

Electric Railway Journal

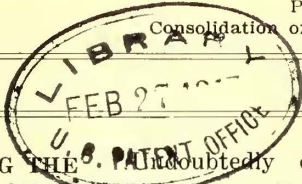
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Consolidation of STREET RAILWAY JOURNAL AND ELECTRIC RAILWAY REVIEW

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No. 8



RELIEVING THE PAVING BURDEN Undoubtedly one of the most promising directions in which money can be directly saved for the purpose of improving service by electric railways is in obtaining release from the traditional paving burden with which they are saddled. Railways are looking for means of widening the margin between income and outgo. Here is a very tangible way in which it can be done, and it can be done because it ought to be done. The illogical character of the paving burden is indicated in an article by W. R. Dunham, Jr., in this issue, and we expect to publish other articles giving further proof of the truths which he convincingly sets forth. There is good reason to believe that the public through its public service commissions is coming to realize that this method of increasing the railway net has many points to recommend it. For one reason, it involves no changes in the rates of fare or in the transfer regulations, and for another reason it can be justified in equity, because it is hardly more logical to require repaving by electric railways than it would be to require them to light or police the streets on which they run. The public is reasonable in these matters when fully informed.

SCHEDULE SPEED A VITAL FACTOR The plan of the Denver Tramway Company, as mentioned in last week's issue, to make an expert analysis of its schedules with the object of working out the most economical arrangement for each of its lines is significant. We are mentioning the plan not because the company in Denver is the first to adopt it but because we believe that scientific schedule making is at once the most neglected field as well as the one which is productive of greatest results on the average electric railway to-day. As has been shown in previous issues of the **ELECTRIC RAILWAY JOURNAL**, schedule speed has a more potent influence upon operating expenses than any other single item. In fact, under favorable circumstances a change in running time may even be reflected by an almost directly proportional change in the final cost of operation, wherein interest and depreciation charges on equipment, as well as working expenses, are considered. Yet it is not unusual to find a great deal of time and attention devoted to the saving of, say, 10 per cent in the cost of maintenance of equipment or track, or the expense of producing power—with the result that, at most, about 1 per cent, or 1.5 per cent or 2 per cent, respectively, of the operating expenses may be saved. At the same time the matter of schedule speed may be absolutely neglected, although a decrease of 10 per cent

in running time on a property of reasonable size may bring about an equivalent saving that ranges from 4 per cent to 7 per cent of the operating expense because of the decreased platform costs and the decrease in the number of cars required to handle the traffic. In a word, the industry might better forget altogether the question of maintenance and power costs if, by so doing, it could concentrate effectively on the vital factor of schedule speed. That there is a field for such endeavors is evident from the fact that, although an average of 11 m.p.h. has been attained in a large city, speeds of less than 8 m.p.h. are almost the rule.

ADVERTISEMENTS IN "AERA" We have never believed that the policy of the American Electric Railway Association in soliciting advertisements from manufacturers for publication in *Aera* was a proper one to pursue for several reasons, among them the following: (1) It puts a burden of expense for the maintenance of the association activities on the manufacturers over and above that which is borne by the railway companies, as both pay dues on the same basis. (2) This expenditure is largely to duplicate existing service and is unfair competition with technical papers. (3) The publication of a commercial magazine is a business activity as much out of harmony with the aims and spirit for which the association was founded as the manufacture of railway supplies, car bodies or machine parts. (4) A question of principle is involved. To this phase Colonel Williams and Mr. Tripp call special attention in their report presented to the executive committee at its Boston meeting. This report with the majority report on the subject is published elsewhere in this issue with the permission of President Storrs. Colonel Williams and Mr. Tripp say:

"Even if no improper pressure has been or is brought to bear upon manufacturers and sellers of railroad apparatus in the solicitation of advertising, the very fact of such solicitation and the existence of such a medium, contributing as it does largely to the expense of the publication, cannot help being a potent but silent influence in compelling advertisements from those who otherwise would not seek or avail themselves of such an advertising medium. If we are right in this view, then the continuance of advertising involves not only a question of policy but a departure from that high standard of principle to which the association should adhere."

These are strong words and very much to the point, coming as they do from the head of a large metropolitan electric railway system, at one time himself an active newspaper man, and from the chief executive of a large manufacturing organization. Incidentally, Mr. Tripp, besides being in an especially good position to understand the advertiser's point of view, was the only rep-

representative of the manufacturers on the committee and thus may be considered fairly to have represented their side of the industry. The report of the sub-committee has now laid the question before the membership at large. It is important for every member of the organization to appreciate clearly the practical and ethical aspects of the policy to the end that advertising shall be speedily eliminated.

GEARLESS EQUIPMENT FOR MOTOR CARS

From every standpoint the bi-polar gearless motor, such as is used on the New York Central locomotives, has been such an unqualified success during its ten years of operation that question may well be raised as to why it has not been applied to motor cars. Admittedly, the design has the vitally important feature of simplicity, and as we have previously pointed out, it may save more than enough through eliminated gear losses to pay for its higher first cost. Yet for motor cars the literally enormous weight of the magnetic circuit, which inevitably is extremely large in cross-section and long and clumsy in form because it must be built into the truck frame, absolutely prohibits its use for this service. In fact, several of the multiple-unit cars operated on the New York Central's electric zone were at one time provided with the bi-polar equipment as an experiment. As might be expected from the remarkable performance of the similarly-equipped locomotive they were eminently satisfactory from an operating and maintenance standpoint, but they necessitated the hauling around such an enormous excess of weight over the standard geared cars that the equipment had ultimately to be discarded and replaced with geared motors of the standard type. There seems to be, in consequence, no possibility that the gearless motor, notwithstanding its advantages of saving some 5 per cent in energy consumption and reducing maintenance, will ever come into use for motor car service.

DAYLIGHT SAVING BEFORE CONGRESS

Daylight saving, the plan of moving the clock ahead an hour in order to make our day correspond more closely to the hours of sunlight, is now being considered by both houses of Congress. It has the hearty support of President Wilson, and the Chamber of Commerce of the United States indorsed the plan at its recent annual meeting in Washington. The Daylight Saving Convention held in New York at the same time passed resolutions asking Congress to pass the bills. It therefore appears that daylight saving is in a fair way of being adopted by this country.

European countries last summer gave a practical demonstration of the plan. England, France, Germany, Austria, Italy, Holland, Denmark, Norway, Sweden and Portugal each set the clock ahead during the summer months, with the result that there was no confusion in the shifting of time, and the popular verdict was in favor of the change. There seems to be no doubt that the plan will be put into effect in Europe again next summer.

The issue of the ELECTRIC RAILWAY JOURNAL for

June 16, 1916, on page 1118, called attention to some of the ways in which electric railways would be affected by the change of time. In many of them the effect would be beneficial. For example, the evening rush hour would come during daylight during many more days of the year than it now does. This would add to the public convenience and reduce the number of accidents. It would also be an advantage to railways that have a large lighting load, since the peaks of the railway load and the lighting load would not come together. All forms of recreation which require daylight would be greatly benefited, and there is no doubt the railways would receive increased travel in cars to and from baseball grounds and other places where outdoor sports take place. In the shops, of course, the change would also be beneficial in that it would substitute a cool morning work hour for a warm evening work hour, and the workmen after leaving the shop would have an extra hour of daylight to devote to recreation.

Since this plan has apparently worked out well in the ten European countries in which it has been tried, it is only reasonable to expect that it would be a success in the United States also. It is said that Canadian provinces are only waiting for the United States to take the lead in this change and that they will be glad to follow.

THE JOURNAL AS A CO-OPERATIVE INSTITUTION

We compared in these columns on Feb. 10 the service given by a technical newspaper and that by a public utility and found many points of resemblance. Each is in duty bound to tell its clientèle its main purposes and how it is striving to secure them. Each can be helped to give a better service when its public understands these purposes and approves them. With each the interests of the public are advanced as the service is improved and made more comprehensive. With this in mind we shall speak briefly of the JOURNAL as a co-operative institution.

One way in which the JOURNAL can help the industry is by inducing those who are giving their best thought to its improvement to express their ideas either through the editors or in signed communications and articles. Of the former we can naturally make no public enumeration, although we are glad to express here our sincere gratitude for the many helpful suggestions and active co-operation received continuously from the field. Of the signed communication there is, of course, a direct record, and a study of the lists of authors in recent volumes of the paper shows that the average number of names listed during each six months as authors of articles or communications or papers before societies is about 213. An analysis of the record of these articles published during 1916 shows that more than a sixth of them were by presidents, general managers and others in high managerial positions; more than a third were by engineers, master mechanics and others having to do with the physical property of the electric railway; slightly fewer than a third were by consulting and manufacturers' engineers, and others indirectly connected

with the electric railway field, while the rest were by railway men in positions other than those mentioned. To this large group of men should be added hundreds of others who have been willing to further the development of the industry by supplying information upon which articles have been prepared by members of the editorial staff.

In order that the JOURNAL may best meet the needs of its readers, their co-operation is necessary in the carrying out of its fourfold aim. This aim is somewhat as follows: 1. To supply promptly and accurately the news of the activities of the industry. 2. To point out the tendencies indicated by this news. 3. To publish articles on special topics when such are needed to assist in further developments. 4. To publish constructive comment on all developments in the industry so as to aid the electric railway man in the solution of the daily problems and to assist him in interpreting these problems to the public. The ELECTRIC RAILWAY JOURNAL is first and last a transportation paper, but it aims to cover also the allied technical fields in so far as they overlap that of transportation.

MORE ABOUT HANDLING WAY MATERIALS

The columns of this paper have been replete, during a few weeks past, with facts and opinions regarding the economical handling of way materials. From these it is clear that there is no one best way of performing this important operation. Many questions demand answers in every case, and the answers must differ with the local circumstances. Typical questions are these: Is extensive storage profitable? How much storage will combine the maximum of security and favorable-terms buying with the minimum of handling, including local transportation? What machines are available for reducing labor cost, and which are most economical? Should storage be concentrated in one spot or on several sites? etc. The articles printed in this and previous issues indicate how the questions have been answered in a number of cases. This series would not be complete without some account of the latest large yard, that of the Cleveland Railway, of which Charles H. Clark has charge. Fortunately, it is now in shape so that a description is possible, and this is contained in an article elsewhere in this issue.

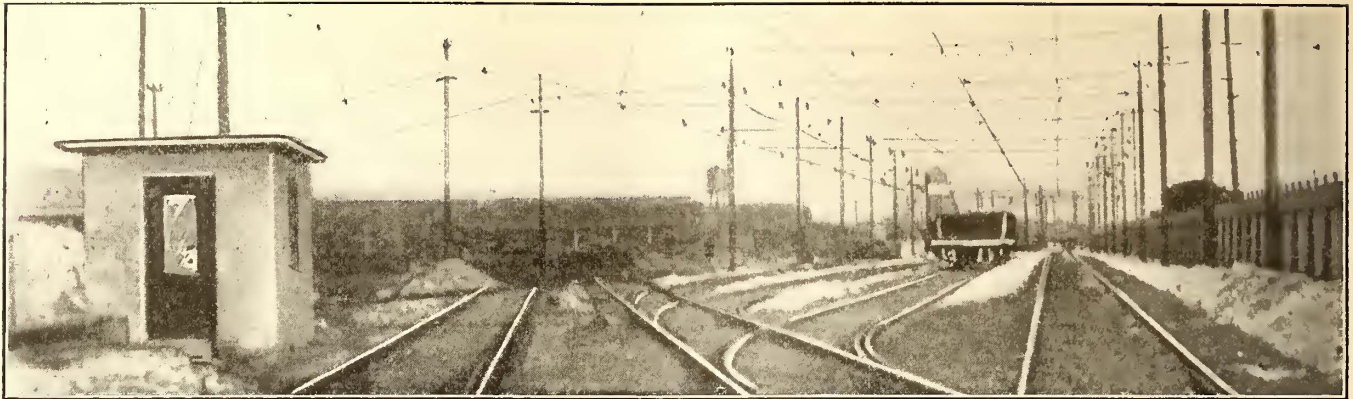
In the Cleveland storage yard somewhat different methods for handling and storing materials from those discussed in other recent articles on this subject are employed. A. E. Harvey of Kansas City, in his article in the issue for Jan. 27, emphasized the need of keeping the equipment in proper balance with the amount of work to be performed and pointed out the limitations of equipment that is useful for only a particular purpose and in one location. Further, he laid stress on the timing of the receipt of material so that it can be transferred directly to the job and thus need not be handled into and out of the storage yard. In the same issue, B. P. Legare of San Francisco stated that he had found several small storage yards to be preferable to one large one on his property.

In most yards the equipment for handling materials

consists of many cheaply-constructed, permanently-located gin poles, stiff-leg derricks, etc., with very infrequent installations of the larger types of hoisting machines and traveling cranes. The Cleveland yard, however, is operated on such a large scale that many things are economically possible which would be sources of loss in less active yards. The immense gantry crane, for instance, represents such an investment that it must be kept in operation almost constantly in order to absorb the "overhead" profitably. Its area of operation along the 1000-ft. runway makes its use for handling various materials possible, as it covers a storage area 1000 ft. long by 120 ft. wide; that is, about 3 acres. With so large an area available, sand, gravel, coal, paving block, etc., are stored in the craneway, and the quantities involved are so great that the machine is kept at work almost constantly. So far as we are aware, this is the first time that the gantry crane has been adapted to electric railway work. If it proves as successful as it promises to do here, this type will constitute a serious rival to the overhead traveling crane.

Mr. Clark's aim in Cleveland has been to concentrate all stored way materials at the one location, and by this means he is able to justify large expenditures in handling equipment, and in turn realize considerable economies in loading and unloading cars. While as much material as possible is handled direct from the steam cars to the job where it is used, the quantities involved in the extension and rehabilitation work each summer in Cleveland are so great that the materials are used as fast as received or faster, and the storage serves promptly to supply the requirements in the intervals between shipments. The ample storage facilities also make it possible to take advantage of the better prices to be had when off-season delivery is permissible. Thus the price rather than the timing of delivery is considered the more important consideration in the purchase of materials.

Some of the general features of the Cleveland materials yard merit comment. For one thing it is equipped with new 80-lb. rail and new special work tamped and lined up in first-class condition for the severe usage under which it must bear up, and cars may be rather roughly handled without danger of derailment. This is in contrast to the not unusual use of partly worn-out rail and special work which leads to derailments and consequent delays. The absence of the overhead trolley has obviously great advantage in giving complete freedom of action to the various cranes. The improvised "third-rail" is, however, a makeshift arrangement which will probably prove to be so much of a nuisance that it will eventually give way to a real third-rail of the protected type and the equipment of the few necessary work cars and motor cars with third-rail shoes. The saving in the construction cost of the ground trolley over a third-rail, and the saving in a few contact shoes and cutout switches on the cars, less the cost of the hand poles, would not, we believe, offset the wasted time and unsatisfactory "fussing" with this makeshift arrangement.



CLEVELAND STORAGE YARD—FIG. 1—STORAGE TRACKS AT BACK OF HARVARD YARD AND SCALE HOUSE AT LEFT

Layout and Equipment of Storage Yard for Handling Large Quantities of Way Materials

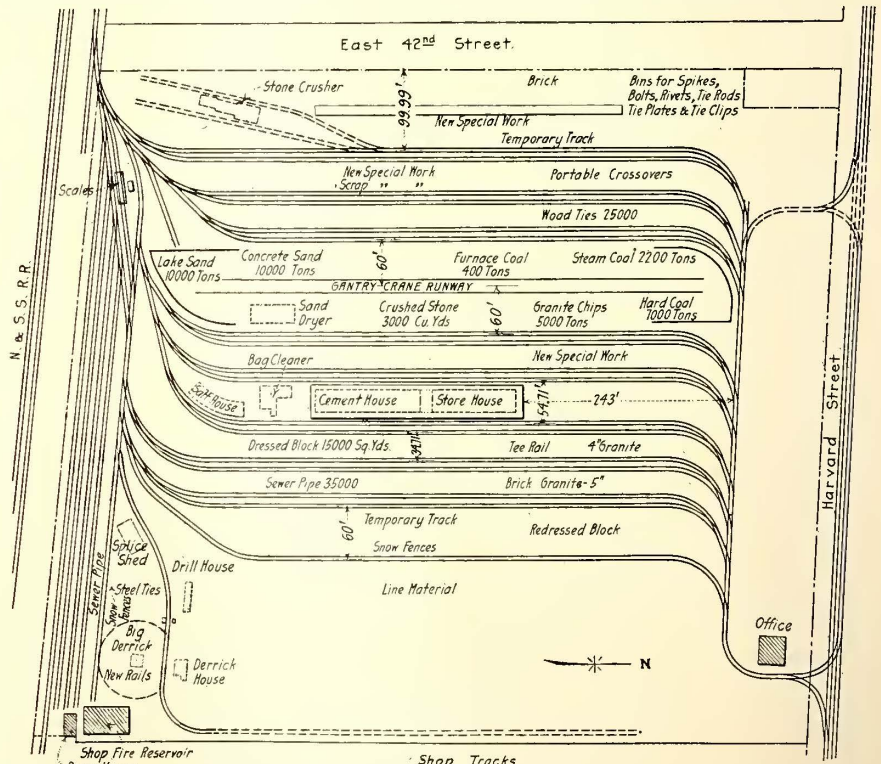
Charles H. Clark, Engineer Maintenance of Way Cleveland Railway, Has Developed New Schemes for Facilitating Economical Buying and Handling of Track Materials on a Scale Uncommon in Electric Railway Work

GR^{EAT} advantages accrue in city track construction work from the ability to have all materials delivered to the job in the amounts and at the times wanted. Also large economies are realized if suitable storage space is available by means of which it is possible to take advantage of the low prices which accompany large contracts and off-season deliveries, etc. These two considerations and a third, the advantages of concentrating the stores of the entire property very largely at one location, governed the layout and equipment of the 19-acre materials storeyard of the Cleveland Railway now nearing completion. It was planned by Charles H. Clark, engineer maintenance of way, and is called the Harvard storage yard. Its location is adjacent to the company's new Harvard Avenue shops on the eastern outskirts of the city.

By concentrating the storage of the principal way materials for the whole company at this new yard it has been possible profitably to invest in handling facilities of size and design quite unfamiliar in electric railway storage yards. But when it is considered that the Cleveland Railway had occasion last summer to handle in and out of its storage yards 14,335 tons of 5-in. and 4-in. paving block, 25,987 yd. of old Medina paving block which was redressed and sent out again for new use, 18,000 wooden ties, great quantities of sand and gravel, cement, special work, etc., and then the 13,600 tons of coal which is in storage and being handled this winter, the economy of large investments in equipment can be readily seen.

On Jan. 26, the company had 71,196 bags of cement in stock and was taking all that it could get under a contract made last year at a price more than 20 per

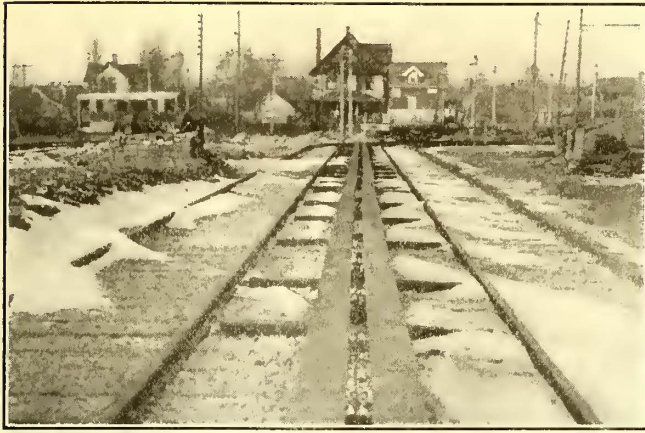
cent below the present market. This is one of the advantages of having facilities for the storage of 100,000 bags, as are provided at the Harvard yard. A good idea of the general quantity of materials handled at the yard is also had from the fact that during last November



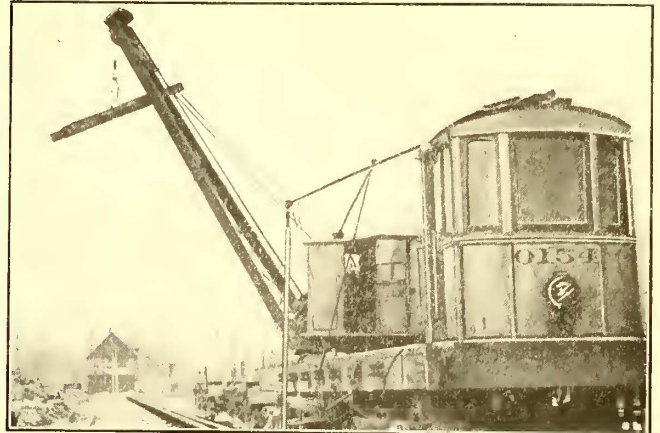
CLEVELAND STORAGE YARD—FIG. 2—GENERAL PLAN OF YARD

ninety-two cars of sand, gravel, granite block, cement, etc., were received and 312 cars were received in one month last summer, while the average year-round monthly receipt of materials is 250 cars.

The location of a yard to handle such quantities of materials was an extremely important consideration, balancing as it must the real estate value against trans-



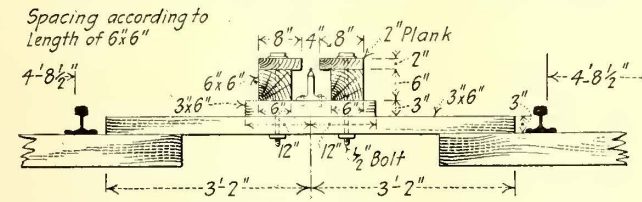
CLEVELAND STORAGE YARD—FIG. 3—GROUND TROLLEY WIRE CONSTRUCTION



CLEVELAND STORAGE YARD—FIG. 5—CRANE CAR WITH GROUND TROLLEY CONTACT POLE

portation facilities and convenience of distribution to various points in the city. The property comprises 19 acres on the eastern outskirts of the city, located on a comparatively new crosstown line which gives rather direct access to various parts of the city. Physical connection with the Newburg & South Shore Railroad, a

Newburg Railroad along the back of the yard so that the company may set empties out there for return. A 100-ton-capacity Howe scale with house and pit electrically heated, is located at the yard entrance on a track adjacent to the ladder track.



CLEVELAND STORAGE YARD—FIG. 4—DRAWING SHOWING DETAILS OF GROUND TROLLEY CONTACT SCHEME

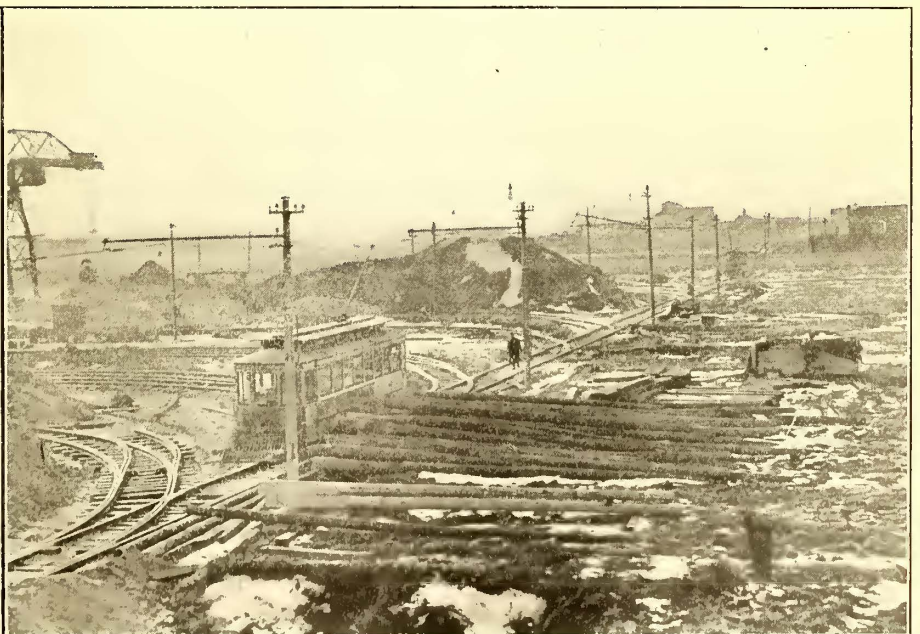
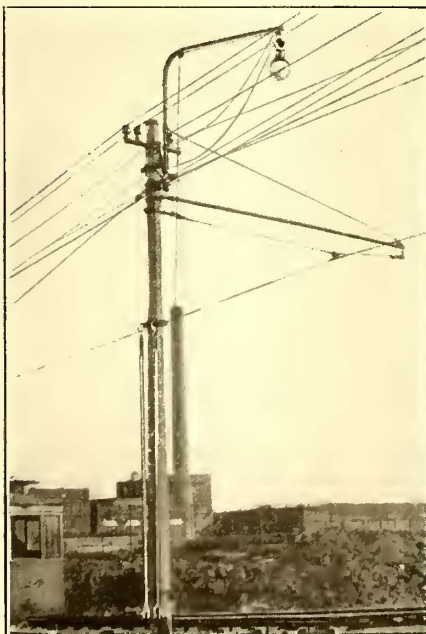
The general yard location adjacent to the company's shops is also a matter of importance on the Cleveland property, as it provides a convenient and economical means of storing and handling the large quantities of coal required for use in the hot-air heaters with which all Cleveland cars are equipped, and for the shop heating plant.

belt line controlled by the American Steel & Wire Company, and connecting with all roads entering Cleveland, gives suitable transportation facilities.

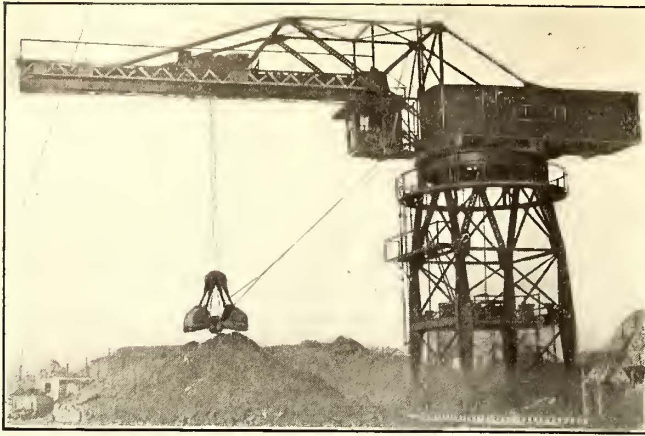
The general layout of the material yard is shown in the accompanying drawing, Fig. 2. Nineteen tracks, laid down in pairs, with 35-ft. to 60-ft. spaces between adjacent track centers for storage purposes, buildings, etc., cover the yard area, the two tracks between material, aisles giving simultaneously access to the materials on either side. Materials are assigned to these spaces tentatively as shown on the plan. All tracks are laid on well-ballasted wood ties with new 80-lb. T-rail and high-grade special work.

Leading from the steam line is a ladder track which serves four car-storage tracks in the yard. The Newburg Railroad sets the cars in on these tracks (Fig. 1) and from here they are moved by electric power to the unloading point in the yard. The overhead trolley is continued out of the yard and over the siding of the

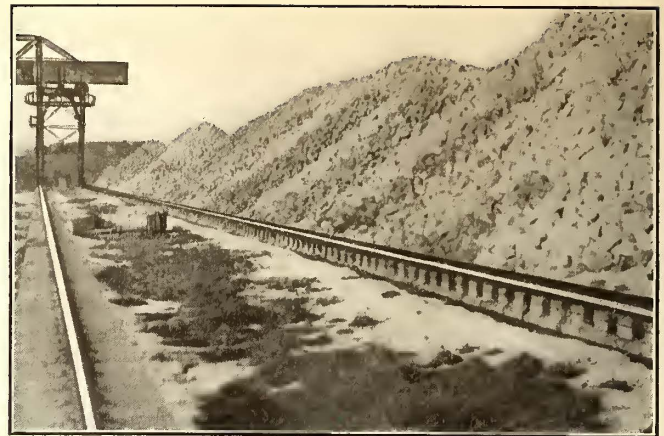
One of the special features of the yard is the absence of the overhead trolley which has been done away with by using an improvised third-rail (Figs. 3 and 4). Only



CLEVELAND STORAGE YARD—FIG. 6—CONCRETE TROLLEY POLE, YARD LIGHTING UNIT AND EXTRA TROLLEY HAND POLE; FIG. 7—GENERAL VIEW FROM OFFICE BUILDING ALONG FRONT LADDER TRACK



CLEVELAND STORAGE YARD—FIG. 8—GANTRY CRANE OF LARGE CAPACITY



CLEVELAND STORAGE YARD—FIG. 9—PAVING BLOCK IN STOCK ALONG GANTRY CRANE RUNWAY

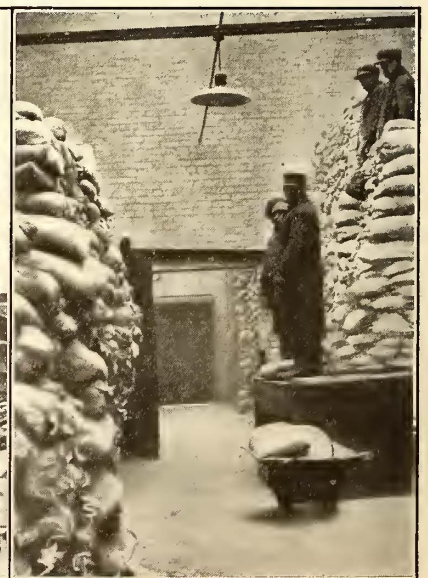
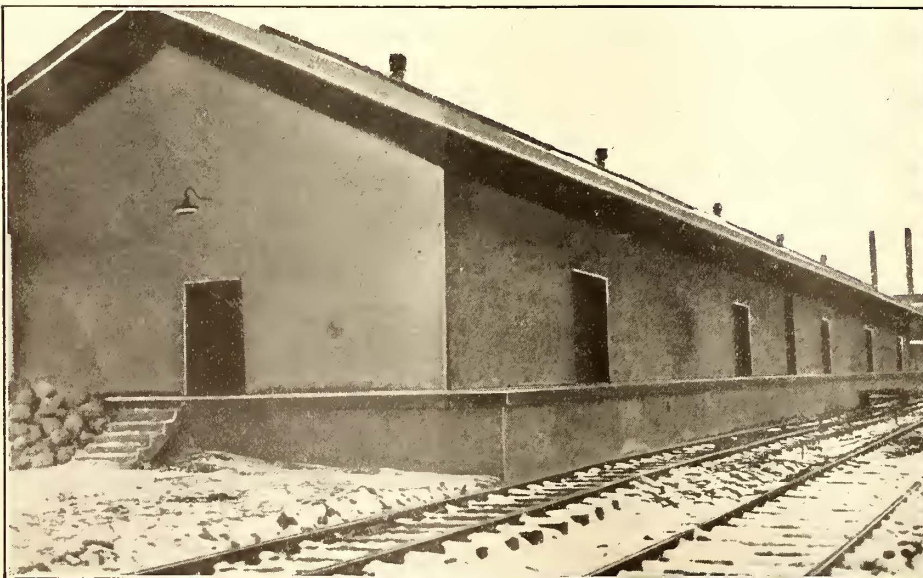
two tracks through the yard, tracks 7 and 10, which are to be used for the principal through movement, are equipped with the overhead trolley. The balance of the yard is clear of poles and wire to give free use of the various cranes. This ingenious third-rail consists of a No. 000 trolley wire fastened with standard ears on regular barn hangers set inverted on 3-in. x 6-in. x 24-in. blocks. These are mounted on 3-in. x 6-in. x 6-ft. 4-in. timbers resting on the tie ends between adjacent tracks, and each trolley serves both tracks of the pair. Protection from accidental contact with the trolley wire is afforded by paralleling it with 6-in. x 6-in. stringers on top of which 2-in. planks are fastened. These leave a 4-in. opening through which to make contact by moving the cars.

