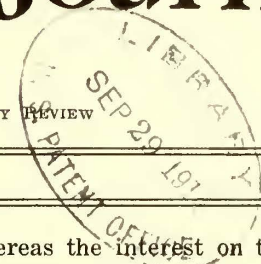


Electric Railway Journal

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THE CLASP BRAKE VERSUS A NEW BRASS The two communications published last week regarding our suggestion for a new design of journal brass lay considerable stress upon the value of the clasp brake as a remedy for journals rolling out from under their brasses. In fact, L. R. Pomeroy, in his letter, takes direct issue with us on the ground that it is more logical to use the clasp brake than a new brass, and his extended experience with railroad problems from the practical viewpoint as well as from that of the consulting engineer certainly gives weight to his opinion. It will be noticed that neither correspondent claims that with the ordinary style of brake, or that pressing on one side of the wheel only, the proposed form of brass is not greatly superior to that now standard. We admit that with the use of the clasp brake the necessity for the change from the M. C. B. brass largely disappears. But many existing electric cars are equipped with the older style of brake and cannot easily be changed over, and even for new cars the increased cost of foundation brake rigging is about \$400. For those who wish to go to this additional expense for the other advantages possessed by the clasp brake, its adoption is undoubtedly advisable. But the cost of introducing new brasses and wedges is within reach of every one, and in the case of new equipment the additional expense would involve an increased cost only for the slightly greater weight of brass, amounting to a dollar or two. There is no doubt of the efficacy of the semicircular brass in eliminating shifting journals. Can it be neglected on purely scientific grounds? Apparently our other correspondent, F. M. Brinckerhoff, does not think so, and as he is one of the few engineers who have had extended experience with the semicircular brass, he has had ample opportunity to judge its weak points. In consequence, we feel safe in adhering to our original proposal that, for high-speed service, the M.C.B. brass should be discarded in favor of some more suitable design.

ELECTRIC RAILWAY PARKS There seems to be a renewed interest in the conduct of parks by electric railway companies, and the opinions now held of the benefit which can be obtained from them are more rational than at any time in the past. Some fifteen years ago an exaggerated idea was general in regard to their value. Undoubtedly they did cause a great deal of additional traffic, and because of this many railway companies spent large sums in developing parks of the "White City" order and in other expensive projects. Later there was a revulsion when the managers realized that this traffic was for

three months only whereas the interest on the investment in the parks ran during the entire year, that the park was usually near the end of a fare zone so that every passenger was a long rider and that the cost of maintaining the attractions was considerable. However, many parks had then been established and it became practically a business necessity to maintain them. During recent years the sentiment has been turning again more in favor of parks. This is particularly the case where the parks are favorably situated as regards fare zones; that is to say, where they are well within the 5-cent limit, or where a double fare or more can be charged. It has been found that simple attractions draw practically as well as the more elaborate and expensive ones. The development of the moving-picture machine has assisted in this direction. Moreover, many companies have paid more attention to developing parks which would appeal to women and children and so would provide a daylight load on the cars as well as an evening load. Finally, most companies have come to realize that the park itself can rarely be made a money maker. If the income derived directly from it is sufficient to pay the carrying charges or most of them, that is all that can be expected. The profit lies in the receipts from transportation to and from the park. In view of the renewed interest in the subject, we are publishing in this issue an account of a very successful electric railway park and will publish a few other park articles during the next month or so, as this is the time when plans for park operation during the coming year are formulated.

THE VALUE OF ASSOCIATION DATA SHEETS Now that the committees of the American Electric Railway Association and affiliated bodies have completed their organization work and prepared their plans for the coming convention, the open season for the data sheet has definitely begun. We know that the average electric railway man is so busy that, despite his most earnest desire, he cannot always answer the questions on these sheets so fully as he desires. The result is that the answers are sometimes too brief to enable the committees to appreciate the reasons which prompt the member company to favor or dislike certain practices. This drawback, perhaps, is one that can never be fully cured, but for all that we believe that the data sheet has other possibilities for good than that represented by the collection and classification of diverse policies. This special value lies in the fact that the usual data sheet covers questions on matters which may not have been thought of by the recipient. Thus, in the case of

an engineering data sheet like that of the equipment committee, the very reading of the questions may be of value to the company which is asked to answer them. For example, many railways are very uncertain about where they should place the lightning protection equipment and what kind they should use. Questions on this subject naturally will tend to awaken their interest in a class of equipment which, possibly, was never properly installed at all or else has been forgotten since the day that it was put in. Furthermore, other subjects which the committees take up may be far in advance of general practice. Thus, the use of specifications for rubber-covered wire is one that has been considered by few railways. The very discussion of this matter has already prompted a number of companies to give it attention, with the result that wire which otherwise would be accepted without question is now carefully scrutinized and sometimes rejected. Again, the subject of air-brake hose specifications for electric railways is also a new one, but there is no doubt that the member companies will value the importance of this equipment item more than they did before it was broached for investigation. In short, the data sheet carries within itself many good hints that should induce the railway to search its own conscience that it may attain to higher ideals in equipment and operation.

COST OF PROGRESS AN OPERATING CHARGE

More than once it has been claimed that "technical and legal subtleties" have been the predominating feature of the United States Supreme Court decisions, and at first glance it seems that the recent decision of this court in the Kansas City Southern case regarding the proper accounting treatment of abandoned property is no exception to this charge. A careful study of the decision, however, shows that it is based on accounting regulations that recommend themselves by their definiteness and clearness to the scientific accounting student and practitioner.

The case arose in the following manner: The Kansas City Southern Railroad, desiring on account of increased traffic and competition to enlarge its capacity by lowering its gradient, accomplished this in six particular cases by diversion and realignment of its tracks. It then desired to capitalize the entire cost, about \$600,000, of these improvements. The Interstate Commerce Commission, however, decided that the company could not carry into its property account the full cost but must first deduct the estimated replacement cost, about \$400,000, of the portions of track no longer used, the difference of approximately \$200,000 being carried to the property account and the estimated replacement cost of the old track being charged to operating expenses for the year.

In sustaining the commission the United States Supreme Court has drawn a clear-cut line of demarcation between the treatment of additions and betterments to the original track, the abandonment of original track accompanied by no replacement, and the abandonment of original track accompanied by the con-

struction of new track off the original line. In regard to the first point, the court states that the full cost of improvements and grade revisions on the original right-of-way should be capitalized as a part of the cost of property in the additions and betterments account. The reasons for this accounting are too evident to be discussed.

On the other hand, when property is abandoned and not replaced, its original cost should be credited to the appropriate property account and charged less salvage to the profit and loss account, to which should also be charged the cost of the abandonment. The accounting theory underlying such treatment is this: When a railroad abandons part of its track without constructing a substitute to serve the same territory, the abandoned section ceases to be an earning instrumentality. The stockholders can no longer derive any profit from it; only past operations are benefited by it. The results of these operations, as far as they have not already been distributed to the stockholders, are contained in the profit and loss account. This account, therefore, is properly chargeable with the cost of such abandonment, unless a special depreciation reserve as a portion of profit and loss has previously been set up in anticipation of some such contingency.

Most men will agree on the treatment of the two points previously given, but in the matter of abandoned property replaced off the line they are likely to claim that the cost of the new construction should be charged to the property account and that the cost of the abandoned property should be retained in the property account or else be charged against profit and loss. The fallacy in this belief lies in treating abandoned property replaced off the line in the same manner as improvements on the line or abandoned property not replaced at all. The fact is that the improvements made off the line are virtually replacements and should be capitalized only to the extent to which they are more valuable than the abandoned property replaced. The discarding of sections of the original road is a loss or depreciation that in correct accounting should be taken out of the property account.

Such abandonment of property as we are discussing is the acme of depreciation, the result of the total inadequacy of the existing property to meet the demands of the future. For the sake of the future it is replaced with stronger and more efficient instrumentalities. The cost of abandonment, therefore, as measured by the replacement value of the abandoned property, should be included among present and future operating expenses, in order that the net earnings, in which are reflected the benefits derived from the improvements, may serve as a proper basis for the declaring of dividends to present and future stockholders. This cost, if very large, should, of course, be held for a long time as a deferred charge and written off periodically so as not unduly to burden the operating expenses of any one year.

We recognize, of course, that in so complicated a matter as the operation of steam railroads and electric railways it is difficult to divide, and more difficult con-

sistently to apply a precise distinction between, capital and expense accounts, but this recent decision of the court makes a close approach to a scientific accuracy of delineation between them. If such regulations are adopted by public service commissions for use in electric railway accounting, there will be an effective means of preventing such a permanent inflation of the property accounts as has proved the downfall of more than one electric railway system in this country.

One critic of the decision has claimed that the replacement cost of abandoned property is "cost of progress" which should remain in the property accounts, and that replacements will come substantially to a standstill if the cost of abandoned property must be met out of present and future earnings. A vast number of improvements must be made within a short time by electric railways, but that fact is not a valid argument against the adoption of this method of accounting. If depreciation reserves are set up, the charge to future earnings will be considerably reduced when replacements do become necessary, and, furthermore, the placing of the excess charge for replacements against future earnings is really a benefit to transportation lines. We say a benefit, for it prevents a piling up of depleted assets and it affords an excellent means for silencing the public demand for lower rates. What more incongruous picture can be found than this: The public crying for vast terminal and service improvements and decreased fares and the courts deciding that the excess cost of such improvements must be met out of present and future earnings? The sooner the public is made to realize the cause-and-effect relation existing between these items the sooner there will come not a suspension of progress but a more legitimate and deliberative demand for it.

THE IMPORTATION OF RAILWAY OFFICIALS

The action of the Great Eastern Railway in seeking and finding a new manager in this country has roused the British public, at least, to a realization of conditions in public utility administration in that country. There are precedents for this appointment, however, notably that of Albert H. Stanley, who seven years ago was made general manager of the London Underground Electric Railways and is now managing director of the vast system of surface and underground railways and bus lines in London under the control of that company. It is true that Mr. Stanley is of English birth, but his railway experience was obtained entirely in this country, and the results accomplished under his management have more than justified his appointment.

