	\$750,000	5.7
Dividends paid .....	843,750	5.3	750,000	5.7
Total .....	\$1,643,750	10.2	\$1,500,000	11.4
Balance transferred to surplus account .....	\$1,237,042	7.7	\$460,761	3.4

During the last calendar year the Detroit United Railway system made big advances. The gross earnings from operation increased \$2,801,118, or 21.1 per cent, as compared to those of the preceding year. Most of this gain came from the increase of \$2,688,151, or 21.7 per cent, in passenger earnings and \$107,245, or 13.4 per cent, in express earnings. Mail earnings showed a falling off.

The operating expenses rose \$1,883,998, or 20.2 per cent, so that the net earnings from operation gained \$917,120, or 23.5 per cent. Other income increased \$64,519, or 22.5 per cent, while interest and taxes rose only \$61,608, or 2.7 per cent. The net result, therefore, before providing for depreciation and dividends, was a gain of \$920,031, or 46.9 per cent. After paying higher dividends and crediting a larger amount to the depreciation reserve, \$1,237,042 was transferred to the surplus account as compared to \$460,761 the year before.

In 1916 there was spent for additions to the property the sum of \$3,762,271, of which \$3,721,998 was spent on the properties in Michigan and Ohio. In this sum were such items as right of way, \$126,110; other land, \$323,528; paving, \$249,810; shops and car houses, \$418,887; passenger and combination cars, \$669,049; electric equipment of cars, \$233,251, and rails, fastenings and joints, \$176,740. During the year the company made large expenditures for the maintenance of its tracks, rolling stock and other properties. On Jan. 1, 1916, the depreciation reserve stood credited with \$3,476,427. This reserve was credited in 1916 with \$19,200 charged against operating expenses and \$800,000 out of income, leaving a balance on Dec. 31, 1916, of \$4,295,627.

During 1916 a total of 35.52 miles of new tracks was added, making the total mileage 874.19 miles. The increase in transfer passengers was 21.75 per cent and in transfer and free passengers 20.5 per cent, while the car mileage rose 16.5 per cent. Detailed passenger and mileage statistics for the last two years follow:

	1916	1915
Revenue passengers .....	335,599,802	275,576,409
Transfer passengers .....	119,899,335	98,541,214
Employee passengers .....	8,670,561	8,076,135
Total passengers .....	464,169,698	382,193,758
Receipts per revenue passenger .....	\$0.0450	\$0.0449
Receipts per passenger .....	0.0325	0.0324
Car mileage .....	54,008,437	46,327,634
Gross earnings per car mile .....	\$0.2970	\$0.2857
Expenses per car mile .....	0.2077	0.2014
Net earnings per car mile .....	0.0893	0.0843

## Hearing on Boston Elevated

### Financial Condition of Boston Elevated Railway Considered by Legislative Committee

Hearings were begun on Feb. 28 at Boston, Mass., by the legislative committee on metropolitan affairs upon the report of the special commission relative to the financial situation of the Boston Elevated Railway, which was abstracted in the ELECTRIC RAILWAY JOURNAL of Feb. 10, page 250. Lieutenant-Governor Coolidge, chairman of the special commission, stated that the investigation showed that the company needed a larger income and that if there had been an opportunity to make a unit of fare of 5½ cents or thereabouts, the commission might have recommended it. The speaker was of the opinion that a 6-cent fare would yield more revenue than the requirements call for at present, but said that the transportation requirements of metropolitan Boston demanded the investment of more money in facilities.

Chairman George F. Swain, of the Boston Transit Commission, a member of the special commission on the Boston Elevated Railway investigation, emphasized the necessity of additional capital for furnishing the needed facilities of rapid transit in the Boston district. He stated that there was no question of stock inflation, and that the company had always enjoyed the reputation of being well managed.

At a second hearing, on March 1, Chairman Swain, of the transit commission, continued his explanation of the special commission's report on the company's financial needs. He pointed out that if the State purchased the Cambridge subway on a 4.5 per cent basis there would be a yearly saving to the company of about 2.5 per cent on the investment, which would mean that the company would by this amount be better able to give the public needed facilities. The purchase of the subway appeared distinctly in the public interest, without any reference to the present urgency of the case. If future subway rentals could be graduated, with payments increasing by steps with the growth of population and with time, the whole situation ought to become considerably easier.

#### COMMISSIONER EASTMAN EMPHASIZES PUBLIC NEED

Joseph B. Eastman, of the Massachusetts Public Service Commission, pointed out that a transportation company like the Boston Elevated Railway, which is serving a large and growing community needed a steady supply of capital in order adequately to serve the public. On an average the increase in patronage was 10,000,000 annually. New capital must be provided continually or the community would suffer. More than \$3,000,000 had already been borrowed by the company on short-term notes. New stock and bonds could not be issued at present. The Public Service Commission could order the company to furnish additional service, but such service could not be provided without capital. Mr. Eastman explained a bill drafted by the special commission to meet the company's needs. (Appendix to Senate 344.)

Mr. Eastman regarded the purchase of the Cambridge subway as a benefit to the State which should be taken advantage of, even if the company were paying 10 per cent dividends. The scheme of having a metropolitan district take over the existing subways was abandoned on account of the unwillingness of the city of Boston to sell its present subway titles. The State was in a better position to finance the Cambridge subway than the city of Cambridge. Such a purchase would give the public the last remaining link in the subway system at cost. No burden would be placed upon the State, as the terms of the subway lease would meet all costs. If the company should continue to own this subway, the cost would be a continuing burden upon the public. No private corporation ever attempted to retire from its capitalization the cost of any such structure.

In reply to questions from Representative Lomasney, of Boston, Mr. Eastman said that he was not interested for the Elevated stockholders, but that he was asking for legislation to secure service for the public; that the community was facing a situation in which the company could not go into the market and get money. It was not a matter of charity. The desire was to secure good service for the public. The hearing was adjourned to March 9.

### I. R. T. Earnings Increase

The directors of the Interborough Rapid Transit Company have declared the regular quarterly dividend of 5 per cent upon the stock of the company, a dividend of 1¼ per cent on the stock of the Subway Realty Company, and a dividend of 1½ per cent on the preferred stock of the Interborough Consolidated Corporation. In recommending the dividends President Shonts said that the earnings of the Interborough Rapid Transit Company for the three months ending March 31 (February partly and March wholly estimated) show a gross operating revenue of \$10,671,000, an increase of \$1,045,221 over 1916. After the payment of all expenses, taxes, interest and other fixed charges there will remain a net corporate income of \$2,753,000, an increase of \$210,549 over the same period last year. For the nine months ending March 31 the gross operating revenue will be \$29,694,024, an increase of \$3,235,210, and after all of the operating expenses and other charges are paid, except those growing out of the strike, there will remain a net corporate income of \$6,973,832, an increase of \$532,228.

### Assessments in Wisconsin

The following is the preliminary valuation of the property of street railways in Wisconsin, and light, heat and power companies operated in connection therewith, as made by the tax commission and entered upon the assessment roll as constituting the assessment for the year 1917, subject to correction in the manner provided by law:

Name of Company	Preliminary Assessment
Ashland Light, Power & Street Railway.....	\$575,000
Bay Shore Street Railway.....	16,000
Beloit Traction Company.....	175,000
Chicago & Milwaukee Electric Railway.....	200,000
Duluth Street Railway.....	1,100,000
Eastern Wisconsin Railway & Light Company.....	1,600,000
Grand Rapids Street Railroad Company.....	100,000
Ironwood & Bessemer Railway & Light Company.....	1,300,000
Janesville Traction Company.....	85,000
La Crosse & Onalaska Street Railway.....	25,000
Madison Railways (formerly Southern Wisconsin Railway).....	950,000
Manitowoc & Northern Traction Company.....	110,000
Menominee & Marinette Light & Traction Company.....	300,000
Milwaukee Electric Railway & Light Company.....	31,250,000
Milwaukee Light, Heat & Traction Company.....	8,750,000
Milwaukee Northern Railway.....	1,950,000
Rockford & Interurban Railway.....	350,000
Sheboygan Railway & Electric Company.....	1,350,000
Waupaca Electric Light & Railway Company.....	90,000
Wisconsin Electric Railway.....	625,000
Wisconsin Gas & Electric Company.....	4,000,000
Wisconsin Interurban Street Railway (formerly Chicago & Wisconsin Valley Railway).....	20,000
Wisconsin-Minnesota Light & Power Company.....	9,000,000
Wisconsin Railway, Light & Power Company.....	1,150,000
Wisconsin Public Service Company.....	2,700,000
Wisconsin Traction, Light, Heat & Power Company.....	2,300,000
Wisconsin Valley Electric Company (formerly Wausau Street Railroad Company and Merrill Railway & Lighting Company).....	1,575,000
<b>Total</b> .....	<b>\$71,346,000</b>

### Sinking Fund in Default

E. H. Rollins & Sons, Boston, Mass., have addressed the holders of the first mortgage bonds of the Petaluma & Santa Rosa Railway, Petaluma, Cal., calling their attention to the fact that the sinking fund provisions of the trust deed are now in default to the extent of \$44,100, which will be increased by \$66,150 on March 1 next. The circular says:

"We believe that by waiving the sinking fund the first mortgage bondholders would in no way jeopardize the principal of their bonds because of the large margin of security over the amount of the bond issue and of net earnings over bond interest. Furthermore, we are confident that if such action should result, as we anticipate, in the discharge of the second mortgage, it would be the indirect means of greatly enhancing the value of the first mortgage bonds, and would, therefore, be decidedly to the advantage of the first mortgage bondholders.

"In the meantime we urge you not to sell your bonds at the present prices, as we feel that if the action suggested is taken by the first mortgage bondholders, the result will be a substantial increase in the selling value of their bonds."

The circular recommends that the bonds be deposited with

the Mercantile Trust Company, San Francisco, Cal., under a plan which looks to the cancellation of the \$250,000 of second mortgage bonds, on condition that the sinking fund payments on the first mortgage bonds be waived.

### New Holding Company Formed

United National Utilities Company to Control National Properties Company and Jersey Central Traction Company

On March 1 the United National Utilities Company, a Delaware corporation, a charter for which was recently taken out, purchased the \$2,500,000 of outstanding common stock of National Properties Company, and the \$1,538,000 of outstanding capital common stock of the Jersey Central Traction Company and affiliated lighting companies. At the same time the common stock of the National Gas, Electric Light & Power Company, owning and controlling gas and electric light plants in ten cities, was purchased by the American Railways. The following directors have been elected for the United National Utilities Company: Van Horn Ely, Alexander C. Robinson, T. W. Wilson, E. Clarence Miller, John Gribbel, L. L. Dunham, William C. Sproul, Henry Almstedt, Charles R. Miller, Walter H. Lippincott, J. T. Lynn and George A. Huhn, Jr. The officers follow: Van Horn Ely, president; William C. Sproul, vice-president; Walter W. Perkins, secretary and treasurer; and Henry P. Carr, assistant secretary-treasurer.

The National Properties Company controls the American Railways, Philadelphia, Pa. The plan for perfecting this merger was referred to in the ELECTRIC RAILWAY JOURNAL of Feb. 10, page 268.

### Decision in Scrip Case

Georgia Commission Without Power to Authorize Issuance of Scrip by the Georgia Railway & Power Company

The petition of the Georgia Railway & Power Company before the Georgia Railroad Commission for authority to issue scrip as evidence of its intent to pay accumulated dividends on its first preferred 6 per cent cumulative stock was denied on Feb. 28 by the commission on the ground that the proposed issuance of scrip is not one of the necessities under which the law permits the commission to authorize such notes, and that therefore it is without authority to approve them. Inasmuch as the dividends, amounting to \$480,000, were declared by the company's board of directors in December, and were ordered to be paid \$60,000 in cash and \$30,000 each six months thereafter, it appears that the payments will be made as planned, but without a scrip issue in advance, unless the directors decide to anticipate payments before they are due.

The commission holds that under the law the power of the commission to approve the issuance of notes is limited, and that it can approve the issuance of notes or other evidences of debt only when necessary and for such amounts as are required for the acquisition of new property and the construction and equipment of power plants, etc., and the completion, extension or improvement of facilities or property, or for the improvement or maintenance of service, or for the discharge or refunding of obligations. The commission's position is that there is no necessity for the issuance of scrip to pay the dividends, and that therefore it is without power to authorize that issuance. The commission does not take issue with the claim of the company that a sufficient surplus has been earned to justify the declaration of the dividend, but does state that it hesitates to give its approval to a plan which would convert "corporate profits into long term corporate debts."