The method of making contact is also rather novel (Fig. 5). A long hollow pole equipped with a standard harp and trolley wheel at one end and a hook at the other, with a cable through the pole connecting the two, is placed on the trolley wire and hooked over the trolley wheel when the car is moved. If the trolley pole is tied down to the side of the car, the hand pole connecting with the ground trolley wire will guide itself. Ordinarily an attendant walks along on the top of the plank protection and holds the contact pole on the wire. The overhead trolley when completed will extend over the main tracks and around the curve into the storage tracks and be dead-ended on an I-beam supported over the pair of tracks by two steel poles. The ground trolley wire will continue through the yard from these

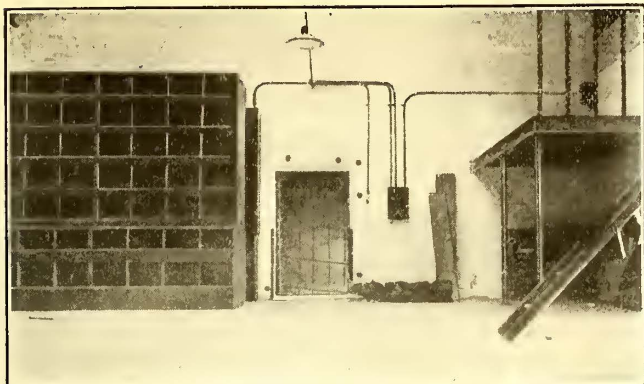
points. Each section of ground trolley wire may be cut off by a knife switch mounted in a box on a pole near the end of the section when there is to be no call for use of this track during a period of time, thus eliminating danger of accident completely. Extra trolley hand poles are hung on the overhead poles at various points of the yard (Fig. 6) so that there is always one available close at hand.

By all means the most striking feature of the Cleveland yard is the huge gantry crane (Figs. 7, 8 and 9) for loading and unloading coal, sand, gravel, etc., and even special work—anything that can be picked up with the clamshell bucket or a magnet. Its capacity is indicated by the fact that it carries a 30-ton counterweight. The cantilever truss is 62½ ft. long from the outer end to the center of rotation and is capable of turning a complete revolution. The legs have a 16-ft. spread both ways. The crane is mounted on eight 30-in. wheels, and a runway 1000 ft. long is constructed across the yard. Each rail is carried on a 2-ft. x 8-ft. concrete bed reinforced with old rail. The 8-in. x 8-in. ties are set into the concrete level with the top and the rail fastened to them with bridge clamps and lag screws.

The crane was built by the Variety Iron Works, Cleveland, and is equipped with four 33-hp. and one 7-hp. Westinghouse 600-volt motors, and a Lakewood Engineering Company 2-yd. clamshell bucket. Its use has introduced great savings in the handling of almost all materials in the yard. The handling of paving block has been found to be considerably speeded up by loading



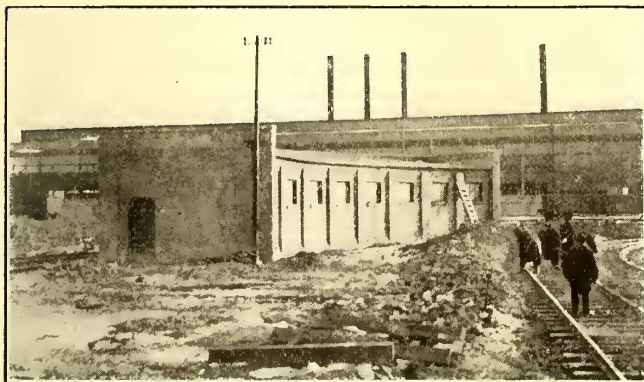
CLEVELAND STORAGE YARD—FIG. 10—CEMENT AND STOCK HOUSE; FIG. 11—PILING SACKS TWENTY-FIVE HIGH IN CEMENT HOUSE



CLEVELAND STORAGE YARD—FIG. 12—STOREROOM FOR SMALL HARDWARE AND TOOLS

the bucket by hand from the car or pile and dumping where desired. This saves one handling, for, when done manually, it is necessary to throw the blocks back after throwing them off the car in order to keep them off the track. The same double handling would be necessary in loading cars for distribution in the city.

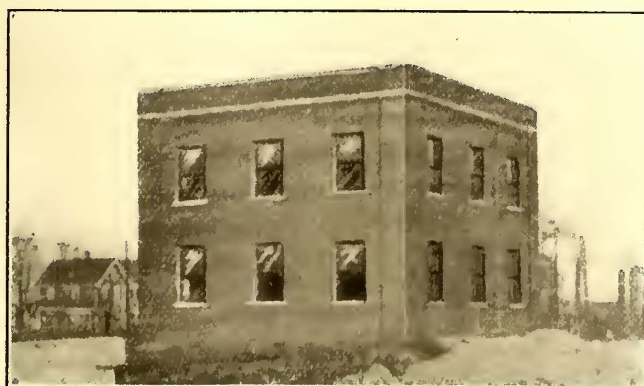
The cost of unloading a car of granite with the gan-



CLEVELAND STORAGE YARD—FIG. 13—SALT HOUSE BUILT ON A CURVE

try crane, using one operator and five men on the car, is \$3.16, while the cost of manual unloading, using a foreman and twelve laborers, is \$4.09. The latter figure does not include the labor cost for throwing the blocks back away from the tracks. Using a derrick and five men, besides the operator, the cost is about the same as with the gantry crane. The gantry crane will unload a gondola of slack coal in twenty minutes, or a carload of wet gravel in forty minutes.

Other materials-handling facilities in the yard in-



CLEVELAND STORAGE YARD—FIG. 14—OFFICE BUILDING AT ENTRANCE TO YARD

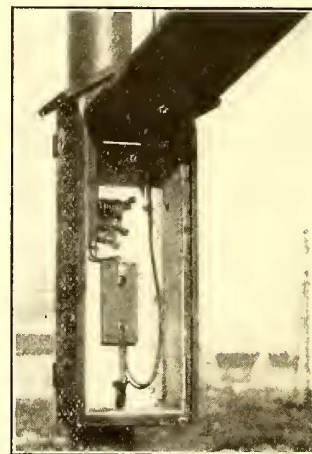
clude a 5-ton derrick car (Fig. 5) with a 26-ft. boom, and a 15-ton locomotive crane with a 50-ft. boom about to be ordered. All machines are, of course, electrically operated from the 600-volt trolley supply.

The principal storage building in the yard is the cement and general storage house (Fig. 10). This is a building 250 ft. long by 50 ft. wide, divided into five sections by fire walls. Three sections are devoted to cement storage and two to the storage of hardware, tools, and various materials which need to be sheltered from the elements. The building is constructed of concrete with concrete floor and roof and a large skylight in each section. The floors are designed to carry the extra heavy load of cement sacks piled twenty-five sacks high, as seen in Fig. 11. One of the general storerooms is equipped with steel cabinets and shelving (Fig. 12). Rolling steel firedoors close the openings between sections and those leading out onto the loading platforms. Two Buda elevating-platform, storage-battery trucks of 4000-lb. capacity are later to be installed in the cement house, and it is expected that each one of these will make possible the handling of ten sacks a minute, piling them twenty-five sacks high.

The salt house (Fig. 13) is also an all-concrete building, and is built on a curve to conform to the track curvature at that point. Between this and the cement house, a cement sack cleaner will later be erected. This will be practically identical with the one on the Cleveland property described in the *ELECTRIC RAILWAY JOURNAL* for Oct. 9, 1915, page 772. Other buildings and machines to be rapidly installed in the yard are a sand dryer, a stone crusher, a splice shed, a drill house, and a long storage bin for track bolts, rivets, tie rods, tie plates, tie clips, etc., extending along one entire side of the yard, as seen on the plan.

A brick office building (Fig. 14) on the Harvard Avenue side of the yard and at the main entrance is very finely finished and equipped for the use of the yard superintendent, clerical help and laborers. The three offices for the superintendent, bookkeeper and time-keeper are on the second floor and one large room on the first floor is furnished with steel lockers, and with steel tables and benches for the men to use at lunch time. A large washroom is adjacent to this. The building is heated with a Peerless automatic gas heater and hot water is supplied by a Hoffman automatic heater. A large Klaxon horn mounted in the center of the yard and operated from a button in the office provides a ready means of calling the men into the office when wanted.

The yard is to be lighted from the 600-volt trolley supply with 500-watt nitrogen-filled lamps, connected five in series. Twenty of these lamps (Fig. 6) are now installed and more will be put up as the yard is completed. These are mounted on special steel brackets on the trolley poles, and placed high above the top of the pole in order to distribute the light over a wide area. A circuit breaker is provided in the cutout box for each circuit (Fig. 15) in order to prevent the burning of the knife switch.



CLEVELAND STORAGE YARD—FIG. 15—CIRCUIT BREAKER AND KNIFE SWITCH MOUNTED IN BOX ON POLE

Advertising Policy of "Aera" Discussed

Reports "Pro" and "Con" Were Considered at Last Week's Meeting of Executive Committee of Association—Three Members of Sub-Committee Appointed to Consider Question Are in Favor of Present Plan—Two Members Oppose Advertising on Principle and as Unfair to Private Initiative

AT the meeting of the executive committee of the American Electric Railway Association held in Boston just prior to the mid-year meeting on Feb. 16 one of the subjects considered by the committee was the continuation of advertising in *Aera*, the association magazine. Ever since the inauguration of the enterprise criticism has been expressed against the solicitation of advertisements for the magazine. This has come in part from the manufacturers themselves, in part from the publishers of technical publications in the field which looked upon the inauguration of a commercial magazine by the association as unfair competition, and partly from officials of railway companies who objected to the plan on principle. In view of this feeling the executive committee passed the following resolution at its meeting on Dec. 20, 1916:

Whereas, it is the sense of this committee that there is a serious question of principle involved in the publication of advertising matter in *Aera*, and it is the opinion of the committee that the publication of the magazine is of great value to the association, it is, therefore

Resolved, that a sub-committee of the executive committee be appointed by the president to investigate the entire matter and report by Feb. 8 for presentation to a meeting of this committee to be called in Boston, Feb. 15.

The following sub-committee was then appointed to present a report on the subject at the meeting of the executive committee in Boston:

Arthur W. Brady, president Union Traction Company of Indiana, Anderson, Ind., chairman.

John J. Stanley, president Cleveland Railway.

C. Loomis Allen, Allen & Peck, Inc., Syracuse, N. Y.

Timothy S. Williams, president Brooklyn Rapid Transit Company.

Guy E. Tripp, chairman board of directors, Westinghouse Electric & Manufacturing Company.

A DIVIDED REPORT

The report of this committee was presented at the meeting of the executive committee on Feb. 15 in Boston and consisted of a majority and a minority report. The reports of both the majority and minority members of the committee are published below. In view of the fact that the majority favored the continuation of the soliciting of advertising from manufacturers, the executive committee, after discussion, decided to continue that policy for the present in *Aera*.

MAJORITY REPORT

Your sub-committee, appointed pursuant to your resolution adopted Dec. 20, 1916, to investigate and report upon certain matters connected with *Aera*, submits its report as follows:

The publication of *Aera* was begun in August, 1912. Advertising has always been carried except for the period April to December, 1913, during which time an arrangement with the Manufacturers' Association for a contribution in lieu of advertising revenue was in effect. An advertising solicitor has been employed beginning with January, 1914.

The revenues and expenses of *Aera* have been as follows:

For the fiscal year ended Sept. 30 or Oct. 31	Revenues	Expenses	Deficit
1912 (2 months)	\$1,832.46	\$2,087.57	\$255.11
1913 (12 months)	4,561.07	11,550.88	6,989.81
1914 (12 months)	13,305.16	16,779.44	3,474.28
1915 (13 months)	11,813.62	20,757.46	8,943.84
1916 (12 months)	17,728.71	21,742.91	4,014.20
Total	\$49,241.02	\$72,918.26	\$23,677.24

In the revenues stated appear receipts from advertising as follows:

1912	\$1,730.90
1913	4,532.74
1914	12,970.00
1915	11,497.10
1916	17,543.24
	\$48,273.88

Nothing is included in the revenues stated on account of the subscriptions of members. The circulation of *Aera* among members of various classes is about 5000, and the revenues at \$2 per subscription from such members for the fiscal year ending Oct. 31, 1916, was \$9,653.70, which, if included in revenues, would have converted the deficit of \$4,014.20 for that year into a surplus of \$5,639.50.

It is apparent from these figures that the revenue of *Aera* from advertising during the magazine's history of four years and three months to and including October, 1916, was a matter of considerable consequence, and that without it the loss from the publication would have constituted a heavy burden on the treasury of the association. It may reasonably be expected that the same statement will hold good for the future also.

The financial aspect of the matter is thus put forward not because it is controlling, for your sub-committee does not so regard it, but that the problem presented may be fully realized. It may be taken for granted that the association is unable to continue the publication of *Aera* if so doing will entail an annual loss, based on the 1916 figures, of almost \$18,000, in addition to a deficit of about \$4,000, making a total of \$22,000. If advertising be eliminated, the consequent loss of revenue must be made up from other sources, such as an increase of dues, which is probably out of the question, or must be met by a radical reduction in publication expense through a decrease in size and curtailment in scope of the periodical. The problem presented is therefore of a two-fold nature involving on the one hand the continuance of the present advertising policy of *Aera* and on the other the continuance of the present policy of the publication with respect to the scope and size.

Addressing itself to the first phase of the problem; your sub-committee believes that *Aera* is an advertising medium of value. The circulation of the magazine among the various classes of members of the association is about 5000, and a large share of these subscribers are connected with electric railway companies in positions of responsibility. Among these subscribers is a considerable proportion of those who determine or in a few years will determine the kind of apparatus, appliances and supplies which their companies shall purchase. No reason occurs to your sub-committee for questioning the

value of *Aera* as a means of bringing such articles to the attention of those men.

Assuming, then, that *Aera* offers a field for profitable advertising, the question arises whether the Association shall permit that field to be occupied and derive a revenue therefrom? Thus far that question has been answered in the affirmative, but the decision thus made is criticised on various grounds.

1—The question is asked whether the appearance of advertising in *Aera* is consistent with the dignity of the association. Your sub-committee does not believe that there is a shadow of reason for criticism on this score. Proper advertising properly displayed, is as fit for the pages of the magazine of the association as it is for the pages of any privately owned magazine, popular or technical.

2—Objection is made that the influence of the association and its members is unfairly exercised to induce manufacturers and dealers in supplies to insert their advertisements in *Aera*. This, it should be noted, is an objection to the method of securing advertising patronage and not to the fact that advertising is taken at all. The objection is, however, most serious, and, if well based and the policy of carrying advertisements could not be thoroughly purged of unfairness of method in securing those advertisements, the policy itself should be abandoned. Very little has been brought to the attention of the committee in support of this objection, and if instances furnishing reason for criticism have occurred, it is believed that they are exceptional and due to an excess of zeal rather than an intention to exert undue influence over any individual or company. Your sub-committee believes, nevertheless, that since this criticism has been made in apparent good faith, positive instructions should be issued, in case the present advertising policy is continued, that the taking of advertising in *Aera* shall be submitted to possible advertisers wholly on the merits of the publication as an advertising medium, and that in particular nothing shall be said or done by any officer or employee of the association to induce the belief that a failure to advertise in *Aera* will be regarded as an exhibition of unfriendliness to the association or the industry which it represents.

3—The objection is made that *Aera* is in the nature of a "jitney"—that is, that *Aera* is an unregulated competitor of the existing electric railway technical press and operated without regard to the economic principles which must govern the operation of a privately owned publication. Closely akin to this objection is another—that the field open to occupancy of the electric railway technical press is so narrow that the present policy of *Aera*, both with regard to advertising and scope, cannot be maintained without seriously hampering the usefulness of the privately owned electric railway publications. These objections combined, present a grave question. Your sub-committee does not, however, believe that *Aera* has been operated on the "jitney" principle. The annual deficits have been recognized and have been paid out of the association treasury in the belief that the association received full value therefor. The duplication of over-lapping by *Aera* of subjects with which the technical press deals does not appear to be serious. The table of matter appearing in *Aera* for the thirteen months October, 1914, to October, 1915, contained in the report of the *Aera* Advisory Committee made in September, 1916, does not seem to have been controverted and may be treated as substantially applicable to subsequent periods. That table shows that out of 1526.75 pages of *Aera*, excluding advertising pages, 68.58 per cent were used for association affairs, question-box and formal matters, and 31.42 per cent, or 478 pages in all, were used for operating questions (including engineer-

ing, traffic, transportation, and accounting), public relations and relations with employees. As it is only the latter class of matter which it might be claimed encroached on the publication field of the technical press and as *Aera* is only a monthly magazine of ordinary size page, the question of duplication does not seem to your sub-committee one of consequence.

The freedom of *Aera* from just complaint in these particulars does not, however, determine whether there is a lack of room for both *Aera*, with its present advertising and editorial policies, and other electric railway publications. Your sub-committee realizes the great value to the electric railway industry of such technical journals as the ELECTRIC RAILWAY JOURNAL and the *Electric Traction*. If convinced that the continuance of the present policies of *Aera* would substantially impair the usefulness or growth of those publications, your sub-committee would not hesitate to recommend such a change in those policies as would meet the situation. We cannot, however, conclude on the basis of our present information, that the present *Aera* policies will have the effect referred to. This statement is made after a careful reading of the various briefs, letters, reports and discussions of *Aera* policies which constitute a part of the association's records of the past year.

Your sub-committee believes, for the reasons stated, that no change in the advertising policy of *Aera* is desirable, and so recommends.

The resolution creating your sub-committees perhaps contemplates a report upon the question whether, regardless of advertising policy, a change in the editorial policy of *Aera* is desirable. The only concrete suggestion made is that *Aera* shall be merely a bulletin, confined strictly to association matters and the question-box. Sixty-four pages are stated as the proper size, and the cost of printing and mailing, exclusive of editorial and other supervisory and incidental expense, is given as \$6,000 a year. It is interesting to note in this connection that the table in the report of the *Aera* Advisory Committee already referred to shows an average of eighty-three pages per month taken up by association affairs, question-box and formal matters. The space so occupied may be expected normally to grow.

Your sub-committee believes that *Aera* in its present form is a valuable means of arousing and sustaining interest in Association work, thereby, materially benefiting the electric railway industry, and does not recommend any change in the general policy of the publication. Respectfully submitted,

JOHN J. STANLEY,
C. LOOMIS ALLEN,
ARTHUR W. BRADY (Chairman).

MINORITY REPORT REGARDING "AERA"

The undersigned members of the sub-committee, while believing strongly in the usefulness of an association publication and recognizing the value of *Aera* to the members of the association, cannot subscribe to the recommendations of the above report in respect to the propriety and desirability of a continuance of the policy of soliciting or accepting advertising for such a publication. We believe that in permitting such advertising the association's publication is encroaching upon a legitimate field of technical journalism under private enterprise, and that inasmuch as this field is concededly limited in scope and opportunity for profit, the advertising competition of *Aera* is unfair to those whose private initiative has been, and can be, of great service to the electric railway industry. Moreover, even if no improper pressure has been, or is, brought to bear upon manufacturers and sellers of railroad apparatus in the solicitation of advertising, the very fact of such solicitation and the existence of such a medium, contributing

as it does largely to the expense of the publication, cannot help being a potent but silent influence in compelling advertisements from those who otherwise would not seek or avail themselves of such an advertising medium. If we are right in this view, then the continuance of advertising involves not only a question of policy but a departure from that high standard of principle to which the association should adhere.

Conceding as we do the necessity of an association

publication, we believe that its contents should be confined to reading matter only upon subjects dealing with the association's affairs and reports, and should assume the character of a bulletin rather than that of an electric railway journal.

Respectfully submitted,

TIMOTHY S. WILLIAMS,
GUY E. TRIPP.

Feb. 14, 1917.

Highway Paving by Street Railways

The Paving Burden Laid Upon Electric Railways by Municipalities Is Both Unreasonable and Inequitable

By W. R. DUNHAM, Jr.

Engineer of Maintenance of Way The Connecticut Company, New Haven, Conn.

THE function of a street railway is to provide transportation for the public at a reasonable rate. This implies a reciprocal obligation between the two parties, the public and the company. The company must provide a reasonably adequate service for which the public must provide a reasonable return, which should include all the cost with a fair profit on the capital invested.

BUILDING OF PAVEMENT IS A MUNICIPALITY FUNCTION

It is no function of a street railway company to build streets or pavements for the use of the general public, except under mutual agreement in consideration for locations first granted. The building of pavements is a function of the municipality, or of all the people. In the early days of urban transportation by street railways the motive power was by horse and, although the railway relieved the pavement of wheel wear by running on its own special pavement in the shape of rails, this relief confined the wear of the pavement by the locomotive power to narrow strips along the rails due to the tracking of horses. As this was an added burden or wear confined to a small area, it was fair and just that the company causing it should be compelled to care for it. The condition was recognized in Connecticut and elsewhere by the statutes governing the operation of railways. The statute in this state specifically provides for repairs to pavements within certain limits, being the area between the rails and 2 ft. on the outer sides of the outer rails.

That the statute did not contemplate placing the burden of constructing new pavements on the companies is shown by its wording. It states that repairs only are contemplated, and further, that the highways are maintained by law by the various municipalities. It also limits these authorities to ordering the repairs made with the same class of pavement as that with which the highway is paved, with one exception, which will be referred to later. There is no statute covering the renewal in its entirety of all the pavement on what is defined as the railway area, and it is doubtful if a municipality can compel a company to renew the entire pavement within the limits above described under the statute.

The exception as to class of pavement noted above refers to a strip of pavement 1 ft. wide on each side of each rail. Bearing in mind that at the time the statute was passed the cars were hauled by horses, and that the normal tracking of these horses was close to the rails,

the necessity for a harder paving material on both sides of each rail is apparent. Most pavements were of earth or macadam, rapidly worn out by the continued action of the horses' hoofs. It is obvious, then, that this provision was in the nature of a protection, not only to the authorities who were "bound by law to maintain such highway," but also to the company which was bound to keep in repair a certain part of it. This exception permitted a compound pavement, on that part of the highway occupied by the tracks, of a character more resistant to the abrasion of the horses' hoofs. A cobble or block type of stone was permitted along the rails for the footing of the horses, with a pavement between of a character similar to that of the highway as a whole, and so suitable for the vehicular traffic ordinarily to be found on the highway.

"REPAIRS" IS AN ELASTIC TERM

Of late years this statute has been used under a false interpretation of the word "repairs" by the various municipalities, to provide more expensive pavements for all the people at the expense of the railways, a result not intended at the time the statute was passed. This is entirely unreasonable at the present time since, with the general use of electricity for the operation of cars, the wear on the pavement by this railway travel is removed and the life of the pavement is increased, as more people are accommodated by fewer vehicles.

The cost of new pavements thrown onto the companies in this State is enormous, the area defined by the statute to be kept in repair by them being from 33 1/3 per cent to 60 per cent of the total area of the highway. In money cost it means from \$300,000 to \$400,000 per year, a large sum to be diverted from the proper uses of a company. This, since it brings in no return, must be paid for by diminishing the real accessories of a railway. That is the municipalities are not getting the pavements free of cost, but must pay for them in lessened facilities; as by fewer cars, inadequate power, or some form of poorer service, unless they wish to provide the necessary funds by increased rates of fare.

EFFECTS OF SNOW REMOVAL AND VEHICLE PARKING ON PAVEMENT MAINTENANCE

There is a feature of unreasonableness even in the question of repairs to pavement by railways. During the winter months the companies must, in order to operate, keep their tracks clear of snow and ice. As this cleared area is frequently the only passable part of the

highway, all vehicular traffic is confined to it. By law this area must be kept in repair by the company, and yet it is subjected to 20 per cent more wear from use by the general public than the remaining area of the highway, since it is passable and free from snow. On the principal streets also, due to the necessary parking of vehicles next to the curb, 75 per cent of the wear is on the area defined by the statute as subject to repair by the company.

As commonly understood and interpreted, therefore, the paving statute referred to is a most unreasonable one. Its intent should be clarified so that the people as a whole may be informed of the fact that they would be better served if this pavement money was spent for service instead of surface.

A railway company, having installed its tracks and replaced the pavement in the condition in which it was found should not be called on for anything more than such repairs as are due to the presence of its structures in the highway. It should not be expected to renew the pavement in its entirety, unless this is made necessary by the entire renewal of the tracks. If for public improvement it is necessary or desirable to renew the pavement, the public should pay its entire cost. This renewal of pavement often necessitates the entire renewal of the company's tracks, although they may have ten or twenty years of life, and the sacrifice of this life is an economic waste which in the end must be paid for by the public.

The majority of people who depend on the cars for daily transportation should be vitally interested in this matter, as in the end they are the ones most affected adversely. While they are entitled to good pavements they are more entitled to good and reasonable service, and they should insist that the part of the public which does not use the railway, but which utilizes other modes of transit more deleterious to the pavement, should pay for the damage which they cause. The car users should not sit back supinely and pay each year by poorer service for this maintenance, while their neighbors who can adopt more expensive means of transportation cut their costs of maintaining the pavements which their methods of transportation make necessary.

"REPAIRS" VERSUS "RENEWALS"

I want to reiterate the fact that repairs and not renewals of pavements were intended by the legislators at the time the several statutes were passed, as the wording is always "repairs." The statutes in this state were enacted in 1863, revised in 1888 and again in 1893, but in each revision the word "repairs" is used. In these years the modern expensive pavements were not in use, except on the most important streets, but even on these streets the pavement costs were not as high as now. Again, in many instances, the fare was 6 cents and length of ride for the fare was much less than it is at present.

Assuredly, then, no law-making body would intentionally place upon a utility a future burden such as the present misinterpretation of the statutes assume. Neither would they provide free roadbeds for all other modes of transportation at the expense of one, especially when the one relieves the pavement of the wear which the others impose upon it. One car moving on its special track can carry the load of ten trucks, thus relieving the roadway of both congestion and wear, and yet the ten trucks pay practically nothing toward even maintaining the pavements they destroy. By the misinterpretation of the statutes the car must pay not only for the maintenance of the roadway, but for its entire renewal at the whim of municipal authorities. This affords an advantage to its competitors at no expense to them and requires a company to pay for something that is of no

use to it, but rather a positive detriment since it increases the cost of any repairs or renewals which may become necessary to its own roadway, that is, its tracks.

THE RAILWAY'S PAVING RESPONSIBILITY

It is, of course, conceded that repairs to the pavement caused by the structures of the company must be paid for by the company. This is fair since it applies to all other occupants of the highway; but that repairs can be construed to mean entire renewal cannot be conceded, for it is neither equitable nor just.

To assume that this paving burden is of the nature of a franchise tax is erroneous, for at least two reasons. It is not equitable to either the municipalities or the companies since the poorer towns, not being able to finance new pavements, get no help except state aid on trunk lines, while the prosperous communities overburden the companies and so get a tax out of all proportion to the value of the franchise. This tax is not assessed at a fair valuation, but rises and falls with the desires for new pavements. In some instances it requires the practical rehabilitation of an entire system in a year or two, thus throwing an unreasonable burden on the earnings of a company, a burden which by any just method of taxation should be spread over a term of years.

PAVEMENT SHOULD BE CHOSEN TO SUIT TRACK

Another feature in the paving question lies in the character of the pavement to be laid on streets in which there are tracks. The type of pavement to be decided on should be chosen for its adaptability to the track and of a kind most durable in combination with it. Once a street is paved it is desirable that the use of that street be as uninterrupted as possible. Hence a type of pavement which will adapt itself best to the rails should be selected, and the rail should be selected not for the pavement but rather for the peculiar highway traffic which it is to carry. In other words, the present form of procedure should be changed by first selecting the most suitable rail, considered as a rail rather than as a part of the roadway, and then getting a type of pavement best suited to fit this rail. In this way the best all-round results will be obtained, the most permanent construction and least disturbance of roadbed will result, and repairs will be reduced to a minimum, not only in the track itself but in the pavement also.

As stated at the outset, the function of a street railway is to sell transportation, not to build pavements. In performing this function it should repair the damage caused by its use of the highway but not renew pavements worn out by the use of others. It should furnish equipment for its patrons but not roadways for its competitors. And it should be allowed to give a fair return on the investment necessary for the proper carrying on of its one and only function.