Lord Hamilton explains his selection of an American for the Great Eastern Railway in the present instance on the ground that, while there were probably men enough in England fully capable of coping with the serious operating problems of that road, he had no means of knowing who they were. The English newspapers look at the matter in a different way. They call attention to the hampering effect of the social system under which incompetent men are promoted to respon-

sible positions more on account of their family names than of what they can do. Probably more important still is the practice of promotion on basis of length of service rather than on achievement. The mere fact that a man may occupy a position for a long period does not qualify him for advancement unless during this period he is definitely training for it. A higher position is usually a recognition of progress already made. We understand that tradition has saddled this habit on the British railway companies. At any rate, something is wrong with an organization when it is not developing men to fill all of the higher positions through a system of natural selection. No other plan is a safe one.

At the moment we have the laugh on our British brethren, but our sense of exultation may be less when we stop and seriously consider to what extent the strictures directed against the British roads apply to our own electric railways. It is undoubtedly true that American electric railway methods have produced a number of pre-eminently successful managers, but what steps are being taken to train younger men to take positions of responsibility when their turn comes? Is there not often too much of a tendency to assume that the best men will come to the top if the whole organization is allowed to take care of itself? Lord Hamilton acknowledged that he had no means of knowing anything of the progress of the men in his company. It is a fair question to ask how much more the officials of our own large companies know about the progress and ability of the men in their employ and what steps they are taking to encourage young men of the right kind to engage in the service. In this connection we might add that it was only two weeks ago that we had occasion to comment editorially upon the apathy with which the apprenticeship system is regarded on most electric railway properties. Considerable interest was expressed several years ago in the apprentice system for young men who are anxious to enter the transportation and engineering department of electric railway companies, and the British episode attracts attention again to the necessity of such a plan.

What is needed is a system of training for the younger men and systematic promotion for all so that there is always a well-prepared, efficient man who is ready to step into any vacancy but is kept alert and satisfied by the "future" in his present position. Every time that a man "higher up" is selected from outside an organization it is a reflection upon the system of selecting men for positions of lower rank and of training them for promotion. It is also a damper upon the ambition and a strain upon the loyalty of the whole force. We are proud that Mr. Thornton was selected for his important task, and we hope that his colleagues in the Great Eastern Railway will co-operate with him in giving the improved service to which the patrons of the road are entitled, in spite of the humiliating circumstances which led to his selection. It is also quite possible that the incident, attracting attention so widely as it has at home and abroad, may assist in the development of a more efficient merit-promotion system in this country.

Maintenance of the Electrical Equipment of the New York, Westchester & Boston Railway

This Article Is a Sequel to One Which Was Published in the Issue of Jan. 31 and Covers the Early Difficulties with the Single-Phase Electrical Equipment of the Cars on This Line, Together with the Means Taken to Overcome Them—A Curve Showing the Total Cost of Maintenance Is Included

In the *ELECTRIC RAILWAY JOURNAL* for Jan. 31 an account was published of the early difficulties that were experienced with the single-phase car equipment of the New York, Westchester & Boston Railway, together with the means taken to overcome them. The previous article, however, dealt only with the mechanical features of apparatus, such as pantographs, air brakes, trucks and running gear, car bodies and interior fittings, and

they were first put in service, namely, that they were running too cool. In order to overcome this the speed of the blower was reduced from 1800 r.p.m. to 1300 r.p.m., thus reducing the supply of cooling air very materially. In addition, the decreased velocity of the air entering the blower eliminated the tendency to draw in with the air the drip from the sides of the car, the intake to the blower being made through louvers



Westchester Equipment—Typical Three-Car Train

in the following paragraphs the experiences with the strictly electrical equipment are taken up in detail.

TRANSFORMERS

The main transformer, which is placed under the car and which supplies current not only for the motors but also for all the auxiliaries, such as heaters, motor-generator set, lighting, etc., originally gave some trouble, much of which was difficult to trace to its origin. This has, however, been entirely overcome during the last year. A number of cases of burnt-out transformers occurred on account of moisture which entered on rainy days with the air from the forced-draft fan, thus injuring the insulation and grounding the coils. The trouble has been eliminated by putting baffle-plates between the blower and the transformer, with an opening at the bottom of the casing so that the water can be drained out. A distinctly unusual condition was found with these transformers when

in the car side and through ducts to the fan. As the opening in the duct between the blower and the transformer was reduced one-half by the presence of the baffle-plate, the final effect of both changes was to reduce the amount of air passing through the transformer about 60 per cent. Consequently the coils were kept at a higher temperature, and such moisture as was deposited on wet days was quickly evaporated and did not rot the insulation. Since these changes have been made no failures of transformers have occurred.

CABLES

One of the interesting features about the early operation of the cars was that the cables running between the switch group and the transformer were found to develop short-circuits through mechanical damage to the insulation. The cables were about 2 ft. long and were stretched reasonably tight, the only place where they could ground being on the frame of

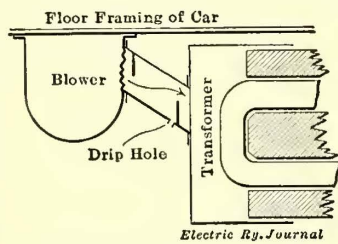
the car immediately above them. They could not be placed in conduit on account of the heating, and it was finally found that the damage to insulation and short-circuiting was caused by the repulsive effect of the alternating current between the various pairs of leads whenever they were used. As soon as this was determined as the cause of the short-circuits the cables were tied firmly in place with heavy rope and thus were prevented from vibrating when the current was turned on them.

Another feature which was impressed upon the management during the early days of operation was that on account of the low voltage of the motors, 322, all connections on the low-tension side of the transformers needed to have especially careful attention. Because the voltage was lower than that which was customary on the ordinary direct-current railways, it was found that the workmen had no conception of the amount of current which had to be handled, and in consequence they displayed a distinct tendency toward making all connections much too light. This difficulty has, of course, been gradually overcome as the electrical repairmen have become familiar with the alternating-current system.

Another unusual feature was found in the fact that, with the alternating current, surges took place, and that the current on bare connections would sometimes jump even at voltages as low as 650, the approximate voltage used for the heater circuit. In consequence, in all a.c. wiring particular care had to be given to the insulation. The recurrence of surges has also required an increase in the capacity of all fuses throughout the car. The air pump has been equipped with fuses as high as 100 amp, although it is normally rated at only 50 amp. The main circuit-breakers on the high-tension side are set at 200 amp, although the normal starting current is but 65 amp.

The ground connections for the motors and for the auto-transformer are made upon the underframing of the car, and this, as originally installed, gave a considerable amount of trouble on account of the enormous currents which were handled. As the ordinary accelerating current in the low-voltage side of the transformer amounts to 2000 amp, it was found necessary to make especially careful grounds by filing the metal where the contacts were made and by bolting the contacts very securely in place. On all future cars, however, it is planned to have the ground leads from the motor returned to the auto-transformer winding. In this way the only ground necessary will be a small one sufficient to handle the 11,000-volt current on the primary side of the main transformer.

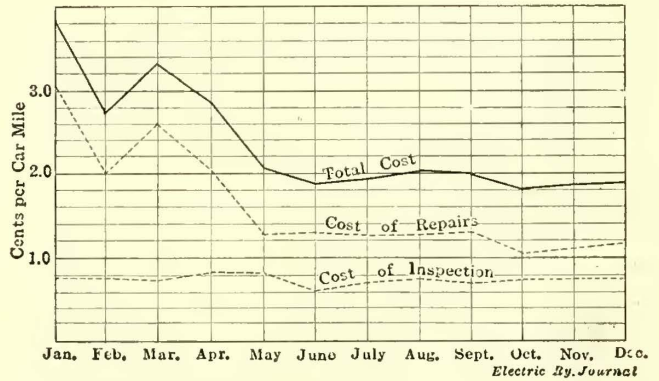
In the high-tension cables only one case of short-circuiting has occurred. This developed in the insulated cable on the roof of the car, the short-circuit jumping through the insulation to the metal conduit. In this connection it is interesting to note that on account of the high voltage used and the consequently small amount of current, a short-circuit is accompanied by practically no arc, the circuit-breakers opening almost instantaneously. Short-circuits have occurred on account of birds lighting on the roof of the car at times when the pantograph was held down by a low overhead wire at a bridge. In such cases there has been only a slight puff of smoke to indicate the short-circuit and a small hole left in the roof where the arc jumped.



Baffles in Transformer Air Duct

DIRECT-CURRENT CIRCUITS AND APPARATUS

The control system is operated by a low-voltage direct-current circuit on which is floated a storage battery operating at about 32 volts. Current for this circuit is supplied by a motor-generator set, consisting of a self-starting, single-phase induction motor mounted upon the same base with a shunt-wound generator. Connected with this battery in multiple are the emergency



Westchester Equipment—Total Maintenance Costs Including Repairs and Inspection

lights which provide interior illumination in case the power is off or in case the pantograph leaves the overhead wire.

In order to provide headlights at all times, however, the headlight circuits also have been connected to the battery circuits, as the need for a headlight during the time when a car is passing a crossover is manifest. In addition to the headlight, the markers, platform lights and gage lights have been connected to this circuit. In consequence these are kept lighted at all times, regardless of whether the power is on the line or not. The emergency lights in the cars, are, however, lighted only by connections made through a back contact on a main-line relay which opens when power is off the line, so that under ordinary circumstances the emergency lights in the car are not in use. The regular lighting system is arranged with all lamps in multiple, 23-watt tungsten series having been adopted as standard after a trial of 30-watt carbon, 60-watt carbon and 25-watt tungsten lamps. Notwithstanding the fine filaments of the present lamps, little breakage and no blackening has been experienced.

It is found that batteries have to be overhauled about once a year on account of the sediment deposited from the plates, and it has been found desirable not to remove the plates, but to clean out the sediment with a hose and a long nozzle pushed down between the plates, water being supplied at city pressure. After flushing out, each cell is tested for short-circuits, this being accomplished when the charging is started by taking the voltage between adjacent plates. The battery boxes are supported on porcelain insulators to eliminate the possibility of grounds and to keep the battery boxes clean.