The first installment of the dividends already has been paid, \$60,000 in cash. The commission's approval is not necessary for the actual payment of the others, and as previously stated they will be paid at the rate of \$30,000 each six months, without scrip, unless the directors anticipate them and pay them even earlier than was intended.

**American Cities Company, New York, N. Y.**—At the annual meeting of the American Cities Company, C. K. Beekman and H. J. Prichard, both of New York, were elected to fill vacancies. No other changes were made in the directorate.

**Columbus Railway, Power & Light Company, Columbus, Ohio.**—The Ohio Utilities Commission has authorized the Columbus Railway, Power & Light Company to issue \$508,200 Series A preferred stock at par and \$1,846,000 of its extension and refunding sinking fund 5 per cent mortgage bonds at 90. The proceeds will be used in paying for improvements already made and to build new power houses, as noted in the *ELECTRIC RAILWAY JOURNAL* of Feb. 24, page 364.

**Commonwealth Power, Railway & Light Company, Grand Rapids, Mich.**—The Commonwealth Power, Railway & Light Company is reported to have purchased the property of the Stearns Lighting & Power Company, Ludington, Mich., which furnishes light and power not only in Ludington, but also in Hart, Pentwater, Scottville, Shelby, Mears, New Era and Custer. The Stearns Lighting & Power Company has \$50,000 of capital stock and \$100,000 of bonds outstanding.

**Illinois Northern Utilities Company, Dixon, Ill.**—The Illinois Northern Utilities Company has asked the Illinois Public Utilities Commission for permission to issue \$166,000 of first and refunding mortgage bonds.

**Los Angeles (Cal.) Railway Corporation.**—The City Railway has secured permission from the California Railroad Commission to issue \$303,000 of bonds to the Los Angeles Railway Corporation in payment of moneys advanced and invested in the plant of the City Railway. The City Railway was organized several years ago to finance new construction and extensions of the Los Angeles Railway Corporation, which about that time took over the property of the Los Angeles Railway, Los Angeles Traction Company, Los Angeles Interurban Railway and portions of the Los Angeles & Redondo Railway and Pacific Electric Railway. The City Railway's property is operated by the Los Angeles Railway Corporation under lease.

**Orleans-Kenner Electric Railway, New Orleans, La.**—F. H. Joubert, general manager of the Public Belt Railroad of New Orleans, is quoted as authority for the statement that nothing further will be done at this time looking toward the purchase of the Orleans-Kenner Electric Railway by the city with a view to making it an annex to the public belt system.

**Philadelphia Company, Pittsburgh, Pa.**—The banking firms of Ladenburg, Thalmann & Company, Hayden, Stone & Company, Brown Brothers & Company, Montgomery, Clothier & Tyler, and Jerome, Hill & Company have proposed to holders of the first mortgage bonds of the Philadelphia Company a sinking fund and redemption plan. The proposal calls for a sinking fund of 2 per cent a year for the first mortgage bonds, beginning on March 1, 1918, with the callable price of the bonds 107½ and interest. A similar sinking fund beginning May 1, 1918, is provided for the consolidated mortgage bonds with a callable price of 102½ and interest. Deposits of bonds in acceptance of the plan have been called for.

**Richmond Light & Railroad Company, Richmond, S. I., N. Y.**—The hearing on the application of the Richmond Light & Railroad Company and the Staten Island Midland Railway to the Public Service Commission for the First District of New York for permission to consolidate under the name of the Staten Island Light & Traction Company was postponed by the commission from March 5 to March 12. A brief statement of the proposed terms of the consolidation was published in the *ELECTRIC RAILWAY JOURNAL* for March 2, page 407.

**Tri-City Railway & Light Company, Davenport, Iowa.**—B. J. Denman, vice-president and general manager of the Tri-City Railway & Light Company, has announced that the capital stock of the Tri-City Railway of Illinois, the Peoples' Power Company of Moline and the Moline, Rock Island & Eastern Traction Company, three subsidiary corporations, will be increased by a total of \$595,000 to cover the cost of recent improvements. The Tri-City Railway stock is to be increased by \$300,000, making the total \$3,300,000. The Peoples' Power Company stock is to be increased by \$275,-

000 to \$3,275,000 and the Moline, Rock Island & Eastern Traction Company stock is to be increased by \$20,000 to \$195,000. The new issues will all be common stock.

**Underground Electric Railways, London, England.**—The Underground Electric Railways has announced that its revenue will enable it to pay the full interest to Dec. 31, 1916, on its 6 per cent first cumulative income debenture stock and to pay 2 per cent, free of income tax, on its 6 per cent income bonds of 1948 for the half year ended Dec. 31, 1916, making 5 per cent free of income tax for the year 1916 with a carry forward of about £30,000. The reduction of 1 per cent in the payment on the income bonds as compared with the semi-annual rate maintained since March, 1913, is chiefly due to the increased rate of income tax and loss in exchange on coupons paid abroad. The revenue receivable by the company shows a reduction of about £27,000, while the increased income tax and loss in foreign exchange exceeds £56,000.

## Dividends Declared

- Brazilian Traction, Light & Power Company, Toronto, Ont., quarterly, 1½ per cent, preferred.
- Brooklyn (N. Y.) Rapid Transit Company, quarterly, 1½ per cent.
- Cleveland (Ohio) Railway, quarterly, 1½ per cent.
- Cumberland County Power & Light Company, Portland, Me., quarterly, 1 per cent, common.
- Eastern Power & Light Corporation, New York, N. Y., quarterly, 1¾ per cent, preferred.
- Frankford & Southwark Passenger Railway, Philadelphia, Pa., quarterly, \$4.
- Ironwood & Bessemer Railway & Light Company, Ironwood, Mich., quarterly, 1¾ per cent, preferred.
- Public Service Corporation of New Jersey, Newark, N. J., quarterly, 2 per cent.
- Second & Third Streets Passenger Railway, Philadelphia, Pa., quarterly, \$3.
- United Light & Railways Company, Grand Rapids, Mich., quarterly, 1½ per cent, first preferred; quarterly, 1 per cent, common.
- West Penn Traction & Water Power Company, Pittsburgh, Pa., quarterly, 1½ per cent, preferred.

## Electric Railway Monthly Earnings

AURORA, ELGIN & CHICAGO RAILROAD, WHEATON, ILL.		Operating Revenues		Operating Expenses		Operating Income		Fixed Charges		Net Income	
Period											
1m., Jan., '17		\$159,792	*\$116,194	\$43,598	\$35,760	\$7,838					
1 " " '16		148,860	*101,161	47,699	36,656	11,043					
BERKSHIRE STREET RAILWAY, PITTSFIELD, MASS.											
1m., Jan., '17		\$82,040	*\$73,165	\$8,875	\$27,550	†\$18,561					
1 " " '16		72,072	*67,912	4,160	22,307	†17,974					
7 " " '17		623,705	*499,636	124,069	193,557	†168,285					
7 " " '16		570,818	*468,115	102,703	129,192	†125,273					
CONNECTICUT COMPANY, NEW HAVEN, CONN.											
1m., Jan., '17		\$786,504	*\$653,109	\$133,395	\$100,042	\$33,353					
1 " " '16		701,505	*480,985	220,520	98,604	†144,637					
7 " " '17		5,857,387	*4,550,382	1,307,005	691,151	†805,127					
7 " " '16		5,153,928	*3,455,340	1,698,588	691,340	†1,169,228					
NEW YORK & STAMFORD RAILWAY, PORT CHESTER, N. Y.											
1m., Jan., '17		\$26,107	*\$26,411	†\$304	\$7,987	†\$8,259					
1 " " '16		24,106	*23,811	295	7,994	†7,662					
7 " " '17		215,672	*178,728	36,944	55,910	†18,630					
7 " " '16		234,416	*183,310	51,106	55,993	†24,496					
NEW YORK, WESTCHESTER & BOSTON RAILWAY, NEW YORK, N. Y.											
1m., Jan., '17		\$45,763	*\$49,119	†\$3,356	\$8,659	†\$8,777					
1 " " '16		41,769	*44,363	†2,594	\$6,548	†7,036					
7 " " '17		354,227	*\$336,144	18,083	\$48,362	†\$22,930					
7 " " '16		298,905	*298,751	154	\$42,549	†\$30,718					
RHODE ISLAND COMPANY, PROVIDENCE, R. I.											
1m., Jan., '17		\$465,750	*\$389,114	\$76,636	\$119,111	†\$14,127					
1 " " '16		428,215	*369,064	59,151	83,393	†2,960					
7 " " '17		3,549,134	*2,593,486	955,648	840,739	†177,393					
7 " " '16		3,184,478	*2,416,221	768,257	805,679	†24,736					
WESTCHESTER STREET RAILROAD, WHITE PLAINS, N. Y.											
1m., Jan., '17		\$15,342	*\$19,766	†\$4,424	\$2,018	†\$6,415					
1 " " '16		18,087	*22,255	4,165	1,723	†5,867					
7 " " '17		122,541	*134,788	†12,247	13,492	†25,554					
7 " " '16		151,830	*151,989	†159	11,563	†11,515					

\*Includes taxes. †Deficit. ‡Includes non-operating income. §Excludes interest on bonds, charged income and paid by the New York, New Haven & Hartford Railroad under guarantee; also interest on notes held by the New York, New Haven & Hartford Railroad, not credited to income of that company.

## Traffic and Transportation

### Joint Insurance Plan in Kansas City

About \$10,000 Will Be Spent on Insurance Premiums, Half of Which Will Be Paid by the Company

The Kansas City (Mo.) Railways put into effect on March 1 an insurance plan under which each employee may receive a policy at the rate of \$6.60 per thousand, half of the premium to be paid by the company. The contract, which is with the Aetna Life Insurance Company, was signed Feb. 23. In the next few days practically all the employees, except those out of the city or home sick, had filed the necessary stipulations. The company will retain the employee's share of his premium out of his wages and will pay the insurance company in a lump sum, probably once a year. The check will be about \$10,000.

While the taking of this insurance is not formally compulsory, it is believed that practically all the employees will take advantage of it. Henceforth every employee who joins the company automatically receives the insurance, a \$500 policy.

The amounts of the policies are graded according to length of service, as follows: First year men, \$500; second year men, \$600; third year men, \$700; fourth year men, \$800; fifth year men, \$900; end of fifth year, \$1,000.

All employees are eligible up to sixty-five years of age. No examination is required. The policies terminate if the insured leaves the employ of the railways company. But he may secure an ordinary life policy in the Aetna by paying the rate at his age at such time. Or he may secure a premium contract on the basis of his age when he received the policy from the railway company by paying the difference between the rate of \$6.60 and the insurance company's rate for such earlier age. Thirty days will be given for effecting the change.

Each employee may also take out an additional \$1,000 policy without physical examination if application is made when the railway's policy is issued. The rate, however, for the additional insurance is higher for men more than thirty-four years of age. For illustration, men forty years old must pay \$7.39 for the extra thousand; fifty years, \$13.01; fifty-five years, \$19.12; sixty years, \$28.67; sixty-five years, \$46.13.

The policies, in the form of a certificate to each insured, call for the payment of the principal sum on death or permanent disability.

### Change from Near Side to Far Side

After Two Years' Trial with Former Stop, Southwest Missouri Changes Back—Reasons Given

At the request of the Southwest Missouri Railroad the city commission of Joplin, Mo., on Feb. 27, gave its permission to the company to change from the near-side stop to the far-side stop in that city. The change went into effect on March 4.

The order was made following representations of T. A. Harbaugh, superintendent of transportation of the company, who said that after more than two years of trying the near-side stop plan, his company favored a change to the old method, for these reasons:

First—That people approaching the crossings take it for granted that the cars will stop, and when there is no reason for a stop the danger of accident is thus increased. Actually the near-side stop has tended to increase accidents instead of diminish them.

Second—The near-side stop gives an opportunity for pedestrians and vehicles to get in the way and tends to delay traffic, and every delay discommodates passengers on the car and persons waiting for the car.

Third—A large number of people stand at about the place where the head of the car stops and the car must be held

until they walk back to get on. This also tends to delay traffic, which discommodates the public, not the street car company.