Interstate Railways' Accident Record

According to the Quarterly Accident Bulletin of the Interstate Commerce Commission for April, May and June, 1916, 446 persons were recorded as having been killed and 4574 injured on interstate electric railways during those months. Out of 3414 persons, the nature of whose injuries were recorded, 1911 persons were passengers on passenger trains, one person was a passenger on another train, four persons were carried under contract, 459 were employees on duty, three persons were employees not on duty, 103 were trespassers and 983 were other persons not trespassers. Recorded damages from collisions and derailments amounted to 62,649 in 1915 as compared with 131,558 in 1914 and 211,777 in 1913.

Wage Arbitration and Contracts*

Public Is Interested in Uninterrupted Service Under Labor Contracts Arising with New Economic Thought—Arbitration Not Being Satisfactory, Public Supervision of Relationship Between Employer and Employee Seems Desirable—Question of Using Commissions for This Work Deserves Serious Study

By BENTLEY W. WARREN

Boston, Mass.

EXCEPT in isolated instances, public regulation has entirely neglected the relations between the carriers and the army of human agents through whom the carriers conduct their public service and for whose individual action the carriers are by law made responsible. Even in the few exceptional cases, as in limiting the hours of employment or in requiring the use of various safety devices, the regulation is usually due to considerations, actual or alleged, of public safety and not, as in the case of the regulation of financial activities of the carriers, to considerations affecting the cost of the service.

REGULATION OF UTILITY LABOR HAS NOT BEEN THOUGHT NECESSARY

Doubtless the lack of governmental attention in the past to this important feature of transportation has been due to the belief that it was unnecessary. It was assumed that the self-interest of the utility managers, who represent the investors and seek to insure a return to them upon their investment, would result in the selection of the most competent employees available and at the lowest wages which would be acceptable in an open labor market. It may have been supposed that the ordinary operation of the economic law of supply and demand would prevent any undue or avoidable burden upon the public in the form of wages or other concessions to the employees. This economic law is still to some extent operative in many lines of industry. Wages are seen to rise and sometimes, though with decreasing frequency, to fall under changed industrial conditions. To the same extent this condition might be true in the case of carriers, if the public had no more interest in transportation service than it has in the product of an ordinary mercantile or manufacturing establishment.

In cases of the latter kind the public can usually await with equanimity the settlement of a wage dispute between capital and labor. Even in such cases, however, the public interest cannot and, as shown in the coal strike of thirteen years ago, will not wait if the dispute becomes country-wide and affects a prime necessity of life. This condition always exists in the case of all street railway transportation conflicts. The controversy does not need to be country-wide or state-wide; to the public of the particular community served by the particular carrier the conflict, if permitted to reach the stage of an interruption of service, is as disastrous as a country-wide interruption might be to the country as a whole.

PUBLIC SANCTIONS COLLECTIVE BARGAINING BUT DEMANDS UNINTERRUPTED SERVICE

With the recognition of the reasonableness of collective bargaining every controversy between a carrier and its employees involves not merely a possibility, but almost a certainty, of an interruption of service if it

remains unadjusted. Collective bargaining implies collective quitting of work. There is no collective labor body to take the place of the collective body which suddenly quits work. Consequently, if the controversy is not adjusted and the employees withdraw in a body the public service must necessarily be interrupted. Ultimately the places of the employees might be filled by equally or even more competent men and at the same or even lower wages, and under working conditions which might insure to the public better service for the money which they pay through the agency of the carrier to those men. In the public estimation, however, these considerations seldom weigh against the inconvenience of partial, irregular and uncertain service during the interval of adjustment.

Not only does the more recent economic judgment of the public sanction collective bargaining; it also, to a considerable extent, approves, if not actively supports, efforts to better the conditions of the workingman and to relate his wages to a higher standard of life than mere subsistence. It is noticeable of late years to what an extent the question "What can a man be hired for?" has been relegated to the background, and in its place has been substituted the question, "How much ought this man receive to insure to himself and his family a decent and reasonably comfortable existence?" Probably the adoption of these changed views is desirable, and their general acceptance will conduce to the advantage of the community. They terminate, however, as far as public service corporations are concerned, the old standards of individual employment. The managers of such corporations must recognize these new views, and in the main have done so.

LABOR CONTRACTS AND INTERESTS OF PARTIES THEREIN

Both the carriers and their employees have become conscious of the difficulties which the adoption of new economic opinions has produced. They have sought to minimize these difficulties by so-called contracts between the carrier and the body of its employees, the latter usually acting as members of a union through selected officers or representatives.

Whenever such a contract is to be negotiated, the employees' chief interest is in the wages to be paid, the working conditions under which their labor is to be performed and the security of their positions. In the development which has taken place in the negotiation of such contracts, and the concessions which have already been obtained by labor, the employees' interest to-day is, more specifically, in securing direct wage increases and various indirect increases through modifications of the working conditions.

The carriers' interest, like that of the employees', is in wages, but to keep them stationary; in the working conditions, but to prevent their use to secure indirect increases in wages or, which amounts to the same thing as far as the treasury is concerned, in increased cost of operation; in the maintenance of discipline, and in the freedom of transportation service from interruption.

*Abstract of paper presented before the American Electric Railway Association mid-year convention at Boston, Mass., on Feb. 16, 1917.

The public is interested in the quality and extent of the transportation service, which is largely dependent upon the character and skill of the employees; in the freedom of that service from interruption, which again is almost entirely dependent upon the character and conduct of the employees and upon their refraining from resort to a collective withdrawal from service; in the cost of that service, which each year is becoming increasingly dependent upon the wages of the employees, and in the safety with which the service is conducted, which again is dependent upon the character and skill of the employees, upon their working conditions being not unduly burdensome, and upon the efficiency of their discipline.

WHAT LABOR CONTRACTS SHOULD INSURE

Such contracts should be definite and clear in their terms. They should insure adequate and proper service for the public; adequate and certain compensation for the employees; safety of operation, which necessarily involves and assumes a power of discipline in the management's control; and freedom from interruption, which necessarily involves prohibition of wholesale discharge of employees by the company and of strikes by the employees.

Labor contracts, to secure the results to which the public is entitled, should absolutely prohibit strikes under any circumstances during the term of the contract, and should similarly prohibit reductions by a carrier in wages or changes in any other terms of the contract agreed to by the carrier. They should provide that all discipline should be retained in the hands of the management. The writer has seen few contracts which contained a prohibition upon strikes, and has known of cases where such a prohibition was suggested by a carrier and its insertion was refused by the employees. While some earlier contracts did retain in the management the control of discipline, many if not most of the more recent contracts provide for the arbitration of all grievances, including those arising in the attempted exercise of discipline. There have been several instances of strikes during the continuance of a labor contract, and perhaps the most frequent cause of such strike has been a grievance arising from a carrier's attempt to enforce its discipline, although the carrier would arbitrate the justice of the penalty imposed.

ARBITRATION IS NOT ENTIRELY SATISFACTORY

Both the carriers and their employees are conscious of the increasing difficulties which beset their attempts to negotiate and carry out satisfactory contracts. Both are also conscious of the interest in such contracts of the unrepresented public, and especially of the interest of that public in the uninterrupted regularity of the service. Notwithstanding this recognition of the difficulty, they have never been able to agree upon a method to admit the representatives of the public to their negotiations, or to delegate either to the courts or any other constituted public authority the final decision in matters upon which the carrier and its employees fail to agree.

The solution usually attempted is settlement through three arbitrators, one selected by the carrier, one by the employees and the third by those two. While no one would say that this method does not represent a commendable effort to save the public from an interruption of service, it is probably true that no representative either of a carrier or of its employees, who has had experience with such arbitrations, would say that the method is satisfactory. It is difficult to settle the questions to be arbitrated, to select the third arbitrator and to educate this practical judge up to his work. Always an unreasonable amount of time is consumed, and great

expense is incurred under the present method of arbitration.

GIVING THE PUBLIC A SHARE IN THE SETTLEMENT

So far as the writer is aware, the public has never been officially represented even at the formal hearings in a street railway arbitration. The awards of such arbitrations have no binding effect upon the public or the representatives of the public who are charged with the regulation of rates. Such public officials are at liberty entirely to ignore the effect upon the carrier of an increase of wages awarded by an arbitration board. The courts not only can, but must, ignore the reinstatement by such a board of an unskillful and incompetent employee. In the one case the company is compelled to pay the increased wages with no right to secure increased income with which to do so; in the other the company is compelled to pay in damages for the results of the incompetence and lack of skill of an employee whose employment it could not prevent.

It would seem that any well-considered scheme for supervision and regulation of street railways should cover the relation between the carriers and their employees. If public supervision of this relationship is desirable, the public tribunal to be used—it would first occur to a student of the question—would be the same tribunal as that already entrusted with the supervision in other respects of such carriers. That there would be certain and very great advantages in such a selection is obvious. The existing supervising bodies, by the very nature of their present duties, are familiar with the general subject of transportation, with the financial condition and ability of the companies, and with the peculiar requirements of the service. They, therefore, could easily determine the effect both upon revenues and upon service of any proposed changes in the relations between carriers and employees.

As an appellate body with final authority to deal with the vexatious and frequent questions of individual or collective grievances and discipline, a commission could exercise that authority intelligently and with due regard to the safety and efficiency of operation in each case. Responsible as such a commission is for promoting the safety of the public, the carrier would be justified in accepting the decision of this body that a given employee ought to be reinstated as conclusive evidence that the carrier's managers had been wrong in discharging or otherwise disciplining such employee. The innumerable controversies over details, the unreasonable delays and the great expense involved in the present system of arbitration would disappear. Either the carrier or the employees could take any disputed matter at once to an authoritative tribunal and could expect a speedy, definite and final determination.

Whether the time has not come for appropriate legislation to vest the public service commissions with jurisdiction over the relations between the carriers and their employees is a question deserving most serious consideration and study. The question is so large and has been so recently raised that I am not prepared at this time to express a definite opinion. I believe, however, that it is bound in the near future to require an answer. It is significant that the Public Service Commission for the First District of New York has already advanced tentative suggestions looking to such an extension of its powers. Those suggestions, in my opinion, merit careful study.

During the year 1916 on the interurban lines of the Detroit (Mich.) United Railway 277,807 orders were issued by train dispatchers. This was an increase of 50,248 over the number issued in 1915.

Practical Results in Publicity Campaigns

Three Cases in Which Crooked Politicians
Were Outwitted by the Railway Managers

By CHARLES T. HEASLIP
New York City

[In the first case the mayor of a certain city, in an effort to control the labor vote, promised co-operation in a proposed strike. Exact information, put before the public frankly, checkmated him. In another case the manager "called the bluff" of a labor-dominated mayor during a strike crisis. These sentences epitomize the third case: Politician—"You know we're not in politics for our health." General manager—"Neither am I running a sanitarium for grafters—now get out before I throw you out," and then the G. M. gave the public some information regarding the type of men who were in office.]

IN the issue of the ELECTRIC RAILWAY JOURNAL for Jan. 27, 1917, page 153, two examples were cited to show how the unscrupulous or misguided "reformer" could be and had been circumvented. These examples involved the use of public speaking for the purpose of neutralizing the tirades of the "reformers." It is not when the reformer or politician foe takes the stump against a corporation, however, that he is most dangerous. He is at least out in the open then, and if the company meets him there and presents its case promptly, honestly and fully the public will usually return a fair verdict. It is when he quietly injects himself into the labor troubles that arise ever and anon in the public utility field that he becomes a real menace—even to the most honestly conducted corporation. Organized labor is quick to take advantage of political support, and when both the unions and the politicians are lined up against a company it has to have a wonderful reputation for fair dealing in the community which it serves if it is to come out unscathed.

An incident illustrative of this fact occurred about two years ago in a town which boasts one of the best managed street railway companies in the country. This company was giving good service and stood high in the estimation of the community. It paid good wages and treated its employees fairly. Under such circumstances it may be difficult to understand why its general manager should have found himself confronted one day with labor trouble among his trainmen. Such things do happen, however, and will continue to happen until the best brains in the ranks of capital and labor get together and devise some fair method of settling disputes without either side bringing in "advisers" from the outside.

The troubles of this particular company were brought to it from the outside. The state in which it operated was upset generally by industrial strife at the time, and an organizer from one of the national trainmen's unions took advantage of the general state of unrest to organize a "local" among the conductors and motormen. The general manager made no move to block the organization of the "local," and about 60 per cent of his men joined it. But when the inevitable list of demands was presented to him a week later, he called a meeting of all his trainmen, both union and non-union, and gave them a heart-to-heart talk. He called attention to the fact that he and all the other company officials had always been willing to meet with them, either individually or

in a body when differences arose, and that all past differences had been settled satisfactorily. He added that it was the company's intention to continue this policy, but that it was also its intention to maintain an "open shop."

"Therefore," he said in conclusion, "if you men will get together as a whole and appoint a committee that will be fairly representative of all of you, both union and non-union, I shall be glad to meet that committee and make whatever adjustments are fair to both sides."

It is probable that this offer would have been accepted by the men if the union organizer had not approached the mayor and urged him to use what influence he had to force the company to recognize the newly-formed union. He called the mayor's attention to the strength of the labor vote and intimated that any favor he could do for the "street car boys" would be appreciated by all the voters in the ranks of organized labor.

The proposition pleased the mayor, but he was too crafty a politician to come out openly against the company. He compromised by addressing a secret meeting of the "local," and promised the men that if they forced an issue by calling a strike he would see that no police protection would be given to the company's property. He also promised to frame up some emergency legislation that would prevent the company from using any strike-breakers.

The general manager of the street railway corporation was a man of more than ordinary ability in handling delicate situations. He did not approve of a street railway or any other large employer of labor carrying its difficulties with its employees before the public, as publicity in such cases only tends to rouse a factional spirit and to make the issues more difficult of settlement. But when he learned that the mayor's support was being taken seriously by the men, and that there was talk of calling a strike on the approaching Fourth of July unless the company recognized the union, he decided to force the issue at once. He knew that he and his company had the respect of the community and that it would give him a fair hearing on any subject which involved both the company and the public. So he bought a full page of advertising space in each of the local newspapers. Here he announced that some of his conductors and motormen were talking of going out on a strike on Independence Day, and as traffic was usually heavy on holidays the company thought the people ought to know about this so they could arrange their plans accordingly.

This announcement was supplemented by a brief and truthful review of the events leading up to it (excluding the part which the mayor had played), and also by a statement of the company's side of the case. In conclusion the general manager stated that his company stood ready to make any fair adjustment of the differences that had arisen between it and its dissatisfied employees and trusted the public would be spared the inconveniences of a strike.

This advertisement threw both the agitators and the mayor into a panic, and the latter's panic increased.

when the general manager visited him and told him quietly that unless he ceased meddling with the private problems of the company, another advertisement would be published which would deal exclusively with the part the city's chief executive was playing in encouraging a situation that might result in riot and disorder. The newspapers and the chamber of commerce then took up the matter and, by indorsing the original plan of settlement submitted to the men by the general manager, showed the union that it could expect little public support if the agitators persisted in forcing a strike. The mayor, meanwhile, seeing which way the "cat was jumping," promptly came out for "law and order."

The upshot of the matter was that inside of forty-eight hours the more level-headed of the union men got together and voted down the strike idea. A few days later the general manager's offer of mediation was accepted and all differences were satisfactorily adjusted.

A CASE IN WHICH CORDIAL PUBLIC RELATIONS HELPED OUT

Sometimes in an effort to secure or keep the labor vote, politicians will attempt even cruder tactics than have just been outlined. If, however, the head of the corporation that is being menaced is sure of his company's standing in the community he can sometimes outwit them. The following is an instance.

Several years ago a street railway strike was in progress in a coast city where the mayor was completely dominated by the labor agitators. He called the general manager of the traction company over to the city hall on the day the strike started and warned him that if he attempted to put strike-breakers on the cars the chief of police would be ordered to have them shot down on sight.

The general manager, who was an Irishman, wet his lips and pushed back his coat sleeves nervously when this ultimatum was delivered to him. Then, controlling both fists and brogue with an effort, he turned to the mayor and spoke as follows:

"Is that so? Well, thin, you'd better tell your chief and his min to have their insurances paid up, because my cars are goin' to run to-morrow with stroike-breakers on thim—and they're goin' to have guns—and they're goin' to shoot those guns at the first copper who raises a gun to thim. If you want civil war here you're goin' to get it!"

But there was no civil warfare the following day. The mayor was not a good poker player.

OUTWITTING THE "GRAFTER"

Another rôle which public utility men have discovered the crooked politician is prone to adopt is that of "grafter."

Nearly any idea for an ordinance that will tend to embarrass a company or cause it to spend large sums of money on so-called "improvements" or "extensions" that are not really needed can be used by him as a lever to extract some graft from the corporation affected if its officials are at all cowardly.

In the old days, before the corporations learned that the public did not want to stand for a crooked politician any more than it did for a crooked corporation, it was easier for the grafter to terrorize the public utilities than it is to-day. This is shown by the following illustration.

Seven years ago the "collector" for the mayor of a city of 40,000 population went to the general manager of the local street railway and showed him the advance copy of an ordinance which, if passed, would compel him to rebuild the company's double-track loop in the heart of the city at an expense of about \$20,000.

"It will cost you \$5,000 to prevent that ordinance from getting over," said the collector, bluntly.

The general manager, who was a good lawyer as well as an operator, read the proposed measure carefully and then shook his head.

"Nothing doing," he said. "Our franchise rights have precedence over that ordinance."

"All right," said his visitor cheerfully, "then we'll attack the validity of your franchise."

They did this so effectively that the company had to spend \$25,000 and fight in the courts for three years to protect its stockholders from the deprecations of a crooked mayor and a thieving council.

The general manager did not ask for the co-operation of the public in that fight, nor did he attempt to "show up" the politicians who were behind it. He did not figure that it would do any good. Last year, however, when another effort was made to coerce him into crossing the palms of some political grafters he tried an experiment. He dealt the public a hand in the game.

The chairman of the highway commission in a town through which his principal interurban line ran had approached him with an offer of a private right-of-way through the main street of the town "for \$5,000." Now, the general manager did not want such a private right-of-way, and, moreover, even if he had wanted it the highway commission did not have the power to grant it. Property owners along the line could have blocked it by injunction proceedings. He called this to the attention of his visitor, who was also political "boss" of the town, and the latter admitted that this might be true. But he insisted that he and "the boys" needed \$5,000 anyway.

"You know we're not in politics for our health," he added.

"Neither am I running a sanitarium for grafters," said the general manager. "Now get out before I throw you out!"

The chairman got out, muttering threats of revenge, and the following week the council of his town passed an ordinance compelling the railway company to stop its "limited" cars at all crossings within the town limits instead of at only one street as before.

The general manager decided then that an opportune time had come to let the citizens of that town know the type of men they had voted into public office. As a special favor to the town he had instituted, the year before, an "owl car" service between it and the city in which his local lines operated. This had become very popular, especially with the theater-going inhabitants. Knowing that a public clamor would be raised if this service was abandoned, and appreciating the opportunity which such a move would give him to expose the grafters, he seized it and announced that the "owl car" service would be discontinued until the town council saw fit to revoke the ordinance which had upset the "limited" service on the interurban line.

This was an effective counter blow and resulted disastrously for the grafters, for in the investigation that followed other petty acts of the town's political crooks were uncovered and a general house-cleaning followed.

Cartoon Series of Editorial Talks

THE ELECTRIC RAILWAY JOURNAL has republished in pamphlet form the cartoon series of editorial talks, twelve in number, published in this paper from Oct. 7, 1916, to Dec. 23, 1916, inclusive. Copies of this reprint will be sent to any subscriber upon application as long as they last. The set was reprinted because of the interest expressed in these cartoons and the desire of a number of readers to have a complete set in convenient form.

American Association News

Plan for Affiliated Association for Manufacturers Presented at Boston—Signal and Claims-Transportation Committees Held Profitable Meetings This Month—Records of Two Recent Company Section Meetings Are Given

Status of Manufacturers

Report of the Sub-Committee on the Subject Was Presented at Boston

The report of the sub-committee of the executive committee of the American Association, appointed by President L. S. Storrs on Dec. 20, 1916, was presented to the executive committee at Boston. It recommended the organization of an affiliated association which would have five representatives on the executive committee and would take full charge of the exhibits and have such other duties as might be assigned to it by the president and executive committee. The sub-committee also recommended that representatives of manufacturers be appointed to membership on the committees of the parent and affiliated associations in the same way that railway men are now appointed. The committee consisted of Guy E. Tripp, E. W. Rice, Jr., S. M. Curwen, Thomas Finigan and James H. McGraw, chairman.

At the meeting of the executive committee of the American Association on Feb. 15, as mentioned in the issue of last week, it was decided to refer the report back to the sub-committee with recommendations of the executive committee for further consideration.

Joint Committee Discusses Block Signals

A meeting of the joint committee on block signals was held in the William Penn Hotel, Pittsburgh, Pa., on Feb. 2 to receive reports of the various sub-committees appointed at the Newark meeting. The members of the committee present were J. M. Waldron, New York City, chairman; J. W. Brown, Newark, N. J., co-chairman; J. B. Stewart, Jr., Youngstown, Ohio, J. J. Brennan, Fort Wayne, Ind., G. K. Jeffries, Indianapolis, Ind., R. C. Johnson, Brooklyn, N. Y., and John Leisenring, Peoria, Ill. The visitors present by invitation, representing various signal manufacturers, were: R. V. Collins, West Newton, Mass., S. M. Day, Rochester, N. Y., H. W. Griffin, New York City, and L. F. Howard and Earl Saunders of Swissvale, Pa.

The subject of standards was first discussed. With regard to automatic block signals for high-speed inter-urban service, investigations showed that the principal objection that had been raised to the requisites as outlined in the 1916 report was in the improper wording of the first requisite. At present the wording is: "Signals of prescribed form, indications given being in not more than three positions, by lights of prescribed color or by both." The sub-committee was advised to submit informally a revision of this requisite to the standards committee and ascertain if possible how any further objections could be met. With a view of harmonizing standards common to steam and electric railways, it was intended to make the revised wording conform to those formulated by the American Railway Association and the Railway Signal Association.

On the subject of the use of continuous track circuits for control of signals for high-speed service, it was decided that the standard as now contained in the Engineering Manual be eliminated and the matter be covered by requisites of installation. The addition of explanatory notes to the requisite was recommended for

the help of members of the association not familiar with terms used in signaling.

Considerable discussion was given to the subject of block signal operation on roads signaled from end to end, this investigation covering maintenance costs, efficiency and effect of traffic. It was thought that the phrase "from end to end" limited the number of roads affording data, and the committee decided to use data obtained from roads using block signals over parts of their routes to show possible results for the case of a road signaled throughout its entire length.

The subject of the operation of trolley contact type of signals will be considered further by the sub-committee. Forms for aspects were submitted and tentatively adopted which are similar to those used with track circuit light signals excepting the cautionary indication. A note was added stating that, when used exclusively on single track, a single yellow light will indicate that a car is in the block proceeding in the same direction. Where car-spacing signals are used, two yellow lights will indicate that the next signal is at danger. Where both track circuit and trolley contactors are used, both red and yellow lights will be used to indicate caution. The sub-committee will submit copies of the proposed aspects to all manufacturers of trolley contact signals.

It was recommended that the work of referring to the Railway Signal Association plates showing apparatus applicable to electric railways be continued but that these should not include specifications for transformers until definite specifications have been decided upon. It was thought that reference to the plates should be made with caution especially in the cases of apparatus the design of which is not yet standard.

Progress on other assignments was reported and the chairman appointed another sub-committee to investigate the co-ordinate work of previous committees according to topics.

It was decided to hold the next meeting in Chicago on March 19.

Joint Committee on Claims-Transportation

Co-operation between claims and transportation departments in reporting accidents and in preventing them was the topic discussed at the meeting of the committee held in New York City on Feb. 1, 1917. The meeting was attended by H. A. Bullock, Brooklyn, N. Y., chairman; H. D. Briggs, Newark, N. J.; A. G. Jack, Chester, Pa., and E. L. Lindemuth, Wilkes-Barre, Pa. In view of the similarity of subjects assigned to this committee and those under study by the electric railway section of the National Safety Council, and of the fact that many railways belong to both associations, it was decided to work in conjunction with the safety education and safe practices committees of the N. S. C. electric railway section. The ways in which this will be done are as follows:

An attempt will be made to get railways to make slides and motion picture films available to members in accordance with the plan discussed at the N. S. C. Detroit meeting, but only American Association members not in the N. S. C. will be approached. Messrs. Lindemuth and Jack were appointed a sub-committee to pre-

pare a report on safety education methods, with respect to expense and conditions under which typical methods had proved successful. For this work the material collected by the N. S. C. will be available. The chairman stated that the safe practices committee of the N. S. C. electric railway section is working out a plan of safety organization adapted to various conditions, namely to roads having union or non-union employees, willing to make liberal or only limited expenditure, etc. The joint committee believed that this would be appropriate as an appendix to its 1917 report.

The committee agreed that all information obtained by claims departments, excepting names and status of witnesses outside of the companies' employ, should be turned over to the transportation departments, and that names be furnished if desired in special cases when this can be done without prejudicing the companies' cases in court.

Messrs. Bullock and Briggs were appointed as a sub-committee to work out a set of inter-department forms to be used in carrying out this plan.

Capital Traction Company Section

The meeting of Section No. 8, held on Feb. 8, was addressed by Elon Von Culin, superintendent of traffic. He spoke of the work of the transportation and traffic departments, covering schedule building, traffic studies, and causes and prevention of delays in service. Some charts and tables were used to illustrate the talk after which followed a general discussion. Several members of the Washington Railway & Electric Company Section were guests, some of whom also gave short talks. Entertainment for the evening consisted of several vocal and instrumental selections. The number of members and guests present was 114.

Milwaukee Section Meeting

The regular meeting of the Milwaukee Company Section was held on Feb. 8. L. G. Riley of the Westinghouse Electric & Manufacturing Company addressed the meeting on "The Latest Development in Electric Car Control." He used slides to illustrate various details and reviewed the different types of car control which preceded the present multiple-unit system as installed on the Milwaukee company's new center-entrance cars. Following the talk by Mr. Riley the company section orchestra rendered several selections, after which the much-talked-of moving picture "King of the Rails" was shown. About 250 were in attendance.

The usual review of the technical press, dated Feb. 8, 1917, has been sent out to members of the section.

Preparedness Poster

The conference committee on national preparedness, of which Henry A. Wise Wood is chairman, has prepared a poster giving statistics of the army and navy with a statement of the needs of the country in both of these directions. The poster is 27 in. x 42 in. and has been issued to educate the public on the needs of national defense. Copies will be sent without charge to any electric railway company which wishes to display these posters in its waiting rooms. The conference committee may be addressed at 32 East Forty-second Street, New York.

For a number of years past the Fishkill Electric Railway has followed successfully the practice of giving \$3 a month bonus to every platform man who shows a clean slate as regards obedience to the rules.

COMMUNICATIONS

Suggestion on Truck Standards

CHICAGO ELEVATED RAILWAYS

CHICAGO, ILL., Feb. 8, 1917.

To the Editors:

I have been greatly interested in reading the article entitled "Truck Classification," by Mr. S. A. Bullock, which appeared in the *ELECTRIC RAILWAY JOURNAL*, for Feb. 3, 1917. I believe that a standard classification is very desirable and would be of great benefit to the operating mechanical department as well as to the truck manufacturer. The classification which Mr. Bullock has worked out seems to answer the purpose.

I notice that the last figure represents the carrying capacity of two trucks expressed in thousands of pounds. There is a question in my mind why Mr. Bullock uses the carrying capacity of two trucks instead of one truck. In cars where the two trucks are exactly the same this would probably not be an important point, but many subway and elevated cars are constructed with a motor truck under one end and a trailer truck under the other end of the car. While in general the center-plate load on the two trucks is approximately equal, the other characteristics of the two trucks are usually entirely different, and it appears to me that it would be better to have the last figure in the classification show the maximum carrying capacity of one truck in thousand pounds as all other figures and symbols in the classification refer to one truck.

H. A. JOHNSON, Master Mechanic.

Regenerative Braking of Electric Vehicles

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY

EAST PITTSBURGH, PA., Feb. 7, 1917.

To the Editors:

I have read, with interest, the abstract of my paper on "Regenerative Braking of Electric Vehicles," given in your paper, as well as your editorial and the abstract of the discussion of the paper. The abstract of the paper proper is indeed a very correct, complete and concise statement of the subject matter brought out in the paper. There is only one statement which is slightly in error, on page 112, to the effect that with the Lake Erie & Northern locomotive, the same connections are used for both motoring and regenerating. This is not quite correct in so far as the motors are in this case handled as straight series motors during acceleration while they are separately excited during regeneration. As mentioned in the paper, however, it would be possible to use the regenerative connection for motoring by making only very slight changes.

In quoting my remarks made in closing the discussion, you mention in your abstract my stating that I expect railroad men will come to see that the constant-speed motor is what they want. This statement should be somewhat qualified as follows: In considering what is desirable for the railway, it is necessary, first, to find out what is the ideal from a pure transportation viewpoint; and second, how closely such an ideal can be obtained without sacrificing reliability of service and equipment, as well as efficiency, etc. I am of the opinion that from a purely transportation point of view it is most desirable and efficient to operate a train over a certain piece of track all the time at the maximum speed

which is safe for this particular piece of track and for the equipment. It is further desirable that in accelerating, the speed of the train be brought up to this speed as quickly as possible. This means that it is desirable to have a maximum permissible accelerating torque until the maximum speed is reached. In other words, straight-line acceleration up to the maximum speed is desirable. In bringing the train to a standstill it is desirable to have straight-line retardation with the maximum permissible braking torque. Putting the above in ordinary language means that it is desirable from a purely traction point of view to reach a maximum permissible speed as quickly as possible, then to continue running at this constant maximum speed as long as possible, and to finally stop the train in as short a time as possible. It cannot be doubted by anyone that this will give the maximum efficiency of the track. Since the maximum permissible speed is, of course, different for different pieces of track and with different car equipments, it may be necessary to adjust the constant speed for different values under different conditions. In other words, it may be desirable, or necessary, to have an adjustable constant-speed characteristic. The only question which is difficult to decide is whether it should be possible to adjust the constant speed for two, three or more different values.