The motor-generator is made self-starting by a split-phase coil which is mechanically cut out after the speed has increased. In several cases this cutting-out device has failed to work and the starting coil has in consequence burned out. There has, however, been no trouble on the d.c. side of the generator, although it was found necessary to use brushes with a very low inherent resistance in order to assist the generator in building up voltage when starting. The previously mentioned line relay opens the circuit between the battery and the motor generator whenever power is off, so that it is impossible for the battery to run the generator as a motor. It also opens the switch group control circuit.

MOTORS

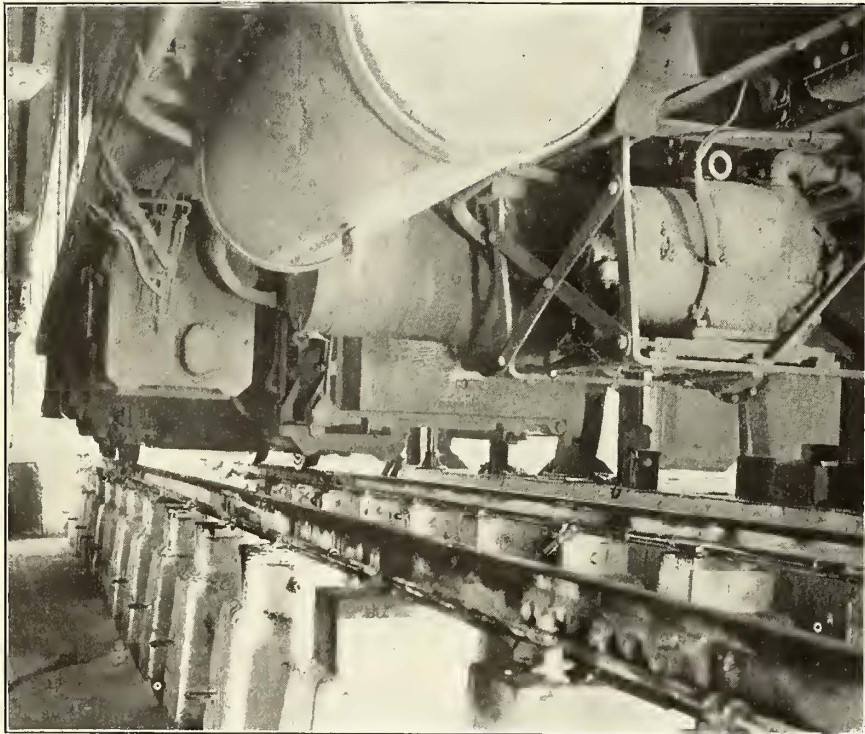
A singularly small amount of trouble has been experienced with the alternating-current motors. These, as above mentioned, are occasionally the cause of having a truck held for repair, but in general practically the only periodical work done upon them consists in returning and slotting the commutators at intervals of about one year, or on a mileage basis of about 50,000 miles. The core bands and armature bands have in no case given any sign of failure, and the armatures, in consequence, have not been rebanded during the eighteen months of service. The work of keeping down the mica between the commutator bars and in general maintaining the commutator in good condition is the one important feature, and the fact that this work has been very carefully followed is believed to be the cause for the really extraordinary lack of trouble with the motor equipment. Flash-overs are absolutely unknown, and no resistance leads have yet been burned out, notwith-

The figure of 90 deg. shown for the commutator in the third case was due to high mica on the commutator, but the other commutator temperatures show that this is the point most affected by heat. These temperatures were taken after the previously mentioned reduction had been made in the air supply from the fan supplying the transformer, and they show that the transformers are not running warm even with the reduced blast.

In connection with the motor control the company has been renewing the contacts in the switch group during the last few months. These have been found to have a life of about one year. The fingers on the reversers were found to have been riveted too loosely, and all have been re-riveted.

Mechanically, a certain amount of difficulty with the motors has developed on account of the vibration from the intermittent torque. It has been found necessary to heat motor pinions to a temperature of 300 deg. Fahr. with a gasoline torch and then to hammer them in place

lightly with a small sledge. The temperature is obtained exactly by use of a thermometer placed between the teeth. There is no shoulder on the tapered fit of the motor shaft. As previously mentioned, flexible gears with rolled-steel, case-hardened rims are to be installed as fast as the solid gears wear out. A great deal of wear on the motor noses also has taken place. Case-hardened steel shoes have been introduced between noses and lugs on the truck transom, but these have not proved equal to the wear, and at present manganese steel shoes are being tried out. Two of the cars on the road have spring-suspended motor noses, but no definite decision has been reached regarding the adoption of this construction at the present time. It is believed, however, that spring-suspended noses will be installed on future cars. The type of spring suspension used includes a leaf spring parallel with and supported on lugs on the truck transom, and upon a block on this spring the nose of the motor is supported.



Westchester Equipment—View Underneath Car, Showing Air Compressor, Casings of Blower and Transformer

MISCELLANEOUS ELECTRICAL EQUIPMENT

standing the hard service to which they have been exposed through the numerous stops and starts. Field windings have never given any trouble.

Four armatures have burned out since the road started operation. Three of these failures occurred in the summer and undoubtedly were due to overwork and excessive external heat. One was due to a grounded commutator bar, which was not properly insulated on the inside from the cone support of the bar. As an illustration of the temperatures at which these motors are normally worked the following table is submitted. These figures were obtained after the six cars tested had been in service for five hours, the outside air being 24 deg. C. or 75 deg. Fahr.:

The difficulties with the miscellaneous electrical equipment on the cars have, strange to say, been of a minor character. Part of this has undoubtedly been due to the fact that the motormen and other employees having to deal with the actual operation of the apparatus have had a very thorough course of instruction, and they have had impressed upon them the necessity for keeping posted on all branches of their work. When the road was first opened, the motormen, after they had received their original instructions, were examined by the superintendent of equipment, and now, after almost two years of operation, they are having another elaborate instruction course consisting of ten lessons, each lesson lasting for about two hours. When this course has been completed all motormen will have another examination, which must be passed successfully by every one who actually operates, or who may be called upon to operate, a car. In this connection it might be said that the present course of lessons is giving rise to a great deal of interest not only among the motormen but among the yardmen and interlocking tower men as well.

TABLE SHOWING NORMAL TEMPERATURES (CENTIGRADE) AT WHICH THE DIFFERENT PARTS ARE WORKED

Armature	Field	Commutator	Motor Shell	Transformer Core
59	57	84	39	47
60	60	84	40	46
60	55	90	39	51
70	50	85	36	50
70	60	80	36	50
60	54	72	44	51

Among the minor changes which have been made in the electrical equipment may be mentioned the fact that an inspection cover has been installed in the casing of the motor for the transformer blower since it has been found that this motor should have regular and careful attention and therefore should be easy of access. An oil drain for the inside bearing of the blower motor shaft has also been installed in order to keep any excess oil from going into the transformer coils. Surplus oil is now drained away onto the ground.

As the main propulsion motors are connected permanently in multiple, it has been found that unless the motors are cut out the cars cannot be moved at more than about 4 m.p.h. when they are being switched around in the yard by the switch engine or by other cars. The reason for this is that the motors act as generators working against each other on a closed circuit through the two motor fields and through the rail between the two pairs of wheels. It is planned, in consequence, to install in the control system a separate pneumatic cut-out switch for each motor instead of the present arrangement of a single cut-out switch which controls both motors at the same time. Separate switches, being operated by the control system, would keep the motors separated if the reverser should fail to work on a car in a long train, a possibility which might have serious consequences. At the same time they would eliminate the necessity for yardmen going underneath the car to pull out the hand cut-out switches, as must be done at present, in case they want to move the cars around at a moderately high speed without power.

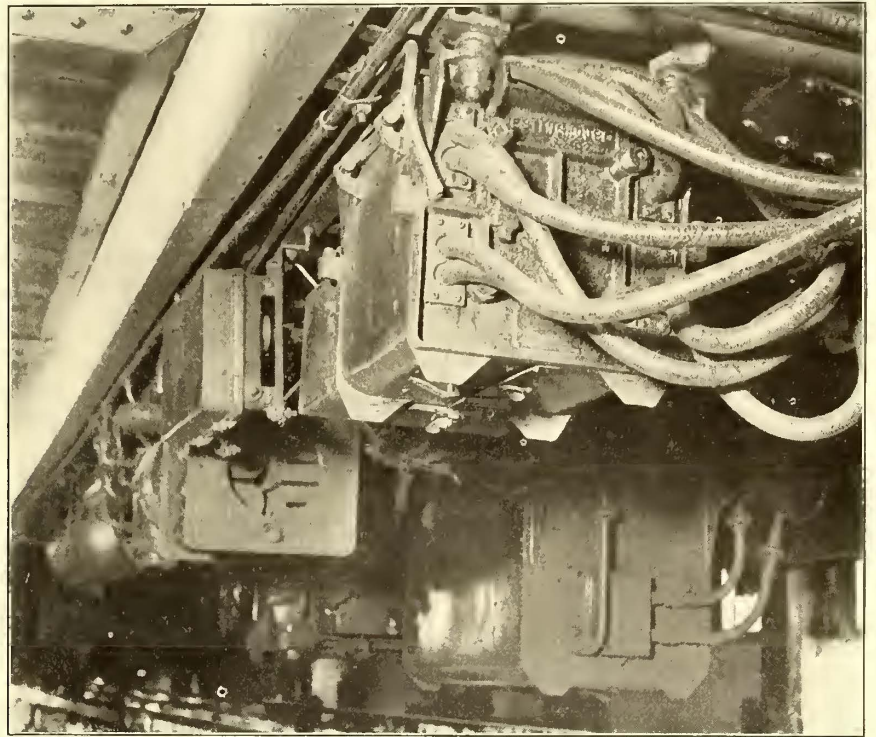
Another interesting point which may be noted is that it was found that the copper washers installed originally between the cast-iron resistance grids became badly burned on account of holes which were punched through the copper by small arcs between grids. The obvious remedy was to remove the washers, and this was done without developing any trouble.