### Massachusetts Commission Approves Withdrawal of Fall River Tickets

In a decision issued March 5 the Massachusetts Public Service Commission approved the withdrawal of tickets sold in the city of Fall River at the rate of six for 25 cents by the Bay State Street Railway. The decision becomes effective March 15, and is an important outcome of the celebrated Bay State fare case decided last summer, as the proposed withdrawal of tickets has been fought by the city at every stage, and had the board retained this reduced rate transportation in comparison with that sold in other important cities of similar size in Massachusetts at a flat 5-cent fare, the precedent would have been serious in its possible effect upon the company's revenues. The present decision states in part:

"The decision points out that the withdrawal of the ticket concession in Fall River carries not the slightest danger that the company will be able to earn an exorbitant return; that the situation is not one to be viewed in any narrow way, and that attention cannot, with regard for the general interest, be concentrated upon a particular portion of the system alone. The commission does not believe that the comparatively small additional burden imposed by the ticket withdrawal is unfair or that it will prove disadvantageous to the city of Fall River. It will place the municipality in a position no better or no worse than that of practically all the other large cities of the state, and so far as it adds to the financial strength of the company, will to that extent bring nearer the day of improved facilities."

### Steam and Electric Connections Urged

As an outcome of four cases which have recently appeared before the Maine Public Utilities Commission, it is understood that the commission will present to the Legislature which is now in session a bill authorizing the commission to require physical connection between steam and electric railroads.

The cases relate to the matter of compulsory physical connection between the tracks of steam railroads and electric railroads, in which the Cumberland Light & Power Company, the Portland & Lewiston Interurban Railway, and the Lewiston, Augusta & Waterville Street Railway are involved, and the performance by the electric railways of auxiliary or carting service by means of such physical connection or by means of a transfer of freight from cars standing on the track of the steam railroad to a car standing on the track of the electric railway and the carting by the latter of the contents of such car to its destination along the line of the electric railway.

It is understood that the steam railroads do not seriously object to permitting the electric roads to render this auxiliary or carting service, but do object to consenting to anything which will enable electric roads to enter into full competition with the steam railroads in the haulage of freight, especially where by means of such physical connection it would be entirely possible for electric roads to make very long hauls through territory now served by the steam railroads and in such haul the electric railways would be using the cars belonging to the steam railroad.

### Clearance of Side Streets a Factor in Traffic Relief

In discussing the present conditions of traffic congestion in New York City before the Fifth Avenue Association on Feb. 21, William McAdoo, chief city magistrate, spoke in part, as follows:

"The traffic problem is most acute on this island south of Fifty-ninth Street. From river to river, must be treated systematically, and not with special reference to some one locality if relief is to be obtained. The first thing to be done, in my judgment, is to distribute more evenly the traffic in

this congested area. If you will look at the side streets all along Fifth Avenue, you will find them congested in a tangle of vehicles, most of them violating the city ordinances; great trucks backed up tail on to the curb for long periods of time in front of shops and stores; great numbers of motor vehicles parked waiting for their fares to call them up. When you divert traffic into these side streets in order to relieve the congestion on the main thoroughfares the conditions are impossible. The Police Commissioner should have sufficient number of mounted men to keep these side streets clear."

## Commission Approves Reduced Service Bay State Railway Lengthens Headways and Cuts Out Stops on Several Interurban Routes with Approval of Authorities

In an important decision issued on March 1, the Massachusetts Public Service Commission approved general reductions in service on various country and interurban lines of the Bay State Street Railway, seven petitions being before the board in this connection. The petitions all involved reductions in service which have been made or which were proposed. Four petitions were addressed to the board by the company and three by municipal authorities. The reasons advanced for the reductions were similar in all cases. The commission concluded, after studying the evidence presented, that the reductions can be made, at least in the winter months, without any overcrowding of cars, in the hours to which the reductions are applicable. This conclusion is borne out by the experience on the Gloucester-Rockport route, where the reduced service has already been put into operation.

In the recent fare case the commission found that the company needed, for the fiscal year 1914, average gross receipts of about 33 cents per car-mile to meet operating expenses, provide adequately for depreciation, pay taxes and secure a return of 6 per cent upon the amount of capital honestly and prudently invested in the railway property. In the same year the average operating expense per car-mile for the entire system was 20.13 cents, and the actual gross receipts averaged 30.11 cents per car-mile. Upon the routes under consideration the receipts in cents per car-mile were:

	1914, Cents	1915, Cents	1916, Cents
Rockland-Braintree .....	21.37	20.32	20.83
Lowell-Redding .....	22.34	22.02	23.14
Malden-Revere .....	22.84	21.06	20.59
Gloucester-Rockport .....	25.81	24.74	24.85
Dummer Academy-Ipswich Junction.....	17.41	18.04	17.07

The board states that there seems no escape from the conclusion that the routes in question are not to be classed as profitable, although most of them pay operating expenses, and some of them pay their fair share of fixed charges. Nor does it appear that the recent increase to a 6-cent fare which has been made upon all of these lines except the Malden-Revere, and part of the Lowell-Reading, is likely, in the immediate future at least, to disturb this conclusion. The evidence does not indicate any very substantial increases in earnings upon these lines since the fare was raised, and such increase as there has been has been offset by the advancing cost of labor and of materials. If these routes were short lines in thickly settled urban territory, where walking is an easy alternative to riding in the cars, the economy of any reduction might be open to very serious question. It appears probable that the change in these cases, however, will result in a net saving.

The reductions in service which are now under consideration are but one minor part of the program which the company is endeavoring to inaugurate all over its system, in the urban territory as well as in the country districts. Since the decision was rendered, 25 per cent of the white pole stops throughout the system have been eliminated, and the schedule speed has in several important instances been increased so that the number of car-hours operated might be reduced. This has been done on all the lines terminating at Scollay Square, Boston, as well as in Fall River, Gloucester, Chelsea and Lynn.

**Toledo Company to Issue House Organ.**—The safety department of the Toledo Railways & Light Company, Toledo, Ohio, as well as the executive committee of the company's section, has recommended to President Frank R. Coates that a monthly publication for the employees of the company be issued under the direction of E. R. Kelsey, advertising manager.

**Indictment Sought for Overcrowding Toronto Cars.**—The Mayor of Toronto, Ont., announced on Feb. 13 that he had instructed that an indictment be prepared for the forthcoming March assizes against the Toronto Railway for maintaining a common nuisance by overcrowding its cars, and if he failed to get it past the grand jury he would proceed by other methods.

**Freight Traffic on Cedar Valley Road.**—A unique freight load consisting of twenty-six cars loaded with Buick automobiles was recently hauled by an electric locomotive over the lines of the Waterloo, Cedar Falls & Northern Railway from Cedar Falls to Waterloo. The tonnage of the train was about 800 and one of the 60-ton, 1300-volt locomotives was used.

**International Railway Would Improve Car Lighting.**—In an effort to improve car lighting the International Railway, Buffalo, N. Y., is experimenting with tungsten lamps on the Niagara and Grant Street lines. Carbon lamps have always been used by the company. This was one of the suggestions received by the company during its recent advertising campaign asking for constructive criticism.

**Interurban Cars Ordered to Perform City Service.**—Because of the car shortage on the Buffalo (N. Y.) city lines of the International Railway, interurban cars on the Buffalo-Lockport, Buffalo-Niagara Falls and Buffalo, Depew and Lancaster divisions, have been ordered to stop and pick up and discharge city passengers. For almost two years these cars have refused to carry city passengers. Suburban patrons have complained about the new order.

**City Tries to Enforce 200 New Cars for Toronto Railway.**—The city of Toronto, Ont., is again making application to the Ontario Railway and Municipal Board for an order to compel the Toronto Railway to place an additional 200 cars in service. Evidence was given on behalf of the company showing the difficulty there was in obtaining material for the construction of cars, also the difficulty of obtaining labor, both for building and operating cars, and it has been attempted to refute this evidence by means of witnesses on behalf of the city.

**Kansas City Railways Publishes City Guide.**—The Kansas City (Mo.) Railways has published a convenient little folder instructive to the citizen and the out-of-town visitor on Kansas City, Mo., and Kansas City, Kan. These folders will be in the hands of the hotel clerks and information bureaus. The idea fits in with the movement in Kansas City to advertise the city to its own citizens. A map of the city is included, together with lists of streets, public buildings, interurban lines and interesting and spectacular points to visit.

**Greater Experience Urged for Motormen of Trains.**—A bill has been introduced in the New York Senate which requires all motormen operating electric multiple-unit trains, with high-speed brakes or electric or gasoline engines, to have at least one year's experience on steam or electric railroads, and to be familiar with train orders, signals and rules, before operating a passenger or freight train in the transportation service. A record of such experience is to be furnished the Public Service Commission with respect to each such employee.

**Improvements Contemplated on Buffalo and Lake Erie Line.**—A recommendation has been made to the Public Service Commission of New York, Second District, that improvements be made in the facilities and service of the trolley line of the Buffalo & Lake Erie Traction Company, running from Buffalo to Erie, Pa., through the villages of Hamburg, Silver Creek, the city of Dunkirk, and along the shore of Lake Erie. These recommendations will probably be acted upon soon, to the end that improved service may be had in the early spring.

**Important Decision on Jitney Bonds.**—The Supreme Court of the State of Washington on Feb. 26 rendered a decision holding that a bonding company, acting as a surety for a jitney owner, was separately liable for the full amount of the bond, namely, \$2,500, for each and every individual injured in an accident. The court made its meaning plain that if five persons injured in one jitney accident sue and recover judgment for \$2,500 each, the bonding company would have to pay a total of \$12,500, were the judgment sustained for the amount awarded.

**Non-Compliance with Commission Kills Jitneys.**—Jitney buses operating between Rock Island and Moline, Ill., and Davenport, Iowa, must cease operation at once under the terms of the decision made in the circuit court at Rock Island on March 1. According to the decision jitneys are public utilities and as such come under the control of the Public Utilities Commission, and therefore are required to secure certificates of convenience and necessity. Failure to comply with such rulings brought about this action, putting fifty jitney buses out of operation.

**Storage Battery Buses for Havana.**—The Havana Electric Railway, Light & Power Company has purchased a fleet of ten storage battery buses from the J. G. Brill Company, the order being divided equally between a 16 ft. 11 in. type, seating twenty-two persons, and a 12 ft. 8 3/8 in. type, with a seating capacity of twelve persons. These buses are of peculiar interest because of the choice of storage current as the motive power over the internal combustion engine so frequently used in buses of the same type. All of the buses are mounted on General Vehicle Company chassis.

**Atlantic City Club Discusses Transportation Progress.**—Transportation was the subject discussed at a recent meeting of the Atlantic City (N. J.) Rotary Club, at which A. J. Purinton, general manager of the Atlantic City & Shore Railroad, was chairman. C. M. Ripley, of the General Electric Company, who is touring the country lecturing on transportation, as it has been made possible through the medium of electricity, came to Atlantic City, exhibited a set of fifty lantern slides, showing the development of transportation from the primitive methods of the Indians up to the highly efficient electrification of railroads.

**Would Shift Mail from Steam to Electric Road.**—A suggestion has been made to the Post Office Department at Rochester, N. Y., by trustees of the Rochester Chamber of Commerce to transfer the mail which is now carried to stations between Rochester and Syracuse on the early morning train on the New York Central Railroad to a car on the Rochester, Syracuse & Eastern Electric Railway. The steam railroad mail train, the trustees were told in a report received from the postal facilities committee, has been running from one to eight hours late in recent months, and the electric route would insure quicker delivery of mail and papers in the eastern towns.

**Public and Company Officials Confer at Dinner.**—Negotiations are pending between Borough Council of College Hill, Pa., and the Beaver Valley Traction Company, New Brighton, Pa., regarding the operation of freight cars of the Pittsburgh, Harmony, Butler & New Castle Railway over the Beaver Valley Traction Company tracks. The good feeling that exists between the public officials and the railway is shown by the fact that the councilmen and the representatives of the company, in an effort to arrive at an amicable settlement of the question, discussed the matter at dinner with Superintendent W. H. Boyce of the Beaver Valley Company at the company's restaurant.

**Cars Are More Efficient, but Blockades Reduce Speed.**—In a second bulletin describing the deplorable blockading of some of the streets in New York City, the New York Railways have pointed out that all the improvements in car service made in recent years are more than offset by delays to which the company is subjected at the present time. Although the cars, to-day are capable of making better speed, are designed to start and stop more quickly, are said to be more efficient and comfortable in operation; yet the net result of street congestion is that the speed of the city's traffic is slower than before, the speed in the congested zone having been reduced from 6 1/2 m.p.h. to 6, and in some cases to 5 1/2 m.p.h.

**Length of Open-Car Season Discussed.**—A hearing has been closed and decision reserved by the Public Service Commission of New York, First District, in reference to complaints made to it concerning the practices of street railway companies in placing open cars in operation early in spring and of leaving them in operation after cold weather begins. At the hearing, testimony was given by several operating officials, representing various street railways and rapid transit roads in general, to the effect that open cars are placed in operation beginning on or about April 15 in the spring, and taken out of service beginning about Labor Day. Dr. Alonzo Blauvelt of the Board of Health of New York City stated that the board would like to see open cars in operation as far as possible and whenever possible. He added that when the weather is fair open cars are much superior to closed cars, as far as the general health of the public is concerned.