There are, of course, other points which are of importance from a transportation perspective. It is undoubtedly desirable to have enough margin for making up time to a certain extent. In the writer's opinion, this can best be provided by introducing a period of coasting, which incidentally has the advantage of giving more economical operation with regard to power consumption. Special attention should be called to the fact in this connection that the possibility of making up time by shortening the coasting periods exists alike no matter whether a constant or variable-speed motor is used for acceleration, assuming, of course, that in either case the maximum rate of acceleration and braking available with the particular equipment is being used, as is usually the case.

As previously mentioned, however, it is also of importance that whatever is ideal from a transportation viewpoint be obtained safely and efficiently, and wherever this is not possible it is perfectly justifiable to sacrifice a certain amount in track efficiency in order to obtain reliability. For this reason, the use of the variable-speed series motor is fully justified, although it does not give ideal conditions from a traction point of view. The strong point of the series motor is that it is to a very large degree self-protecting—ininitely more so than the constant-speed direct-current shunt or compound motor. The great successes achieved in traction work by the series motor are, therefore, not due to the fact that this motor is ideal from a traction standpoint, but rather to its great reliability as compared with the shunt and compound motors. As soon, however, as there is a type of motor available which is both reliable and adapted to give adjustable constant speed, there is no doubt but that such a motor should be preferred by the railways. This ideal is most closely approached by the induction motor in all cases where a limited number of constant speeds is satisfactory. There is no doubt but that adjustable constant-speed characteristics of locomotives may also be obtained in time with commutator motors for both direct current and alternating current as the art advances, although certain difficulties have to be overcome in this connection.

With regard to your editorial, in which it is stated that it is a long cry from the present applications of regeneration to trunk lines, to the use of the principle on the motor cars of city and interurban railways, I cannot

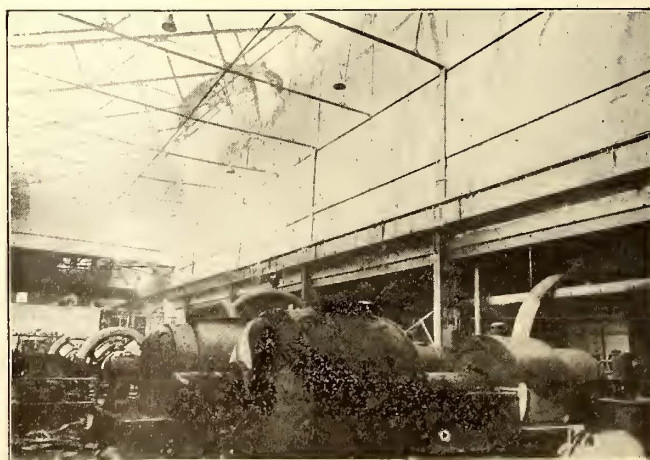
fully agree. Your argument that first cost and cost of maintenance are most important surely does not apply if additional costs are more than paid for by the savings made possible with regenerative control. The arguments advanced with regard to complication are only applicable within certain limits and depend largely upon the perfection of the additional apparatus. There is no doubt, for instance, but that an air brake with its compressor, compressor motor, air tanks, piping, and valves is infinitely more complicated than a hand brake, and yet nobody doubts nowadays that air brakes should be applied in a large majority of cases. It should not, therefore, by any means be concluded that the addition of a small exciter machine would make regenerative control for city cars prohibitive. The writer is convinced that regenerative braking will be used for such service eventually, although it may not be possible to recuperate as much as 60 per cent of the energy as mentioned in your editorial. Even if it is true that 60 per cent of the power is used for acceleration, it should be considered that a large part of this energy is regained without regeneration by coasting and that regeneration does not give 100 per cent efficiency. Therefore, in most cases it will hardly be possible to regain more than 20 per cent by regeneration. This amount will be about the same with the exciter and the booster system for reasons pointed out in my paper.

R. E. HELLMUND,
Railway Engineering Department.

Service Quickly Restored by Railway After Fire

The illustration below shows effects of the fire of Jan. 6, that destroyed some of the buildings and rolling stock and damaged the power plant of the Eastern Pennsylvania Railways at Palo Alto, and of which mention was made in the issue of this paper for Feb. 10, page 272. Enough of the power generating equipment escaped serious injury so that partial service was maintained, and with diligent efforts of the officials and employees, and help from neighboring companies, full service was soon restored.

The storehouse with all of its contents was destroyed and the building which was formerly a paint shop is now used for storing new supplies. The carhouse was also destroyed and contained twenty-one passenger and service cars at the time of the fire. A temporary repair shop has been erected beside the fireproof blacksmith shop, which was only slightly damaged. About 1100 ft. of track with a cinder covering in a new section of



INTERIOR OF EASTERN PENNSYLVANIA RAILWAY'S POWER HOUSE,
SHOWING DAMAGE BY FIRE

the carhouse was saved, and over this portion a temporary shelter was built after the fire for making car repairs.

The power plant consists of an old and a new portion, adjoining with no partition wall. This building remains intact, the new part having a tile roof, and damage to equipment was done by water and by falling embers from the roof of the old section. The two turbo-generators of 1000-kw. and 3250-kw. capacity were disabled by broken gages, oil pipes, etc., and damaged by water, but have been repaired and put back in service. Two motor generator sets, a rotary converter, arc lighting circuit, and a transformer which supplied power for plant lighting and for the carhouse were only temporarily disabled, but a direct-current switchboard and two old-style engines and generators used to supply power for the railway peak loads were destroyed. Sheet iron and other material put over the exciters during the fire saved them from damage.

Two Corliss engines and generators supplied all power for about forty-eight hours. During the time when the turbine units were out of order some energy was obtained from the Lehigh Navigation Electric Company. Three 500-kva. transformers were brought about 30 miles and set up at the company's substation at Tamaqua. This afforded car service as soon as the converting apparatus was dried out and repaired. A portable substation obtained from the Monongahela Valley Traction Company filled in for the old-style generators, so that normal rush-hour service was re-established. This was delayed by the addition of grab-handles, end-ladders, 1¼-in. hose and other changes, made to conform with M. C. B. requirements, before it could be accepted for transportation.

The A. I. E. E. Mid-Winter Convention

Electrical Engineers, at New York Meeting, Discuss
Among Other Subjects, Generator Heating
and Reactance Protection of Electrical
Machinery and Circuits

THE fifth mid-winter convention of the American Institute of Electrical Engineers was held in New York City on Feb. 14, 15 and 16, with an attendance of about 500. The papers were largely of a special electro-technical character relating to theory, design and operation of machinery and circuits. The meeting opened with a brief patriotic address by President H. W. Buck, who explained the plan of the engineering societies for co-operating with the war department of the federal government. He stated that the invitation extended by the A. I. E. E. to its membership to enroll with the institute, stating qualifications for military service and circumstances affecting military serviceability had met with a tremendous response. He also explained the plan for an organization to be known as the Engineering Council for United Engineering Societies through which engineers can express themselves as a body on public and engineering matters relating to human affairs.

Among the topics discussed in the papers only two will be mentioned here as of rather considerable interest to the power generation and distribution departments of electric railways. These are the internal temperatures of electric generators, and devices for protecting circuits from excessive overloads. On the first-named topic a paper, prepared by Ralph Kelly, power engineering division Westinghouse Electric & Manufacturing Company, was presented by Prof. Alex. Gray of Cornell University. In this the author outlined a method for calculating the internal temperatures of

electric generators. The discussion which followed brought out the difficulties of calculating these temperatures on a rational basis, but emphasized the importance of recognizing the fact that internal temperatures are much higher than external ones. This is, of course, due to the fact that heat can only flow under the influence of "temperature head" or difference of temperature. In flowing from the interior of the machine, when it is generated, to the outside where it is radiated the heat must overcome the resistance due to the imperfect heat conductivity of the materials.

On the subject of circuit and machine protection by means of current-limiting reactors there were two papers, one by J. Allen Johnson, electrical engineer Ontario Power Company, Niagara Falls, Ont., and one by P. B. Juhnke, Commonwealth Edison Company, Chicago, Ill. These and the resulting discussion went to show that while reactance has an excellent protective effect against short-circuits in electric circuits there is a limit to the amount which should be used. Excessive reactance between generators reduces the synchronizing power and thus increases the tendency to hunt. One speaker in the discussion said that in this respect a bus reactor, that is, one connected between sections of a power plant, acts analogously to a mechanical coupling between two generators. If the reactance is too low, comparable with a rigid coupling, the stress imposed on the machines and system during synchronizing may be severe; whereas too high a reactance, comparable with a flexible coupling, may reduce the synchronizing power too much.

Mr. Juhnke told of a short-circuit which occurred near one of the great power plants of his company, causing an automatic disconnection of an 80,000-kw. load. The protective reactors in this case prevented great damage to the equipment and the greater load interruption which must have occurred without them. It was stated that had the reactors not been used mechanical forces up to 1000 lb. per foot might have occurred between parallel conductors.

Society of Terminal Engineers

The Society of Terminal Engineers has just been chartered under the laws of the State of New York with headquarters in New York City for the purpose, among other things, of promoting the study of terminal engineering and mechanical freight handling as a specialty.

The new organization has three grades of membership, viz., members, associate members and juniors. The members grade is open to professors of civil and mechanical engineering, and engineers specializing in terminal work. Associate membership applies to officers and others connected with concerns manufacturing freight handling appliances and terminal equipment, and those whose work and interests enable them to co-operate in the aims of the society. Junior members comprise recent graduates of recognized technical schools who will specialize in terminal engineering, and young engineers qualified to fill subordinate positions in terminal work.

A rate of \$6 a year, without initiation fee the first year, has been fixed as dues for membership in the new society. The partial organization so far effected is: President, H. McL. Harding, New York; vice-presidents, Gen. W. H. Bixby, U. S. A., Washington, D. C., and John Meigs, Philadelphia, Pa.; treasurer, W. J. Barney, New York; secretary, J. Leonard, New York. The office of the secretary is at 1133 Broadway, New York. The society will meet once a month in New York.

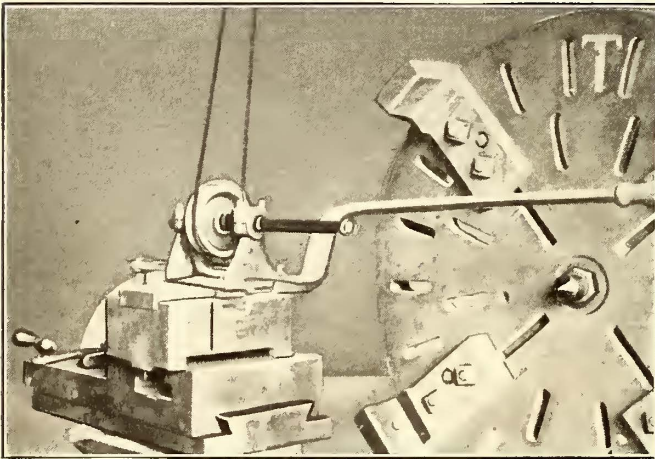
Practical and Economical Solutions of Problems in EQUIPMENT AND ITS MAINTENANCE

Pole Raising with Old Emergency Wagon—Twin Cities' New Two-Car Unit—Avoiding "Loose Ends" in Way Department—Maintenance Cost Data in Graphic Form—Good and Bad Bridge Construction

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

Spindle of Old Wood Lathe Used for Commutator Slotter

The accompanying illustration shows a home-made commutator slotter constructed by M. B. Osborne, master mechanic Galveston (Tex.) Electric Company. The carriage of a large machine lathe holds a heavy iron block, machined to take the spindle of an old wood lathe which was taken from the company's junk pile. The circular saw which cuts the commutator slot is mounted on the end of this spindle. The armature is mounted



COMMUTATOR SLOTTOR USED IN THE SHOPS OF THE GALVESTON (TEX.) ELECTRIC COMPANY

on the large lathe, and the slotter is moved along commutator by means of the long handle shown in the illustration. The cost of constructing this device in the shop was less than \$15.

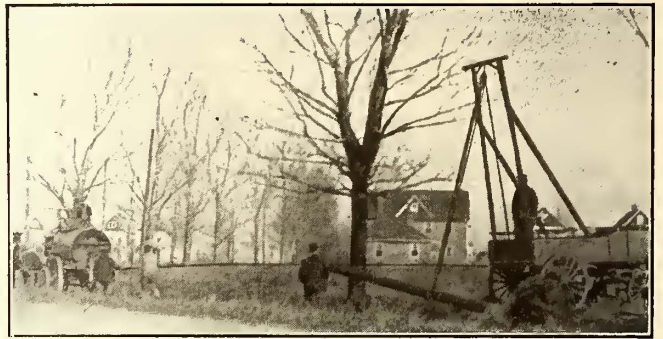
Pole-Raising Equipment Made from Old Emergency Wagon

BY G. H. MCKELWAY

Engineer of Distribution Brooklyn Rapid Transit System

A pole-raising wagon which has been in successful use for several months is shown in the accompanying illustration. It consists of an old emergency wagon with a strong gallows frame securely braced and bolted to the floor. When the pole is to be raised at the back of the wagon the block and tackle is placed in the center of the top crossbar, and when the pole is to be raised on the side the block is attached to the end of this crossbar.

Where conditions will permit, the wagon is backed up to the pole hole with the block and tackle suspended from the center of the top bar. A rope sling is made fast to the pole, and the hook which is attached to the pulley block is slipped under it. From the other end of



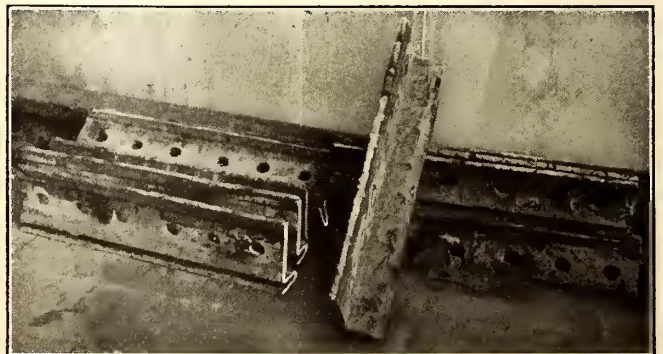
RAISING POLES BY MEANS OF GALLOWES ATTACHED TO OLD EMERGENCY WAGON

the block and tackle the rope is run down through a pulley attached to the back end of the wagon and then hitched to a team of horses, which raise the pole by drawing on the rope. In this case the rope was attached to a tank wagon that carried water for use in mixing the concrete in which the poles were set.

On some pole-raising wagons the legs of the gallows frame are extended to the ground, but in this case the wagon was amply strong for any size of pole that it might have to raise. When first used, a few bags of cement were placed in the wagon to prevent it from tipping over when the pole was raised at the side. This made the wagon very heavy, and so the load was gradually decreased until it was found unnecessary to carry any ballast at all. Occasionally, however, the wagon has tipped slightly, but this has been stopped by having someone step on the hub of the opposite wheel.

Old Angle Bars Reclaimed by Electric Welding

One of the economies practised by the Puget Sound Traction, Light & Power Company, Seattle, Wash., is the reclaiming of old angle bars by the use of an electric welder. The accompanying photograph shows a



WORN ANGLE BARS BEFORE BEING RECLAIMED BY ELECTRIC WELDING

number of these which have been removed from the track when relaying rail or making other improvements. The angle-bars shown have been worn so badly that they are no longer of use.

In order to reclaim these bars, sufficient additional metal is welded onto the top of the bar with the welder. Usually two layers are built up to make sure that there is plenty of metal, not only at the worn places but also between them. The bar is then planed down to size. It takes about ten minutes for the welding operation and about the same length of time to run the bar through the planer. A saving of from \$1 to \$1.50 per bar over the cost of replacing with new bars is effected by this scheme.

New Type of Car for Twin Cities

Equipment Which Is Being Tried for Rush-Hour Service Has 26-In. Wheels, Inside Journals, a Low Floor and a Weight of 14 Tons

The Twin City Rapid Transit Company is experimenting with a two-car unit for rush-hour service that is made up of cars of a new type designed by W. J. Smith, master mechanic, and built in the company's shops.

Each of the new cars in the unit is equipped with four GE-258, 25-hp. motors, and 26-in. Davis wheels. The trucks are very light, with arch-bar side frames and a 4 ft. 8 in. wheelbase, and the journals have been placed between the wheels, thus reducing the length of transom and bolster necessary with the customary ar-

The total weight of the unit of two cars, fully equipped for operation is 55,500 lb., this including double sash for both cars. The present standard Twin City car weighs complete 42,000 lb. when equipped with four GE-200, 40-hp. motors. For comparison, two such cars in a train would weigh 84,000 lb. and would seat ninety-six passengers, while the new unit weighing 55,500 lb. seats 101 passengers. One of the new trucks, complete with motors, wheels and brake equipment, weights 5200 lb.

The company expects to adopt the type of car used in the front of this unit as its new standard. If operation proves successful, more double units will be built for use in the rush hour.

Efficiency in Maintenance of Way

Careful Planning and Attention to Detail Are Especially Necessary to Success in This Department

BY DAVID CURTIN

Engineer Maintenance of Way, Bay State Street Railway

Close attention to details is the price of efficiency in all branches of electric railway operation. In the maintenance of way department of any large system, the cost of even small departures from good practice on a local job may lead to serious increases in operating expenses, and unless apparently trifling matters are properly handled the chances of performing work economically are jeopardized. Oversights multiplied over



UNIT OF TWO LOW-FLOOR CARS BEING TRIED OUT ON TWIN CITY LINES

range of having the side frames outside of the wheels. The brakes are of a specially designed band type.

The level of the car floor is 31 in. above the rail. The car body is 46 ft. long by 9 ft. wide, and in outward appearance is similar to the Twin City Lines standard, except that it is not so high. For the vestibules there have been provided folding doors with wireglass panels in their upper part. These doors are operated by the same type of mechanism that is used for the company's standard folding wire, platform gates. However, the doors will be operated by the conductor instead of by the motorman, as is the rule on the present type of cars.

A different body arrangement has been adopted for the two cars making up the unit, the front car having rear entrance and exit and the rear car front entrance and exit. The front car seats forty-seven passengers, and rear car fifty-four. Both cars are permanently coupled together, and the rear car is not equipped with control, all eight motors being operated by one controller on the front car. A hollow steel coupling carries the power line, air hose, bell wires, etc.

many divisions or work done without thoroughness affect the service and the company's cost sheets far beyond the appreciation of outsiders. There is therefore every incentive to standardize methods in handling routine matters, thereby leaving more time for the consideration of new and important problems.

Experience develops the best ways of handling work, and some of the lessons taught by the past dozen years in the maintenance of way department of this company may be suggestive to others in the same field. I do not mean to imply that our practice has become rigidly standardized, for it is constantly changing as new problems and conditions arise. Instead, I have been persuaded that if I emphasize some of the points which, if neglected, might be classed as "loose ends," the interests of more thorough work will be served.

Whenever matters are taken up with municipal officials by a representative of the way department, the local operating superintendent should be consulted and kept in touch with proceedings, as he is the company's authorized representative in dealing with city or town officials. Lack of co-operation between the departments may lead to delays in carrying out work or to adverse

effects on the service, and economical operation depends upon full team-play. Ample notification should be given to the line department of any plan to break track, so that a temporary return can be installed around the break if necessary. The provision of material for contemplated new jobs is facilitated by having the representative of the way department walk over the work as soon as he is notified that it is to be done and decide as to the economical location of supplies, taking into consideration the location at which track is to be broken and how the work will affect the handling of ties, gravel, etc. It is unwise to distribute more material than will keep the work moving to best advantage.

No time should be lost in reporting to the headquarters of the way department as soon as a member of the staff learns of any street improvements or changes that are to be made. In this class are excavations on account of sewer, water, gas, electric light or telephone connections that are being installed under or near the track, or any work being done by outside parties on bridges, state highways, etc. The progress of such work should be reported to headquarters daily. This may help the way department employee to be prepared with the necessary material, grade papers, etc., and prevent delays in the operation of cars and the progress of trackwork.

Plows and scrapers should be used for all possible excavation work, the men following up and doing all necessary trimming. When possible on a double-track location, with one track being rebuilt at a time, plowing should be done by car. Scrap bonds should be removed from track being torn up and secured in a locked box for subsequent delivery to the storekeeper, and the same care should be taken of supplementary return wire. Spikes should be pulled out as carefully as possible for future use when feasible, using spike plugs in ties to keep out water if the tie is suitable for relaying. Shims should be spiked with large nails to prevent their working out. The line department ought to be notified whenever ground wires are detached from the track during the progress of the work, or found to be broken from the track, before connections are made to the rail.

Bonds improperly applied are most valuable to the company in the junk pile, and as long as such bonds remain in the rails they represent this money equivalent. Installing bonds in damp weather is bad practice. In bonding, drills should be kept sharp and up to gage. When high-speed drills become worn on the flute so that they drill undersized holes, their proper destination is the storeroom. It is a great mistake to install bonds in poorly drilled holes, and careful bonding requires that holes in rail should not be left exposed to rust for any length of time, but should be filled with grease and left until ready to apply the bond terminal. Careful handling of bonds pays, as they become shapeless if not kept snugly in their containers.

The tamping of ties is one of the most important details of modern track construction. The life of track can be greatly cut down by insufficient tamping, especially at the joints. Time is sometimes wasted by continuing to tamp after no further improvement is possible and also in tamping against the sides of ties instead of underneath. Tamping after improvement ceases is liable to raise the track out of surface. Men should tamp in pairs, using bars of the same size and weight, standing on opposite sides of the tie and striking together, for even tamping. Joints should be "coaxed" by tapping on the bottom of the plate and not driven with the sledge, as there is danger of breaking the rail. After joints have been tightened, it is essen-

tial to keep them uncovered until after two days of car service, after which the track can be gone over and any remaining slack taken up, using care not to bend the plates. Every joint hole in special work should be bolted, as the life of special work depends on this to a great extent. Whenever special work is received, immediate inspection of it is desirable. It is a mistake to sign for special work as "received in good order" before being satisfied that such is the case. Temporary efforts to save time and trouble along this line may result in considerable inconvenience and multiplied correspondence before matters can be straightened out. An inspection of defective special work by a division roadmaster is expedient before it is sent back to the manufacturer.

Maintenance-of-way employees on a well-managed property are expected to render all possible aid in case of accident; to send in full reports of such occurrences; and to secure the names and addresses of witnesses if the accident appears due in any way to track or roadbed conditions. Ends of rails should be protected by red lanterns when piled or being turned at night and it is most important to safeguard excavations made by outside parties in or near tracks or company property, regardless of the neglect of the lighting by the responsible party. Such lighting should be independent of the regular street-lighting service. Liberality in the use of lanterns pays, as an accident-prevention measure. The disposal of waste material which might otherwise cumber the roadbed or street is important, and this should be done as economically as possible, first considering what the company can use. It is a good plan in disposing of the balance to give the city or town authorities the preference, the remainder being given to residents or taken to the dump, bearing in mind the desirability of minimum haul.

A few words on inspection may be in order in conclusion. Special work should be inspected daily, with particular care for switches and tongues. Track on "fast rail" should be gaged at least once a week and a record of the gage inspection should be kept on file. Immediate removal of erroneous gages is essential. Branch-offs, crossovers and turnout ends that are only used occasionally ought to be maintained in clean condition in case emergency operation requires their use, thereby preventing possible derailments or delays in cleaning them out when occasion arises for their service. The keeping of switch tongues in proper adjustment is a prime factor in the prevention of derailments. High or low manholes, broken manhole covers, irregular paving, if liable to injure car equipment, cause derailment or accident to vehicles should be reported immediately to headquarters. A daily inspection of railroad crossings by oilers with immediate report of any improper conditions is most important. The track for a distance of at least 150 ft. on each side of a railroad crossing as well as the crossing itself should be maintained in the best of repair at all times, as should curves on steep grades or at the foot of grades. Special care should be taken to keep stones out of the flanges of crossings and to spike down or renew loose planks when necessary. Another important daily task is the inspection of track on bridges and in trestles, with special attention to loose bolts and spikes, wide gage, loose or defective planks. Immediate repairs should naturally follow such conditions when discovered.

In many cities the posts on which the fire alarm boxes are located are painted red to make them more conspicuous. For the same reason it is the practice in some railway shops to paint an 8-in. red strip from each fire extinguisher to the ceiling.

Cost of Erecting Overhead Work—IV

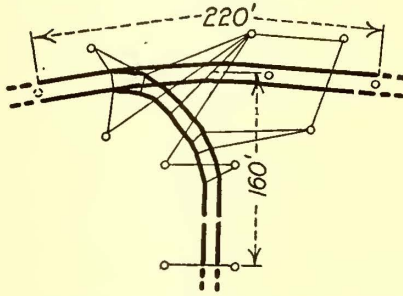
(From the records of a large Eastern company)

The following is the fourth group of a series of diagrams with cost figures to show actual costs of erecting the various types of overhead construction

described under conditions of light, ordinary and congested traffic. The preceding groups appeared in the issues for Jan. 20, Jan. 27, and Feb. 10.

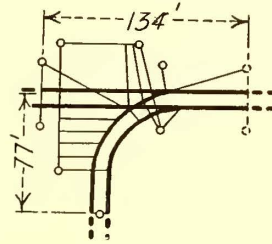
LABOR REQUIRED FOR CONSTRUCTING VARIOUS TYPES OF OVERHEAD TROLLEY SPECIAL WORK UNDER VARIOUS TRAFFIC CONDITIONS

Double track, right-hand branchoff from curved main line, angle 60 deg.



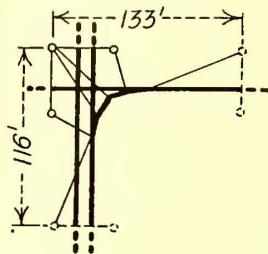
No.	LIGHT		ORDINARY		CONGESTED	
	Labor	Trucking	Labor	Trucking	Labor	Trucking
26*	\$36.30	\$26.40	\$45.38	\$33.00	\$54.45	\$39.60

Double track, left-hand branchoff, angle 90 deg.



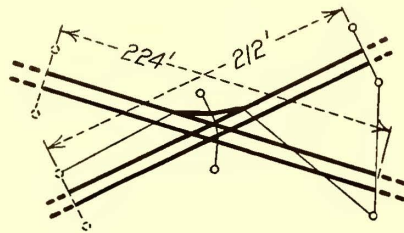
No.	LIGHT		ORDINARY		CONGESTED	
	Labor	Trucking	Labor	Trucking	Labor	Trucking
27*	\$29.04	\$21.12	\$36.30	\$26.40	\$43.56	\$31.68

Single track crossing double track, with single track connecting curve, angle 90 deg.



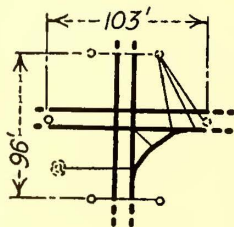
No.	LIGHT		ORDINARY		CONGESTED	
	Labor	Trucking	Labor	Trucking	Labor	Trucking
28*	\$29.04	\$21.12	\$34.39	\$25.08	\$43.56	\$31.68

Double track crossing double track, with single track connecting curve, angle 45 deg.



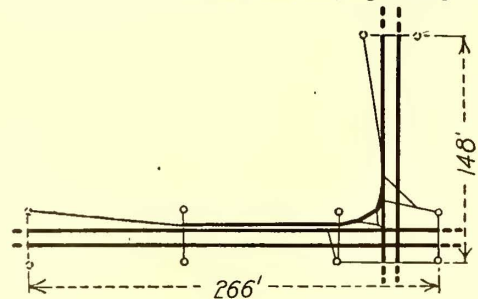
No.	LIGHT		ORDINARY		CONGESTED	
	Labor	Trucking	Labor	Trucking	Labor	Trucking
29*	\$36.30	\$26.40	\$45.38	\$33.00	\$54.45	\$39.60

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



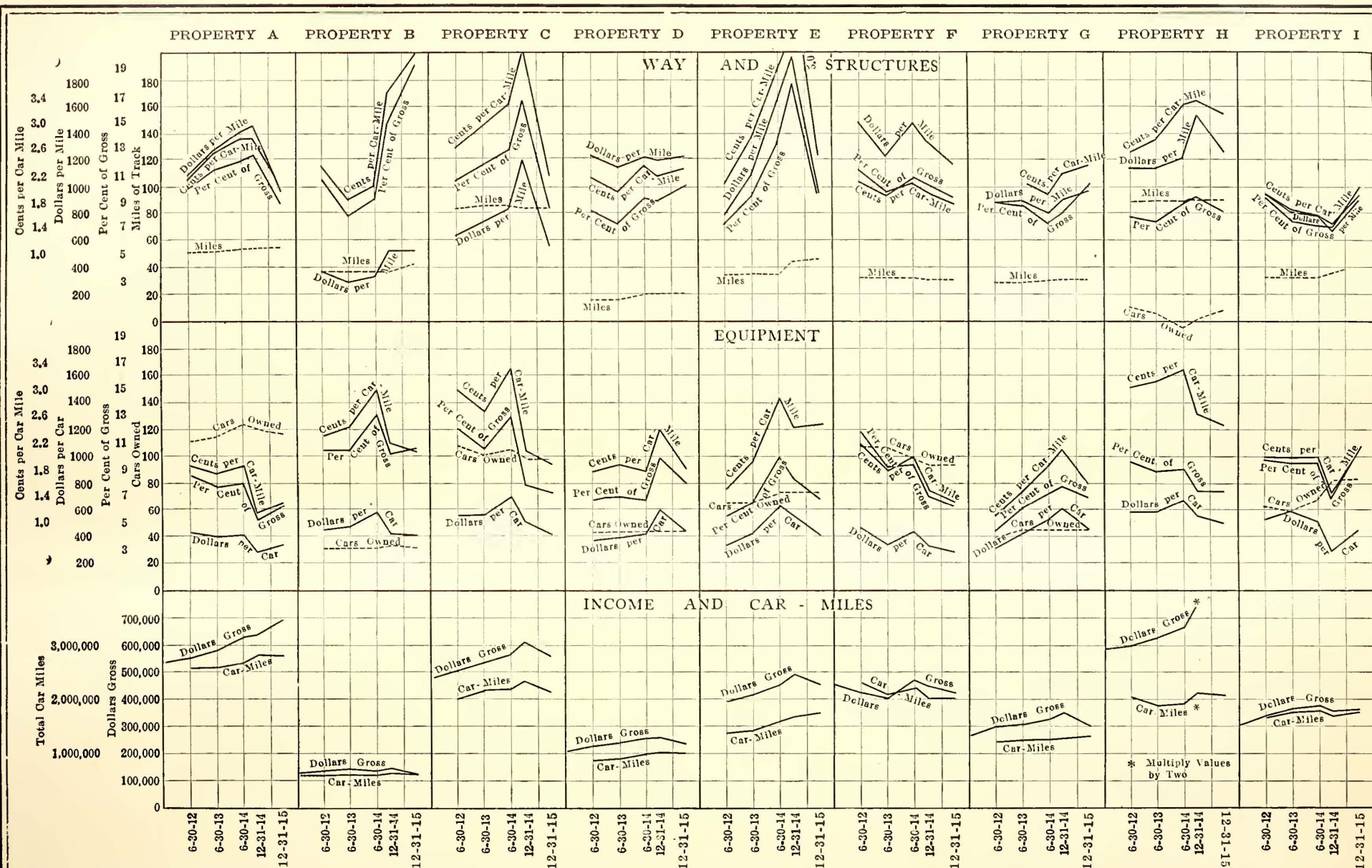
No.	LIGHT		ORDINARY		CONGESTED	
	Labor	Trucking	Labor	Trucking	Labor	Trucking
30*	\$32.67	\$23.76	\$39.93	\$29.04	\$47.19	\$34.32

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



No.	LIGHT		ORDINARY		CONGESTED	
	Labor	Trucking	Labor	Trucking	Labor	Trucking
31*	\$27.23	\$19.80	\$32.67	\$23.76	\$43.56	\$31.68

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



Note:—Values of "Dollars per Mile," "Dollars per Car," "Dollars Gross" and "Total Car-Miles" for six months ending Dec. 31, 1914, are doubled to compare with annual figures.