As previously mentioned, all of the cars are equipped with recording wattmeters. These were originally located on the rods which support the main transformers under the car, and it was found that some of the wattmeters ran as much as 60 per cent too high, none of them giving reliable results. It was finally discovered that this difficulty was caused by the magnetic influence of the transformer windings, and in consequence all wattmeters were moved inside of the car and as far as possible away from the inductive effect of the alternating current. Since this change has been made no trouble with the wattmeters has been experienced. Another peculiarity due to the magnetic action of the single-phase current was found in the blow-out coils in the switch group. Adjoining coils, it was discovered, displayed a strong attraction for each other. Whenever they actually touched they generally became welded firmly together. The difficulty was cured by inserting pieces of fiber board between adjoining coils and thus maintaining them at all times at a reasonable distance apart.

Another minor difficulty was found in occasional failures of the snap switch originally applied to cut out the electric brake, the cars being equipped with both standard air brakes and electro-pneumatically operated brakes for long-train operation. A plug switch was

therefore installed instead. This, when pulled out, broke the power circuit to the electric brake and eliminated the possibility of a car in a train which was operated by air getting applications through the electric brake. It might also be remarked that the magnet coils which operate the air valves for the pneumatic switches on the main switch group are designed for a voltage of 20, the auxiliary d.c. system on the cars being charged at about 32 volts. In consequence resistance is installed in the power line to the magnet coils. It was found that the presence of this resistance in the auxiliary circuits caused occasional wrong operation of the various coils through "backing up" of current, when the doors were operated, so that the door-operating circuit was taken off this resistance and was connected direct to the terminals of the d.c. system.

In a later article to be published in this journal a complete record will be given of all maintenance costs for the equipment on this line. However, a curve published



Westchester Equipment—View Underneath Car Showing Reverser and Grid Resistance at Left and Switch Groups at Right

on page 395 of this issue shows the total costs of the car-equipment department including the expenditures for inspection as well as for repairs. The high figures of January and March respectively were due to the fact that costs were charged in those months which could justly have been prorated over a considerable period. These were respectively the entire cost of repairs to the four burnt-out armatures mentioned on page 396 and the entire cost of high-priced anthracite coal used for heating the shops during the winter. The average annual cost of slightly more than 2 cents per car mile applies to 70-ft. cars weighing about 60 tons and seating seventy-eight passengers.

The Illinois Traction System is now installing in its cars aisle strips of $\frac{1}{8}$ -in. linoleum edged with several strips of wood. The use of this linoleum eliminates tripping, the material is comparatively low in first cost, and it is easily kept clean. The softness of the surface is also a feature of this improvement. The wearing qualities of linoleum are so good that it should prove very durable in this service, even though the thickness selected is small.

Arbitration Decision in Indianapolis

Ruling of Indiana Public Service Commission Sitting as Arbitration Board on Wages Dispute in Case of Indianapolis Traction & Terminal Company—Open Shop and Increase in Wages Ordered—Trainmen Not Skilled Laborers

After a number of hearings, which have been reported week by week in this paper, the Public Service Commission of Indiana, which has been sitting as a voluntary board of arbitration in the matter of the grievances presented to the Indianapolis Traction & Terminal Company upon the termination of the street car strike in Indianapolis Nov. 7, 1913, handed down its decision in the case on Feb. 11. The hearings, which commenced on Dec. 4 and continued to Jan. 9, were open to the public and were held in the Senate Chamber of the State Capitol at Indianapolis. The testimony comprised about 5000 typewritten pages of evidence, with ninety exhibits and about the same number of detailed statistical sheets. The officials of the Indianapolis Traction & Terminal Company have agreed to accept the award and endeavor to carry out its provisions. A strong protest was made by the officials of the Amalgamated Association against the award of the commission, particularly in the matter of the rate of wages fixed for the three-year period and the failure to recognize the organization of the employees.

REFERENCE TO STRIKE

In deciding the points in arbitration between the Indianapolis Traction & Terminal Company and its employees the commission cited the agreement of Nov. 7, 1913, by which the street car strike was ended, as its authority for its decision. The grievances of the employees and answers of the company are then set out in full. The commission then discussed the history of the parties prior to the strike. It was shown that the Indianapolis Traction & Terminal Company had been for a number of years operating the street railway system in the city of Indianapolis by non-union labor, and that for ten years at least there appeared to have been little agitation of the union question, and that during August, 1913, non-resident labor organizers, representatives of the Amalgamated Association of Street & Electric Railway Employees of America, entered the city and attempted to organize the train service men of the electric lines. The commission then shows that the attention of the organizers was directed first to the interurban lines and states that "a premature strike of these employees in the latter part of August proved futile." The commission describes the efforts and movements of the organizers directed against the city property after the failure of the interurban strike, which moved rapidly to a culmination. It sets out the heavy demands made upon the company in the form of increased wages, shorter hours and greatly modified conditions of labor, an answer to which was demanded by noon of the following day. "Before the expiration of the time given the company to answer a call for a strike was prepared, and a strike of the employees was precipitated on Hallowe'en night—a most propitious hour. In spite of the fact that it is now manifest that the demands would have been refused, we cannot justify this hurried call of the men from their work." The commission then relates the attempts to operate cars with the regular crews, the lawlessness which prevailed in the city, and the riotous mobs dragging men from the cars and compelling them to join the union. The events leading up to the signing of the so-called "Governor's agreement" are then set out. These events were

described in the ELECTRIC RAILWAY JOURNAL for Nov. 8 and 15, 1913.

LEGAL RIGHTS OF BOTH PARTIES

The commission then states that, sitting as a board of arbitration, it finds it difficult, on account of the lack of helpful precedents, to do otherwise than decide the case on the principles of law, as neither organized or unorganized labor nor organized capital would expect an award that would violate a legal right of the other. "The submission in this instance is simply a contract between the parties thereto whereby they have agreed to refer the subjects in dispute to the members of this commission and to abide by their award. Our legislative provisions touching arbitration are but statutory enunciations of the principles of the common law. Under either of these methods of arbitration only controversies between parties which might be the subjects of a suit at law could be submitted. In this controversy there is no question involved that might be the subject of a suit at law. Recognition of the union, rate of wages, the regulation of hours and conditions of labor are not matters of which any court could take cognizance. In this State, at this time, these are all matters of private contract, left absolutely to the discretion of the parties involved in each particular transaction. This is the reason why no compulsory arbitration law has been provided. Under our constitution no such tribunal can be provided. A court of compulsory arbitration can be provided only by overturning the entire fabric of constitutional government. . . . As arbitrators we have power to determine only matters within the submission. Where settled principles of law determine what the conclusion should be, the law must prevail. Beyond the realm of fixed legal principles we must be guided by equity and good conscience. No award should be made that would destroy a legal right of either of the parties. While there are some decisions declaring we are not bound to follow the law, we think the weight of authority and the better reason compel us so to do. Otherwise we could exercise arbitrary power. We have no right to do general equity."

In discussing the legal relations of union labor and employers the commission said in part: "It is so manifestly the right of the employees to join a labor union to promote their own interests that the citation of authorities is absolutely unnecessary. They have the right to join the union with the avowed purpose of bettering their situation by an increase of wages. Acting as a union, they have a lawful right to strike for the avowed purpose of bringing their employer to a situation where he will be necessarily driven to increase the wages of his men, shorten the hours of labor and grant more favorable conditions of labor. They have the right to secure the highest wages, shortest hours and the best conditions that they can peaceably compel. This is a broad general statement, clearly sustained by a great weight of authority. . . . On the other hand, the Traction & Terminal Company had rights as sacred and as clearly defined by the constitution and laws as those herein mentioned in favor of the employees. The company had the right to refuse to employ union labor in the operation of its cars and in the conduct of its business. It had the right to operate its cars by

non-union labor if it were able to do so. Union labor had no legal right to interfere by attempting to impede the work of the company in its efforts so to do.

. . . In so far as union labor and its sympathizers impeded the operation of the company's business by force or intimidation and by preventing non-union men from engaging in the business from which the union men had struck, union labor was acting beyond its legal right and in defiance of the law."

The commission attaches importance to the case of *Adair vs. United States*, 52 Law Ed., page 442. The Legislature of Kentucky had enacted a law making it a crime for an employer or his agent to discharge a union man for that cause only. Adair, as the agent of the Louisville & Nashville Railroad Company, discharged a man named Coppage from the service of the company wholly on the ground that he was a member of a labor union. Adair was indicted, tried, found guilty and a fine assessed against him. The Court of Appeals of Kentucky affirmed the judgment. The case was presented to the Supreme Court of the United States, where it was reversed. The commission gives an extract of the decision of the Supreme Court to show that it is "not within the functions of government, at least in the absence of a contract between parties, to compel any person in the course of his business and against his will to retain the personal services of another. . . . So the right of the employee to quit the service of the employer, for whatever reason, is the same as the right of the employer, for whatever reason, to dispense with the services of such employee."

CONDITIONS OF LABOR

The commission then summarized the twenty-three grievances, as presented by the employees, under three general heads, viz: (1) conditions of labor; (2) hours of labor; (3) rate of wages. These were taken up in order and decided upon by the commission as follows:

The grievances under this head demanded:

- (1) The recognition of the employees' association.
- (2) A shortening of runs on cars.
- (3) Abandonment of extra trips on Sundays and holidays.
- (4) Decrease of number of times extra men are required to report at carhouses.
- (5) Making up of working board for extra men by 4 p. m. of each day.
- (6) Registration of requests for privilege of being off duty.
- (7) Hearing of complaints of employees by superintendent three days each week.
- (8) Appeals by employees from the superintendent to the president of the company and hearing of such appeals on two days of each month.
- (9) A board for the arbitration of controversies.