**Bellingham (Wash.) Jitney Ordinance Not Discriminatory.**—That a city has the right to pass an ordinance regulating jitney busses and placing them under strict control of local authorities is the ruling of the Supreme Court at Olympia, Wash., affirming the Whatcom County Superior Court in a case against the city of Bellingham. The court upholds the validity and constitutionality of a Bellingham city ordinance regulating jitneys. It was contended that the ordinance violated both the Federal and State Constitutions which guarantee equal rights, immunities and privileges, and that the ordinance was discriminatory class legislation. The Supreme Court says the city has the power to classify subjects of legislation and the constitution is violated only if there has been an arbitrary or unreasonable classification. The Court also lays down the rule that the State laws are not meant to be the whole law on the subject, and cities may pass regulative laws so long as they do not conflict with the State laws.

**Passenger Articulates Trip to Beat the Company.**—The Superior Court of Marion County, Ind., has decided in an action brought against the Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind., that the company is entitled to full through fares for hauling passengers between two points, even though the combined fares from intermediate points might be less than the through fare. Prior to the operation of the interurbans on a straight 2-cents-per-mile basis, fares were computed by doubling the number of miles traveled and fixing the fare so as to make it 5 cents or a multiple of five. On cross-examination of the case in question it was shown that the plaintiff had ridden from the Terminal Station, Indianapolis, to Thirty-fourth Street for a 5-cent fare, had alighted and then boarded the car again and tendered 20 cents as his fare from Thirty-fourth Street to Stop 10 on the Northwestern Interurban line, which would have made his total fare 25 cents. The jury decided he was a through passenger and should have paid 30 cents, the through rate. This suit is a test case, and the plaintiff has filed five other suits against the company, which are now pending.

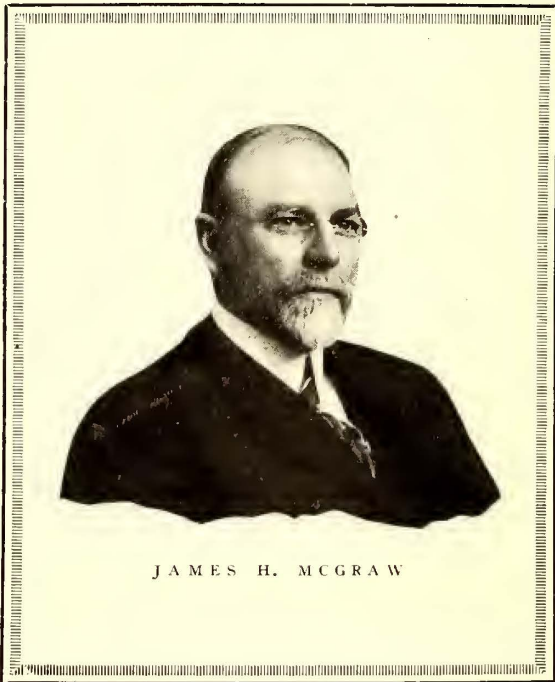
**Self-Interest of Winnipeg Citizens an Argument Against Jitneys.**—An appeal for a fair regulation of the jitney's competition on the grounds of public welfare is contained in a series of five artistically prepared folders recently distributed by the Winnipeg (Man.) Street Railway to about 5000 residents of Winnipeg. Introduced by such titles as, "The March of Progress and Its Effect Upon the Future," "The Value of Merchandise and Labor Is To-day Governed by Its Mobility," "These Are Essentials in the March of Progress," "A Call to Duty the Supreme Test," "Community Life," the folders supplement each other in describing the part which the railway company has played in the last twenty-three years in the arrangement and development of Winnipeg by localizing and centralizing the shopping, warehouse and residential districts to their best advantage. In the face of many restrictions and regulations, one of the folders states, the company must endeavor to influence more and more capital into the undertaking in order to finance extensions and meet current disbursements. The corporation pleads for the removal of competition by the jitney, which has been allowed for more than two years to operate in direct violation of the street railway company's franchise.

## A Record of Publishing Activity

Facts in Regard to the McGraw-Hill Publishing Company, Which Will Publish This Paper, and of Those Who Organized It

**B**RIEF announcement was made in this paper last week of the organization of the McGraw-Hill Publishing Company, Inc., which has taken over the publishing business of this paper and ten other technical periodicals. Some facts in regard to the individuals who will direct the activities of this company may prove of interest.

The president, James H. McGraw, is known personally to many of the readers of this paper through his activities as a publisher in the electric railway field. He was born in Panama, Chautauqua County, New York, in 1860, and was graduated in 1884 from the Fredonia Normal School. After teaching school for a few years, he commenced his life as a publisher with the American Railway Publishing



Company of New York, then owner of the *Street Railway Journal* and two other papers. Shortly after the dissolution of this company, in 1888, Mr. McGraw acquired the *Street Railway Journal*, later renamed the **ELECTRIC RAILWAY JOURNAL**. Early in his ownership of this paper, Mr. McGraw recognized that electricity was to furnish the future power for street railways and from the beginning advocated its adoption in preference to the cable, then its strong rival as a substitute for horses.

With the growth of electric traction, other large industries sprang up for the manufacture of electrical equipment of all sorts. To the young publisher these events were significant, and in 1896 Mr. McGraw purchased *Electrical Industries*, which he renamed the *American Electrician*, and issued it as a monthly periodical devoted to electrical and mechanical engineering. Three years later he acquired the two leading electrical journals, the *Electrical World* and the *Electrical Engineer*, both of New York. These papers were consolidated into one publication, now known as the *Electrical World*, and a few years later the *American Electrician* was included in this periodical. The *Engineering Record*, then twenty-seven years old, was purchased in 1902, and soon became of national influence in the civil engineering and contracting fields. At about the same time, Mr. McGraw started in Philadelphia a publication known as *Electrochemical Industry*. Later this paper was moved to New York, and is now known as *Metallurgical and Chemical Engineering*, and is issued semi-monthly. Two recent additions to the group are *Electrical Merchandising* and *The Contractor*. The former is designed for the merchant engaged in the sale of the electrical devices, as it

was felt that the electrical field had grown so greatly in extent in a technical and commercial way that the *Electrical World* could not well serve all elements of it. *The Contractor* solves a somewhat similar problem which arose in the field of the *Engineering Record*, and is a consolidation of *The Contractor* and the *Contractors' Review*, both of Chicago. This paper is published fortnightly.

As the properties of the McGraw Publishing Company developed it became evident that special housing facilities for the editorial, business and printing staffs were necessary, and an eleven-story reinforced concrete structure was erected at 239 West Thirty-ninth Street. This building has been the home of the **ELECTRIC RAILWAY JOURNAL** and the other McGraw publications for the last ten years.

### THE HILL PUBLISHING COMPANY AND ITS FOUNDER

The history of the Hill Publishing Company, like that of the McGraw Publishing Company, Inc., is built largely around the efforts of one man, the late John A. Hill. Mr. Hill began his publishing career by the acquisition of *Locomotive Engineering*, a paper for which he had been acting as editor. Soon after he sold that paper and purchased the *American Machinist*. Later, *Power* was added. In 1905 the *Engineering and Mining Journal* was acquired, and in 1908 the *Engineer*, of Chicago, was consolidated with *Power*, and the latter paper was made a weekly. In 1911 *Engineering News* became a Hill paper, and in the same year *Coal Age* was started, its field being coal mining and coke manufacture. The need for special quarters was also felt by Mr. Hill, and in 1914 he completed a large building at the corner of Tenth Avenue and Thirty-sixth Street, New York, where the papers are edited and printed.

After Mr. Hill's death, Arthur J. Baldwin was elected to the presidency of the Hill Publishing Company. Mr. Baldwin, who has just been elected vice-president of the McGraw-Hill Publishing Company, Inc., is a lawyer by profession, and for many years was closely associated with Mr. Hill. For ten years, before becoming the administrative head of the Hill Publishing Company, Mr. Baldwin's attention had been directed almost entirely to business problems. Among the offices he held were those of treasurer of the Rogers Silver Plate Company, treasurer of the Borough Development Company, which had a contract to remove ashes from Brooklyn; treasurer of the Boston Development & Sanitary Company, which handled all the garbage and ashes for the city of Boston; vice-president of the Automatic Fire Protection Company, and secretary of the Mississippi Wire Glass Company. For many years Mr. Baldwin had been Mr. Hill's business adviser and confidant, and this enabled him to enter upon his work as president of the Hill organization with a thorough grasp of all its details and policies.

## Savings Association in Kansas City

Plans for a building savings and loan association have been completed by the Kansas City (Mo.) Railways. The overhead expenses will be borne by the company, while the employees will be the directors and all executive and official work in the organization will be directed by them. Membership in this association is limited to the 4000 employees of the railways company and their families.

The association is to be incorporated at \$1,000,000, apportioned into 5000 shares at \$200 each. The main purposes of the association are, first, to assist members in buying real estate; second, making improvements on real estate; third, in removing encumbrances on real estate, and, fourth, the accumulation of employees' savings. The plan is an improvement over the ordinary savings bank or building and loan association in that the company stands the overhead expense and is willing to deduct the given amount from the employee's pay check if so desired.

To become a member of the association it is necessary for the employee to buy one or more shares of stock. There are two kinds of stock—full pay and installment pay. The full pay is that which is bought outright and draws 5 per cent annually, payable semi-annually. The instalment pay draws 6 per cent interest and is payable semi-annually. It may be paid on monthly instalments of \$1 or more. The stockholder may borrow at any time 75 per cent of the stock value on the security of the paid-up stock.



## Personal Mention

**B. W. Arnold** is now solicitor for the traffic department of the Illinois Traction System, and not secretary to H. E. Chubbuck as reported recently.

**C. G. Newton**, formerly agent of the London & Lake Erie Railway & Transportation Company, St. Thomas, Ont., has been appointed accountant at London, Ont., succeeding L. Tait.

**L. T. Brown**, assistant freight agent of the Auburn & Syracuse Electric Railroad, at Syracuse, N. Y., has been appointed freight agent at Auburn, succeeding John J. McCarthy.

**John Phillips**, who has been affiliated with the firm of Ford, Bacon & Davis, engineers, New York, has been appointed superintendent of the Gary & Interurban Railway, Gary, Ind.

**Worth A. Baldwin**, for ten years passenger agent for the Union Traction Company at Muncie, Ind., has resigned to become manager of collections for the Muncie Electric Light Company.

**Charles Johnstone**, heretofore acting manager of the Sherbrooke Railway & Power Company, Sherbrooke, Que., has been appointed comptroller, with office at 330 Coristine Building, Montreal.

**W. G. Meloon**, formerly general manager of the Atlantic Shore Railway, Kennebunk, Me., is to become receiver and manager of the Portsmouth, Kittery & York Street Railway, Portsmouth, N. H.

**Alex Newhouse** has been appointed master mechanic of the Public Utilities Company, Evansville, Ind., and not division shop foreman of the Evansville (Ind.) Railway, as stated in the *ELECTRIC RAILWAY JOURNAL* of Feb. 24.

**Carl Alberte**, for over twenty years manager of Norumbega Park, controlled by the Middlesex & Boston Street Railway, Newtonville, Mass., has resigned to accept one of several offers for his services at points in western cities.

**F. A. Miller**, chief engineer of the Oakland, Antioch & Eastern Railway, Oakland, Cal., recently discussed the operation of this company's block signal system at a luncheon of the Transportation Club of the Oakland Chamber of Commerce.

**W. N. Voegtly** has been appointed purchasing agent of the Pacific Power & Light Company, Astoria, Ore., to succeed C. H. Still. Mr. Voegtly has been with the company for six years, part of the time in the Portland office and later as general storekeeper for the company at Kennebec.

**Martin N. Todd**, president of the Galt, Preston & Hespeler Street Railway, and general manager of the Lake Erie & Northern Railway, Galt, Ont., who has not been in good health for some time, left Galt on Jan. 29 for the south, his intention being to go to the Isle of Pines, and to be away for two or three months.

**Sir W. M. Aitken, Bart.**, who was elected a director, British Columbia Electric Railway, Vancouver, B. C., at the recent annual meeting of shareholders in London, England, has been created a Baron of the United Kingdom, with the title of Baron Beaverbrook of Beaverbrook, N. B., Canada, and of Cherkley, Surrey, England.