Maintenance Costs on a Number of Electric Railway Properties of Moderate Size

Some Maintenance Cost Data in Graphical Form

Through the courtesy of a company operating a number of railway properties in cities of moderate size, it has been possible to give to the readers of the *ELECTRIC RAILWAY JOURNAL* the data plotted in the graphs appearing on the page opposite. These bring the record up to the end of 1915. The 1916 data are not included as they cannot be considered typical in view of the prevailing high prices of materials and scarcity of labor.

It will be noted that the cost data are stated in several ways, giving an opportunity for comparison based on income, car-miles operated and miles of track for the way and structures, and on income, car-miles operated, and cars operated for the equipment.

Inspection and Maintenance of Railway Bridges*

Importance of Thorough Inspection, Dangerous Conditions Often Overlooked, Purpose of Guard Rails and Timbers, Use and Abuse of Paint, and Safe Loading Specifications

BY H. C. KEITH

Consulting Engineer, New York City

In the State of New York the board of railroad commissioners was established in 1883, and the failure of three railroad bridges within a year after the commission was organized brought forcibly to its attention the need of investigation of all the bridges in their jurisdiction. Accordingly an order was issued to the railroad companies to file complete plans with strain sheets of all bridges on their lines.

Of about 2500 railroad truss bridges then existing in the State, many were reported to "have been repaired or rebuilt before the strain sheets were submitted to the board" because of conditions found which had previously been unknown or winked at, and 669 truss bridges were repaired or rebuilt because of criticism by the board. As may be judged by these results, this investigation had a very important effect on the safety of the bridges in this State. With regard to the frequency of bridge inspection it may be said that two years is a satisfactory interval between inspections, though in certain individual cases greater frequency is desirable.

Much has been said of the danger of electrolysis and short-circuiting on bridges used by electric railways, and it is a real danger, though serious cases are rare. However, if the steel is found to be charged with electricity the inspector should make thorough examination to learn the cause of the leak and to discover any damage done where the current enters or leaves the steel work.

Timber piles and posts in sea water should be examined between high-water level and a little below low-water level for damage done by teredo or limnoria. In waters infested by either of these pests timbers should be given as great protection as possible, since a pile may otherwise become unsafe in less than two years. Thoroughly impregnating with creosote is somewhat effective as a decided deterrent, though not a sure preventive. If any method of incasing the piles is used the casing should be carried at least 5 ft. below low-water level and somewhat above high-water level. The best protection where practicable is a fill of earth or concrete to somewhat above high-water level, facing with rip-rap if

necessary to prevent scour. When the pests are found the extent of their ravages should be thoroughly investigated and recorded. On land white and black ants are sometimes as destructive as the teredo and limnoria are in sea water, but the chief cause of danger to timber on land is rot which is caused by dampness usually aided by warmth.

PAINTING AND PRESERVATIVE COMPOUNDS

Creosoting, kyanizing, vulcanizing, etc., are deterrents rather than absolute preventives of decay. They all act by stopping up the pores of the wood and thus keeping out the moisture. Creosoting is the most effective of these processes, though for soft woods, as spruce and white pine, kyanizing and vulcanizing are of great value. Hard pine that is full of pitch may resist decay as well as if creosoted, but for protection from teredo and limnoria the poison of the creosote adds to the efficiency. Unfortunately, most of the hard pine now in the market has been cut from trees which have been tapped for turpentine, so that the pores are not filled with pitch.

Sometimes a specially careful but unreasoning bridge man paints ties, expecting thus to make them more durable. The result is usually just the opposite; track men and the public soon wear off the paint from the top of the ties allowing moisture to enter there, while the paint on sides and bottom delays the drying; hence the conditions are right for rapid decay. It is of some value to paint the ends (though tar or pitch is better than paint) and it may do some good to paint the top, but the bottom and sides should be left unpainted. The purpose of painting steel work is to protect it from rusting by excluding moisture from contact with the metal. The best of paint cannot be thoroughly effective if dirt is allowed to collect on the steel work, since the dirt holds the moisture which will eventually find its way through the paint and do its destructive work with ever-increasing speed until attended to. A layer of tar or bituminous mixture has been used effectively to protect the steel in some places. When paint is put on over a rust flake the new paint skin is soon broken and worse than useless, since the moisture can get under it and has no chance to dry out. It is of prime importance that the steel be thoroughly cleaned before the paint is applied.

GUARD TIMBERS AND RAILS

The purposes of guard timbers and guard rails should be kept clearly in mind in order that their efficiency for those purposes may be observed. The primary object of guard timbers is to maintain the spacing of the ties to prevent bunching, and the secondary object is to stiffen the floor and make the ties work together. The purpose of the guard rails is to prevent the straying of a derailed truck and to bring back near the proper position a truck that may have been derailed on the approach to the bridge. Inside guard rails are a very important adjunct to a bridge carrying a track. They should be fully spliced or their efficiency will be greatly reduced. Care should be taken that bolts are so placed that neither heads nor nuts can be sheared off by a derailed car. Some engineers do not realize that outside guard timbers do not answer the same purpose. If a wheel is retarded by rubbing against the inside rail it will tend to turn the axle a little, directing the car toward its normal location; but the retarding of a wheel by rubbing on the outside guard timber will swing it further out of line and away from its proper place. This change of direction, too, will throw it against the guard more nearly at right angles, thus making it more likely to climb the guard and leap into whatever disaster is lurking beyond.

Though the outside guard timbers are not qualified for

*Abstract of part of a paper on "Bridge Inspection and Reports," presented before the Brooklyn Engineers' Club on Feb. 8, 1917.

guiding a derailed car, they do have a very important office. Without them, or some substitute, the ties would be likely to become bunched; the guard timbers also help to distribute the load and reduce the danger that the ties will tip up under a derailed wheel when stringers are too closely spaced. Guard timbers should always be bolted to at least every fourth tie.

Any type of construction which makes no provision for the safety of a derailed car is very undesirable. One such construction which seems to be popular is a flitched beam with the rail spiked directly to the timber stringer which is bolted between two I-beams or channels, with no floor between the stringers at all adequate to support a car if it leaves the rail. Another similar construction is a double stringer of I-beams or channels with spiking pieces between, which rest on horizontal separators of short pieces of channel riveted to the beams. Fortunately, many bridges with such stringers have heavy plank floors laid on top of the stringers, thus providing for the safe passage of a derailed car if it does not get too far away from the track stringers. A danger in many highway bridges is that a car may leave the rails and the support provided for it and get on to that part of the bridge where the stringers were designed for lighter loads; perhaps also nearer the center of floor beams competent to carry a car only near one end.

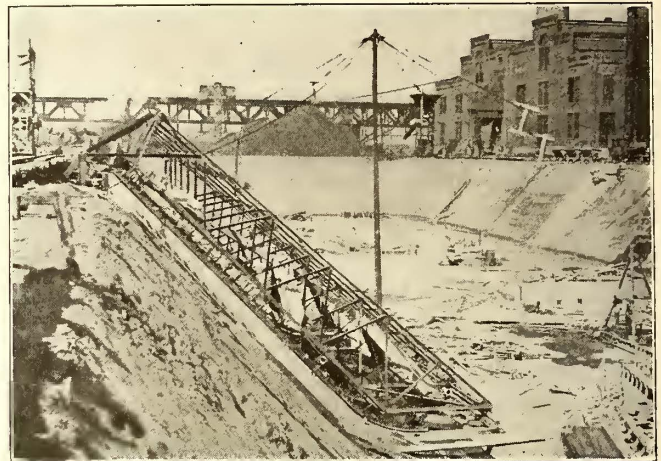
The specifications of the Public Service Commission of Massachusetts for bridges carrying electric railways have been found so satisfactory for the purpose that they have been used with certain modifications in connection with a great many bridges in other states. For the track load these specifications use a 50-ton car with wheel spacing of 5, 15 and 5 ft. and a total length of 40 ft. over all. For roadway and sidewalks loads of 100 lb. per square foot are used for city bridges and 80 lb. per square foot for country bridges 100 ft. or less in length. These uniform loads are assumed to cover the full area of the roadway and sidewalks except a width of 9 ft. at each track. For longer spans these uniform loads are reduced 1 lb. per square foot for every 5 ft. additional length up to 200 ft., and for all greater lengths 80 lb. and 60 lb. per square foot respectively are used. For suburban bridges the floor is designed for the same loads as the city bridges, while trusses and girders are designed as for country loads. For highway bridges in city, town or country the specifications require provision for an alternative roadway load of a single 20-ton auto-truck on two axles 12 ft. on centers and wheels at 6-ft. gage; the weight assumed to be distributed 6 tons on one axle and 14 tons on the other; the truck assumed to occupy a floor space 32 ft. long and 10 ft. wide, the overhang being equal at front and back and at the sides. With track and uniform roadway and sidewalk loads, impact of 25 per cent is added for floor beams and stringers, while for girders and members of main trusses the impact used varies from 25 per cent to 10 per cent, according to the loaded length producing maximum live-load stresses, except that 40 per cent is used for counters and floor-beam hangers. With the auto-truck load 50 per cent impact is used for steel members which receive their full load from one panel point only, and no impact is used for wood floor or stringers. The tension stress allowed by these specifications is 16,000 lb. per square inch of structural steel. Other allowed unit stresses in general correspond with those given in other specifications using the same tensile stress, except that in direct compression these specifications allow only 12,000 lb. per square inch of steel, reduced by the Gordon formula.

Diagrams have been prepared by which may readily be obtained the approximate weights of other single-truck or double-truck cars symmetrically loaded which

would give the same moment or shear as the standard 50-ton car of the specifications. By use of these diagrams a quick determination can be made as to whether it is permissible to run any car whose wheel spacing and loads are known over a bridge whose capacity for cars of the standard wheelbase is known.

Coal-Storage Reservoir Constructed After Disastrous Fire

About a year ago a disastrous fire destroyed hundreds of tons of coal at the Brunot's Island generating station of the Duquesne Light Company, Pittsburgh, Pa. Since spontaneous combustion is liable to occur when coal is piled to a greater depth than 15 ft. or 20 ft., a concrete basin is under construction in which 100,000 tons of coal can be protected against fire by being submerged



COAL-STORAGE PIT DURING CONSTRUCTION

in water. The basin will be 25½ ft. deep, 791 ft. long and 153 ft. wide, made of 40 x 50-ft. reinforced concrete slabs, laid so as to permit expansion and contraction. The expansion joints are made waterproof with pitch and tar paper and the abutting ends are supported by concrete 12 in. thick and 4 ft. wide. The inside walls have a 45 deg. slope.

The coal is handled by cranes, and the water for submerging the coal is pumped into the basin through a 14-in. cast-iron pipe leading from the power house to four 12-in. cast-iron outlet pipes placed 160 ft. apart and 6 ft. below the top of the reservoir. The discharge system consists of four 18-in. pipe lines.

Poles Set at Small Cost

The Georgia Railway & Power Company, Atlanta, Ga., has set a considerable number of poles in north Georgia during the past few years, and by using a block-and-tackle method of its own design has been able to set a large number of 50-ft. creosoted poles in a day's time with a minimum number of men and at a cost of 60 cents to 75 cents per pole. In giving this figure E. B. Hook, the superintendent of construction, states that it does not include anything but actually setting and tamping-in the poles. The block-and-tackle method referred to has been used for a couple of years, a pair of mules and nine or ten men being required to set the poles. Recently a 1½-ton truck has been substituted for the mules and the services of six or seven men dispensed with. In this way from twenty-five to forty 50-ft. and 60-ft. creosoted poles, weighing approximately 2 tons each, are being set in a day with three men and the truck at a cost of about 33 cents per pole.

News of Electric Railways

Traffic and Transportation

Financial and Corporate

Personal Mention

Construction News

Connecticut Commission Reports

A Summary Is Also Presented of the Recommendations of the Commission with Respect to New Legislation

The Public Utilities Commission of Connecticut has transmitted its fifth annual report to the Governor covering the year ended June 30, 1916. The report contains a general review of the work of the year together with certain recommendations and suggestions and detailed summaries and analyses of the financial condition of the several classes of companies under its jurisdiction. With respect to the electric railways the commission says in part:

"Passenger service on electric street railways, especially in the large cities, has been inadequate to the reasonable needs of the public. The rapid and almost phenomenal growth of some of the industrial centers created a demand for additional trolley service which the companies were unable to meet, and as a consequence, overcrowded conditions on electric railway cars during rush hours became the rule rather than the exception.

"During the year ended June 30, 1916, the Connecticut Company put into service ninety-two new double truck cars, adapted for summer and winter use. At a conference with the officers of this company in the spring of 1916, the commission recommended the immediate placement of an order for 300 additional cars, to be ready for service during the coming winter. Subsequently, on application of the Connecticut Company, the commission approved the type of construction of 100 additional double truck cars, for which an order was placed, and which were to be ready for service by Nov. 1, but present indications are that actual deliveries will be very much later. The 100 additional cars will not be sufficient to remedy the overcrowded conditions, particularly during rush hours, but should afford material relief.

"Service of the Shore Line Electric Railway on lines of said company supplied with electrical energy from its power plant at Saybrook, has been very unsatisfactory, and for the past six months has been partially suspended. In July, 1916, by virtue of an agreement with the Shore Line Electric Railway, The J. G. White Management Corporation, New York, assumed charge of the rehabilitation of the Saybrook plant, with instructions and full authority to put the same in good serviceable condition. The work has necessarily been slow, but substantial relief has already been secured.

"The Shore Line Electric Railway and the Norwich & Westerly Traction Company have adopted the so-called 'copper zone' as a basis for passenger fares in substitution for the ordinary 5-cent zone system formerly used. This system was made effective on the Saybrook and East Lyme Division on Sept. 1, 1915, on the Norwich & Westerly Traction Company, including the Groton & Stonington Street Railway, on Nov. 22, 1915, and on the New London Division of the Shore Line Electric Railway on Feb. 24, 1916. Patrons of the Groton & Stonington Street Railway petitioned the commission in December, 1915, alleging unreasonable increases in rates incidental to the change to this new plan and the towns of Stonington and Groton also intervened as petitioners in the case. After numerous hearings and inspection of the system the commission issued a finding requiring some adjustment of zones, but the general plan and rates were not otherwise disapproved. From this order of the commission an appeal was taken to the Superior Court which is still pending.

"The total mileage of single track operated by street railways in Connecticut is 830.479 miles. These companies operate outside of the State 341.91 miles, making a total

single track mileage operated of 1172.38. The aggregate salaries and wages paid to employees of street railway companies in Connecticut for the year amounted to \$4,339,801."

RECOMMENDATIONS FOR LEGISLATION

Among the recommendations of the commission are the following:

A law directing the commission to prescribe uniform systems of accounts for the several classes of reporting utilities, consideration to be given to the systems prescribed by the Interstate Commerce Commission for companies reporting to that commission.

A law whereby the commission may require companies to make returns for the calendar year instead of for the year ended June 30, as at present, such change in reporting year to be made if and when the Interstate Commerce Commission shall, as is now contemplated, require companies reporting to said commission to report for the calendar year.

That Sec. 1 of Chap. 128 of the Public Acts of 1911, be amended by removing the exception of municipal utilities from the operation of the Public Utilities Commission Act, to the extent of giving the commission jurisdiction over municipally owned utilities operating outside the corporate limits of the municipality.

A law requiring the installation of standard advance signs on line of highway, approximately 300 ft. from railroad tracks, at grade crossings, and providing for the maintenance thereof, substantially in accordance with resolutions which were adopted by the National Association of Railway Commissioners, at a meeting in Washington in November, 1916.

In view of the legislation enacted by the 1915 session of the General Assembly, giving the commission jurisdiction over the issuance of securities by the New York, New Haven & Hartford Railroad, the largest public service corporation in the State, the commission suggests the advisability of considering whether or not such authority should be extended over all the utility companies.

Mr. Sanders Optimistic

Street Railway Commissioner of Cleveland Hopes to Continue Three-Cent Fares

Fielder Sanders, street railway commissioner of Cleveland, Ohio, announced on Feb. 16 that the recommendations he will make to Council for the purpose of maintaining low fare are: Retirement of useless officials; gradual payment of the street railway deficit of \$450,000, instead of payment in a lump sum; retirement of old cars and purchase of new equipment that will reduce the operating expenses; a safety-first campaign to educate the employees and the public in ways to reduce accidents and consequent damage claims.

On May 1 the trainmen in the employ of the Cleveland Railway Company are to receive an increase of 1 cent an hour in their wages. This will amount to about \$200,000 a year. Mr. Sanders said that the operating allowance may have to be increased from 13½ cents a car-mile to slightly more than 14 cents, but that after July the company will purchase additional power from the Cleveland Illuminating Company. Mr. Sanders believes that the saving with purchased power will offset the increase in expenses and make it unnecessary to raise the fare.

The company has indicated its desire for payment in full of the deficit in the operating and maintenance accounts, which Commissioner Sanders proposes to extinguish in monthly installments.

Toledo Situation Reviewed

Sixty-five Weeks of Negotiation Without Results— Direct Deal with Mr. Doherty Suggested

In an editorial in its issue of Feb. 14 the Toledo *Times* dealt with the street railway commission appointed by Mayor Milroy to perfect a settlement of the franchise question with the Toledo Railways & Light Company. The *Times* believes that nothing substantial will ever come from the so-called "community of interest" plan, and that municipal ownership is a hope rather than a prospect. Something of a substantial nature is what the people want, says the *Times*, and it suggests that Henry L. Doherty is willing to play fair, if allowed to propose a settlement upon a proper basis. The editorial follows in part:

"Has it occurred to Mayor Milroy that his street car commission is not a success, that it is not carrying out his wishes? Sixty-five weeks have elapsed since the commission went into action. During those sixty-five weeks the commission has held many sessions. Out of these discussions has been evolved 'the community of interest' plan, a nebulous proposal that is as impractical from the viewpoint of the public interest as anything that could be devised.

"All four members of the subcommittee are supposed to be for municipal ownership. Both Cochran and Thurston urged the people at first that nothing less than a 3-cent fare should suffice, and that the people could own their own street railroad. Mr. Usher is apparently interested in getting the best possible terms for the people, and Mr. Wright's attitude might be described as non-descript.

"There is no talk of 3-cent fare in the commission now, and municipal ownership has diminished to little more than an echo. The commissioners indeed are discussing 5-cent fares quite generally, and as for municipal ownership, it has been discovered that the people of Toledo are not properly educated for it. During the period of instruction the people are to pay 5-cent fares and enjoy the kind of service provided by men who do not know anything more about running a street railroad than a pig knows about gardening.

"If what the commission has done so far is a sample of what it proposes to do, the people prefer to deal directly with Mr. Doherty. They want action of a positive kind, action that will give them either better service for the prevailing fares or present service at lower fares, although the *Times* is confident they would vote for better service. If Mr. Doherty can submit a plan that is fair, there is every reason for thinking that the people will accept it. Surely it is neither just to the commissioners nor to the people of Toledo that they be kept longer in service."

Six Months for Stealing Fares

Atlantic City Conductor Sentenced—Bridgeport Conductor Apprehended

Judge C. C. Shinn in the County Court House at May's Landing, N. J., on Feb. 14, sentenced Thomas Barlow to six months in the county jail. Barlow was employed as a conductor on the Atlantic Avenue line of the Atlantic City & Shore Railroad last summer, working just twenty-three days when discovery was made that he was collecting and retaining fares.

On Feb. 14 the police of Bridgeport, Conn., arrested W. J. Windsor of Delaware, said to be the leader of a gang that has been swindling electric railways in the East. He waived his extradition rights, saying he was willing to go back to Atlantic City, where he is wanted. According to the information of the detective bureau at Bridgeport the gang started work in Wilmington, by making application for work as conductors. Members of the gang would give references and on writing to these the men would be highly recommended. When they got work they would start in robbing the company. They are believed to have worked in twelve cities under as many names and are said to be wanted with a number of others. Windsor went to work for the Connecticut Company in Bridgeport as a conductor about a month ago. When arrested he had charge of a car on the East Main Street line.

\$1,000,000 Power Plant for Columbus

Plans have been completed by the Columbus Railway, Power & Light Company, Columbus, Ohio, for the construction of a power house on the Hocking Valley Railroad, 6 miles south of the city, to cost about \$1,000,000.

It has been decided to concentrate power production in the proposed plant, and abandon the Spring Street and the Third Street stations. The company will also give up the plan of building on the bank of the Scioto River, just north of West Broad Street. The property there will be put to some other use.

It is stated that the company has already placed orders for a portion of the equipment of the proposed power house and that the right-of-way has been secured for the high-tension transmission lines into the city.

The company will ask the Public Utilities Commission for authority to issue \$1,640,379 of securities. A portion of the proceeds will be used to construct and equip the power house and the remainder for the purchase of additional cars and other equipment necessary. In addition, the company desires to issue securities for funding about \$500,000 spent in making improvements last year.

Further Reprisals Against I. T. S.

A resolution has been introduced in the Board of Aldermen of St. Louis, Mo., directing the law department to take steps to collect the mill-per-passenger tax from the Illinois Traction Company since it began operations in 1909.

Officials of the company were notified recently by city officials that the tracks of the line in Venice would be torn up on Feb. 22 unless the company agreed to reduce its fare from Venice to St. Louis from 10 cents to 5 cents. This is the second ultimatum regarding the removal of the tracks which has been sent to the company by the Venice officials. A month ago the city wanted to remove the tracks and the railway officials asked for more time in which to confer with the city officials in hope of reaching an agreement.

Progress on East Bay Franchises

The Legislature of California has approved by concurrent resolution the charter amendments to the charters of Oakland and Berkeley, and has approved the new charter for Alameda, all without amendment or alteration.

These charter amendments enable the Common Councils of these cities to enter upon negotiations for the resettlement of the franchises of the public utilities operating within their limits, and more particularly for the resettlement of the franchises of the San Francisco-Oakland Terminal Railways, Oakland, Cal. All of these amendments have received the approval of the citizens and are now effective.

The next step is the application required to be made by the railway to the Councils requesting that these negotiations be entered upon. When such applications are made it will become the duty of the respective mayors of these cities to appoint committees of seven citizens selected with the power and for the purpose of passing upon and considering the character of resettlement franchise which shall be granted in each instance. When such committees of citizens have determined upon the conditions and circumstances under which resettlement franchises shall be granted, they report their conclusions to the Common Councils, and the Councils are then empowered themselves to consider and pass upon such report and to continue in the negotiations with the railway. After these negotiations have resulted in an agreement, ordinances embodying the terms of the resettlement franchises are to be adopted by majority vote of the Councils, and thereupon such ordinances are to be submitted to the vote of the people. If a majority of the citizens voting thereon approve the same, they become effective and constitute a new contract between the communities and the railway under which they will be authorized to operate for an indefinite period.

Applications for resettlement are being prepared on behalf of the railway and will be shortly submitted to the Councils of the cities in which the company operates for the purpose of commencing these negotiations.

Chicago Considers Fifty-Year Grant

At the meeting of the local transportation committee of the City Council of Chicago, Ill., on Feb. 19, Walter L. Fisher, counsel for the committee, was directed to prepare a bill which would make possible the granting of a fifty-year franchise to the consolidated surface and elevated lines and provide for their acquisition by the city at any time during the period of the franchise. The bill previously proposed by the committee was for a thirty-year period and included a clause which prohibited the city from taking over the property until a certain per cent of the capital had been amortized. With this clause inserted, Mr. Fisher stated that the thirty-year franchise was of no consequence and that the city might as well grant a fifty-year franchise with the city having power to take over the property at any time. L. A. Busby, president of the Chicago Surface Lines, told the committee that it would be impossible to finance the proposition on a thirty-year franchise unless the per cent of the capital should be fixed upon that was to be amortized before purchase by the city became possible.

With these differences before the Council committee, the fifty-year franchise bill was ordered drawn, and will be brought before the committee together with the thirty-year franchise bill for joint discussion at the next meeting.

Great Northern Considering Electrification

The Great Northern Railway is making a study looking toward the possible electrification of some 300 miles of its main line between Spokane and Seattle. Engineers from the Westinghouse and General Electric companies are working up preliminary data at the present time, and no decision as to the character of the installation has been made. However, it is anticipated that the company will proceed with this project in 1918, though nothing has been authorized as yet. The project has been initiated because of the successful operations of the Chicago, Milwaukee & St. Paul's electric zone. Whether or not it is to be carried out in the immediate future depends upon developments in the foreign and domestic situation during the next few months, the programs for improvements on Western railroads in general being held largely in abeyance just at present.

\$800,000 Project for Newark

Extensions of Hudson River Tunnels System to New Newark Terminal

Thomas N. McCarter, president of the Public Service Railway, Newark, N. J., outlined on Feb. 19 a plan before Mayor Thomas L. Raymond in Newark for an underground extension of the tracks of the Hudson & Manhattan Railroad in Newark, with a terminal under the apex of Military Park and Park Place in that city. The project is designed to connect the tube line with the Public Service Railway terminal on Park Place.

For more than a year past the Pennsylvania Railroad and Public Service Railway have been negotiating with reference to a combination of their terminal facilities in Newark.

It is proposed to abandon the present Park Place Station of the Pennsylvania as a terminal and to utilize the ground now covered by it to depress the tracks below street grade; to cause the tracks thus depressed to cross underneath Park Place and Center Street at their junction and continue under Park Place and a limited portion of Military Park to a sub-surface station located approximately at the apex of the park, which sub-surface station will be provided with convenient and direct means of ingress and egress to Broad Street and to the concourse floor of the Public Service Railway terminal.

By this means the whole Public Service Railway system, local, suburban and interurban, will be brought into direct connection with the high-speed line of the Pennsylvania Railroad and the Hudson & Manhattan Railroad to uptown and downtown New York, and, through it, with the whole metropolitan transportation system with which it connects.

This plan is a return, in an enlarged sense, to the original location proposed by the Pennsylvania for its terminal in Newark, which at the time was favored by the city authorities, but which was abandoned because the necessary enabling act passed by the Legislature of 1910 was vetoed by Governor Fort. The construction of the Public Service Railway terminal in the meantime has accentuated the desirability of this location for the terminal.

Railway Men on Defence Committee

Matthew C. Brush, president of the Boston Elevated Railway; P. F. Sullivan, president of the Bay State Street Railway; Clark V. Wood, president of the Springfield Street Railway and the New England Street Railway Club, and C. D. Emmons, general manager of the Boston & Worcester Street Railway, have been added to the Massachusetts transportation committee which is investigating railway co-operative measures related to the present international crisis. Many men well known in the engineering and utility fields are associated with the main organization, under the chairmanship of James J. Storrow of Lee Higginson & Company, Boston. Among the members of the committee on industrial survey are Howard Rogers, of the Stone & Webster Engineering Corporation, Boston, vice-chairman, Walter C. Fish of the General Electric Company, Lynn, Mass., and Howard Coonley of the Walworth Manufacturing Company, South Boston. Fred T. Ley of F. T. Ley & Company and G. Dresser, superintendent of the New England Telephone & Telegraph Company, are members of the committee on emergency help and equipment. At a meeting of the executive committee in Boston on Feb. 19 General Sir Sam Hughes, former organizer of the Canadian overseas expeditions, conferred with those present upon preparedness problems from the standpoint of civilian aid.

Increase in Wages in Fargo.—C. P. Brown, general superintendent of the Fargo & Moorhead Street Railway, Fargo, N. D., has announced an increase in the wages of the trainmen in the employ of the company. The employees have been receiving from 19 to 24 cents an hour, based on length of service. Under the new scale the men will receive from 20 to 25 cents an hour.