Referring to the question of recognition of the employees' association by the company, the commission stated: "The contract of Nov. 7, 1913, makes no reference to the Amalgamated Association or any other employees' association. It is executed in the name of the employees as a class of men and not as representatives of a labor union. The question of the recognition of the union is not within the submission." After discussing at some length the rights of the men and the company in the case, the commission says: "The evidence of the officers of the company and of some of the barn foremen was that after the men returned to work discipline was in a measure destroyed. Before the large rights demanded in these various grievances should be awarded to the employees' association, it ought to demonstrate that it has sufficient control and discipline over its members to call a strike and conduct

it without disorder, destruction of property or violation of law, in which its membership participated. When this association shows that membership in its local means more efficient service and better discipline among the employees it will destroy the competition arising from non-union labor. We are constrained to deny the demand for the recognition of the employees' association for the reason that it is not within our jurisdiction.

"The demand that 75 per cent of all runs should be earlies and lates and should be completed in eleven consecutive hours is presented by the second grievance. There are no facts in this record that enable us to determine the feasibility and practicability of this demand. On this point we feel that it is the duty of the employees to prove the practicability of the demand made. . . . We do not think this grievance can be corrected any more justly than by an application of a principle borrowed from the federal statutes which requires eight hours of consecutive rest in every period of twenty-four hours. We think no run should exceed an aggregate of twelve hours completed within sixteen hours from the time it is commenced. After completing any run the motorman and conductor should be permitted and required to have at least eight hours off duty. We think this plan is practicable and will greatly relieve the car service men and will in no manner embarrass the company. We do not believe that men should be paid for more hours' work than they perform."

Regarding the grievance that the men should not be compelled to make extra trips on Sundays and holidays, the commission decided "that the provision touching the runs and hours off duty hereinabove set out will remove the complaint presented by this grievance."

The commission expressed its opinion that the grievance in regard to extra men being required to report at carhouses several times a day was well founded and entitled to relief, and that while during the month extra men usually made substantial wages, the uncertainty made the men restless. The commission decided that a working board should be provided at each carhouse and marked up not later than 4 p. m. each day, a list of extra men to be made up at the same time and place in plain sight so that the extra men could see their standing for work, and requiring the names of such extra men to be checked as they get a run or miss. The commission also ordered that each extra man be guaranteed a wage of \$45 each month, less the amount of runs missed by reason of his own fault.

Regarding the grievance in connection with requests for leave of absence, the commission described very fully its views on discipline and asserted that it believed from the testimony that many of the car service men had a mistaken view of duty. "Absence from duty is the result of a request granted. It cannot be demanded and asserted as a right," reads the report. The commission, however, ruled that a book shall be maintained at each carhouse in which the names of employees who wish to be off duty may be registered, and absence from duty, if permitted at all, shall be granted in the order shown by such registration. Members of a grievance committee of employees shall receive preference on the day or days they are required to meet officials of the company. If all requests cannot be granted, those who have been off duty within the last sixty days shall be first refused.

In regard to the hearing of grievances by the superintendent, with appeal to the president of the company, the commission feels that while it may be assumed that each of the parties will accept in good faith and comply with the awards of the decision, there will probably

arise many matters for adjustment. It was ruled, therefore, that on the second and fourth Tuesdays of each month the superintendent of the company shall, on notice, give a fair and impartial hearing to discharged or suspended employees. If the discharge or suspension is found to be unjust, any such employee shall be reinstated with pay at the regular wages for time lost by such suspension or discharge. On the third Tuesday of each month the president of the company shall hear any employee who desires to appeal from the decision of the superintendent. The president shall correct any erroneous decisions of the superintendent. At such hearings before the superintendent or president the discharged or suspended employee may be represented by any employee or employees he may select.

The commission then reviews the possibilities of the interruption of activities in a community by labor disputes which end in disorder and strife, and, seeking to avoid this, provides for an arbitration board as follows:

"That any difficulty or disagreement arising under this award, either as to interpretation or application, or arising out of the relations of the employer and employees during the lifetime of this award, which cannot be settled or adjusted by conference between the officers of the employer and the employee or employees directly interested, shall be referred to a board of conciliation or arbitration appointed as hereinafter provided. Said board shall consist of three disinterested members, one of whom shall be selected by the judge of the District Court of the United States for the District of Indiana, one member shall be selected by the chief justice of the Supreme Court of the State of Indiana and one member shall be selected by the chief judge of the Appellate Court of the State of Indiana. Such board of arbitration shall constitute a permanent court of arbitration during the lifetime of this award. Each member of said board shall receive just and reasonable compensation for his services, such compensation to be paid equally by the company and the employees. Necessary stenographic force shall be employed and paid for equally by the company and the employees. Said judges shall confer with each other in making said appointments, and said judges shall have power to fill any vacancies that may occur at any time in the life of this award on said board. Such board thus constituted shall take up and consider any question referred to it by the company or by the employees and shall hear both parties to the controversy and consider such evidence as may be laid before it by either party. At all hearings before this board either party may be represented by such person or persons as they may respectively select. No suspension of work shall take place by strike or otherwise pending the adjudication of any matter so taken up for adjustment by said board. Any award made by said board shall be binding and final during the lifetime of this award. In any proceedings before said board the moving party shall have the burden of proof; provided that if any discharged employee shall institute proceedings before said board of arbitration for the purpose of being reinstated in his employment with the company, said board of arbitration shall not have power to reinstate such discharged employee, if, upon the hearing, there is a reasonable and strong suspicion that such employee was guilty of the offence for which he was discharged."

HOURS OF LABOR

On this subject the commission decided there was little doubt or uncertainty and that the efficiency of the company and standard of citizenship of the men is lowered if they are overworked. The commission's ruling on this point was as follows:

"(1) No run shall exceed twelve hours in length. Split or trip runs shall not exceed an aggregate of twelve hours of platform service. Each run shall be completed within sixteen hours from the time it is commenced. After completing a run no motorman or conductor shall be required or permitted to continue or again go on duty without having had at least eight hours off duty. One period of twenty minutes in each run shall be allowed within which to eat meals. Overtime shall be paid for at the regular rate.

"(2) Each motorman and each conductor shall be permitted and required to remain off duty on the first day of the week, commonly called Sunday, at least once in each calendar month. The company shall designate the particular Sunday in each month that each of such employees shall be off duty.

"(3) Each conductor and each motorman shall be required to report at the proper car barn ten minutes before time for taking his run. Men who are delayed without their fault by reason of accidents or blockades on the line and are thereby prevented from taking out their run shall not be penalized further than to lose their run for that day only. The penalty for missing runs for any other reason than as above stated shall be in the discretion of the company; provided, if the company experiments and finds that reporting five minutes before taking out the runs is sufficient, it is at liberty to reduce the reporting time to five minutes."

WAGES OF CAR SERVICE MEN

In making its award on the wage question the commission goes into the matter at great length, discussing conditions which affect employment and giving statistics concerning the rates of wages in other pursuits. The commission says that in fixing the rate of wage no court could ignore the element of competition, and there is no reason why an employer should pay a higher wage to one man than to another possessing equal skill, integrity and industry. Under such conditions unionism could add nothing either to the necessities of the man or the value of his services. The commission advances the following opinion regarding the car service men:

"There has been in recent years a marked increase in the cost of the necessities of life in this city. The proof clearly establishes this fact. This reduces the nominal wage. By different processes of reasoning we will endeavor to determine whether the present wages of the employees of the Traction & Terminal Company are just and reasonable. Any man twenty-one years or more of age, of less than the ordinary muscular power, of average intelligence and with but a very limited education, can perform the duties of a motorman or conductor. Such a man with ten days' instructions is assigned to this work. The labors of a motorman are not strenuous at any time. For about two hours of each day a conductor is very busy. At other times his labors are light. These men are seldom exposed to the elements, and there was no proof of any particular hazard arising from the use of electricity as a motive power. The employment is constant, the temptations are such as a man of ordinary moral courage ought to be able to resist. . . . The labor of these men, if it can properly be called skilled labor at all, is not far removed from common labor. When these positions are vacant they are easily filled with recruits from the ranks of common labor. Their necessities are those of the average citizen. The revenues of the company would be but slightly increased, if at all, by requiring men of better education and skill. This means that the work is such that the average man can do it well. From these facts it would appear that the car service men cannot command as high a wage as that paid to the skilled trades."

The commission then makes a comparison with the

rates of wages paid in other cities of the United States and points out that the payment of an annual revenue of \$30,000 to the city of Indianapolis should in a comparison raise the rate of wages paid by the Indianapolis Traction & Terminal Company 1 cent an hour. The commission denies the demand of the employees for a flat rate of 32 cents an hour and time and one-half for overtime. The report reads: "One of the elements that enters into the determination of the wages per hour is the constancy of the employment. A high hourly wage is usually found where labor is suspended for a part of the season, as in the building trades." The commission cites the testimony of witnesses for the employees regarding the amount of wages received, and shows that one man receiving the maximum rate of 25 cents an hour, averaged for four months, with time off, \$86.13 per month, while one man receiving the minimum of 20 cents an hour averaged \$52.99 per month for the same period under similar conditions. The commission gives these examples as representing the extremes of the result of the maximum and minimum wage.

The commission then discusses briefly the ability of the company to pay interest upon its own and underlying bonds, provide a proper sinking fund and dividends on its stocks, and decides that as the findings of the commission are to cover a period of three years the car service employees should receive a reasonable increase in wages. The award then gives the following rate:

In continuous service one year or less, 21 cents an hour.

In continuous service one year and less than two years, 23 cents an hour.

In continuous service two years and less than three years, 24 cents an hour.

In continuous service three years and less than four years, 25 cents an hour.

In continuous service four years and less than five years, 26 cents an hour.

In continuous service five years or more, 27 cents an hour. Overtime shall be paid for at the regular rate.

The increase thus granted to the men for a period of three years, dating back from Nov. 8, 1913, is approximately 5 per cent more than the old rate, which graduated from 20 cents the first year to 25 cents the fifth year and thereafter. The requirement of the commission, however, which states that each motorman and conductor must be off one Sunday in each month reduces the possible earning capacity of the men by more than 3 per cent.

EMPLOYEES (EXCEPT LINEMEN) OTHER THAN CAR SERVICE MEN

The commission sets out in the report that it carefully considered the evidence as applied to these employees and their conditions of labor, and had some doubts as to whether there should be an increase in their wages at this time. However, considering the fact that the wages now fixed will prevail for three years unless voluntarily increased by the company, the commission decided to give these employees an increase of 5 per cent.