**George B. Tripp** has resigned as vice-president of the United Gas & Electric Engineering Corporation, New York, to become president of the Central Construction Corporation, Harrisburg, Pa. Mr. Tripp, who is president of the Pennsylvania Electric Association, has been connected with central station and utility company operation for many years.

**John J. McCarthy**, formerly freight agent of the Auburn & Syracuse Electric Railroad, at Auburn, N. Y., has been appointed commercial agent of the company, a newly created position, with office at Auburn. Mr. McCarthy entered the employ of this company on June 1, 1914, and one year

later he was promoted to the position of freight agent at Auburn, which he has held until his recent appointment.

**J. L. Ingoldsby**, statistician for the United Railways & Electric Company, Baltimore, Md., is the author of an article entitled "Statistics in Electric Railway Work," which has appeared in the March issue of the *United Railways Forum*. The article shows how charted figures enable officials of all departments of a large transportation system such as his company to keep a constant finger on the pulse of the system.

**F. W. Bacon**, vice-president of the Kentucky Traction & Terminal Company, the Lexington Utilities Company and the City Ice Company, Lexington, Ky., on Feb. 2, was presented by the employees of these companies with a silver service as a token of their friendship and esteem, on his leaving for Philadelphia, where he will have his headquarters. Mr. Bacon will continue as vice-president and will have general supervision over the property.

**W. H. Boyce**, superintendent of the Beaver Valley Traction Company, New Brighton, Pa., was tendered a dinner at the Fort Pitt Hotel, Pittsburgh, on Feb. 24, by 120 of his friends, as a testimonial of his efforts in bettering the rapid transportation facilities of the towns in the Beaver valley touched by his company's system, and for the close interest he has shown in promoting the welfare of the community. Among those who spoke at the dinner were S. L. Tone, vice-president, and C. G. Rice, claim agent, of the railway company and also of the Pittsburgh railways.

**G. G. Holding**, for four years secretary-treasurer of the London (Ont.) Street Railway, has resigned in order to devote his time to his private affairs. Mr. Holding formerly was identified with business interests in Toledo, Ohio, for many years. He entered the service of the Toledo Railways & Light Company fourteen years ago as pay roll clerk and was advanced until he held the position of chief clerk in the office of the auditor of the company. He resigned from that position to go into business for himself, but subsequently re-entered the service of the company.

**M. M. Reid** has resigned as president, director and general manager of the Ironwood & Bessemer Railway & Light Company, Ironwood, Mich. He has been with the property since July, 1908. Mr. Reid was formerly general manager of the Pittsburgh, Harmony, Butler & New Castle Railway, Pittsburgh, Pa., previous to which he was general superintendent of the Dayton, Springfield & Urbana Electric Railway, Springfield, Ohio. Before that time he had been for five years master mechanic of the same company in charge of power stations and rolling stock, having been engaged to supervise the installation of the machinery and cars. Before that he was with the Southern Railway, having been master mechanic for seven years of the Norfolk Division.

**Leonard Tait**, heretofore secretary-treasurer of the London & Lake Erie Railway & Transportation Company, London, Ont., has been appointed secretary-treasurer of the London Street Railway, succeeding G. G. Holding. Mr. Tait began railway work in 1899 with the Michigan Central Railroad, at London. He also served with the Grand Trunk Railroad and the Canadian Pacific Railroad, and returned to the Michigan Central Railroad in February, 1905, as chief clerk to the freight and passenger agent, London. He was appointed soliciting passenger agent of the New York Central Railroad at Toronto, and in November, 1912, became accountant of the London & Lake Erie Railway & Transportation Company and later secretary-treasurer of the company.

**Edward A. Maher, Jr.**, whose appointment as vice-president and general manager of the Third Avenue Railway, New York, to succeed his father, E. A. Maher, Sr., was briefly announced in the *ELECTRIC RAILWAY JOURNAL* of March 3, is a member of the New York bar and has also had an extensive experience in railway and electric lighting affairs in New York, having been for ten years, or between 1892 and 1902, president and general manager of the North River Electric Light & Power Company. He then entered the legal department of the New York City Railway and the Third Avenue Railway, with which he was connected for seven years. He became assistant general manager of the Third Avenue Railway on Dec. 1, 1913. In connection with

his recent appointment the staff members of the company on March 9 presented Mr. Maher with a 6-ft. floral horseshoe at the 130th Street headquarters, and took occasion to congratulate him on his advancement with the company, while assuring him of their earnest support and co-operation.

Lewis Clark Haskell, secretary-treasurer of the Southern Power Company, who has also been appointed secretary-treasurer of the Sherbrooke Railway & Power Company, Montreal, was born in Pennsylvania, Jan. 2, 1883, and was graduated from Colgate University, in June, 1905. From 1905 to 1908 he was assistant manager of the Haskell Lumber Company, and Salmon River Railway, Fassett, Que. In 1900 Mr. Haskell was appointed secretary-treasurer and manager of the Labrador Electric Company, Murray Bay, Que., and in 1912 he became secretary-treasurer of the South Shore Power & Paper Company, Montreal. In 1913 he was appointed secretary-treasurer of the South Canada Power Company, Montreal, which company has taken over the Sherbrooke Railway & Power Company.

C. N. Wilcoxon, president for more than two years of the Chicago, Lake Shore & South Bend Railway, Michigan City, Ind., was elected president of the Central Electric Railway Association at its annual meeting in Indianapolis, Ind. Mr.

Wilcoxon was born at Muncie, Ind. The early part of his business career was spent in the construction and management of gas and water-works systems. In 1893 he accepted the position of general manager of the local street car lines at Muncie, Ind., where he remained until 1898, when he went to Decatur, Ill., as general manager of the Decatur Traction Company. During his association with this property the system was rebuilt and put on a substantial paying basis. In 1901

Mr. Wilcoxon became general superintendent in charge of the operating department of the Western Ohio Railway, Lima, Ohio, where he remained until 1905, when he became general manager of the Cleveland, Southwestern & Columbus Railway. In 1909 he resigned this position to become general manager of the Chicago, Lake Shore & South Bend Railway. Early in 1914 he was also elected a vice-president of the latter company and later in the same year became president.



C. N. WILCOXON

## Obituary

Col. William Barbour, director of the North Jersey Rapid Transit Company, Hohokus, N. J., and a large number of other corporations, also former treasurer of the Republican National Committee and president of the American Protective Tariff League, died on March 1.

Col. Walter Katte, who was for fifty years active in railroad and bridge construction in this country, and who was the first chief engineer of the Second and Ninth Avenue elevated roads, died on March 4, in his eighty-eighth year. His son, E. B. Katte, is chief engineer of electric traction, New York Central Railroad.

Horace E. Teachout, financier, promoter and builder of the first electric street railway in Des Moines, Iowa, died in that city on Feb. 22. Mr. Teachout's successful organization and operation of this street railway, which was also the first electric street railway in Iowa, had its beginning in 1886. Three years later Mr. Teachout sold out his interest in the car line.

Alfred W. Parker, for many years closely identified with the inspection of steel work in connection with Boston rapid transit development, died recently at Waltham, Mass., at the age of seventy-three. Mr. Parker was a native of Providence, R. I., and his electric railway experience included a long term of service as inspecting engineer for the Boston Elevated Railway and the Boston Transit Commission, the steel work of the latter being in his charge with respect to all erection and installation at the time of his death.

## Legal Notes

### CHARTERS, FRANCHISES, ORDINANCES

TEXAS.—*Contract of Officers for Purchase of Real Estate and Erection of Station Construed as Personal.*

Where the officers of a traction company contracted with certain property owners, in return for a bonus, to buy lots and construct and maintain thereon the depot and terminal station buildings of the traction company, which contract was signed by the officers without designating themselves as such, it was to be construed as their personal engagement and not as that of the company. (*Eastern Texas Traction Co. v. Harrison*, 189 Southwestern Rep., 302.)

### LIABILITY FOR NEGLIGENCE

MISSISSIPPI.—*Carrying Passenger Beyond Destination.*

In an action for carrying plaintiff beyond her destination, the language of defendant's conductor in refusing to back the car at the request of plaintiff's mother, saying, "No, you will get off right here," and also stating that he "did not have time," the testimony of the witness that he "spoke rough," amounting at the most to brusqueness, was not sufficient to constitute an insult, justifying an award of punitive damages. (*Jackson Light & Traction Co. v. Taylor*, 72 Southern Rep., 856.)

MISSOURI.—*Injury in Front of Carhouse.*

Where the petition alleged that deceased was driving a horse and buggy and that a street car was run out of a yard or shed from behind a brick wall, unmanned in front by any employee of the railway, and that deceased, to avoid collision with it, was compelled to turn away and upon a main line track, where his team was struck by another car and he was fatally injured, the inference was that deceased acted from apprehension of immediate danger. Hence an instruction that if defendant's negligence placed deceased in a situation of apparently imminent danger and peril, he could not be held to be negligent if in trying to escape he adopted a dangerous alternative in attempting to cross the main track, provided it was that which a prudent man might take in the same circumstances, was not repugnant to the allegations. (*Huber v. United Rys. of St. Louis*, 199 Southwestern Rep., 1163.)

NEW HAMPSHIRE.—*Injuries to Person from Rear Projecting Fender.*

In an action for injuries to a woman who in passing around the rear of a street car which she intended to board stumbled over the fender, evidence that the fender projected unnecessarily and that such fenders were customarily pushed in so that persons had no reason to be on guard against them, was held sufficient to show defendant's fault, though the fender did not project over the crosswalk. The company ought to have anticipated that persons coming around the rear to board the car would take the shortest route and not keep on the walk. (*Guerin v. Manchester St. Ry.*, 99 Atlantic Rep., 298.)

WASHINGTON.—*Injury to Man Passing Through Railway Switchyard.*

Where a man was killed while walking on the tracks of a railway switchyard, which until two days before the accident had been necessarily used as a thoroughfare because a parallel street was impassable, although the use of the yard had never been forbidden, he was a naked licensee using the switchyard by surference, and the railway company was not responsible for his death. (*Scharf v. Spokane & Inland Empire Ry.*, 159 Pacific Rep., 797.)

WEST VIRGINIA.—*Care of Electric Wires.*

The burden of the proper erection and maintenance of its trolley wires across a space over which telephone wires are strung and operated is on the railway company, and if a person is injured because of a cross connection, the company, to exonerate itself, must prove its adoption of approved and effective means to prevent such diversion. (*Edmonds v. Monongahela Valley Traction Co.*, 99 Southeastern Rep., 230.)

## Construction News

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

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

### FRANCHISES

**Marengo, Iowa.**—The Iowa Railway & Light Company has received a franchise from the City Council to erect transmission lines in Washington, Johnson and Muscatine Counties.

**South Hadley Falls, Mass.**—A copy of the franchise granting the Holyoke Street Railway the right to construct an extension of its Falls line to West Main, Canal, Taylor and North Main Streets has been sent to the Public Service Commission for its approval.

### TRACK AND ROADWAY

**Alabama Power Company, Anniston, Ala.**—Announcement has been made that the Alabama Power Company will spend about \$20,000 in the next three or four months in practically rebuilding its line from Anniston to Oxford Lake. The present 35-lb. rails will be replaced by 56-lb. rails and 10,000 new crossties have been ordered. A considerable amount of additional ballast will be used and new switches will be installed at crossings.

**Los Angeles & San Diego Beach Railway, San Diego, Cal.**—This company will reconstruct the track on its La Jolla line, substituting 60-lb. rail for the 40-lb. rail now in use.

**Municipal Railways of San Francisco, San Francisco, Cal.**—The public utilities committee of the Board of Supervisors has recommended that \$13,702 be set aside out of the municipal street railway earnings for the purchase of copper wire for overhead construction on Market Street, between Van Ness Avenue and Church Street.

**Springfield & Carbondale Railway, Chicago, Ill.**—Construction will begin April 1 on this company's proposed line to connect Springfield, Pawnee, Harvel, Hillsboro, Greenville, Carlyle, Pinckneyville, DuQuoin and Carbondale. Overhead trolley will be used and 160 miles of single track will be laid. The power station will probably be located at Harvel. C. H. Forrester, 76 West Monroe Street, Chicago, president. [Jan. 27, '17.]

**Illinois Traction System, Peoria, Ill.**—This company will soon begin work on a realignment of the Hillsboro branch of its lines. A belt line will be constructed at Staunton, and the curves at Litchfield and Mount Olive are to be reduced in such a way as to greatly facilitate the handling of standard railway freight equipment. Construction work will be begun as soon as the weather will permit.