Bill to Provide Steam and Street Railway Connection.—Representative Gans of Philadelphia, Pa., has introduced a bill into the Legislature of Pennsylvania, amending the public service law so as to provide for switch and other connections between street railways and steam railroads when required by the Public Service Commission, and establishing through and joint fares.

Electrification Nearing Completion.—The work of electrifying the West Side line of the Southern Pacific Company into Corvallis, Ore., is practically completed, and it is expected the line will be ready for operation before April 1, the official date for the opening. McCoy, 8 miles south of Whiteson, has been the northern terminus of the electric division of the Southern Pacific Company.

Franchise Controversy in Muskegon.—A controversy has developed between the Muskegon Traction & Lighting Company, Muskegon, Mich., and the city over conditions of the street railway franchise of the company, which has until 1931 to run. Officials of the company have announced their willingness to enter into negotiations for a new grant, but only on condition that the validity of the present rights of the company to operate be not contested by the city in court.

Savings Bank Reviews Toledo Utility History.—The Home Savings Bank of Toledo, Ohio, issues an eight-page monthly business letter for the purpose of giving its depositors and customers information concerning the business life of the city. The current issue contains an historical sketch of the Toledo Railways & Light Company, operated by Henry L. Doherty & Company. The article briefly reviews the inception of the Toledo Gas Company in 1853, the securing of a franchise for the operation of a street car system, and finally the merging of several companies into the Toledo Railways & Light Company.

Payment of Strike Damage Award Advised.—The Board of Supervisors of Erie County, N. Y., has been advised by the County Attorney to pay the judgment of \$2,862 returned against it by a jury in Supreme Court in favor of the International Railway, Buffalo, N. Y., for damages to the company's property during the street car strike riots several years ago. It is said that if the International Railway appeals the case on the ground that the verdict was too small, the county will file a cross appeal. The company asked for more than \$100,000 damages, including the losses in fares. The award of the court was made for damage to the physical property only.

N. Y. C. Improvement Opposed.—The Public Service Commission for the First District of New York, in response to the request of Governor Charles S. Whitman, has directed its engineers and experts to furnish the Governor with estimates of the value of the lands and rights to be conveyed to the city of New York by the New York Central Railroad and by the city to the railroad under the proposed so-called West Side agreement. The plan is an ambitious one, and involves electrification of the lines affected. At the public hearings which have been held on the matter considerable opposition has developed on the part of the public to certain features of the plan.

Important Bills in Ohio.—The Chapman bill, which, if passed, will impose upon Ohio the terms of the Clayton Federal law relating to injunctions in labor disputes, has been recommended by the labor committee of the House and will be placed upon the calendar. It legalizes boycotting, picketing and personal persuasion, makes labor a personal rather than a property right, prohibits injunctions in labor troubles and declares that no indictments shall be returned against persons for performing acts which are not forbidden to the individual. In the House Harry Israel has presented a bill which, if enacted, will bring municipally owned utilities under the supervision of the Public Utilities Commission.

Canadian Northern Railway Plan Opposed.—The Hydro-Electric Commission of the Province of Ontario, Canada, is opposing the application which has been made to the Dominion Parliament by the Canadian Northern Railway for approval of its plan for a railway through Halton, Wentworth and Lincoln Counties. This is part of the proposed \$7,000,000 double-track line to connect Toronto, Ont., with the Niagara frontier at Niagara Falls. The commission has addressed communications to the village authorities along the proposed route claiming that approval of the Canadian Northern Railway's plan would be detrimental to the development of the proposed hydroelectric proposition connecting Toronto with Niagara Falls, Ont.

Nine-in-Eleven-Hour Bill Opposed.—William Bradley, president of the Cumberland County Power & Light Company, Portland; Judge Newell, representing the Lewiston, Augusta & Waterville Street Railway; John A. Morrill, representing the Rockland, Thomaston & Camden Street Railway, Rockland; George L. Emery, representing the Biddeford & Saco Railroad, and Thomas Lee, representing the Aroostook Valley Railroad, Presque Isle, and others appeared before the committee on labor of the Maine Legislature recently in opposition to the so-called nine-in-eleven hour bill for electric railway employees, presented to that body. This measure was noted briefly in the *ELECTRIC RAILWAY JOURNAL* for Jan. 27, page 178.

Projected Subway for Madrid.—According to *Vida Financiera* (Madrid), the Spanish Ministerio de Fomento has granted a concession, under date of Jan. 12, to Don Miguel Otamendi for the construction and working, for a period of ninety years, of an underground electric railway system in Madrid, to be known as the Metropolitano de Madrid Alfonso XIII. There will be four double-track lines. The capital necessary for the construction of the complete system, embracing a total distance of 8.7 miles, is approximately \$6,000,000. A period of eight years will be allowed for the completion of the undertaking. The first line to be constructed will cross the city from north to south; it will be 2.5 miles long, and is estimated to cost \$1,600,000. Work is to be commenced shortly. This section must be completed within three years.

Financial and Corporate

Electric Railway Statistics

Returns for November, 1916, Compared with Those for the Corresponding Month of 1915, Show That Operating Ratio Is Increasing

A comparison of electric railway statistics for November, 1916, with figures for the corresponding month of 1915, made by the information bureau of the American Electric Railway Association, indicates an increasing growth in the operating ratio. Data for November, representing 7502 miles of line of companies scattered throughout the country, indicate an increase in operating revenue of 3.65 per cent and in operating expenses of 8.50 per cent, but a decrease in net earnings of 3.83 per cent. Data representing 5707 miles of line show an increase in the amount of taxes paid of 26.03 per cent and a decrease in the operating income of 12.29 per cent.

Of the groups shown in the accompanying table, data for the Western, represented by 1808 miles of line, indicate an increase in operating revenues of 5.09 per cent, in operating expenses of 5.49 per cent and in net earnings of 4.38 per cent. Data for companies represented by approximately 90 per cent of this mileage show an increase in the amount of taxes paid of 5.90 per cent, while the operating income increased 3.03 per cent.

The Southern district makes the next best showing. Data for companies represented by 824 miles of line indicate an increase in operating revenues of 5.70 per cent, in operating expenses of 7.20 per cent and in net earnings of 3.70 per cent. The amount of taxes paid by companies represented by about 570 miles of line increased 19.27 per cent, but in spite of this there is shown an increase in operating income of 2.94 per cent.

	REVENUES AND EXPENSES OF ELECTRIC RAILWAYS FOR NOVEMBER, 1916			
	Companies Not Reporting Taxes		Companies Reporting Taxes	
	Amount	Per Cent Increase	Amount	Per Cent Increase
<i>United States*</i>				
Operating revenues.....	\$16,408,227	3.65	\$13,963,989	1.99
Operating expenses.....	10,421,543	8.50	8,800,554	7.48
Net earnings.....	5,986,684	†3.83	5,163,435	†6.13
Taxes.....	.....	.....	1,106,304	26.03
Operating income.....	.....	.....	4,057,131	†12.29
Operating ratio, per cent:	.....	.....	.....	.....
1915.....	63.51	...	63.02	....
1916.....	60.68	...	59.80	....
Miles of line represented..	7,502	...	5,707	....
<i>Eastern District*</i>				
Operating revenues.....	\$11,908,196	3.07	\$10,106,494	1.00
Operating expenses.....	7,598,935	9.53	6,388,423	8.42
Net earnings.....	4,309,261	†6.64	3,718,071	†9.64
Taxes.....	.....	.....	807,345	34.12
Operating income.....	.....	.....	2,910,726	†17.14
Operating ratio, per cent:	.....	.....	.....	.....
1915.....	63.81	...	63.21	....
1916.....	60.05	...	58.88	....
Miles of line represented..	4,870	...	3,535	....
<i>Southern District*</i>				
Operating revenues.....	\$901,444	5.70	\$598,848	5.23
Operating expenses.....	523,447	7.20	331,111	4.43
Net earnings.....	377,997	3.70	267,737	6.24
Taxes.....	.....	.....	60,842	19.27
Operating income.....	.....	.....	206,895	2.94
Operating ratio, per cent:	.....	.....	.....	.....
1915.....	58.07	...	55.29	....
1916.....	57.26	...	55.72	....
Miles of line represented..	824	...	570	....
<i>Western District*</i>				
Operating revenues.....	\$3,598,587	5.09	\$3,258,647	4.58
Operating expenses.....	2,299,161	5.49	2,081,020	5.14
Net earnings.....	1,299,426	4.38	1,177,627	3.60
Taxes.....	.....	.....	238,117	5.90
Operating income.....	.....	.....	939,510	3.03
Operating ratio, per cent:	.....	.....	.....	.....
1915.....	63.89	...	63.86	....
1916.....	63.65	...	63.52	....
Miles of line represented..	1,808	...	1,602	....

*Groupings are as follows: *Eastern District*—East of the Mississippi River and north of the Ohio River. *Southern District*—South of the Ohio River and east of the Mississippi River. *Western District*—West of the Mississippi River.

†Decrease.

The Eastern district is apparently suffering not only from the after effects of the late labor disturbances in New York City, but as well from the constantly growing costs of materials and labor. Returns from companies represented by 4870 miles of line, or approximately 60 per cent of the total mileage shown, indicate an increase in operating revenues of 3.07, an increase in operating expenses of 9.53 per cent and a decrease in net earnings of 6.64 per cent. The tax burden is also growing, the result being a decrease in operating income of 17.14 per cent.

For the last few months there has been apparent a continual growth in the operating ratio. For November the operating ratio of the United States as a whole increased from 60.68 in 1915 to 63.51 in 1916. The increase in the Eastern district was from 60.05 in 1915 to 63.81 in 1916, while smaller increases occurred in the Southern and Western districts.

Annual Report

N. Y., N. H. & H. R. R.—Affiliated Electric Lines

The annual report of the New York, New Haven & Hartford Railroad for the year ended June 30, 1916, contains income statements for its various affiliated electric lines, as shown in detail in the accompanying statement. All of these companies, with the exception of the New York, Westchester & Boston Railway, are controlled through the ownership of all the stock, the percentage of control in the excepted case being 98.4 per cent. All are controlled directly except The Connecticut Company, which is held through the New England Navigation Company.

During the fiscal year ended June 30, 1916, all the affiliated lines operated at a loss with the exception of The Rhode Island Company and The Connecticut Company. Two of the four losing companies failed to meet operating expenses and taxes, but all showed an improvement in operating ratio over the preceding year. In most

operating revenue gained \$261,306 or 15.9 per cent. Taxes rose \$18,601 or 3.9 per cent, but the ratio of operating expenses and taxes to operating revenues was cut to 74.19 per cent, a decrease of 2.74 per cent. Non-operating income fell off, but income deductions were decreased to a greater extent, the final result being a gain of \$249,002 from the deficit of \$115,428 the year before. The credit to the profit and loss account as of June 30, 1916, was \$885,145.

In the case of The Connecticut Company the gain in operating revenues amounted to \$987,153 or 11.1 per cent as compared to a loss of \$124,578 the year before. Operating expenses, however, rose \$439,248 or 8.4 per cent, so that the net operating revenues gained \$547,905 or 19.1 per cent. The showing was further bettered by a decrease in taxes of \$112,062 or 21.4 per cent. The operating expenses and taxes were 67.66 per cent of the operating revenues, a decrease of 4.28 per cent from the 1915 percentage. Non-operating income fell off, but in spite of this, with income deductions showing a slight decrease, the net income rose \$631,216 or about 47 per cent. In 1915 the company paid dividends of \$400,000, a decrease of \$1,100,000, but this year it paid \$600,000 and carried forward a profit and loss credit of \$2,129,366 as compared to \$1,016,886 the year before.

New Directors in St. Louis

Minority Interest, Voting Under the Cumulative Plan, Elect Four Representatives to the Board

The eleven directors of the United Railways, St. Louis, Mo., elected at the annual meeting held on Feb. 12 were: A. J. Siegel, G. W. Norton, John C. Roberts, John I. Beggs, A. C. Brown, Murray Carleton, D. R. Francis, Jr., Richard McCulloch, Henry S. Priest, A. L. Shapleigh and H. C. Cole. The new directors are: A. J. Siegel, St. Louis; H. C. Cole, Waterloo, Ill.; John C. Roberts, St. Louis, and George W. Norton, Louisville, Ky. Breckenridge Jones and

INCOME STATEMENTS OF AFFILIATED ELECTRIC RAILWAYS OF NEW YORK, NEW HAVEN & HARTFORD RAILROAD FOR YEAR ENDED JUNE 30, 1916, WITH CHANGES FROM PRECEDING YEAR

	New York, Westchester & Boston Railway		Berkshire Street Railway		Rhode Island Company		New York & Stamford Railway		Westchester Street Railroad		Connecticut Company	
	1916	Change	1916	Change	1916	Change	1916	Change	1916	Change	1916	Change
Operating revenues.....	\$513,325	+\$63,445	\$956,968	+\$5,771	\$5,484,874	+\$400,737	\$378,561	+\$2,478	\$252,276	-\$5,874	\$8,947,974	+\$987,153
Operating expenses.....	438,730	+59,693	731,879	-70,880	3,577,704	+139,431	278,610	-8,308	244,693	-9,693	5,643,902	+439,248
Net operating revenue....	\$74,595	+\$3,750	\$225,089	\$76,651	\$1,907,170	+\$261,306	\$99,951	+\$10,786	\$7,583	+\$3,819	\$3,304,071	+\$547,905
Taxes.....	120,025	+4,496	56,822	-4,857	491,312	+18,601	24,189	+7,372	12,410	+1,257	410,165	-112,062
Operating income.....	\$145,430	-\$746	\$168,267	+\$81,508	\$1,415,858	+\$242,705	\$75,762	+\$3,214	\$4,826	+\$2,562	\$2,893,905	+\$659,967
Non-operating income...	52,752	+33,404	2,223	+551	119,783	-1,972	592	+130	337	+185	244,950	-30,553
Gross income.....	\$7,322	+\$32,658	\$170,490	+\$82,059	\$1,535,641	+\$240,733	\$76,354	+\$3,345	\$4,489	+\$2,747	\$3,138,856	+\$629,411
Deductions from gross income.....	1,523,396	+99,033	*257,545	+51,025	*1,402,067	-8,270	*95,899	+847	*20,399	+4,292	1,184,182	-1,802
Net income.....	\$1,616,074	-\$66,375	\$187,055	\$131,034	\$133,574	\$249,003	\$119,546	\$2,497	\$24,888	-\$1,545	\$1,954,673	\$631,216

†Deficit.
 *The 1916 deductions from gross income in the case of the Berkshire Street Railway include \$213,199 for interest accruing to the New York, New Haven & Hartford Railroad, but not included in the income account of that company. Similar items included for other companies are as follows: Rhode Island Company, \$195,008; New York & Stamford Railway, \$38,569, and the Westchester Street Railroad, \$19,126.
 †The Connecticut Company paid dividends of \$600,000, an increase of \$200,000, and had a surplus of \$1,354,673 for the year, an increase of \$431,216.

cases this resulted from decreased operating expenses. The operating expenses and taxes of the New York, Westchester & Boston Railway during the year amounted to 8.85 per cent in excess of the operating revenues, a decrease of 1.08 per cent from the percentage excess in 1915. The deficit as of June 30, 1916, was \$5,795,233. For the Berkshire Street Railway the operating expenses and taxes were 82.42 per cent of the operating revenues, an improvement of 8.46 as compared to the percentage in 1915. The deficit at the end of the year totaled \$462,372. The New York & Stamford Railway cut its operating and tax ratio by 0.72 per cent to 79.99 per cent, its total deficit amounting to \$94,430, while the Westchester Street Railroad reduced its similar ratio by 0.95 per cent to 101.91 per cent. In this case the accumulated deficit at the end of the year was \$92,638.

The operating revenue of The Rhode Island Company during the last year showed an increase of \$400,737 or 7.8 per cent, which more than made up for the decrease of \$295,011 in the preceding year. The operating expenses increased \$139,430 or 4.0 per cent, however, so that the net

John L. Green failed of election. J. D. Mortimer, president of the North American Company, who was one of the 1916 directors, was not placed in renomination. The names of James Adkins, secretary and treasurer of the United Railways, and H. P. Hilliard, both of whom were directors last year, were not placed on the ticket.

Messrs. Siegel, Cole, Roberts and Norton, the new directors, were supported by the minority stockholders, who were represented by George Dieckman and Ephraim Caplan. The minority stockholders concentrated their voting power upon Messrs. Cole, Roberts, Siegel and Norton under the cumulative voting right secured to the stockholders.

Henry S. Priest, attorney for the company and a director last year, was re-elected. Considerable opposition had developed to Mr. Priest among minority interests in the company, but the vote of the minority, as previously stated, was concentrated upon Messrs. Cole, Siegel, Norton and Roberts.

At the meeting of the newly elected board of directors held on the afternoon of Feb. 20, all the old officers were re-elected. A new executive committee was named composed of

J. I. Beggs, D. R. Francis, Jr., A. L. Shapleigh, A. J. Seigel and George W. Norton. Messrs. Seigel and Norton represent the minority stockholders. H. S. Priest was retained as general counsel in an advisory capacity, but with no reduction in salary. Thomas E. Francis, one of Mr. Priest's former assistants, was appointed general attorney and will take charge of all damage suits and litigation of a routine character. He will devote his entire time to the position with offices at the headquarters of the company.

U. R. R. Factions Come Together

New Tentative Reorganization Plan Appears Satisfactory to All Interests—Bonds and Common Stock Largely Substituted for Preferred

The two rival protective committees for the 4 per cent bonds of the United Railroads of San Francisco have come together and reached a tentative understanding regarding the reorganization of the company. Under the modified plan the new securities will be \$47,698,000, instead of \$47,598,000 as under the old plan, thus preserving practically all the proposed cut in capitalization from the \$91,928,100 now outstanding. The character of new securities is changed, however, bonds and common stock being largely issued in lieu of preferred stock as originally proposed. Under the old plan the holders of the 4 per cent bonds were to receive 25 per cent of the face value of their bonds in new 5 per cent bonds and 46 per cent in 6 per cent preferred stock, a total of 71 per cent, while under the new plan they will receive 66 2/3 per cent in new 6 per cent bonds, 8 per cent in 6 per cent preferred stock, and 33 1/3 per cent in common stock, a total of 108 per cent. Moreover, an entirely new corporation to issue the new securities is proposed, instead of utilizing the existing subsidiary, the Market Street Railway, as the reorganization medium.

While the main features of the proposed changes appear to be satisfactory to all interests, no formal agreement has yet been made, and the details have not yet been worked out. When this has been done, the changes will be submitted to the bondholders and to the California Railroad Commission for approval. The original reorganization plan was described in the *ELECTRIC RAILWAY JOURNAL* of Oct. 7, 1916, page 744, and the opposition movement in the issue of Nov. 25, 1916, page 1127.

The tentative understanding now reached by the two protective committees was explained in a statement which was given out on Feb. 10 on behalf of both committees after conferences lasting nine days. In this statement it was said that the representatives of the protesting Eastern committee were now entirely satisfied with the work of the other or original reorganization committee, and that the successful consummation of the reorganization seemed assured. Regarding the tentative amendments to the plan, the statement said:

"It is believed by all that the recent decision of Circuit Judge Hunt, permitting the city to parallel the tracks of the United Railroads on Market Street, unless reversed by the Appellate Court, will create such a diminution of the company's revenues as to endanger the dividends on the preferred stock which the bondholders were to receive under the present plan, in view of the large annual payments which were necessary to be made for the retirement of the \$2,500,000, of proposed debentures prior to 1924. For that reason, it is the unanimous opinion that a change in the plan is imperative, in order to eliminate the debentures and to provide for the raising of \$2,200,000 in cash in some other way.

"The plan which seems most practicable is to use the net income of the company up to April 1, 1918, which it is estimated will amount to at least \$2,200,000, for the purpose of retiring the matured \$1,800,000 of Market Street 6 per cent bonds and \$400,000 of Ferries & Cliff House 6 per cent bonds, and to issue to the bondholders, in consideration and exchange for the coupons of the present bonds which mature up to April 1, 1918, 6 per cent bonds of a new company to be formed of an equal face amount.

"To this end it is proposed to create a new corporation which shall succeed to the properties of the United Rail-

roads of San Francisco and which will issue new 6 per cent bonds in the amount of \$15,600,000, first preferred stock in the amount of \$2,000,000, second preferred stock in the amount of \$5,500,000, and \$14,500,000 of common stock. The present bondholders will then receive 66 2/3 per cent of the face of the bonds which they now hold in 6 per cent bonds of the new corporation, 8 per cent in first preferred stock, and 33 1/3 per cent in common stock, a total of 108 per cent in bonds and stock of the new corporation for 100 per cent of their present bonds and 8 per cent of coupons.

"The unsecured creditors and stockholders will pay \$3,000,000 in cash for \$3,000,000 of Market Street 5 per cent bonds as and when it becomes necessary to raise this money for the purpose of paying off the \$2,000,000 of Omnibus Cable Company bonds and \$1,000,000 of Sutter Street Railway bonds which mature in 1918. In this way, all of the underlying bonds which are ahead of the Market Street 5 per cent bonds will be taken care of, and the present Market Street 5 per cent bonds will remain undisturbed, except for the issuance of the additional \$3,000,000 of bonds at par.

"The unsecured creditors and stockholders will also surrender the unsecured notes which they now hold aggregating \$3,665,000, and all their claims against the company for unpaid dividends on preferred stock, as well as all their preferred and common stock, and the company will surrender to them the notes of the Railroads & Power Development Company and the debentures of the United Railroads and of the United Railways Investment Company, as provided in the present plan."

Brooklyn (N. Y.) Rapid Transit Company.—The Public Service Commission for the First District of New York has before it for approval an application from the Brooklyn, Queens County & Suburban Railroad for permission to issue \$299,543 of additional bonds.

Columbus Railway, Power & Light Company, Columbus, Ohio.—Proceeds of the \$1,640,379 of 5 per cent bonds and \$508,000 of Series A 6 per cent preferred stock of the Columbus Railway, Power & Light Company for the approval of the issue and sale of which application has been made to the Ohio Public Utilities Commission, will be used to reimburse the treasury of the company for capital improvements made in 1916 and for new extensions and additions in the current year. The principal capital improvement to be made this year by the company will be the construction of a new central generating station on which the initial expenditure will be in excess of \$1,000,000. The general plan for this improvement is referred to in this issue of the *ELECTRIC RAILWAY JOURNAL*, page 360.

Fitchburg & Leominster Street Railway, Fitchburg, Mass.—The Massachusetts Public Service Commission has authorized the issue of an additional \$150,000 of 4 1/2 per cent refunding bonds by the Fitchburg & Leominster Street Railway, due on Feb. 1, 1921, to refund \$150,000 of first mortgage 5 per cent bonds due on April 1, 1917. This will make \$300,000 of the 4 1/2 per cent bonds outstanding. The total issue authorized is \$350,000.

Pittsburgh (Pa.) Railways.—An offer has been made by the Philadelphia Company to give to each preferred shareholder of the United Traction Company 66 2/3 per cent of his holdings in a 5 per cent mortgage bond of the Pittsburgh Railways, to be guaranteed principal and interest by the Philadelphia Company; or, as an alternate proposition, to pay holders \$25 in cash for each share of stock, the par of which is \$50. The proposition was submitted by the management of the Union Traction Company to the protective committee for the preferred stockholders, looking toward a settlement of the present litigation. Stockholders who have not already deposited their certificates are urged by the protective committee to do so at once. In April, 1916, application was made to the Court for an order directing an inquiry into the transactions involving the stock of the United Traction Company and the reasons for the discontinuance of the payment by the Pittsburgh Railways of the 5 per cent dividend on the United Traction Company stock. At the hearing on this application the management of the United Traction Company denied that the net earnings of the company were

large enough to pay fixed charges and a dividend of 5 per cent on the preferred stock and to show a surplus to the credit of the company if proper allowances were made for maintenance, etc.

Railways Company General, New York, N. Y.—At the annual meeting of the Railways Company General on Feb. 19 the retiring directors were re-elected with the exception of William H. Crook, whose place was filled by Evans R. Dick, Jr.

Reading Transit & Light Company, Reading, Pa.—The Reading Transit & Light Company, which is controlled by the Eastern Power & Light Corporation, has filed with the Pennsylvania Public Service Commission a petition for the purchase of the controlling interest in the United Traction Company. The Metropolitan Electric Company, controlled by the United Traction Company, has asked for permission to acquire the Edison Electric Illuminating Company and the Lebanon Valley Electric Light Company, both of Lebanon, Pa. The consolidation of the companies is a step in the direction of preparing for the further development of the street railway and electric power service in Reading and the Lebanon Valley, in accordance with the plan noted in the ELECTRIC RAILWAY JOURNAL of Feb. 10, page 267.

Seattle (Wash.) Municipal Railway.—According to figures by A. L. Valentine, superintendent of the Department of Public Utilities, Division "A" and Division "C," which constitute Seattle's municipal railway system, were operated from June 1, 1914, to Feb. 1, 1917, at a loss of \$100,672, or an average for the entire period of \$3,146 a month. Losses for January were \$2,290. Of this loss, \$528 is charged to Division "A," \$1,593 to interest on Division "A" bonds, and \$168 to operating loss on the Lake Burien line.

Sherbrooke Railway & Power Company, Sherbrooke, Que.—It is stated that 8000 of the 11,200 shares of the common stock of the Sherbrooke Railway & Power Company have been deposited under the exchange plan with the Southern Canada Power Company. The terms of the exchange were published in the ELECTRIC RAILWAY JOURNAL of Jan. 13, page 92.

Southern Cambria Railway, Johnstown, Pa.—The Southern Cambria Railway has been placed in the hands of the Cambria Trust Company, Johnstown, Pa., as receiver. This action is understood to be the direct outcome of a serious wreck on the road on Aug. 12, 1916. Shortly after the accident the railway was placed in the hands of James P. Thomas as trustee.

Third Avenue Railway, New York, N. Y.—The directors of the Third Avenue Railway have ordered payment of the full six months' interest, due on April 1, on the adjustment income 5 per cent bonds.

Toronto (Ont.) Railway.—At the annual meeting of the Toronto Railway on Feb. 7, George H. Smithers, Montreal, and Frank W. Ross, Quebec, were elected directors of the company to succeed W. D. Matthews and James Gunn, resigned.

Toronto (Ont.) Civic Railway.—The Toronto Civic Railway was operated by the municipality at a profit of \$27,569 during 1916. The balance over operating expenses during 1915 was \$10,459. The city operates the lines in the newer portions of the city, where the Toronto Railway has not been extended. The fares for adults are six tickets for 10 cents. Children are carried at half fare. More than 800,000 soldiers in uniform were carried free during 1916, as against about 187,000 during 1915.

Washington Water-Power Company, Spokane, Wash.—Although the number of car miles for 1916 exceeded those of 1915 by 53,000 and the car hours run showed an increase of more than 6000 over those of the previous year, the number of passengers carried by the Washington Water Power Company in Spokane, Wash., during 1916 decreased 112,903 as compared with the corresponding figure for 1915. This statement is made in a report recently submitted to the company's stockholders, which blames jitney competition for the decrease. The total net earnings during the year were \$586,962. Total dividends of 4½ per cent were paid. Extensions and betterments amounted to \$320,833, and the total assets at the close of the year were \$27,360,058.

Dividends Declared

El Paso (Tex.) Electric Company, quarterly, 2½ per cent, common.

Northern Texas Electric Company, Fort Worth, Tex., 3 per cent, preferred; quarterly, 1 per cent, common.

Sheboygan (Wis.) Electric Company, quarterly, 1¾ per cent, preferred.

Wisconsin-Minnesota Light & Power Company, Eau Claire, Wis., quarterly, 1¾ per cent, preferred.