OTHER AWARDS

On the union question the commission ruled that the company should not be obliged to employ only union men, and no man now or hereafter in the employ of the company shall be required to become a member of any labor organization, but that the company shall not discharge a man solely for the reason he is or becomes a member of a labor organization. The ruling also provides that no discrimination by employees for or against union or non-union men will be permitted.

An award is made which provides that the president

and the secretary of a labor organization of which the employees may at any time be members shall each upon his retirement from office in such organization be reinstated in his former position without impairment of his seniority rights. However, for such officers to hold their seniority rights they must deliver to the president of the company on or before Feb. 20 in each year during the lifetime of the award a written request for the holding of such rights, but such statement shall not in any manner be, or be construed to be, a recognition of such organization.

The company is not required to change its method of furnishing transportation to employees and shall give only such transportation as is needed by an employee in going to and from his work. No extra pay is to be allowed to motormen and conductors while instructing students.

Conductors and motormen who take or leave their cars at points other than their carhouses are to be paid at the regular rate for the time necessarily required in transportation from the carhouse to the place of taking or leaving car.

The commission denied the request for double pay for snow-plow and sweeper work, but when such work is completed in less time than employed in their regular runs employees are to receive full pay for the number of hours composing their regular runs. While doing such work meals shall be furnished by the company.

Regarding the grievance that motormen should never be required to work as conductors, or vice versa, the commission ruled that in case of emergency conductors may be required to work as motormen and vice versa. The carhouse foreman in charge of the men shall determine the emergency.

The award closes as follows:

"The findings and awards of this commission shall be effective as of the eighth day of November, 1913, and shall continue in force and effect until the eighth day of November, 1916; provided, that the company shall have a period of sixty days in which to revise its schedules and determine what motormen and what conductors shall be required to remain off duty on each particular Sunday.

"On every point in controversy stated in any grievance or in any part of any grievance and upon which we have not made a specific finding and award our finding and award is for the company."

MILWAUKEE A. E. R. A. COMPANY SECTION MEETING

The Milwaukee Electric Railway & Light Company's section of the American Electric Railway Association held its regular meeting on the evening of Feb. 12, 1914. The subject of the evening was "Recent Developments in Electric Traction," presented in a paper by Miles Lambert, of the Westinghouse Electric & Manufacturing Company. His talk was illustrated with lantern slides showing the various stages in the development of modern street railway and interurban motors, as well as views of the most modern types of street railway and interurban cars. The meeting was attended by more than 100 members of the association and a number of out-of-town representatives of electric railways and supply men. In the discussion which followed the presentation of this subject, Mr. Lambert was called upon to give something of the historical development of single-phase apparatus. Other points brought out in the discussion concerned the practicability of employing multiple-unit control on one-car trains, and when and where to use the mechanically ventilated types of motors.

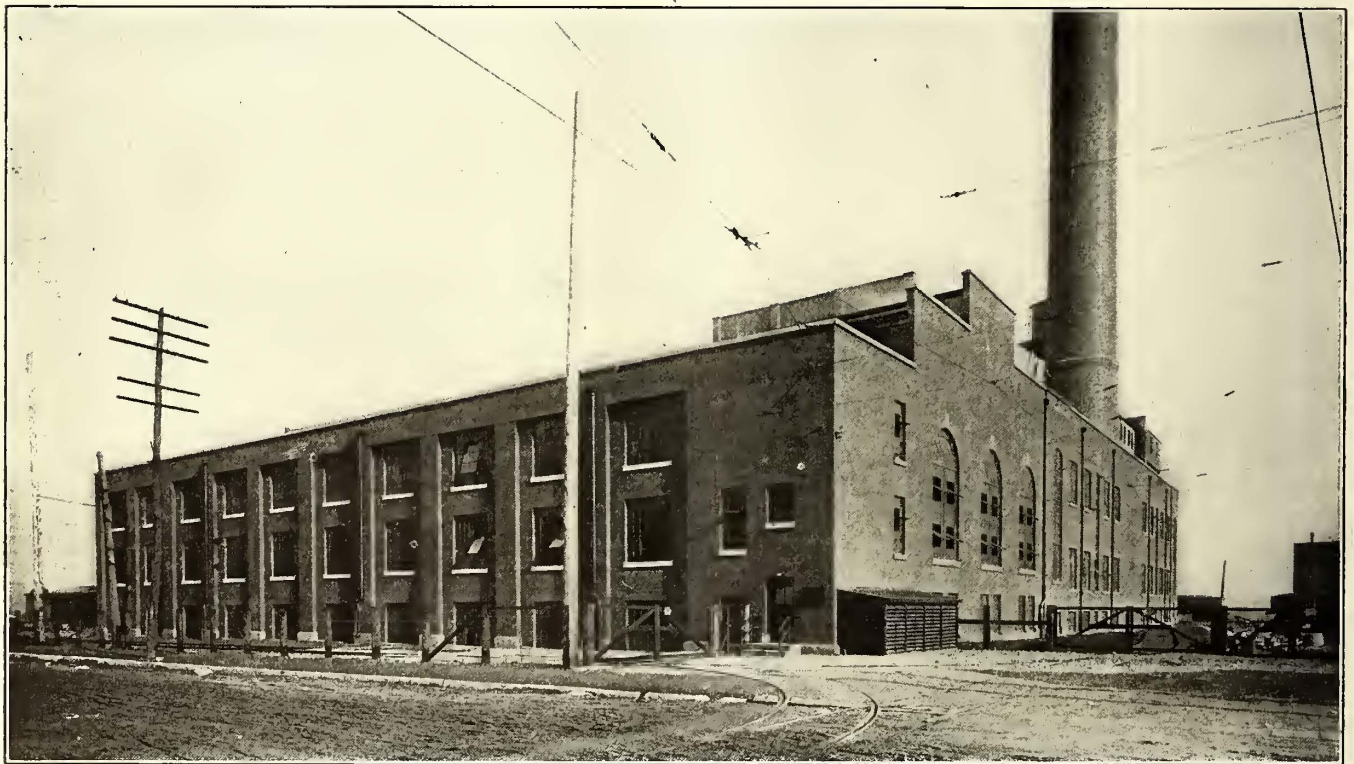
The meeting was attended by several representatives of electric railway lines in Chicago.

The Louisville Railway's New Generating Station

A Railway Power Station Constructed According to the Unit System with an Initial Capacity of 12,000 Kw and an Ultimate Capacity of 48,000 Kw

A thoroughly modern generating station with an initial capacity of 12,000 kw has just been put in operation by the Louisville Traction Company, owner of the Louisville Railway and the Louisville & Interurban Railroad companies. This new station will feed the underground and overhead transmission system at 13,200 volts, twenty-five cycles, three-phase, to two city substations and an old generating station on Campbell Street, Louisville, which has been tied in with the new station, and which in turn feeds six substations on the seven interurban lines radiating from Louisville. The unit system of design was followed in the construction of this new station, which will have an ultimate capacity of 48,000 kw.

did not materially impair the value of the water for use in the condensers, but within the past five years the city of Louisville constructed sewers parallel to the creek, and this resulted in reducing the flow of water to an almost negligible quantity. This situation made it necessary for the railway company to seek a new supply of condensing water or a new site for a power station. It put off the day when it would be necessary to build a new plant and sunk artesian wells and installed a spray cooling system to furnish condensing water. These methods, with the limited amount of water and the amount of pumping necessary, were costly and materially reduced the efficiency of the plant. To eliminate these difficulties and at the same time take



Louisville Railway—Exterior of Recently Completed Power Plant

The Louisville Railway and the Louisville & Interurban Railroad companies operate 165 miles of city track and 96 miles of interurban track respectively. Prior to the completion of the new plant this system was supplied with electrical energy from the Campbell Street plant situated on Beargrass Creek in the southeastern part of Louisville. This generating plant contained one 3500-kw, one 3000-kw steam turbine and two 1650-kw reciprocating vertical engine-type units, all generating alternating current at 13,200 volts, twenty-five cycles, three-phase. In addition to these, the old plant was equipped with 550-volt direct-current generators as follows: Two 1650-kw and three 500-kw generators, making a total of 14,600 kw a.c. and d.c., installed in connection with one 3000-amp.-hr. storage battery which was used as a reserve during peak-load periods.

Beargrass Creek, on which the old plant was situated and from which circulating water was obtained, received the discharge from a number of sewers. This

advantage of modern generating efficiencies, it was decided to build a new station at a more advantageous location and especially where plenty of water was available.

In the meantime other difficulties arose which also tended to give impetus to the building of a new generating station. The average daily output in the existing plant increased from 35,000 kw-hr. in 1900 to practically 150,000 kw-hr. at the close of 1912. At the same time the maximum hourly load demand rose from 3000 kw in 1900 to 15,000 kw in 1912. This rapid rise in the output was due to various causes, namely, increased car mileage, track mileage, car sizes and car equipment. During 1902 the generating station output was 1.5 kw-hr. per car mile; in 1905 this had increased to 2.5 kw-hr. and in 1912 to approximately 3.9 kw-hr. per car mile.

Factors entering into the selection of the new generating site therefore totaled as follows: Ample condensing water supply, ready access to steam road trans-

portation and cheap real estate so as to permit open storage of coal to tide over high-water periods, coal strikes and transportation accidents. To obtain all these necessary requirements the site for the new plant was selected on the Ohio River, the only available source of constant water supply within many miles of Louisville.

At a point in the Ohio River opposite Louisville the federal government has built a removable dam to limit the low-water stage in the Louisville harbor. Rapids in the river opposite Louisville also made it necessary that some means of transporting boats around them during low river stages be provided. This difficulty was removed by the building of a flight of three government locks with a canal leading to serve these. These local conditions of the river determined the location of the new plant, and accordingly property was purchased above the locks where a definite minimum stage of the river could be obtained.