**Peoria & Chillicothe Electric Railway, Peoria, Ill.**—The various franchises of the Peoria & Chillicothe Electric Railway have been sent to the Public Utilities Commission of Illinois for its approval. Construction of the proposed line will be begun as soon as the weather permits, and it is expected that the line will be in operation by early fall. The company will construct a power plant at Rome. A bond issue of \$30,000,000 is arranged in the East if the present franchises prove satisfactory. E. S. Woolner, Peoria, president. [Dec. 16, '16.]

**Kankakee & Urbana Traction Company, Urbana, Ill.**—Announcement has been made by this company that construction work on its proposed line between Paxton and Gilman will not be undertaken this year, as planned. Increased cost of material and labor prevent the company from securing contracts favorable to warrant construction work.

**St. Joseph Valley Traction Company, Elkhart, Ind.**—It is reported that an extension will be built by the St. Joseph Valley Traction Company to Montpelier, Ohio, where it will connect with the Wabash Railroad, and through freight service will be established over its entire length.

**Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind.**—The new bridge over Wildcat Creek, near Lafayette, has been placed in service by this company.

**United Railways & Electric Company, Baltimore, Md.**—This company has awarded a contract to the Union Switch & Signal Company, Swissvale, Pa., for 18 miles of alternating-current automatic signaling on its Bay Shore-Sparrows Point line.

**Springfield (Mass.) Street Railway.**—Plans are being made by the Springfield Street Railway to construct an extension of its car line in the Northern Heights addition on Chestnut Avenue, Elm Street, Sherman Avenue and Olive Street.

**Minneapolis (Minn.) Street Railway.**—The construction of 12.8 miles of single track in the season of 1917 has been approved by the Council committee on street railway matters and extensions for recommendation to the City Council. The committee instructed the city attorney to prepare a resolution for the Council, indicating a reasonable time within which these extensions must be completed by the Minneapolis Street Railway.

**\*Lebanon, Mo.**—It is reported that C. F. Robertson, Edith, is interested in the construction of an electric railway from Lebanon to Edith.

**International Railway, Buffalo, N. Y.**—A movement has been begun in Tonawanda to urge the International Railway to build a trolley line from its proposed extension to the present river road line through the town of Tonawanda and along Fletcher Street in the city of Tonawanda connecting the company's present Niagara Falls branch. The company has the matter under advisement.

**Interborough Rapid Transit Company, New York, N. Y.**—Application has been made to the Public Service Commission for the First District of New York by the Interborough Rapid Transit Company for permission to issue \$16,436,000 in bonds, the proceeds to be used as follows: For alterations in power plants, \$2,391,000; extensions and equipment, \$2,533,000; and for third-track installation and equipment, \$10,444,000.

**Schenectady (N. Y.) Railway.**—The Federal Signal Company, Albany, has received a contract from the Schenectady Railway for the installation of block signals on its double-track line between Albany and Schenectady, 10 miles. The material for this installation will include 17 left-hand upper-quadrant Federal type 4A, 110-volt alternating-current semaphore signals, controlled by type UA, three-position track relays; Federal type impedance bonds having a continuous capacity of 500 amp. per rail, three Federal type C, alternating-current switch indicators with track control, and nine light type switch indicators controlled by a combination track circuit and time-element mechanism.

**\*Mandan, N. D.**—Plans are being made to construct an electric railway between Mandan and St. Anthony. Subscriptions to the amount of \$60,000 have been received from farmers living between Mandan and St. Anthony. It is planned eventually to connect the Northern Pacific main line with the Chicago, Milwaukee & St. Paul Railway at Freda or Raleigh. F. C. Massingham, president of the Missouri Slope Fair Association, Mandan, is the promoter.

**Northern Ohio Traction & Light Company, Akron, Ohio.**—Plans have been completed by the Northern Ohio Traction & Light Company for four car-line extensions, including the West Exchange Street line from Five Points to Delia Avenue, out Delia Avenue to Madison Avenue, south in Madison Avenue to South Maple Street; Goodyear Heights line from East Market Street and Goodyear Avenue, extending through the Heights to the distributing reservoir of the Akron Water Works in Britain Road; Grant Street line from South Street south through the new Firestone Park allotment; Wooster Avenue line from the present terminal to East Avenue, thence southwest to the intersection of Manchester Road. The present tracks in West Exchange, West Market and Howard Streets will be relaid. Over 2 miles of double track will be built on the interurban line between Bedford and Cleveland.

**Oklahoma (Okla.) Railway.**—Work will be begun at once by this company on the construction of an extension from Thirteenth Street and Broadway to Eighteenth Street and Robinson Street through the Winnans Addition.

**Peterboro (Ont.) Radial Railway.**—The City Council of Peterboro is considering the construction of extensions to the street railway system.

**Philadelphia & Reading Railway, Philadelphia, Pa.**—It is reported that the Philadelphia & Reading Railway plans to equip its system from Pottsville to Schuylkill Haven and thence to Reading, a distance of 37 miles, for electrical operation. The cost is estimated at \$750,000.

**United National Utilities Company, Philadelphia, Pa.**—This company, recently incorporated in Delaware, has purchased the outstanding common stock of the National Properties Company and the outstanding capital common stock of the Jersey Central Traction Company and affiliated lighting companies. The following officers have been elected: Van Horn Ely, president; William C. Sproul, vice-president; Walter W. Perkins, secretary and treasurer; and Henry P. Carr, assistant secretary-treasurer. [March 3, '17.]

**Charleston Consolidated Railway & Lighting Company, Charleston, S. C.**—Work has been begun by the Charleston Consolidated Railway & Lighting Company on the double-tracking of its line from the Five-Mile House to the Navy Yard, and it is expected that the line will be completed in the early spring.

**Chattanooga Railway & Light Company, Chattanooga, Tenn.**—A 3-mile extension to the property of the West Chattanooga Land Company is contemplated by the Chattanooga Railway & Light Company if a government armor plate plant is located there. The proposed line would be an extension of the St. Elmo or Lookout Mountain lines.

**Houston (Tex.) Electric Company.**—This company will double-track its line on Harrisburg Boulevard.

**Hampton & Langley Field Railway, Hampton, Va.**—An 1800-ft. pile trestle will be built by the Hampton & Langley Field Railway across Back River in connection with its 3-mile railway to be built from Hampton to the Langley aviation field. J. N. Shannahan, president. [Feb. 3, '17.]

**Port Orchard, Wash.**—At a recent meeting of the commissioners of Pierce and Kitsap counties the proposition of constructing an electric railroad from Port Orchard to Gig Harbor, including the inauguration of ferry service to Tacoma, was discussed. However, the commissioners were chary about committing themselves on the construction of the proposed line, stating that they believed the matter should be left entirely to a vote of the people. From present indications it is believed nothing further will be done in the matter, and that the proposed line will be indefinitely postponed. [Feb. 17, '17.]

**Sedro Woolley, Wash.**—It is reported that the Stone & Webster interests are preparing to extend their present system of interurban lines in this section to the upper valley, connecting Sedro Woolley with other towns in the Skagit Valley. Surveys are being made of the Upper Valley and it is believed construction activities will be begun during the summer.

**Monongahela Valley Traction Company, Fairmont, W. Va.**—The construction of a 3-mile extension of its east side branch to Pleasant Valley has been ordered by the Monongahela Valley Traction Company.

**Waupaca Electric Service & Railway Company, Waupaca, Wis.**—Improvements to its property, especially in the electric light and power department, are being planned by this company.

## SHOPS AND BUILDINGS

**Union Traction Company of Indiana, Anderson, Ind.**—This company is considering the enlargement of its division shops at Muncie.

**Beaver Valley Traction Company, New Brighton, Pa.**—Agreements have been signed by the Beaver County Agricultural Association, the Beaver Valley Traction Company, and the Pennsylvania Railroad, providing for the relocation of the race track and buildings at Junction Park. The total cost of the contemplated improvements will be \$46,000. The cost of the work will be paid by the Pennsylvania Railroad, in consideration for the relocation of the railroad tracks along the Beaver River, this change necessitating the moving of the race track. The work will be done under the direction of the Beaver Valley Traction Company, and contracts will be awarded in a few weeks.

**Galveston-Houston Electric Railway, Galveston, Tex.**—H. B. Sewell, superintendent of the Galveston-Houston Electric Railway, announces that the company will change the construction of the front of its passenger station in Galveston in repairing the damage done when a car split a switch and knocked out a brick pillar which supported the front of the building. A contract has been awarded to M. C. Bowden, Galveston, for taking out the brick pillar and placing heavy steel beams across the entire front of the building of sufficient weight to support the front of the structure.

## POWER HOUSES AND SUBSTATIONS

**Danville Street Railway & Light Company, Danville, Ill.**—Contracts have been awarded by this company for the installation of a 4000-kw. condensing turbine unit. A new building for this equipment is nearly completed, and a substation will be erected to take care of the transmission lines leaving this plant.

**Northern Illinois Light & Traction Company, Ottawa, Ill.**—Work has been begun by the Northern Illinois Light & Traction Company on the construction of a plant with a 4000-kw. turbine generator. In connection with this plant an outdoor transformer station will also be built.

**Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind.**—This company's power house at Decatur has been discontinued and current is now supplied from the main power house at Fort Wayne.

**Albia Light & Railway Company, Albia, Iowa.**—This company is rebuilding its entire plant at Albia.

**Detroit (Mich.) United Railway.**—In connection with the rehabilitation of the Detroit United Railway's power house, station B, in Detroit, the nature of which was described in the *ELECTRIC RAILWAY JOURNAL* for Oct. 28, 1916, page 956, contracts for the following equipment have been let: Four 600-hp. Stirling boilers and four six-retort Taylor stokers, four Diamond Power Specialty Company soot blowers, a Griffin steam jet ash conveyor, and a Custodis Chimney Construction Company stack. The contract for the building alterations was let to a local contractor, W. E. Woods.

**Southern Power Company, Charlotte, N. C.**—Contracts have been let by the Southern Power Company for the immediate construction of a new hydroelectric generating station at Wateree, S. C., to be completed Nov. 1, 1918. The new plant will have an ultimate capacity of 100,000 hp., and will be connected with six other hydroelectric stations upon the same stream or its tributaries, and owned by the Southern Power Company. The cost is estimated at \$5,000,000.

**Northern Ohio Traction & Light Company, Akron, Ohio.**—New installations are being made by this company at its Gorge power house and the substation on the Northern Division, including two 20,000-kw. turbogenerators, boilers of 6000 hp. capacity, and nine 1000-kw., 60-cycle, rotary converters. Three 1000-kw. rotary converters will be installed at Canton. A new substation will be built at East Akron, and it will receive electricity from a 22,000-volt line, and will have one 1000-kw. rotary converter and two 1000-kw. distribution transformers. A high-tension switching station will be built at Kenmore, with a capacity for handling ten 22,000-volt circuits. A number of changes will also be made at some of the other substations of the company.

**Lehigh Valley Transit Company, Allentown, Pa.**—Extensive improvements are being made to the transmission system and distributing lines of the Lehigh Valley Transit Company over the entire system, from Philadelphia to Slattington. About \$110,000 has been expended, and the proposed work is estimated at about \$220,000.

**Valley Railways, Lemoyne, Pa.**—A new 2500-kw. turbine is being built by the General Electric Company for the Valley Railways to be installed at its Lemoyne power plant.

**Wisconsin Public Service Company, Green Bay, Wis.**—It is reported that the Wisconsin Securities Company, through its subsidiary, the Wisconsin Public Service Company, will construct a new plant at Manitowoc, at an estimated cost of \$500,000.

# Manufactures and Markets

Discussions of Industrial Conditions

A Department for the Manufacturer, Salesman and Purchasing Agent

Rolling Stock Purchases

Business Announcements

Trade Literature

## To Combine Forces in Buying

Staffs to Meet for Discussion of Purchases Before Placing Orders

So many roads are deeply affected by the rise in prices of materials and the difficulty in obtaining supplies, that any measure of relief found by one will no doubt be considered readily by another. According to P. P. Crafts, general manager Kanawha Traction & Electric Company, "the difficulty of getting delivery of materials has made large stocks necessary in order to avoid a serious loss of business due to shortage of some article essential to continuity of railway or electric service. This company is to-day carrying an investment in stores of materials and supplies for operation and maintenance nearly 50 per cent greater than it has required under normal conditions. If market and transportation conditions become worse still further increases will be necessary."

Because of these conditions cited by Mr. Crafts, which are almost general in application, most roads are giving far more thought to buying methods than they ever before received. The buying questions are now difficult to answer and so, on Mr. Crafts' property as well as on others, "buying conferences" are now being held in advance of placing orders. This practice tends to assure the purchase of materials in correct quantities.