Electric Railway Monthly Earnings

BATON ROUGE (LA.) ELECTRIC COMPANY						
Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Dec., '16		\$20,204	*\$7,084	\$13,120	\$3,555	\$9,565
1 " " '15		18,055	*8,354	9,701	3,175	6,526
12 " " '16		211,694	*100,858	110,836	42,003	68,833
12 " " '15		190,852	*108,205	82,647	26,946	55,701

BROCKTON & PLYMOUTH STREET RAILWAY, PLYMOUTH, MASS.						
Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Dec., '16		\$8,788	*\$9,185	†\$397	\$1,121	†\$1,518
1 " " '15		8,145	*8,318	†173	1,113	†1,286
12 " " '16		122,614	*109,113	13,501	13,286	215
12 " " '15		115,207	*96,433	18,774	13,493	5,281

CAPE BRETON ELECTRIC COMPANY, LTD., SYDNEY, N. S.						
Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Dec., '16		\$40,284	*\$22,346	\$17,938	\$6,552	\$11,386
1 " " '15		36,267	*19,625	16,642	6,536	10,106
12 " " '16		393,666	*231,265	162,401	78,327	84,074
12 " " '15		357,214	*206,428	150,786	79,172	71,614

COMMONWEALTH POWER, RAILWAY & LIGHT COMPANY, GRAND RAPIDS, MICH.						
Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Dec., '16		\$1,733,278	*\$972,807	\$760,471	\$420,273	\$340,198
1 " " '15		1,475,889	*760,857	715,032	405,890	309,142
12 " " '16		16,962,607	*9,276,038	7,686,569	5,034,827	2,651,742
12 " " '15		14,590,124	*7,788,455	6,801,669	4,506,082	2,295,587

GALVESTON-HOUSTON (TEX.) ELECTRIC COMPANY						
Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Dec., '16		\$176,496	*\$109,857	\$66,639	\$36,859	\$29,780
1 " " '15		163,212	*106,445	56,767	36,597	20,170
12 " " '16		1,944,839	*1,236,107	708,732	438,993	269,739
12 " " '15		1,936,228	*1,206,457	729,771	433,308	296,462

GRAND RAPIDS (MICH.) RAILWAY						
Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Dec., '16		\$119,184	*\$61,871	\$57,313	\$17,740	\$39,573
1 " " '15		112,010	*74,316	37,694	12,475	25,219
12 " " '16		1,297,586	*828,025	469,561	186,919	282,642
12 " " '15		1,176,450	*832,799	343,651	165,187	178,464

HOUGHTON COUNTY TRACTION COMPANY, HOUGHTON, MICH.						
Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Dec., '16		\$29,777	*\$15,081	\$14,697	\$5,240	\$9,457
1 " " '15		26,887	*12,091	14,796	5,522	9,274
12 " " '16		326,398	*186,459	139,939	63,916	76,023
12 " " '15		276,660	*157,537	119,123	66,517	52,606

JACKSONVILLE (FLA.) TRACTION COMPANY						
Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Dec., '16		\$62,300	*\$38,149	\$24,151	\$15,552	\$8,599
1 " " '15		53,618	*36,772	16,846	14,736	2,110
12 " " '16		627,193	*423,707	203,486	183,907	19,579
12 " " '15		611,568	*428,839	182,729	177,898	4,831

KEOKUK (IOWA) ELECTRIC COMPANY						
Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Dec., '16		\$21,456	*\$14,411	\$7,045	\$2,063	\$4,982
1 " " '15		21,069	*12,481	8,588	1,859	6,729
12 " " '16		240,181	*160,855	79,326	23,626	55,700
12 " " '15		232,593	*151,156	81,437	22,400	59,037

NORTHERN TEXAS ELECTRIC COMPANY, FORT WORTH, TEX.						
Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Dec., '16		\$182,357	*\$101,221	\$81,136	\$28,597	\$52,539
1 " " '15		156,940	*93,912	63,028	29,250	33,778
12 " " '16		1,930,320	*1,157,078	773,242	346,929	426,313
12 " " '15		1,713,213	*1,049,709	663,504	330,817	332,687

PENSACOLA (FLA.) ELECTRIC COMPANY						
Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Dec., '16		\$26,843	*\$14,657	\$12,186	\$7,664	\$4,522
1 " " '15		23,935	*13,008	10,927	6,884	4,043
12 " " '16		280,100	*157,336	122,764	92,675	30,089
12 " " '15		258,041	*146,819	111,222	85,705	25,517

PHILADELPHIA (PA.) RAPID TRANSIT COMPANY						
Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Jan., '17		\$2,427,787	\$1,385,416	\$1,042,371	\$813,804	\$228,567
1 " " '16		2,153,920	1,200,538	953,382	816,777	136,605
7 " " '17		16,284,933	9,089,236	7,195,697	5,701,037	1,494,660
7 " " '16		14,570,892	8,160,473	6,410,419	5,712,571	697,849

TAMPA (FLA.) ELECTRIC COMPANY						
Period		Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Dec., '16		\$91,444	*\$45,504	\$45,940	\$4,368	\$41,572
1 " " '15		85,769	*44,325	41,444	4,345	37,099
12 " " '16		967,086	*527,719	439,367	52,414	386,953
12 " " '15		981,049	*502,901	478,148	52,343	425,805

*Includes taxes. †Deficit.

Traffic and Transportation

Jitney Regulation More General

Nearly All Pacific Coast Cities Have Ordinances with Restrictive Provisions

Practically all of the cities of the Pacific Coast have adopted jitney ordinances with more or less restrictive provisions. The terms of the ordinances vary between wide limits, as does the rigidity with which the ordinances are enforced, but in certain fundamentals the majority of the measures enacted by the municipalities correspond. For example, definite routes are prescribed on which the buses must operate, making complete trips before turning. Bonds or insurance policies are required, the minimum liability ranging from \$5,000 to \$10,000. The license fees are assessed on various bases and vary from \$10 to \$60 per car per annum.

In San Francisco and, in fact, in most of the larger cities, the regulation of the buses is in the hands of the police department. In Los Angeles, on the contrary, the drafting and the enforcement of special traffic regulations for jitney buses is now in the hands of the Board of Public Utilities, whence it was transferred from the Police Department. Since this transfer a material improvement in traffic conditions is claimed to have been effected.

Unique among the plans under which jitney buses operate on the Pacific Coast is the franchise scheme in effect at Long Beach, Cal., where a carefully drawn up franchise was sold to the highest jitney bus bidder, as outlined in the *ELECTRIC RAILWAY JOURNAL* for Dec. 9, 1916. There has not yet been opportunity to study operating conditions under the franchise plan because the independent jitney drivers of Long Beach secured injunctions preventing the city from excluding them from streets on which the exclusive franchise was granted. The case is now being tried and meanwhile the independent jiteys are operating.

In at least six Pacific Coast cities the traction companies have put on motor buses of their own for auxiliary service in competition with or after the exclusion of the privately owned jiteys. At first some of these buses cost the companies considerably more than they took in in fares, but in recent months there has been some change in this situation. Although definite figures are not yet available, traction company officials have stated that the auxiliary service is a success in serving outlying districts. This is true particularly where the company is granted the exclusive right to operate such service.

Spokane One-Man Cars Approved

Arthur A. Lewis, chairman of the Public Service Commission of the State of Washington, and J. F. Reardan, inspector, recently inspected the lines of the Washington Water Power Company and the Spokane & Inland Railroad in Spokane, in reference to their use of one-man cars. They have approved the use of the cars on some of the lines of the Washington Water Power Company. The cars operated by the company are built according to the commission's recommendation, except that the knob on the emergency door at the back must be placed lower down. Permission to use the one-man cars is made conditional upon the use of two men on the cars during the rush hours. The Spokane & Inland Empire Railroad is now operating a one-man car on the Rockwood line, which is approved by the commission. Other lines of this company will be inspected for approval as soon as that company has cars to operate. In the case of the city of Spokane against the companies the Public Service Commission, as noted in the *ELECTRIC RAILWAY JOURNAL* for Jan. 27, page 184, decided that the companies should submit for the approval of the commission lists of routes on their respective lines upon which they desired to operate one-man cars and that such cars be inspected and approved by the commission before operation.

Hearing on Buffalo Service

Public Service Commissioner Will Recommend Survey of Traffic Conditions

Unusual interest was taken in the public hearing held in Buffalo, N. Y., on Feb. 17, before Public Service Commissioner Devoe P. Hodson of the Second District on complaints against the International Railway for alleged inadequate service. At the conclusion of the hearing, Commissioner Hodson announced that he would recommend to the commission that Charles R. Barnes, its traffic expert, make a survey of conditions in Buffalo and report his recommendations to the commission. The railway was represented by Edward G. Connette, president; E. J. Dickson, vice-president; Nelson H. Brown, general superintendent of transportation; T. W. Connette, superintendent of Buffalo city lines, and Thomas Penney, general counsel.

Almost every witness who appeared before Commissioner Hodson severely criticized union platform employees of the company and scores of suggestions were made for re-routing lines through the congested down-town business district; more efficient handling of workers in the north-end industrial centers and better lighting in the cars.

Explaining the causes of traffic delays during the last four months, Mr. Connette declared that an unusual amount of snow had fallen and that it has been a physical impossibility to remove the snow from the city streets. He produced figures to show that more than 60,000,000 cu. ft. of snow should be moved away in order to facilitate traffic and he called attention to the fact that if every vehicle was pressed into service it would take at least four months continuous work to remove this vast amount of snow. He told of an agreement between the city and the company whereby the city is to remove the snow and the company agrees to pay one-third of the cost.

Answering other complaints against the company's service, Mr. Connette told Commissioner Hodson that the company has under consideration plans for re-routing, thereby preventing congestion and over-crowding. He told Commissioner Hodson that the company has placed an order for fifty new cars of the most approved type, but they cannot be delivered until August. Thirty-two new cars are due immediately. A year ago the company had 568 cars in operation and 143 cars in reserve. At present the company has 667 cars in operation, forty-five of which are used exclusively by employees of the Pierce-Arrow motor plant.

David C. Howard, vice-president of the Buffalo Chamber of Commerce, made the following statement:

"At a meeting of the board of directors of the Chamber of Commerce, held on Feb. 13, the president submitted a message which authorized the formation of a special committee to investigate the street railway situation. Until this committee has had an opportunity to make its investigations and arrive at its conclusions, the chamber is in no position as an organization to submit complaints, but we wish at this time to have our presence recorded."

Petition for One-Man Cars

The Puget Sound Traction, Light & Power Company, Seattle, Wash., has petitioned the Council for authority to operate one-man cars on all lines where it is deemed advisable. The petition has been referred to the franchise committee of the Council. It reads as follows:

"Your petitioner has given much consideration to the subject of operating a safe and comfortable light car, which can be easily and safely run by one man. Your petitioner is ready to adopt cars of such character. It is now operating with entire satisfaction one such car on the Bellevue-Summit line in Seattle. If your petitioner should put a number of such cars in operation in Seattle, it would be enabled to give more expeditious and frequent service upon various lines. In order for it to purchase and put into use a considerable number of such cars, your petitioner prays that you enact an ordinance permitting the use of such cars generally throughout the city, so that your petitioner may, wherever it is advisable to use such cars, proceed to put them into service. Your petitioner submits herewith a Council bill, which it respectfully prays your honorable body to enact as an ordinance."

Abandonment Petition Denied

Commission Refuses to Upset Contractual Relation, Claiming Intervention Is Not Needed in Public Interest

Upon an opinion by Commissioner Emmet the Public Service Commission of the Second District of New York has denied the petition of the Freeport Railroad to cease the operation of its electric railway between the railroad station at Freeport, L. I., and the ferry during the winter months. The application is denied upon the grounds that though under a recent decision of the Appellate Division of the Supreme Court of New York the commission is held to have the power to modify franchise requirements as to fares, etc., this newly found power should be employed with great care. Mr. Emmet finds that in the present case the village board has expressly refused to modify the franchise requirement which compels the railroad to operate six trips a day in winter; that there is evidence that many people in Freeport and some transients would be inconvenienced by the discontinuance of this winter service, and that though past experience of the railroad produces figures which show the winter operation to have been unprofitable, Freeport is a growing community in which the winter business of the company may well improve.

In discussing the decision of the Appellate Division in the case of the New York & North Shore Railroad, referred to in the *ELECTRIC RAILWAY JOURNAL* of Feb. 3, pages 195 and 210, Mr. Emmet says that before this decision it was generally held that the commission had no power to modify the conditions of a franchise, and finds that the North Shore reasoning, though concerning rates of fare in franchises, must also be taken to extend to service matters. He says:

"Apparently we have the right to grant an application of this sort. We feel, however, that the circumstances surrounding this case are somewhat different from those which ordinarily accompany appeals to the Public Service Commission to employ discretionary powers which it has long been recognized to possess, and for the wise exercise of which it was in large part created. In this case the power we are asked to exert must be regarded as having been placed in our hands not so much by the deliberate action of the Legislature as by a more or less 'advanced' decision of the Supreme Court. And certain rather unusual complications exist in respect to the use which we are asked to make of our newly discovered powers. It is proposed that we shall upset what has always been regarded as a contractual relationship, against the will of one of the contracting parties. We are asked to reverse the judgment of another governmental body which until recently was supposed to be the only one which had any jurisdiction over this particular matter."

Mr. Emmet concludes that such powers should be exercised only when there is the "strongest evidence that our intervention is necessary in the public interest." He does not find such evidence in this case.

Traffic Survey Urged in Harrisburg

Demands for a survey of electric railway traffic in Harrisburg, Pa., are being made by the *Harrisburg Telegraph*. Under date of Feb. 17, that paper printed an editorial which is of interest as showing the viewpoint of the disinterested newspaper toward the street railway problem. The editorial does not blame the company. It merely wants things straightened out, and says: "The average citizen has no feeling either for or against the railway as such. He wants prompt and efficient service for his nickel, and beyond that he is not greatly interested."

Interviewed by the *Harrisburg Telegraph* on Feb. 19, Frank B. Musser, president of the Harrisburg Railways, declared that personally he favored such a survey as suggested, and stated he believed the board of directors would do the same. Mr. Musser was quoted in part as follows:

"We are interested in seeing what results are accomplished by those surveys. If anything of importance is accomplished by the work there we may take the matter up. We shall be guided largely in our decision by these reports.

"We are making every effort to work out our problems and are glad to receive suggestions from persons not connected with the company. More demands are made on the service now than in past years. Business has been greater every place than ever before and we have every car on wheels in operation in an effort to avoid congestion and crowded cars. General conditions are such that we cannot get new cars. Generally the company orders six or seven each year. This time we ordered ten, but we cannot get the deliveries through. The manufacturers have promised to try to get five of them to us by Memorial Day."

Safety-First Checks Distributed in San Diego.—Savings from the San Diego (Cal.) Electric Railways 1916 accident fund of \$13,651, made possible by the work of its platform men in preventing accidents during the past year, were distributed on Jan. 31 by M. J. Perrin, superintendent of the company.

Interurban Benefit Association Prospering.—The Union Traction Mutual Benefit Association, organized among the employees of the Union Traction Company, Anderson, Ind., has now over 700 members on its rolls and the number is rapidly increasing. The Union Traction Company has guaranteed the payment of all benefits, and is furnishing free to the employees the services of its officers and the use of its offices.

Eastern Representatives Attend Western Stone & Webster Club.—The mid-winter meeting of the Stone & Webster Club of Washington at Seattle was dignified on the night of Jan. 26 by the presence of a member of the firm of Stone & Webster and several Eastern officials connected with the Boston organization. Edwin S. Webster, who had been in Seattle since the previous Sunday evening, was accompanied by F. S. Pratt, vice-president of the Stone & Webster Management Association and chairman of the board of the Puget Sound Traction, Light & Power Company, and D. P. Robinson, president, and G. O. Muhlfeld, manager, of the Stone & Webster Engineering Corporation.

United Traction Transfer Privileges to Be Withdrawn.—Upon the ground that the present tariffs of the United Traction Company, Albany, N. Y., effect an inequality between city passengers and those using the city and interurban lines, the Public Service Commission of New York, Second District, has permitted the company to put into effect on Feb. 25 its new tariffs withdrawing the transfer privileges to and from the Albany-Troy and Albany-Cohoes interurban lines and the city lines in all three cities. The company has announced that it will increase local service to take care of traffic heretofore carried on the interurban cars for points within the city lines, so that the transfer privilege within the cities will not be materially changed. The opinion of the commission, written by Commissioner James O. Carr, points out that under the present schedule city passengers in Troy are carried an average of 2 miles for 5 cents and in Albany 1.4 miles for 5 cents, while the interurban passengers using transfers under the present transfer system average probably more than 5 miles for 5 cents.

Serious Grade Crossing Accident in Louisville.—The most serious accident of years in Louisville, Ky., on Feb. 12, when a Southern Railway freight engine struck a loaded West Broadway car of the Louisville (Ky.) Railway at the Thirtieth Street grade crossing, has resulted in a general and apparently determined agitation in that city for elimination of grade crossings. There were four persons killed in the crash and thirty-seven more or less badly injured, several of whom are not expected to recover. According to best information obtainable, the car made the safety stop at the crossing; the motorman looked both ways; the conductor, seeing the gates up, gave the signal and the freight locomotive struck the car in the middle as it was crossing the rails. The accident occurred after dark and there is a difference of statements as to whether or not the railroad engine had a headlight lighted. The towermen were just changing watch and the bell was not sounded until the street car was on the track. One board of the City Council has adopted a resolution calling on the Louisville Railway to furnish a man to ride on cars and at the crossings of the steam railroad tracks to get off and make sure that no train is approaching.

Personal Mention

A. H. MacAdams has been elected president of the Slate Belt Electric Railway, Pen Argyl, Pa.

Dr. O. D. Schaffer has been elected secretary of the Slate Belt Electric Railway, Pen Argyl, Pa.

Thomas J. Ryan has been elected treasurer of the Slate Belt Electric Railway, Pen Argyl, Pa.

Frank Lugar has been appointed superintendent of the Shamokin & Edgewood Electric Railway, Shamokin, Pa.

Charles Herrick has been appointed master mechanic of the Reading Transit & Light Company, at Lebanon, Pa.

Perry Trimble has been elected secretary and counsel of the Chicago, Aurora & De Kalb Railroad, Aurora, Ill.

Earl Partrick has been appointed master mechanic of the San Francisco, Napa & Calistoga Railway, Napa, Cal.

W. H. Grimes has been appointed local superintendent of the Central Illinois Public Service Company, Anna, Ill.

R. L. Aage has been appointed general auditor of the American Public Utilities Company, Grand Rapids, Mich.

J. T. Kemp has resigned as general superintendent of the Sherbrooke Railway & Power Company, Sherbrooke, Que.

H. H. Lunsford has resigned as superintendent of the Southwestern Traction & Power Company, New Iberia, La.

F. X. Couture has been appointed railway superintendent of the Sherbrooke Railway & Power Company, Sherbrooke, Que.

F. C. Chisholm has been appointed power superintendent of the Sherbrooke Railway & Power Company, Sherbrooke, Que.

Charles O. Murphy has been appointed assistant general manager of the American Public Utilities Company at Grand Rapids, Mich.

M. B. Wheeler will be appointed commercial agent of the American Public Utilities Company, Grand Rapids, Mich., effective March 1, 1917.

T. A. Darrow has been appointed chief dispatcher of the Columbus-Dayton division of the Ohio Electric Railway to succeed W. L. Clayton.

L. B. Andrus has been appointed chief engineer of the American Public Utilities Company, Grand Rapids, Mich., succeeding B. T. Gifford.

F. G. Houser, formerly secretary-treasurer and auditor of the Boise Valley Traction Company, Boise, Idaho, will succeed H. F. Dicke as general manager.

J. G. Bouris, auditor of the Everett (Wash.) Gas Company, will succeed Ray Ballard as auditor of the Ottumwa Railway & Light Company, Ottumwa, Iowa.

G. E. Barber, assistant superintendent of the Columbus-Dayton division of the Ohio Electric Railway, has resigned. He has been with the company twelve years.

A. T. Longhurst has been appointed general foreman of the Stamford shops of the New York, New Haven & Hartford Railroad, in charge of steam and electric equipment.

C. B. Jones has been appointed manager of the railway department, in addition to his duties as claim agent, of the Montgomery Light & Traction Company, Montgomery, Ala.

Roy Ballard, auditor of the Ottumwa Railway & Light Company, Ottumwa, Iowa, has been appointed auditor of the Fort Smith Light & Traction Company, Fort Smith, Ark.

C. H. Still has resigned as purchasing agent of the Pacific Power & Light Company, Astoria, Ore., to become purchasing agent for the Valley Mills purchasing bureau in Portland.

Alex Newhouse, for several years division shop foreman at Muncie, Ind., for the Union Traction Company, has resigned to accept a similar position with the Evansville (Ind.) Railways.

W. W. Waterson, of the Illinois Traction System, has been

appointed superintendent of transportation of the Chicago, Ottawa & Peoria Railway and transferred to Ottawa, Ill., as headquarters.

Frank W. Brooks, president and general manager of the Detroit (Mich.) United Railway, has left on a two-months trip to California and Honolulu. He is accompanied by his wife and daughter.

Fred Connelly, formerly division man at New Castle, Ind., for the Union Traction Company of Indiana, has been appointed division foreman of the same company at Tipton, succeeding Alex Newhouse.

W. L. Clayton has been appointed assistant superintendent of the Columbus-Dayton division of the Ohio Electric Railway to succeed G. E. Barber. Mr. Clayton has been chief dispatcher for some years.

Samuel Riddle, superintendent of transportation of the Louisville (Ky.) Railway Company, has been elected a director of the Louisville Transportation Club, an organization of shippers and traffic men of that city.

Robert A. Smith, for a number of years master mechanic of the Shreveport (La.) Traction Company, has been appointed master mechanic of the Southwestern Traction & Power Company, succeeding H. H. Lunsford.

Ward Hubbard is assistant engineer, maintenance of way, Bay State Street Railway, Boston, Mass., and not engineer, maintenance of way, as stated in last week's issue. David Curtin is still engineer, maintenance of way.

J. H. Morris, formerly chief dispatcher of the Illinois Traction System, has been appointed superintendent of the Peoria Division of the St. Louis, Springfield & Peoria Railroad, with headquarters at Mackinaw Junction, Ill.

B. W. Arnold, who has resigned as superintendent of the Chicago, Ottawa & Peoria Railway, Ottawa, Ill., has been transferred to Peoria as secretary to H. C. Chubbuck, vice-president executive of the Illinois Traction System.

R. A. Riley has resigned as superintendent of equipment of the Birmingham Railway Light & Power Company, Birmingham, Ala., to accept a position with the sales staff of the Western Electric Company. He will travel in Alabama.

G. H. Losey, superintendent of maintenance of way of the railway electrical department of the Indiana Railways & Light Company, Kokomo, Ill., has been made electrical engineer in charge of the company's railway and lighting department.

P. W. Kurr, Lebanon, Pa., has been appointed cashier of the Reading Transit & Light Company, succeeding H. B. Daugherty, whose resignation took effect on Feb. 1. Mr. Kurr has been in the employ of the company as assistant cashier for two years.

P. H. Palmer, who for several years has been assistant general manager and electrical engineer of the Indiana Railways & Light Company, Kokomo, Ind., has been appointed general superintendent of the company to succeed T. C. McReynolds.

John A. Barhite, Special County Judge of Monroe County, New York, has been nominated by Governor Whitman as the successor to Devoe P. Hodson, on the New York Public Service Commission, Second District. The nomination has been sent to the Senate for confirmation.

Daniel J. Haren has resigned as general superintendent of the Syracuse & Suburban Railway, Syracuse, N. Y., to assume an important position in the transportation department of the Buffalo, Lockport & Rochester Railway of which Allen & Peck, Inc., are operating managers.

Charles Currie, whose resignation as vice-president and general manager of the Northern Ohio Traction & Light Company, Akron, Ohio, was recently announced in the ELECTRIC RAILWAY JOURNAL, has been elected president of the London (Ont.) Street Railway, succeeding E. W. Moore.

George W. Knox, second vice-president and general manager, Oklahoma Railway, Oklahoma City, Okla., has resigned, effective May 1. The directors of the company gave him a certified copy of resolutions, thanking him for his able services to the company through dull times, and expressing regret at his departure. It is understood Mr. Knox will return to Chicago to resume active work in business interests which he left to take charge of the Oklahoma company in 1911.

James F. Hamilton, general manager of the Schenectady (N. Y.) Railway, has been appointed general manager of the New York State Railways, Rochester Lines, succeeding E. J. Cook. Mr. Hamilton, who has been a prominent figure in the electric railway field, entered the transportation department of the International Railway, Buffalo, in 1896, and after serving in various positions was placed in charge of one of the largest stations. He resigned his position with that company in 1902 to become assistant superintendent of the Schenectady Railway and was appointed superintendent of the company in 1909. In 1911 Mr. Hamilton was engaged as general superintendent of the United Traction Company, Albany, and was retained by the Schenectady Railway in an advisory capacity, and in 1912 he was appointed general manager of both companies, in which capacity he continued until 1914, when he relinquished his connection with the United Traction Company. Mr. Hamilton has been active in the work of the New York Electric Railway Association for a number of years, and has served on the executive committee, as vice-president and as president in 1914.

Thomas H. McGarry, for the past six years connected with the Bay State Street Railway, Boston, Mass., has been appointed purchasing agent of the company. Mr. McGarry started with the company at its Woburn office as stock clerk. At a later date he was transferred to the transportation department.

E. J. Cook, general manager of the New York State Railways, Rochester Lines, has been appointed chief engineer of all lines of this system, which include the city lines in Rochester, Syracuse, Utica and Schenectady, the third-rail line between Syracuse and Utica, and half of the interurban line between Schenectady and Albany. Mr. Cook was born in Springfield, Ohio, in 1865. After a preliminary education in the schools of this city he prepared for an engineering career at the Stevens Institute of Technology, graduating in 1886. He was engineer of construction and later superintendent of the Brooklyn Edison Company, and was vice-president of the Field Engineering Company, New York, during the period when many electric railway and lighting properties were designed and equipped, the railways changing from horse to electric cars. In 1895 he became active in the reconstruction and development of the Detroit (Mich.) Railway, and in 1896 he was appointed electrical engineer of the Cleveland (Ohio) Electric Railway, and five years later electrical engineer of the Cleveland City Railway. When these two properties were consolidated in 1903, Mr. Cook became electrical engineer of the entire system, remaining until 1907, when he was sent to Rochester, N. Y., as general manager of the Rochester Railway and the subsidiary electric railway companies in that vicinity, which later became consolidated into part of the New York State Railways. Mr. Cook is particularly well adapted for his new engineering position as he is pre-eminently an engineer with a keen ability to analyze problems by means of applied mathematics. He has been successful in utilizing this talent to advantage, even in the inexact field of transportation, where his studies in connection with trailer operation are especially noteworthy.



JAMES F. HAMILTON

W. R. Barlow, formerly with the New York State Railways, Syracuse-Utica Lines, has recently been appointed to the position of assistant electric engineer with the Public Service Commission for the First District, New York. Mr. Barlow is a graduate of the Pennsylvania State College, class of 1909, and for five years after graduation had been with the General Electric Company in the railway engineering department.

J. E. Bassett has been elected secretary of the Dallas (Tex.) Northwestern Traction Company, which has arranged to build an electric railway from Dallas to Slidell, a distance of 60 miles. Mr. Bassett has been connected with the Texas & Pacific Railroad for more than thirty years and for the last twenty years has had charge of the purchasing department of the road under J. W. Everman and L. S. Thorne at Dallas, Tex.

Obituary

Maj. E. C. Lewis, formerly a co-receiver of the Nashville Railway & Light Company, Nashville, Tenn., is dead. Major Lewis was a well-known civil engineer and was also a publisher of the Nashville *Daily American* and a chairman of the board of directors of the Nashville, Chattanooga & St. Louis Railroad.

James Leitch, of the Supreme Court of Ontario, died on Feb. 8 at his home in Toronto. Mr. Leitch was the first chairman of the Ontario Railway & Municipal Board, from the time of its creation by the Ontario government in 1906 until his appointment to the Supreme Court in 1912. He was born in South Branch, Ont., and practised law for many years at Cornwall, Ont., until his appointment as chairman of the railway board. He was sixty-six years of age.

Edward Johnson, division superintendent of track and roadway, Chicago (Ill.) Surface Lines, died on Jan. 3 after a short illness. Mr. Johnson was born in Sweden, and was first employed in street railway work by the Western Chicago Railroad in 1893, which operated on the West Side in that city. He began work as a mechanic on the old Madison Street cable line, and was later promoted to assistant foreman, then foreman, and general foreman. In 1906 he was made assistant roadmaster of the Chicago Union Traction Company, and on Feb. 1, 1914, was made division superintendent of track and roadway, the position held at the time of his death.

John J. Burleigh, vice-president of the Public Service Corporation of New Jersey, Newark, N. J., and president of the Broadway Trust Company, Camden, N. J., died on Feb. 18 at his home in Merchantsville, in his sixty-third year. Mr. Burleigh rose to his late position of influence through a long series of activities in the utility and financial fields. At the age of fourteen, after a course in the public schools of Salem, he began the study of telegraphy. A year later he entered the service of the West Jersey & Seashore Railroad as station agent. While he was only eighteen Mr. Burleigh was made chief telegraph operator of the railroad and its leased lines. In 1883 he became assistant trainmaster and five years later trainmaster. Leaving the company in June, 1892, he started upon a series of successful utilities promotion enterprises, most of which were in South Jersey. He gave the city of Camden its first electric car, first telephone and first electric light. A telegraph line between Bridgeton and Port Norris was built by Mr. Burleigh in 1892, and a line from Woodbury to Penns Grove a year later. Other large operations were the Eastern Telephone Company, now a part of the Keystone system, and the Camden Lighting & Heating Company, which was taken over in 1903 by the Public Service Corporation. Until 1908 Mr. Burleigh continued as the Public Service executive in the Camden field. At that date he became a director and was soon made second vice-president, dividing his activities between the Camden and the Newark offices. His touch with Public Service employees was close. He was chairman of the public relations committee of the corporation and its subsidiaries, and took charge of the welfare work of the company from its inception in 1911. Mr. Burleigh had many other business interests and he had a large share in promoting the development of Camden. He is survived by seven children.



E. J. COOK

Construction News

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

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

RECENT INCORPORATIONS

***Coal District Power Company, Fort Smith, Ark.**—This company has just been organized at Fort Smith and incorporated under the laws of Arkansas for the purpose of constructing and operating electric street railway and interurban lines, and the production and distribution of electric current for light, heat and power. The company is capitalized at \$120,000, of which \$100,000 is common and \$20,000 is 6 per cent preferred. Incorporators: L. A. Petit, Jr., L. E. Turner, G. W. Skow, Hugh Means and Albert Emmanuel. Officers of the company are: Hugh Means, president; G. W. Skow, vice-president, and L. E. Turner, secretary-treasurer. Headquarters will be maintained in Fort Smith. The organization of this company is the outgrowth of a recent visit to Fort Smith of Albert Emanuel, Schwind Building, Dayton, Ohio. Mr. Emanuel now controls traction lines in Lawrence and Parsons, Kan.; Fort Sheridan, Wyo., and Greenville, Tex. The company has taken option on the lighting plants in Greenwood, Huntington, Mansfield, Hartford and Booneville, and it is stated that these plants will be consolidated and all these towns will be connected by an interurban line.

FRANCHISES

Batavia, Ill.—By arrangement with the City Council the Aurora, Elgin & Chicago Railroad is to pay the city of Batavia \$15 daily for a twenty-four-hour franchise, and the boycott of the city on that road has been ended. Trains now operate through the city.

South Hadley Falls, Mass.—The Holyoke Street Railway will receive a franchise from the City Council to construct an extension along West Main Street, to Canal, to Maple, to Taylor, to North Main Street.

Eastwood, N. Y.—The New York State Railways has asked the Council for a franchise to construct a loop in Eastwood.

New York, N. Y.—The Manhattan & Queens Traction Corporation has received a six months' extension of time on its franchise to construct an extension on Central Avenue to Springfield Avenue, St. Albans.

Bartlesville, Okla.—It is reported that the Oklahoma & Northern Traction Company, which proposes to construct an electric railway from Bartlesville to Miami, has received a franchise from the City Council of Bartlesville. W. K. Palmer & Company, Kansas City, Mo., engineers. [Jan. 13, '17.]