GENERAL ARRANGEMENT OF STATION

The new generating station site fronts 1358 ft. on the Kentucky & Indiana Terminal Railroad Company's right-of-way, which adjoins the Louisville & Portland

boiler house and one into the generating room under the crane. The space remaining between these four tracks furnished sufficient area to store two or three months' coal supply in the open. This open space has been graded so that all surface water drains off readily, and it is well above the high-water mark of the Ohio River. Approximately thirty cars of coal will be required every twenty-four hours for the completed station. In designing the track layout the engineers decided to provide for two days' supply of coal on cars at all times, with extra space for one day's empties. This required about 4000 ft. of track, which was sufficient to set ninety cars exclusive of the main switching track which paralleled the steam road's right-of-way.

The quantity of coal stored in the space provided between the switch tracks is limited only by the height to which the coal may be piled. Fuel purchased for storage purposes will be mine run or a combination of nut and slack coal, and the height to which it will be piled will be limited to approximately 15 ft. By providing a well-drained storage area and limiting the height of coal piles in open storage, it is believed that spontaneous fires will be reduced to a minimum.

The first section of the generating station includes a

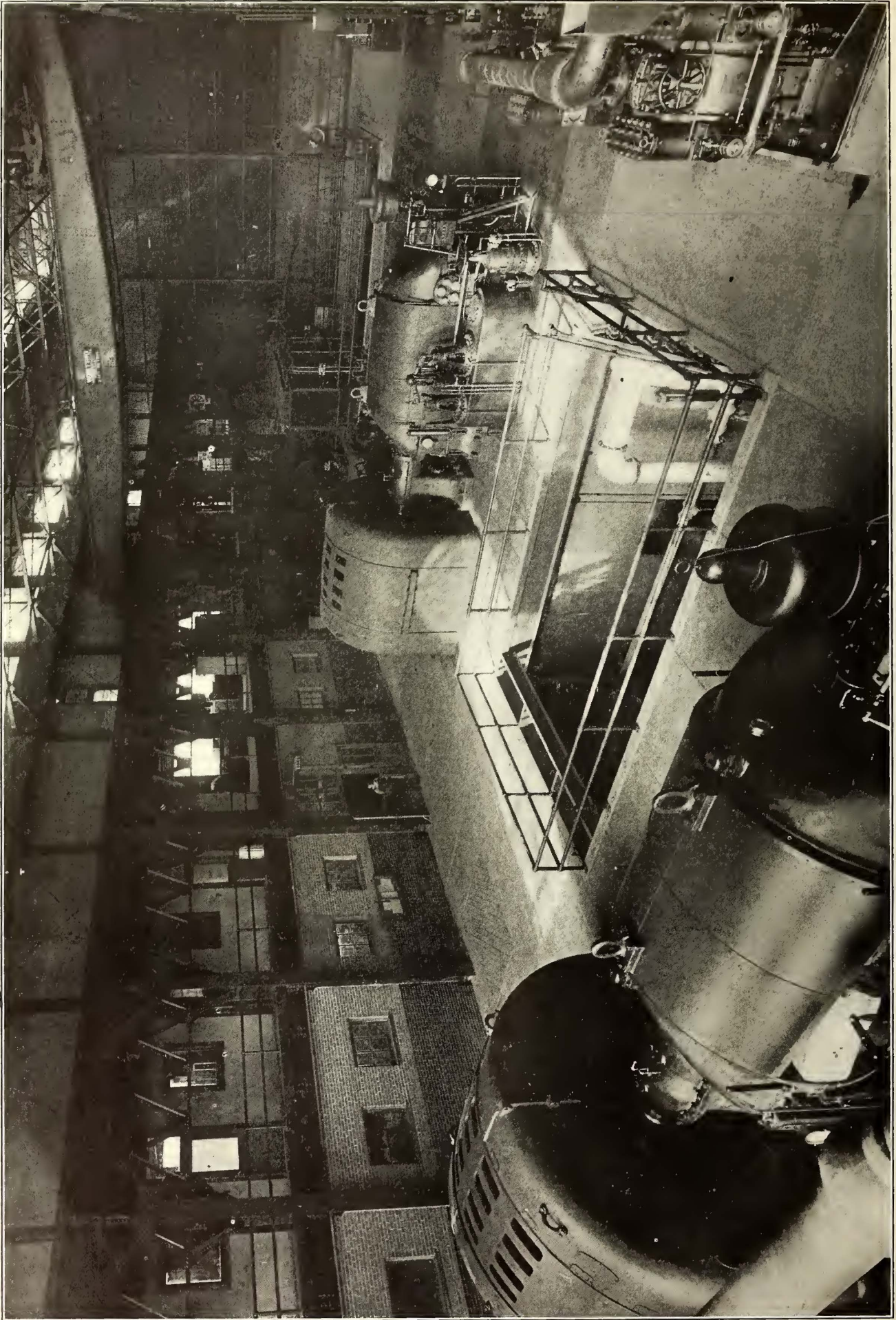


Louisville Railway—Industrial Railway for Handling Coal

canal. The transportation facilities offered at this location were especially desirable, because this railroad formed a part of a double-track belt line around one-half of the city and connected with and switched from all the steam roads entering Louisville. In addition to this, the general level of the property on which the plant was to be built, was approximately 5 ft. above the maximum high-water stage reached by the Ohio River. The precise location of the station building was so chosen that all openings into the building could be provided 5 ft. above the maximum high-water stage in the Ohio River. Another advantage of this particular site was that it was underlaid with bed-rock at a depth of about 36 ft.

Two switches, one at each end of the plant property, were taken off the main track of the steam road, and these connect to a long side track paralleling the steam road's right-of-way. A lead from one end of this side track in turn branches into five tracks, two of which lead over the coal hopper beside the boiler house, one into the

boiler room, 100 ft. x 180 ft., built with the long axis at right angles to the turbine room, which is 80 ft. x 175 ft. This boiler room is large enough to house the initial equipment of eight 507-hp boilers with spare space for a duplicate battery under the same roof. The turbine room also was designed large enough not only to house the initial installation of two 6000-kw steam turbines, but foundations for one additional unit and space for a fourth were provided. These two buildings were constructed of plain and reinforced concrete, brick and steel, and so designed and incased as to produce a thoroughly fireproof structure resting on concrete caissons taken down to rock or on concrete mats resting on Ransome concrete piling driven to bed-rock or to a refusal. One end of the turbine room and one side of the boiler room are inclosed with corrugated iron so that the ultimate capacity of the station may be had at the least possible cost. In designing the building the engineers made ample provision for natural illumination and ventilation in the turbine and boiler rooms by pro-



Louisville Railway—Interior of Recently Completed Power Plant

viding large window glass areas with Fenestra steel sash. In addition to these a double-monitor skylight surmounts the firing aisle of the boiler room and the long axis of the turbine room, and the space between windows in the monitor is inclosed with corrugated asbestos siding.

BOILER EQUIPMENT AND STACK

For the initial installation of eight 507-hp Babcock & Wilcox boilers, a 13-ft. x 255-ft. dark-red radial brick stack has been erected by the H. R. Heinicke Company on a concrete foundation resting on bed-rock. The size of this stack is sufficient to provide a square foot of area for each 36.25 hp, and it was designed to serve only the eight boilers, being installed with two batteries on each side. Foundations for a second stack, as well as that for the other row of boilers on the opposite side of the boiler room, have been provided at this time. The present boiler equipment was designed to generate

COAL AND ASH-HANDLING EQUIPMENT

As mentioned earlier in the article, coal is received from the steam railroad connection by way of the two tracks which lead over these concrete coal unloading hoppers at one end of the boiler room. From these receiving track hoppers, 2-ton hand push cars are used to convey the coal to the structural-steel bunkers over the boiler room by way of duplicate electric elevators. An industrial railway leads from the elevator shaft over the battery of bunkers so that these cars may be pushed by hand and dumped at any point desired. This plan was adopted as the most economic one. A view of this industrial railway is shown in one of the illustrations. The two platform elevators are 10 ft. x 10 ft. in size and of 6000-lb. capacity. They were designed to operate at 100 ft. per minute, one being driven by a 550-volt d.c. motor and the other by a 440-volt, three-phase a.c. motor, and both motors are of 30 hp.



Louisville Railway—View in Electrical Operating Gallery

steam at 200-lb. pressure and 125 deg. superheat. Each boiler is equipped with Babcock & Wilcox chain-grate stokers with a grate 9 ft. 6 in. wide by 12 ft. 3 in. long. It was calculated that this size of grate would produce most economical results with the Kentucky pea and slack coal which will be used at this station.

Since operation was begun in this plant, tests have been made to ascertain the draft at the base of the stack and over the grates. The relative location of the stack and the grates provides 253 ft. of stack height above the grate level. With six of the boilers in service, the draft at the base of the stack averaged approximately 1.2 in. of water. Similar tests made over the front of the grates with the main breeching and the boiler dampers open showed 0.45 in. of water, while the draft at the last boiler pass showed 1 in. of water. A preliminary test of boiler and station efficiency during the second month's operation, before the steam pipe work was completely covered, and while some steam was being used for drying out and test purposes, gave a coal consumption per kilowatt-hour of 2.975 lb. with 12.5 per cent ash. The coal used was Western Kentucky pea and slack, testing approximately 12,000 b.t.u., dry.

Each battery of two boilers is equipped with a coal bin holding 225 tons, which represents four and one-half days' fuel supply for ordinary operation. This large coal-bin capacity was deemed necessary as a precaution against shortage during extreme high-water periods when the tracks of the steam railroad would be inundated. These tracks are 6 ft. lower than the generating plant property, consequently high water would cut the plant off from its source of coal supply other than coal from yard storage.