The staff method of handling the buying problem is no different in principle than the committee or conference method of deciding other operating problems. In organizations of average size the requirements of individual departments are better known by those in direct charge than by a very busy purchasing agent or storekeeper. Staff meetings on purchases to be made, therefore should serve to reduce the investment in idle stocks and to provide stores in ample time for use in extensions or maintenance.

## Big Increase in Skylight Business

Many Large Orders Recently Placed—Export Business Important—Recent Studies and Developments Made on Skylights and Sashes

Owing to the large industrial development in the manufacturing, textile, steam and electric railway field, the business of the G. Drouvé Company, according to William V. Dee, secretary and general manager, has increased about 200 per cent over last year, and prospects are that the coming year will show an even greater increase.

The export business is commanding considerable attention owing to the size and amount of orders placed. Most of these installations are industrial, sugar mills, power developments or buildings for general business purposes; in some cases orders are coming from steam or electric railways which are building shops, substations or power houses. This develops the metric side of the situation and shows how extensively it is used in dealing with foreign buyers. This fact was also brought out during the recent National Foreign Trade Council convention held in Pittsburgh, Pa., on Jan. 24-27 in one of a set of eighteen questions considered helpful to the manufacturer.

### INDUSTRIAL AND POWER DEVELOPMENTS

Extensions are under construction for the Boston Elevated Railroad, the Mahoning & Shenango Railway & Light Company, as well as for the New Bedford Gas & Electric Light Company, the Union Gas & Electric Company and the American Gas & Electric Company, for which the G. Drouvé Company is furnishing its anti-pluvius puttyless skylights

and straight-push sash operators. In addition to the above the various Edison companies are making extensions in different parts of the country. The textile and industrial development throughout New England, the Central Eastern States and the South has grown steadily to keep pace with the demand for increased production. Several large orders have recently been completed on which from \$15,000 to \$25,000 worth of this company's material has been required. While the electric railway field demands only a portion of this company's product, there is considerable activity, but usually this is at its best during the summer and fall months of the year. Considerable work has been done for the Public Service Electric Company as well as for the Public Service Railway, and the Drouvé products are receiving a favorable share of this business, the largest installation being at the new terminal building recently completed in Newark, N. J. Several large groups of car repair shops and carhouses using this company's products have been completed by the Cleveland Electric Railway, and the Chicago Surface Lines have replaced a portion of one of its carhouses. Reports from the Pacific Coast indicate that several large installations will be made there in the spring. Last year an equipment of sash operating devices was furnished to the Havana Railway, Light & Power Company, Havana, Cuba.

### PRICES FORCED UP—DELIVERIES GOOD

Regardless of the increased cost of raw materials and labor, this company's prices were not increased until Jan. 1, 1917, and then only after the immense stock of raw material which had been on hand was completely used up. These increases took into account only the exact costs of labor and raw materials. The advancing prices of glass, iron and copper are generally known and no comment need to be offered on this subject. Wages offered by munition workers in order to secure skilled men have necessarily caused increases in wages in the ordinary industrial manufacturer's establishment, but this condition is settling down and seems in a fair way to be solved. While all the skylights made by this company are of special "anti-pluvius" puttyless design, nevertheless orders are being filled promptly. This is in a measure due to the specialized organization in standard product that is turned out in our own manufacturing plant. While there have been shortages of small classes of material, the requirements have been pretty well covered and good records for deliveries will be maintained.

The past year has awakened decided interest in the question of paying attention to the important subject of cleaning skylight glass, which at the same time gives opportunity for observance of the condition of all parts of the skylight structure. In many cases, in electric railway buildings, it is absolutely essential that light be secured from overhead. When an investment is made to accomplish this object it would seem poor economy to permit the glass through which daylight must enter to become so black through dirt accumulation that instead of obtaining 100 per cent light, it should be reduced to 50 per cent and even less when cleaning at stated intervals insures full value all the time.

If a construction is used such that the skilled labor factor is eliminated, so that the ordinary mechanic in the maintenance force of a street railway company can attend to the vast skylight areas used, then the value of these daylight openings may be made a real asset to the corporation in many ways—better light, avoidance of accidents, saving in glass crackage and probable spoilage of work, and last, but not least, permanence as against possible renewal. There is a field for improvement in this direction, and it is the hope of the company that thought be given to it and much good will come thereby.

## Trolley Contactor Signals Active

**Eighteen-Year-Old Signals Still in Use—New Standard-Aspect System Soon Available—High Prices Affect Manufacturing Costs**

The first trolley contactor controlled block signals installed by the United States Electric Signal Company on the lines of the Bay State Street Railway in 1899, are still in operation according to statements recently made by Roland F. Gammons, 2d, vice-president and treasurer of the company. These original signals, which have served to make history in electric railway signaling, were crude when viewed through the eyes of the present. At that time, if it was desired to run more than one car through a block at a time, it was customary to pull down the trolley poles on all but the last car entering the block. Thus the procession was protected against an adverse movement after the last car had entered. In October, 1908, the most important development appeared in the form of the improved registering signal. This was a notable step in advance for trolley contactor signaling work, because these signals protected following movements through a block and the various sections of the train counted themselves in and out, the last train out clearing the section. This company was one of the pioneers in the business and, therefore, these dates of 1899 and 1908 might well be set down in the history of trolley contactor signaling.

The next notable step in advance came recently with the announcement by Mr. Gammons that within the present season his company will offer for sale its new type N trolley contactor signal with standard aspects. This will be an all-light signal showing green for proceed, yellow for proceed with caution and red for stop. Inquiries and prospects for the sale of this signal are such that it will be fair to expect an active market as soon as it is offered for general use. Several large old-time customers have signified their intention of adopting this type of trolley contactor signaling as standard for their systems as soon as it is available for installation.

### INQUIRIES SLOW FOR THREE YEARS

Speaking of the general market for trolley contactor signaling systems and apparatus, Mr. Gammons pointed out that inquiries during the past three years had been less frequent and not so substantial as in earlier years. The high cost of money three years ago, followed by the ravages of the jitney and now by the high prices of materials, even though money is low in cost, reduced the number of possible signal sales for this three-year period. Just now the roads seem to have stopped buying everything but essentials and devices which produce economies easily and directly.

Mr. Gammons cited the Collins non-splashing electric track switch as an example of an economy-producing device which is having a ready sale even during the period of high prices. He said that the prospects in 1917 for the sale of the track switch are very good. Within the past year sales have been made to more than twenty-five roads in the United States. The foreign business, however, is below normal.

### THE STORY OF HIGH COSTS

The high cost of raw products and special material for the manufacture of block signals and track switches has affected the United States Electric Signal Company in about the same way that has been described for a number of other companies. Iron castings, for example, formerly purchased for all patterns at 4½ cents a pound, are now classified in accordance with the patterns and the price ranges from 6¼ to 15¾ cents a pound. Copper magnet wire, normally 20 to 22 cents a pound, is now in the neighborhood of 55 to 60 cents a pound and some kinds of flat steel used in the signal mechanism have increased from 4 cents a pound to 20 cents a pound.

In the sealing of the track switch mercury is used. Mercury is produced largely in Australia, New Zealand and Spain. The only mine in this country that is a regular producer is located in California. Because the largest sources are abroad, the submarine activities in Europe have caused rapid fluctuations in the price of mercury. This material normally sells for about 43 cents a pound and it has

been necessary during the last two years to buy mercury at prices as high as \$4.30 a pound.

Mr. Gammons has called attention to the fact that his company during the past year has done a great deal of development and experimental work along the line of trolley contactor controlled automatic block signals. Those railway men who have inspected the newly developed apparatus have complimented it highly and Mr. Gammons looks forward to its ready sale and to a possible broadening of the market by the use of standard aspects.

## The Effects of Rising Costs

**An Accessory Manufacturer's Ideas of the Controlling Factors of the Railway and Manufacturing Fields.**

According to George P. Smith of the Smith-Ward Brake Company, the specialty manufacturer, like the general manufacturer, has had many difficulties to face during the past year. He said recently to a representative of this paper:

"Most of us buy some or many parts of our apparatus or mechanism. This greatly adds to our difficulties because of the obstacles in transportation which must be overcome before shipments can be made to our customers. We, like everyone else, have had to raise our selling prices about 25 per cent to cover the increased cost of labor, materials and other expenses. Many parts of our specialties have advanced 100 per cent. For instance, small malleable castings which we formerly bought for 4½ cents per pound delivered now cost 8 to 10 cents per pound, depending on size, weight, etc., f.o.b. the foundry. For certain more intricate, small malleable castings we have paid as high as 20 cents per pound. Even at these abnormal prices it has been most difficult to get reasonable deliveries. Bar steel, as everyone in the industry knows, has doubled in price since the start of the war. We have had several blessings, however, to make up for increased costs. There has been an increased demand to make quantity production possible, thereby lowering production and overhead costs to a great extent.

"The worst feature for electric railway manufacturers in rising costs and increased selling prices is the effect produced on their customers, whose only possible increase in receipts is in the number of persons carried but not from the receipts of each passenger. A few years ago the nickel received by the railways was much bigger in buying power than it is to-day. It went further in paying labor, taxes and all the one hundred and other expenses that an electric railway falls heir to. This diminishing buying power is as serious for the manufacturer, if he confines himself to this field, as to the electric railway. His ultimate destiny is bound up to that of the railway.

## Packing 120-Ton Locomotives

**Each Locomotive When Packed Required Eight Cars for Transporting from Factory to Docks**

Heavy machinery intended for export is usually assembled at the factory and then loaded intact onto the decks of ocean liners. Electric locomotives weighing 41 tons each have been shipped in this way from New York to the Canal Zone and there are numerous other examples of loading complete locomotives onto the decks of ocean vessels. However, a more difficult problem was presented in the shipment of the 120-ton electric locomotives recently built by the General Electric Company for the Bethlehem-Chile Iron Mines Company at Tofo, Chile.

The capacities of the ship and dock cranes were insufficient for handling these locomotives, and therefore it was necessary to take the locomotives apart, classify the different pieces or groups according to size and weight, and box them in shipping cases of a size that could be handled by the ship and dock cranes. In shipping form, the parts of a single one of these locomotives filled eight freight cars. The shipments were loaded without mishap, and safely made the forty-day voyage to Cruz Grande. The heaviest single article in the shipment weighed 23 tons. It consisted of the locomotive underframe together with the roof structure and the necessary boxing.

## Standardization of Catalogs

BY S. R. DUNBAR

Purchasing Agent Union Traction of Indiana.

I have noted with interest the article of W. L. Chandler of the Dodge Manufacturing Company which was published in the *ELECTRIC RAILWAY JOURNAL* of Feb. 24, page 372.

If any standard sizes of catalog can be agreed upon, I would be glad to join in insisting that such sizes should be furnished, although our manner of filing catalogs is such that the variation in sizes and shapes is not of particular inconvenience.

There would probably be much difficulty in standardizing on one size of catalog without causing waste of paper, which, particularly just now, costs more than space. Possibly it would be better if more than one size should be permitted. For instance, one or two sizes for pamphlets and one or two sizes for bound books might be chosen. We may get nothing by insisting too strongly on a single standard size, whereas we might accomplish something by permitting some flexibility.

Advertisers, of course, have very different ideas as to the best methods of presenting their data and some have pet ideas which cannot be changed readily. The small folders, for instance, for envelope "stuffing" lead naturally to a similar sized catalog as a matter of economy. The 6 in. x 9 in. pamphlet is quite generally used and it seems to be more convenient in a good many instances than the 8½ in. x 11 in. pamphlet. This latter size is, of course, necessary and anything larger would seem to be entirely unnecessary. Bound books could readily be made to conform to the last two mentioned sizes.

I believe that anything the *ELECTRIC RAILWAY JOURNAL* or its associated trade papers can do to bring about some progress toward standardizing sizes of advertising matter and catalogs would be greatly appreciated by a large majority of its readers.

[EDITORS' NOTE]

At the present time the standard sizes adopted by the Master Car Builders' Association are as follows: For post-card folders, 2½ in. x 5½ in. and 3½ in. x 6 in., and for pamphlets and trade catalogs, 6 in. x 9 in. and 9 in. x 12 in. These standard sizes have remained unchanged since 1895. The only change made by the Master Car Builders' Association was the adoption in 1912 of a new size of letter paper, 8 in. x 10½ in.

## A Folder File for Catalogs

BY F. S. MONTGOMERY

Advertising Manager National Metal Molding Company, Pittsburgh, Pa.