San Antonio, Tex.—The County Commissioners have granted the San Antonio Traction Company a permit to construct an extension along the Somerset Road from the city limits to Givens Avenue and thence on to South San Antonio, which is located about 6 miles south of the city hall.

Walla Walla, Wash.—The Walla Walla Railway Company recently applied to the Board of County Commissioners of Walla Walla County for a franchise to use a certain strip of land along Electric Avenue, in connection with the construction, maintenance and operation of side tracks.

TRACK AND ROADWAY

San Francisco, Napa & Calistoga Railway, Napa, Cal.—Another track, to provide better switching facilities, and in contemplation of increased freight traffic, will be laid by the San Francisco, Napa & Calistoga Railway from the foot of Georgia Street to the Monticello steamer wharf at the foot of Maine Street.

Attawaugan Street Railway, Danielson, Conn.—A committee consisting of Harry E. Back, William P. Kelley,

Judge Sabin S. Russell, E. L. Darbie, Judge Oscar Atwood, Fred E. Bitgood and B. C. Hopkins, all of Danielson, appeared before the railroad committee of the General Assembly asking for an amendment to the charter of the Attawaugan Street Railway to allow a further extension of the proposed line beyond that contemplated in the original charter. The newly proposed line will start from Danielson, extending to Williamsville, Dayville, Attawaugan, Balouville and Pineville. [Jan. 4, '13.]

Alton, Granite & St. Louis Traction Company, Alton, Ill.—The Public Utilities Commission of Illinois has rendered a decision which places the building of the extension to the line of the Alton, Granite & St. Louis Traction Company from the city limits of Alton to the site of the new State Insane Hospital in the hands of the Clark syndicate. The extension has been a matter of contention for two years.

Chicago, North Shore & Milwaukee Railroad, Highwood, Ill.—This company plans the rearrangement of its tracks through the southern part of the village of North Chicago, which will cut the number of curves from four within two blocks to two. Through the lengthening of the curve and elimination of reserve curves the cars will pass under the tracks of the Chicago & Northwestern Railway near the naval station depot on the east end.

Indiana Railways & Light Company, Kokomo, Ind.—At the annual meeting of the board of directors of the Indiana Railways & Light Company an appropriation of \$300,000 to be expended this year in extending the street railway line and enlarging the power plant in Kokomo was approved.

Des Moines (Iowa) City Railway.—This company will construct a concrete viaduct at Twenty-fourth Street over High Street for the new Crocker Street car line. The structure will be about 175 ft. long and will cost about \$5,000.

Kentucky Traction & Terminal Company, Lexington, Ky.—This company will relocate its tracks from the south side to the center of Georgetown Street from Fourth Street to the city limits, preparatory to the improvement of that thoroughfare.

***Grand Rapids, Mich.**—The construction of an electric railway is being contemplated from Grand Rapids to Ludington and Manistee, via Sparta, Kent City, Ravenna, Fremont, Shelby and Hart. B. F. Barendsen, Grand Rapids, is interested.

Helena Light & Railway Company, Helena, Mont.—Improvements to the amount of \$80,000 will be made by the Helena Light & Railway Company to its system in Helena this year. The proposed improvements include the installation of new ties and heavier rails on the East Helena line; the reconstruction of the upper Broadwater line to a great extent, and the addition of several new cars.

Brooklyn (N. Y.) Rapid Transit Company.—The Public Service Commission for the First District of New York has decided to reject the one bid received on Feb. 7 from Charles Meads & Company, New York, to cover the cost of the relocation of the trolley tracks in New Utrecht Avenue, Brooklyn, between Thirty-ninth and Eighty-first Streets. The commission is advertising for new bids to be received on March 5. The commission decided to reject the bid received from Charles Meads & Company on the report of its acting chief engineer, who stated that the amount of the bid, \$223,220, was approximately \$5,000 above the estimates of the cost of the work made by the commission's engineers. The commission will extend the time within which the work may be completed in the hope that considerably lower prices will obtain when new bids are opened.

New York Municipal Railway, Brooklyn, N. Y.—The Public Service Commission for the First District of New York has been informed by its engineers that both tubes of the land tunnel under Willoughby Street and Montague Street, Brooklyn, between the Flatbush extension and Clinton Street are now "holed through" to the shaft at Clinton and Montague Streets. The south tube of the tunnel was "holed through" on Jan. 30 and the north tube last week. Work was begun on both tubes of this tunnel on March 10, 1915, at Willoughby Street and Flatbush Avenue extension and work was prosecuted westward. The tunnel will cost approximately \$2,000,000.

Great South Bay Ferry Company, Freeport, N. Y.—The Public Service Commission for the Second District of New York has denied the petition of the Great South Bay Ferry Company to cease the operation of its trolley line between the railroad station and the ferry during the winter months.

Buffalo, Rochester & Pittsburgh Railway, Rochester, N. Y.—Among the improvements planned by the Buffalo, Rochester & Pittsburgh Railway in the near future is the electrification of its Indiana branch.

Piedmont Railway & Electric Company, Burlington, N. C.—It is reported that surveys are being made by the Piedmont Railway & Electric Company for the construction of an extension to Hopedale, 3 miles.

***Cleveland, Ohio.**—City Engineer Hoffman is preparing plans and estimates for a city-built subway to care for all street railway traffic between West Twenty-fifth and East Fourteenth Streets. These have been ordered by the city administration, which has announced that it proposes to ask for a bond issue election to get funds to build the subway. The plan calls for a street railway terminal in Public Square with the city owning both the subway and the terminal and leasing them to the traction company.

Youngstown & Southern Railway, Youngstown, Ohio.—Announcement has been made that within a year the project of the extension of this company's line connecting Youngstown directly with East Palestine will be under way. The addition will call for a comparatively short line extending from Columbiana or Leetonia to the eastern terminal at East Palestine.

Ardmore (Okla.) Railway.—Surveys are being made by the Ardmore Railway for a few miles of city and suburban extensions.

Tulsa (Okla.) Traction Company.—The interurban railroad now being built by this company from Tulsa to Sapulpa will be in operation within ninety days, according to officials of the road. The line will then be extended south to Henryetta, traversing the great oil and coal fields of Oklahoma. The section of the line between Tulsa and Red Fork will be in operation in less than thirty days.

St. Catharines, Ont.—It is reported that a belt line around St. Catharines will be built in connection with the hydro-radial line to be constructed from Port Credit to St. Catharines.

Buffalo & Lake Erie Traction Company, Erie, Pa.—This company reports that it proposes to double-track a number of its single-track lines in Erie and will construct extensions into outlying territory. The company will also purchase additional equipment. The plan proposed will cover a period of five years, such extensions and double-tracking being made as are found necessary for the growth of the city.

Philadelphia, Pa.—Bids were opened Feb. 6 by the Department of City Transit of Philadelphia for the construction of the Delivery Loop Subway in Arch, Eighth and Locust Streets. The lowest bidders on the following sections were: Contract No. 201, Arch Street between Broad and Eighth Streets, including two stations, Keystone State Construction Company, Philadelphia, \$1,575,760; contract No. 202, Eighth Street between Arch and Locust Streets, including one station, Smith, Hauser & MacIsaac, Inc., New York, \$2,420,303; contract No. 203, Locust Street between Eighth and Broad Streets, including two stations, Keystone State Construction Company, \$1,713,715. Awards of contracts are being withheld pending action by the Public Service Commission of Pennsylvania.

Chattanooga (Tenn.) Traction Company.—Operation has been begun by the Chattanooga Traction Company on its line from Chattanooga to Red Bank, 8 miles.

Waco-Beaumont Railroad, Beaumont, Tex.—At a recent meeting of the committee named by the Waco and Beaumont Chambers of Commerce, permanent organization of the board of control of the proposed Waco-Beaumont Railroad was formed. The following officers were elected: C. R. Walden, Beaumont, president; Abe Gross, Waco, vice-president; William Sanger, Beaumont, secretary, and E. W. Marshall, Waco, assistant secretary. The officers will arrange for a survey of the line, the route to be selected to be the shortest distance between Waco and Beaumont. [Oct. 23, '15.]

SHOPS AND BUILDINGS

Interborough Rapid Transit Company, New York, N. Y.—A two-story brick and terra cotta railroad station, containing stores and offices, will be constructed by the Interborough Rapid Transit Company at University Avenue near Jerome Avenue at a cost of about \$40,000.

POWER HOUSES AND SUBSTATIONS

Georgia Railway & Electric Company, Atlanta, Ga.—Plans are being prepared by the Georgia Railway & Electric Company for the erection of four new substations in order to carry more evenly the increased city arc-lamp lighting load. The changes will call for the revision of all of the thirty-eight arc-lamp circuits, which will require new wires and poles, etc.

New Orleans Railway & Light Company, New Orleans, La.—This company is increasing its generating capacity and making important changes in its boiler plant. One 15,000-kw. General Electric turbo generator unit was installed in March, 1916, and a duplicate unit will be put in service by November, 1917. These units will generate 60-cycle, three-phase current at 6600 volts. The boiler installation, which is double-decked, consists of 900-hp. units installed seven on the first level and six on the upper level. By means of changes in the furnaces and by the installation of Westinghouse Underfeed stokers, it is planned to increase the boiler capacity so that, except at peaks, the boilers on the lower floor will probably be able to handle the entire present load. These boilers on the lower floor are coal-fired. The boilers on the upper floor are oil-fired. An important change that is being made in the boilers is the lowering of the floors to increase the size of the combustion chambers.

Bangor Railway & Electric Company, Bangor, Me.—This company will construct a transmission line from the Ellsworth, Veazie and Milford stations to the Eastern Manufacturing Company, Lincoln, with whom it has contracted to supply 2000 electric horsepower. About \$75,000 will be spent in building the line.

Helena Light & Railway Company, Helena, Mont.—This company will construct a power line to the Scratch Gravel district to supply electrical power to the various mining companies operating in that section. The line will probably be built this fall.

Richmond Light & Railroad Company, New Brighton, N. Y.—Plans are being considered by the Richmond Light & Railroad Company, it is reported, for the erection of an aerial cable from Linoleumville to Lake Island over Fresh Kill Creek, to supply light and power service.

Piedmont Railway & Electric Company, Burlington, N. C.—Work has been begun by the Piedmont Railway & Electric Company extending its power lines to Elon College and Gibsonville.

Northern Ohio Traction & Light Company, Akron, Ohio.—Plans are being prepared for rebuilding the electric plant at Kent, which was recently taken over by the Northern Ohio Traction & Light Company. It is proposed to use the power house for a substation to distribute electricity for lamps and motors in Kent.

Columbus Railway, Power & Light Company, Columbus, Ohio.—Plans have been completed by the Columbus Railway, Power & Light Company for the construction of a power house on the Hocking Valley Railway, 6 miles south of the city, to cost about \$1,000,000. The Spring Street and Third Street stations will be closed and the plan of building on the bank of the Scioto River, just north of West Broad Street will be abandoned. It is stated that the company has already placed orders for a portion of the equipment for the proposed power house and that the right-of-way has been secured for the high-tension transmission lines into the city. It is expected that the station will be in operation some time during the coming fall.

Pacific Northwest Traction Company, Bellingham, Wash.—The City Council of Sedro Woolley is negotiating with the Pacific Northwest Traction Company for a new street lighting contract to cover a period of five years. Considerable changes will be made in the street lighting system if the contract is made.

Manufactures and Markets

Discussions of Industrial Conditions

A Department for the Manufacturer, Salesman and Purchasing Agent

Rolling Stock Purchases

Business Announcements

Trade Literature

Buyers and Sellers Favor Uniform Catalog Size

Standardization Is Urged on the Basis of Conserving Printed Matter and Increasing Its Effectiveness

"Assurance has been given that a standardized catalog plan would have the support of most every wide-awake buyer and seller." This statement was recently made by W. L. Chandler, Dodge Manufacturing Company, Mishawaka, Ind., who also expressed his views on how catalogs and advertising literature could then be filed by the purchasing agent if published in uniform size by the manufacturer.

Mr. Chandler makes the prophecy that some generally-favored uniform catalog scheme will be in use before the end of five years. He urges attention to this subject because he believes a standardized catalog will reduce the cost of buying and selling.

"One of the biggest bugaboos of the buyer will then have vanished," he says. "He will no longer be compelled to find space in his files for an endless number of catalogs, price lists and data sheets ranging from single sheets of various sizes to bound books the size of a dictionary. All the data he possesses will be in one place. Tons of printed matter of possible interest to buyers for future reference will thus be saved from an untimely death via the waste basket route. Many circulars now escape the waste basket only when they pass through a buyer's hands at a time when he is in the market. After this prophecy shall have been realized, many of these will be saved by the buyers because they will have a place in which to file them conveniently for instant reference when occasion demands.

"A single standardized catalog of loose-sheet variety will furnish full information supplied by various sellers. This information will include price lists, weights, freight rates, discounts and any other data of value to the buyer. The standardized catalog has not as yet been adopted, but here is a method by which such a great time-saving device may and probably will be brought to a realization—perhaps in two years.

HOW TO PLAN THE WORK

"This catalog should be worked out through the co-operation of all national trade, engineering and other associations, together with such local organizations as may care to lend assistance. This co-operation can perhaps best be secured through a conference board composed of representatives of the organizations interested. Such a conference board may formulate certain definite recommendations, outlining the proposed complete plan of operation of the standardized catalog. In such a conference board the best interests of all industries, from the standpoints of both buyer and seller, would be served. These recommendations may be ratified by the various organizations, and the catalog will then become a reality as soon as equipment can be installed and loose sheets prepared and distributed."

Mr. Chandler has worked out a definite plan for a standard master catalog file with loose sheets 8½ in. x 11 in., to be kept in standard vertical letter files and indexed according to the Dewey decimal system now used by large libraries. He points out that if this plan or any other plan recommended by a general conference board is accepted throughout the various industries a great economy in the production of advertising literature and a saving in the cost of space for its filing will result. Simple means are available for keeping such a file up to date. One item of waste under present conditions is the large catalog which applies only in part to the business of one buyer. Small sections of such books when filed in a standard master catalog file could usually cover the needs of any buyer.

The standard size for advertising matter and data sheets and catalog pages was proposed and was thoroughly discussed some years ago by the Central Electric Railway Association which adopted uniform sizes. However, so many of the manufacturers selling to the members of that association are interested to a far greater extent in other parts of the electric railway industry and in other industries that they found it inadvisable to change existing standards where these did not meet the standards laid down by the Central Electric Railway Association. At this time, however, Mr. Chandler through the National Association of Purchasing Agents and through contact with the executives of a great many engineering and trade associations, hopes to be able to give impetus to the movement for a standardized catalog.

Annual Report of The J. G. Brill Company

Sales Increase 40 Per Cent During 1916—Prospect of Increased Sales During 1917

The sales value of the combined output for the calendar year 1916 of all the plants of the J. G. Brill Company, Philadelphia, Pa., amounted to \$6,180,895, as compared to \$4,903,510 in 1914 and \$4,403,116 in 1915. The increase for the last year was \$1,777,779, or more than 40 per cent. The result of operation for 1916, after deducting \$376,475 for maintenance and depreciation, was a net combined profit of \$93,257. This, combined with the preceding surplus, left a net surplus on Dec. 30, 1916, of \$1,146,193 after the payment \$1,146,193 after the payment of \$183,200 in dividends. The record of sales since 1907 is as follows:

1907.....	\$9,211,825.72	1912.....	\$7,842,090.68
1908.....	3,845,173.91	1913.....	9,154,433.79
1909.....	4,261,204.90	1914.....	4,903,510.70
1910.....	5,960,778.61	1915.....	4,403,116.72
1911.....	5,870,907.47	1916.....	6,180,895.79

According to the annual report of the company, the general business of electric car and car truck manufacturing had shown such improvement in the latter part of 1915 that the management at the beginning of 1916 hoped for a return to normal conditions during the year. The company, however, carried over into 1916 orders taken in the previous year at very low prices and upon estimates based on the then lower costs of labor and materials. While the demand for cars and car trucks improved during 1916, it was not nearly sufficient in volume to meet the normal capacity of all the concerns engaged in the industry, and consequently it did not lessen very materially the severity of competition. In addition, the cost of raw materials entering into production and used for maintenance, accompanied by the difficulty of obtaining prompt delivery at any price, and the great scarcity and continuous increase in the cost of labor throughout the year seriously affected the ability of the management to execute orders at satisfactory costs and within reasonable and profitable time.

The principal orders for projectiles on hand at the beginning of 1916 resulted in far less profit than the management anticipated, largely owing to the fact that the subcontractors, with whom the company had arranged for material and for machining and completing shells from forgings made by it, failed to meet their engagements. This resulted in the cancellation by the purchasers of the unfinished portions of these contracts. While settlements which the company was able to make gave some profit from this activity, it was not sufficient to affect materially the general results for the year. The management, however, made no serious expenditures in machinery or equip-

ment to engage in the manufacture of munitions, so that it has suffered no loss in the purchase of equipment fit only for such purpose.

On Feb. 9, 1917, the combined work on hand for cars, trucks, parts and miscellaneous material totaled \$3,858,988, as compared to \$2,058,918 the preceding year, while the work on hand for projectiles amounted to only \$613,766, as compared to the preceding year's total of \$2,741,197. The report states that there are prospects of increasing demands from electric railways during 1917.

Nominations for Federal Trade Board

President Wilson has sent to the Senate the nominations of former Governor Franklin Fort of New Jersey and William B. Colver of St. Paul, Minn., for the vacancies on the Federal Trade Commission created by the retirement of Edward N. Hurley and the fact that the Senate refused to confirm Commissioner Rublee, who has served for some time as a recess appointee, but who will not be nominated again.

Mr. Fort is a Republican, and resides at South Orange, N. J. He was born in that State in 1852, and is a graduate of Albany Law School, Rutgers College and New York University. From 1878 until the time he became Governor of New Jersey in 1908, in which position he served until 1911, Mr. Fort served on the judicial bench of New Jersey in various positions, ending with service on the Supreme Bench of that State.

Mr. Colver is a Democrat, forty-six years of age. For many years he was associated either as editor or publisher with the Scripps-McRae League of newspapers, the Newspaper Enterprise Association, etc.

The positions pay \$7,500 a year. Mr. Colver is appointed to fill out Mr. Hurley's unexpired term and Mr. Fort is appointed for a term of six years.

Union Switch & Signal Plans New Shops

As noted last week, this company's machine shop and packing department were destroyed by fire on Feb. 10. However, the foundry, forge shop, pattern and carpenter shops and the general offices, which house the drawings, were untouched.

G. A. Blackmore, vice-president, Union Switch & Signal Company, has stated that "the buildings formerly used for munitions work (which work was completed last October), comprising over 65,000 sq. ft. of floor space, are immediately available, as is also certain space in our other undamaged buildings, and this space will be utilized for machinery formerly located in the destroyed building. Temporary buildings are also being erected. We also expect to utilize to the fullest extent practicable the offers of the associated Westinghouse companies to assist us in every way possible. Orders for large quantities of machine tools on which we are assured early deliveries have already been placed.

"Plans are well under way for a new permanent machine shop having a capacity much greater than the former one, and equipped with most modern machinery and appliances for the manufacture of signaling material. We have such confidence in our ability to continue the manufacture of our products that we are now ready to accept future orders subject to reasonable delays.

Heavy Copper Sales Reported

High prices of copper have brought to light supplies of the red metal that were not known to exist. It has been generally supposed that practically all of the first half copper had been contracted for by consumers. However, it is reliably reported that sales last week totaled between 25,000,000 and 30,000,000 lb., mostly in large lots. Several sales of small lots were reported at prices a cent or two above market quotations.

Buyers are still disinclined to anticipate their needs very far in advance. Most of the buying now is for early summer delivery.

Market quotations on Wednesday for electrolytic were as

follows, showing a slight increase over last week: February, 36.5 cents; March, 36.25 cents, second quarter 34.5 cents; third quarter 31.5 cents and fourth quarter 30.25 cents.

CURRENT PRICES FOR MATERIALS

Quoted Wednesday, Feb. 21.

Copper (electrolytic).....	New York, 36 cents per pound
Rubber-covered wire (base).....	New York, 40 cents per pound
No. 0000 feeder cable (bare).....	New York, 37½ cents per lb.
No. 0000 feeder cable (stranded).....	New York, 35 cents per pound
No. 6 copper wire (insulated).....	New York, 37½ cents per pound
No. 6 copper wire (bare).....	New York, 37 cents per pound
Tin (straits).....	New York, 48¾ cents per pound
Lead.....	New York, 9½ cents per pound
Spelter.....	New York, 10¾ 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 per 100 pounds
Steel (bars).....	Pittsburgh, 3.25 cents per pound
Sheet iron (black, 28 gage).....	Pittsburgh, 4.75 cents per pound
Sheet iron (galv., 28 gage).....	Pittsburgh, 6¾ cents per pound
I-beams over 15 in.....	Pittsburgh, 10 cents per pound
½-in. galv. extra high strength steel wire,	New York, \$6.82 per 100 ft.
¾-in. galv. high strength steel wire.....	New York, \$3.41 per 100 ft.
¾-in. galv. Siemens-Martin wire.....	New York, \$2.52 per 100 ft.
5/16-in. galv. Siemens-Martin wire.....	New York, \$1.94 per 100 ft.
Galvanized barb wire and staples.....	Pittsburgh, 3.85 cents per pound
Galvanized wire (ordinary).....	Pittsburgh, 3.65 cents per pound
Cement (carload lots).....	New York, \$2.07 per barrel
Cement (carload lots).....	Chicago, \$1.96 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, 9¾ cents per pound
Turpentine (bbl. lots).....	New York, 52 cents per gallon

OLD METAL PRICES

Copper (heavy).....	New York, 32½ cents per pound
Copper (light).....	New York, 31½ cents per pound
Red brass.....	New York, 21 cents per pound
Yellow brass.....	New York, 19¼ cents per pound
Lead.....	New York, 8½ cents per pound
Steel car axles.....	Chicago, \$34 per net ton
Zinc.....	8¾ cents per pound
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

Important Change in Supply Organization

The National Railway Appliance Company, a new concern, announces that it has taken over the entire railroad department business of the U. S. Metal & Manufacturing Company, which has been well represented in the supply business for the past sixteen years.

The new company will have temporary offices at 165 Broadway, New York City, and the officials elected are well known in the railway equipment field. B. A. Hegeman, Jr., president, was formerly in the railroad business. He started in 1878 with the D. L. & W. R. R., later being made general manager of the Lackawanna Live Stock Transportation Company. From this position he went with the American Car & Foundry Company as Eastern sales agent and in 1901 was selected as the president of the U. S. Metal & Manufacturing Company, which position he has occupied for the past sixteen years. Mr. Hegeman is vice-president of the New York & North Shore Traction Company, vice-president of the Damascus Brake Beam Company, Cleveland, Ohio; president of the Anglo-American Varnish Company, Newark, N. J.; chairman of the finance committee of the New York Railroad Club, and in 1914 was president of the Railway Supply Manufacturers' Association.

Charles C. Castle, first vice-president, has long been in the supply business. He was for many years vice-president of the Hildreth Varnish Company and became associated with the U. S. Metal & Manufacturing Company in 1910 as manager of the railroad department. He is vice-president of the Anglo-American Varnish Company, Newark, N. J., and secretary and treasurer of the Genesee Corporation, Rochester, N. Y., and was president of the American Electric Railway Manufacturers' Association in 1911.

Harold A. Hegeman, vice-president and treasurer, has also been connected with the U. S. Metal & Manufacturing Company for the past nine years, as salesman, and is well

known throughout New England and New York State among steam and electric railway officials.

F. C. Dunham, assistant to the president, has been with the U. S. Metal & Manufacturing Company for the past thirteen years as special sales agent and during that period he has made a wide acquaintance among railroad officials through the promotion of the sales of the Dunham hopper door device.

Edward D. Hillman, secretary and engineer, graduated from Lehigh University in 1898, with the degree of mechanical engineer. He was connected with several manufacturing concerns as engineer during the next four years, entering the employ of the New York Central & Hudson River Railroad in February, 1902. From 1902 to 1905 he was in the motive power and rolling stock department, going to the electrical department in December, 1905, where he remained until February, 1906, when he entered the employ of the U. S. Metal & Manufacturing Company as mechanical engineer.

The company has established a branch office in the McCormick Building, Chicago, Ill., under the management of Walter H. Evans. A branch office has also been opened in the Munsey Building, Washington, D. C., under the management of J. Turner Martyn. Both managers were formerly connected with the railroad department of the U. S. Metal & Manufacturing Company.

ROLLING STOCK

Fonda, Johnstown & Gloversville Railroad, Gloversville, N. Y., is reported to be in the market for four cars.

Helena Light & Railways, Helena, Mont., is reported to be considering the purchase of several new cars.

Goldsboro (N. C.) Electric Railway is said to be in the market for some new equipment.

London & Port Stanley Railway, London (Ont.), Canada, expects to purchase a motor freight car at a cost of \$23,500.

Michigan Railway, Kalamazoo, Mich., has ordered from the St. Louis Car Company one 60-ft. motor baggage car which will be equipped with Baldwin trucks.

New York State Railways (Syracuse Lines), Syracuse, N. Y., are in the market for thirty-five double-truck center-entrance cars.

Three Rivers Traction Company (Que.), Canada, has ordered three light-weight, safety, one-man cars from the St. Louis Car Company.

Johnstown Traction Company, Johnstown, Pa., is reported to have placed an order with the St. Louis Car Company for ten double-truck cars.

Northern Ohio Light & Traction Company, Akron, Ohio, has ordered from the St. Louis Car Company four 60-ft. baggage and express cars. Two of the cars will be equipped with St. Louis trailer trucks and two with Baldwin motor trucks.

American Railways, Philadelphia, Pa., has ordered six double-truck city cars from the St. Louis Car Company for the Roanoke Electric Railway. This company is also reported to have purchased ten cars from the J. G. Brill Company for the Wilmington & Philadelphia Traction Company.

TRADE NOTES

William J. Hammer, consulting electrical engineer, announces the removal of his office to 55 Liberty Street, New York City, suite 2510, Liberty Tower Building.

R. H. Harper has resigned as general sales manager of the B & K Manufacturing Company and has joined the sales organization of the Western Electric Company at the Philadelphia office.

Veeder Manufacturing Company, Hartford, Conn., has issued catalog No. 120 on its speed counters, tachometers and tachodometers. In addition to recording and speed counters, this company also manufactures fine die castings.

F. L. Gordon has been appointed assistant to the vice-president, and L. R. Dewey has been made Western sales manager of the American Brake Shoe & Foundry Company, with headquarters at Chicago.

John A. Foulks, who has been associated with the

Indianapolis Switch & Frog Company for the last eight years, and who is now Eastern representative of the company, has sent in his resignation effective March 1.

J. G. White Company, New York, N. Y., announces the election as vice-president of the company of Russell B. Marchant, formerly treasurer of the company; Douglas I. McKay, formerly assistant to the president, and Sanger B. Steel, formerly manager of the Paine-Webber & Company, Chicago.

E. A. Garrett, who for the past four years has been publicity manager for the Busch-Sulzer Brothers-Diesel Engine Company of St. Louis, has resigned to accept a position with the Boston (Mass.) Belting Company. Prior to his connection with the Diesel Engine Company Mr. Garrett was manager of the Twinplex Sales Company.

American Institute of Consulting Engineers, Inc., New York, N. Y., at its annual meeting on Jan. 15, elected A. M. Hunt, Lewis B. Stillwell, William J. Wilgus and Gardner S. Williams members of the council to fill the places of retiring members. At the council meeting on Feb. 6 the following officers were elected for the year 1917: George Gibbs, president; Lewis B. Stillwell, vice-president, and F. A. Molitor, secretary and treasurer.

Walter A. Zelnicker Supply Company, St. Louis, Mo., has purchased the Idaho Southern Railroad, which operates between Gooding and Jerome, Idaho, and the Milner & North Side Railroad, a short line extending from Milner to Oakley, Idaho. These roads, which comprise a total of approximately 50 miles, were built only a few years ago by Pittsburgh capital. The purchasers will dismantle the roads and sell the rails and other equipment, which are practically new.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has recently occupied a large four-story building situated on the corner of Thirty-sixth Street and Tenth Avenue, New York City. The entire building is being utilized as a service station, repair shop and warehouse. It is equipped to handle repairs of every kind, type and size of electrical machinery, and will employ more than seventy men.

McQuay-Norris Manufacturing Company, St. Louis, Mo., announces that J. H. Bishop, P. T. Egbert, Arthur F. Frost, J. H. Griffith, George Heidenreich and G. T. Parsons have joined the forces of the company. Mr. Bishop is assigned to the Kansas City office. Mr. Frost to the Dallas office, Messrs. Parsons and Egbert to the New York office, Mr. Griffith to the Pittsburgh office and Mr. Heidenreich to the Cincinnati office. All these men are graduate mechanical engineers.

ADVERTISING LITERATURE

Electric Storage Battery Company, Philadelphia, Pa., has issued bulletin 160 on its "Iron-Clad Exide" batteries for storage battery industrial trucks.

Central Electric Company, Chicago, Ill., has issued bulletin No. 45 on its Balco line of detachable plugs and receptacles for shops, round houses, factories, docks and terminals.

Mesta Machine Company, Pittsburgh, Pa., has issued bulletin D on its automatic plate valves for use in both new and rebuilt air and gas compressors, ammonia compressors, vacuum pumps and blowing engines.

Locke Insulator Company, Victor, N. Y., is distributing supplement No. 1 to its insulator book. This book presents ten designs of insulators for voltages ranging from 27,000 to 80,000.

H. M. Byllesby & Company, New York, N. Y., announce that exceptionally complete annual reports showing the progress made by Standard Gas & Electric Company and the Northern States Power Company will be sent to investors.

Railway Improvement Company, New York, N. Y., has issued a booklet on "A Few Words to Motormen About Rico Coasting Recorders." It explains how the avoidance of certain operating faults by motormen will result in more coasting, less energy consumption and greater safety. The illustrations are of cartoon type. The booklet was prepared as a part of the educational service which this company gives to users of Rico coasting recorders, but the company will be pleased to furnish copies on request.