I have noticed with particular interest the article in your issue of Jan. 24 on the subject of standardization of catalog sizes. We have recently adopted a folder file for catalogs and think that your readers may be interested in it. It was designed as a substitute for the loose-leaf catalogs. The latter have their advantages, but these are offset by the time required to insert new sheets. It is unreasonable to expect the trade to take this time, and unless a loose-leaf catalog is kept up to date it is worse than useless. We are, therefore, sending recent data on our different products in the form of separate bulletins, each bulletin being bound in a standard correspondence folder. This folder is properly indexed for filing, either according to materials or to the name of the manufacturer, and will fit any standard vertical letter file. The first three of a complete set of bulletins to replace our present catalog are just off the press and are being sent out to the trade in this manner.

## Steam Railway Price Increases

A table prepared by M. M. Rice, second vice-president of the Frisco System, shows that 52 per cent of the supplies bought in 1916 show an increase of 119 per cent in cost over 1915. The other 48 per cent of the supplies increased in cost 60 per cent. The increase in the cost of axles, which were purchased in the same amounts both years, was 257 per cent and brake beams 86 per cent. Boiler tubes increased 201 per cent and steel wheels 107 per cent.

## Government Orders Take Precedence

A number of manufacturers who supply important electric railway equipment and materials have been instructed by the government to give precedence to orders now in process of manufacture for the army and navy departments. With most companies this has not affected the progress of work through their shops. All manufacturers, of course, are acceding to the instructions and prosecuting the government work with all possible haste. This situation and the possible outcome now confront quite a number of manufacturers of railway equipment. One boiler manufacturer has been forced to write its electric railway customers that all earlier promises on delivery must now be delayed at least thirty days because of instructions from the government for the manufacturer to devote full attention to government orders only.

It is recognized that in time of war the government has the right to commandeer any manufacturing plant or any equipment that is needed for military use. This is a condition which the railways with much material now on order should recognize.

## CURRENT PRICES FOR MATERIALS

Quoted Wednesday, March 8

Copper (electrolytic).....	New York, 36¼ cents per pound
Rubber-covered wire (base).....	New York, 40 cents per pound
No. 0000 feeder cable (bare).....	New York, 37¼ cents per pound
No. 0000 feeder cable (stranded).....	New York, 35 cents per pound
No. 6 copper wire (insulated).....	New York, 37¼ cents per pound
No. 6 copper wire (bare).....	New York, 37 cents per pound
Tin (straits).....	New York, 54 cents per pound
Lead.....	New York, 9½ cents per pound
Spelter.....	New York, 10¼ cents per pound
Rails, A. S. C. E., O. H.....	Mill, \$40 per gross ton
Rails, A. S. C. E., Bess.....	Mill, \$38 per gross ton
Wire nails.....	Pittsburgh, \$3.20 per 100 pounds
Steel (bars).....	Pittsburgh, 3¼ cents per pound
Sheet iron (black, 24 gage).....	Pittsburgh, 4.65 cents per pound
Sheet iron (galv., 24 gage).....	Pittsburgh, 6.30 cents per pound
I-beams over 15 in.....	Pittsburgh, 10 cents per pound
½-in. galv. extra high strength steel wire.....	New York, \$7.04 per 100 ft.
¾-in. galv. high strength steel wire.....	New York, \$3.52 per 100 ft.
¾-in. galv. Siemens-Martin wire.....	New York, \$2.60 per 100 ft.
5/16-in. galv. Siemens-Martin wire.....	New York, \$2.00 per 100 ft.
Galvanized barb wire and staples.....	Pittsburgh, 4.05 cents per pound
Galvanized wire (ordinary).....	Pittsburgh, 3.85 cents per pound
Cement (carload lots) with rebate for sacks.....	New York, \$2.02 per barrel
Cement (carload lots).....	Chicago, \$2.06 per barrel
Cement (carload lots).....	Seattle, \$2.60 per barrel
Sand in large lots.....	New York, 50 cents per ton
Linseed oil (raw, 5-bbl. lots).....	New York, 94 cents per gallon
Linseed oil (boiled, 5-bbl. lots).....	New York, 95 cents per gallon
White lead (100-lb. keg).....	New York, 10¼ cents per pound
Turpentine (bbl. lots).....	New York, 51¼ cents per gallon

## OLD METAL PRICES

Copper (heavy).....	New York, 29¼ cents per pound
Copper (light).....	New York, 24¼ cents per pound
Red brass.....	New York, 20 cents per pound
Yellow brass.....	New York, 18¼ cents per pound
Lead.....	New York, 8 cents per pound
Zinc.....	8 cents per pound
Steel car axles.....	Chicago, \$34 per net ton
Iron car wheels.....	Chicago, \$18 per gross ton
Steel rail (scrap).....	Chicago, \$24.50 per gross ton
Steel rail (relaying).....	Chicago, \$34 per gross ton
Machine shop turnings.....	Chicago, \$9.25 per net ton

## ROLLING STOCK

Sioux City (Iowa) Service Company is building seven city cars in its shops.

Tri-City Railway, Davenport, Iowa, is reported to be preparing specifications for fifteen single-truck cars.

Chicago, South Bend & Northern Indiana Railway, South Bend, Ind., is inquiring for prices on sixteen cars, part of which are for city and part for interurban service.

Illinois Traction System, Peoria, Ill., has ordered from the St. Louis Car Company fifteen double-truck city cars for Peoria.

Montreal Tramways, Montreal (Que.), Canada, is reported to be in the market for fifty cars in addition to the fifty which have been ordered recently from The J. G. Brill Company.

Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., is in the market for eight single-truck cars for

Logansport and for nine double-truck cars for Fort Wayne with an option for another nine cars.

Indiana Railway & Light Company, Kokomo, Ind., noted in the *ELECTRIC RAILWAY JOURNAL* of Feb. 3 as being in the market for two double-truck city cars, has ordered this equipment from the American Car Company.

Municipal Railway, San Francisco, Cal., has ordered from the White Company, Cleveland, Ohio, five semi-convertible, single-deck, prepayment type auto buses. The buses will cost \$29,550 and delivery will be made within four months.

Peninsular Railway, San José, Cal., has ordered three new Fadgl cars. This type of car is 25 ft. long, weighs 10 tons, and is propelled by a 70-hp. gas engine. It will seat thirty-two passengers.

International Railway Company, Buffalo, N. Y., has not purchased five coaches from the Pennsylvania Railroad to be used on its Buffalo-Niagara Falls line as was incorrectly stated on page 278 of the Feb. 10 issue of this paper. The cars for the new line are being constructed by the G. C. Kuhlman Car Company, Cleveland, Ohio, as reported in the *ELECTRIC RAILWAY JOURNAL* of Jan. 6, 1917, and will be new cars, complete in every detail.

Interborough Rapid Transit Company, New York, N. Y., noted in the *ELECTRIC RAILWAY JOURNAL* of Feb. 10, 1917, as being in the market for 477 steel subway cars, has opened the bids on the car-bodies. The Pullman Company had the lowest bid, \$4500, and will probably get the order for all the car-bodies subject to the approval of the Public Service Commission. It is reported that the next lowest bid on the same combination was \$5,550 and the highest bid was \$5,795. It was stated that the Commonwealth Steel Company will probably receive the order for trucks. The following companies submitted bids on car bodies: American Car & Foundry Company, The J. G. Brill Company, the Pullman Company, the Jewett Car Company, the Southern Car Company, the Standard Steel Works, the Pressed Steel Car Company and the St. Louis Car Company.

## TRADE NOTES

Perry Ventilator Corporation, New Bedford, Mass., has received an order to equip with ventilators the fifty new cars being built by the J. G. Brill Company for the Montreal Tramways.

Siemens Brothers Dynamo Works, Ltd., and Siemens Brothers & Company, Ltd., London, England, have removed their offices from Caxton House, Westminster, to Palace Place, Manchester, Kensington Court, London.

Lincoln Bonding Company, Cleveland, Ohio, announces the appointment of Holden & White, Inc., Fisher Building, Chicago, as sales agents in the states of Illinois, Iowa and Nebraska for the Lincoln rail bonding and welding apparatus and materials.

P. H. Affolter and A. E. Garland, who were formerly connected with Fairbanks-Morse & Company, have been made Pacific Coast representatives of the Moloney Electric Company, with headquarters in San Francisco.

H. W. Johns-Manville Company, New York, N. Y., announces the removal of its Louisville branch office to the corner of Fourth Avenue and Guthrie Street, Louisville, Ky. A. H. Voigt will be in charge of the office.

Federal Signal Company, New York, N. Y., announces that Mark R. Briny has accepted the position of Eastern manager and will have headquarters at the company's New York office, 52 Vanderbilt Avenue, after March 1.

Associated Manufacturers of Electrical Supplies, New York, N. Y., have made extensive plans for the annual meeting and banquet of the association which will be held at Delmonico's on March 15. Edward N. Hurley, retiring chairman of the Federal Trade Commission, will make an address at the banquet.

Miller Trolley Shoe Company, Boston, Mass., has received an order from the International Railway for 100 trolley shoes and 100 contact inserts to be used on its high-speed interurban line between Niagara Falls and Buffalo. The Chicago North Shore & Milwaukee Railway has repeated an order for sixty trolley shoes and 500 contact inserts.

A. H. Ackerman, formerly vice-president and general manager of the U. S. Light & Heat Corporation, and C. C. Bradford, formerly sales manager of the same company, announce the formation of the Bradford-Ackerman Corporation, with offices in the Forty-second Street Building, New York City, to represent manufacturers of railway and electrical supplies for domestic and export trade.

Marlin Arms Corporation, New Haven, Conn., has arranged to buy the plant and assets of the Standard Roller Bearing Company, Philadelphia, Pa., and of the Rockwell-Drake Corporation, Fairfield, Conn., the consideration being \$2,270,000 in cash and 3350 shares of Marlin's common stock. This will assure the Marlin organization an active business after the war in addition to its regular business.

Union Carbide Company, Chicago, Ill., and Linde Air Products Company, New York, N. Y., have issued an offer to the Oxweld Acetylene Company to exchange on the basis of one-half a share of Carbide stock and one-third a share of the Linde stock for each share of Oxweld stock. Large stockholders of the Oxweld company have indicated their intention of making the exchange.

Permutit Company, New York, N. Y., announces that Cass L. Kennicott, for many years an expert in water softening, has become associated with this company, and will have charge of its Chicago office at 208 South La Salle Street. This company is prepared to install apparatus which will produce water of zero hardness, and also install other forms of water purification devices, including those designed and built by Mr. Kennicott.

Dayton Fare Recorder Company, Dayton, Ohio, announces that it has taken over the business of the New Haven Trolley Supply Company, the Recording Register & Fare Box Company, and the Sterling Fare Register Company. The new arrangement will enable the company to serve the trade even better than in the past owing to unexcelled facilities for the development and manufacture of fare collecting, recording and registering devices for city, suburban and interurban car operation.

Du Pont Fabrikoid Company, Wilmington, Del., has purchased the Marokene Company of Elizabeth, N. J. This company manufactures a material similar to fabrikoid which is used extensively by the automobile, carriage and upholstery industries. R. B. Heyward, formerly assistant superintendent of the Fabrikoid Company's Newburgh plant, will become superintendent of the Marokene plant at Elizabeth, N. J. All the sales transactions of the Marokene Company will be handled through the Wilmington office under the direction of J. K. Rodgers, sales manager of the Du Pont Fabrikoid Company.

## ADVERTISING LITERATURE

Alpha Portland Cement Company, Easton, Pa., has issued a 100-page booklet on "Alpha Cement and How to Use It."

Western Reflector Company, Chicago, Ill., has issued a 16-page pamphlet on its silver and oval glass inverted, double and single cone reflectors.

David Lupton's Sons Company, Philadelphia, Pa., has issued its catalog No. 9 on Lupton service products which consist of projected ventilator, counterbalanced and counterweighted steel sashes.

General Electric Company, Schenectady, N. Y., has issued bulletin 46291A on its type IB-5 and 6 portable test meters for alternating-current circuits. This meter is made in two sizes, one of 10-amp. and the other of 150-amp. capacity.

Johnston Export Publishing Company, New York, N. Y., has just issued the fifth edition of the Export Trade Directory. The volume contains 536 pages and gives information of great value to every exporter.

W. S. Barstow & Company, New York, N. Y., has issued an attractive publication, "The Puzzle of Prosperity and Its Solution." Descriptions and illustrations of electric railway, power and industrial developments for which this company has been the constructing engineers are given. A number of halftones are shown of the construction work on the Oregon Electric Railway, which is one of the railways built by this company.