The ashes drop from the chain grates into two steel ash hoppers lined with firebrick and are dumped into push cars on an industrial railway which passes underneath. One of these hoppers serves to catch siftings from the grates, and these siftings are dumped into the cars and returned to the coal bunkers. The cars loaded with ashes are elevated to a steel ash hopper lined with firebrick and installed over the coal-unloading hoppers. By this arrangement after the coal has been unloaded into the track hoppers the cars may again be loaded with ashes from the hoppers overhead. It is estimated that by means of this industrial railway the cost of handling coal and ash at the new station will show a saving of

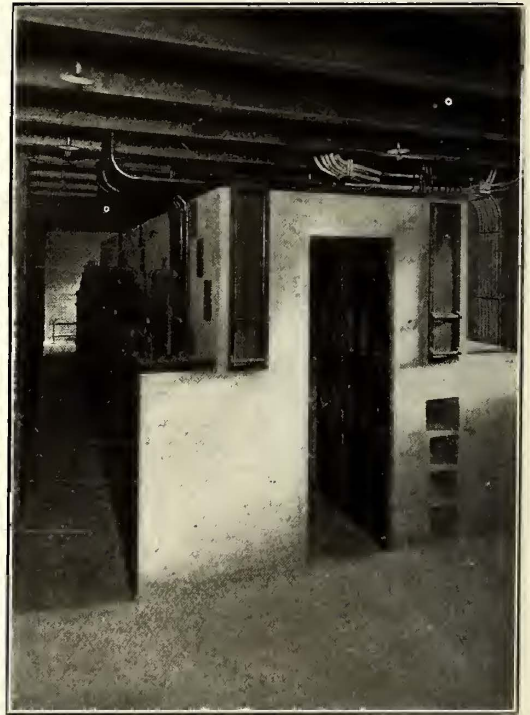
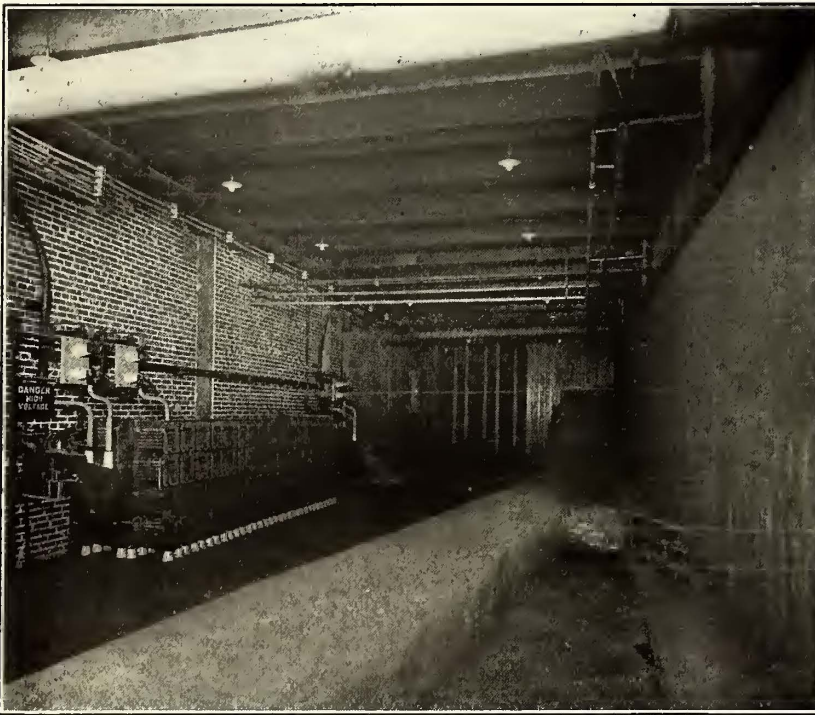
approximately 20 per cent as compared with the continuous bucket conveyor system.

FEED WATER AND STEAM PIPING

Under normal conditions boiler-feed water will be taken from two 5000-hp Cochrane feed-water heaters placed on the boiler room floor. These heaters are supplied with water from the hot-well condenser pumps with enough make-up water from an overhead tank, which is supplied by the house service pumps. The station is so arranged that the boiler room firing floor is 12 ft. above the turbine floor, and the latter projects 15 ft. underneath the boiler room. In this 15-ft. space the station auxiliaries, such as dry-vacuum pumps, air compressor and boiler-feed pumps, are installed. This allows the boiler-feed pumps to be placed directly beneath the feed-water heater and gives a head for the boiler-feed pumps of 12 ft. plus some 3 ft., the feed-water heater being supported 3 ft. above the floor. The

An elevation gage has been installed over the engineer's desk in the turbine room. It is graduated in feet to indicate the height of the water in the tank so that the engineer may be advised at all times as to its condition. This tank is used to provide a uniform head, against which the service pumps operate, and water from it is also used for make-up water in the feed-water heaters, for water-cooled glands in the main turbines, centrifugal pumps and exciters, and for wetting down ashes and coal, as well as for general washing purposes about the plant. Water from the city mains is used only for drinking and toilet purposes, and eventually filters may be installed so that it will not be necessary to purchase any water from the city.

Essentially, the steam-pipe layout includes one steam header installed over the front of the boilers and at right angles to the turbine room. This header varies in size from 12 in. to 16 in. and is connected to a cross-header in the boiler room running parallel to the tur-



Louisville Railway—Views of High-Tension Switch Compartments and of Conduit Basement

two boiler-feed pumps are Jeansville 4-in., four-stage, driven by General Electric steam turbines.

A 20-in. x 12-in. x 15-in. duplex Worthington reciprocating pump has been installed in the pump pit between what will be No. 3 and No. 4 units. This pump is so piped that it may be used for boiler-feed service or house service, or for 300-lb. fire service, the suction of this pump dipping into the two concrete water intakes. All pump suctions are piped so that they may take water directly from the city mains in case it becomes necessary.

A general utility water-supply steel tank manufactured by the Henry Vogt Machine Company, of Louisville, of 35,000-gal. capacity, has been installed on top of the elevator shafts over one end of the boiler room. This tank's overflow is 119 ft. above the turbine room floor, and it is supplied with water from one of two steam reciprocating house pumps which take their water from one of the two main 7-ft. x 8-ft. water intakes. A float valve in the tank closes the inlet when the water rises to within 6 in. of the tank overflow, thereby producing pressure on the service pump discharge which automatically stops the pump.

bine room. Out of this cross-header steam is taken to the turbines by way of 12-in. long-radius bends, and two 10-in. long-radius bends take the steam to an auxiliary header in the basement of the turbine room, which in turn feeds all station auxiliaries. When the second row of boilers is installed a ring system of steam piping is contemplated which will encircle the boiler room. In fact, valves already have been installed on each bend and between each battery of boilers, so when the ring system is complete any battery or any steam bend may be cut out of service for repairs without disturbing any other steam unit.

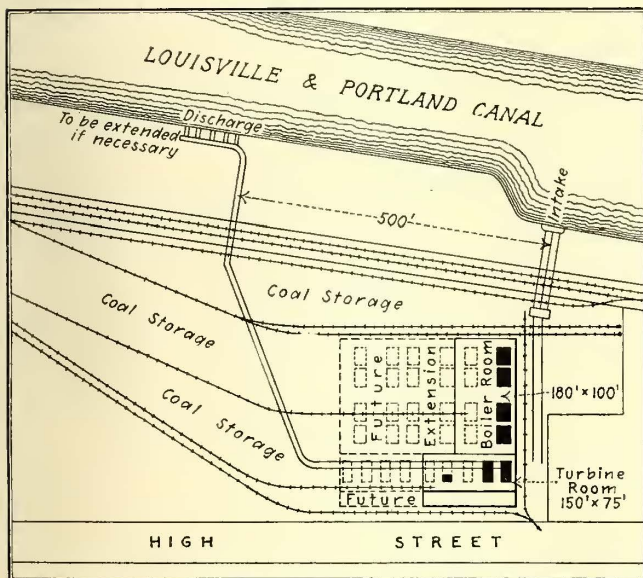
All headers and valves are of cast steel, the headers being furnished by the Crane company and the valves with solid monel-metal seats and stems by the Chapman company. All bands are of extra-heavy steel with Crane lap joints and steel flanges. The connection to each boiler is equipped with a Lunkenheimer automatic cut-off valve.

CIRCULATING WATER SUPPLY

Probably one of the most interesting pieces of construction in connection with this railway generating

station was that necessary to provide circulating water. This is taken from the canal through eight 4-ft. 8-in. x 8-ft. openings, the bottoms of which are approximately 50 ft. below the generator room floor or 12 ft. below normal water level in the canal. The top of these intake openings is approximately 4 ft. below normal water level, which, it is hoped, will eliminate a certain amount of floating trash from clogging the intake screens. Just inside the intake openings in the canal walls there are four cast-iron racks set at 20 deg. to the vertical and composed of 4-in. x 1½-in. bars with 2-in. openings between them for screening off logs and large trash. Manholes are provided over each of these racks in the intake structure so that any trash collected may be hauled out with a long-handled fork.

A duplicate set of screens is installed in a screen house on the railway company's property, approximately 90 ft. from the intake. Two 10-ft. x 10-ft. concrete conduits which connect the canal intakes and the screen house lead under the steam railroad's right-of-way. At the screen house, which is 18 ft. 6 in. x 30 ft. 4 in. in plan, the intakes flare to provide supports for stop planks and a double row of movable vertical screens. The latter have been installed with four



Louisville Railway—General Plan of Completed Plant and Part of Grounds

double screens in each of the four channels. In each channel the screen nearest the intake is of 7/8-in.-mesh No. 8 copper wire and the second screen is 1/2-in.-mesh No. 10 copper wire. Each screen is set in a substantial angle-iron frame 7 ft. ¼ in. wide x 14 ft. 9 in. high, and these frames have slight angle projections which slide in cast-iron vertical slots set in the concrete. A Whiting electric crane installed on runways has been provided in the screen house to facilitate raising and lowering these screens and the stop boards.

Twin concrete intake conduits, 7 ft. wide x 8 ft. high, lead from the screen house under circulating pumps in the turbine room. These waterways are protected by Chapman sluiceways operated from the screen-house floor. These intake conduits slope from the canal to the turbine room on a 0.22 per cent descending grade, and all the pumping equipment was so designed and installed that water may be taken from either or both intakes. In order to facilitate cleaning, manholes with tops at the property grade have been installed every 100 ft. The complete intake and discharge system has been designed for the future extensions to the station. Construction work on these in-

take conduits was very difficult, it being necessary to quarry them out of rock their entire length. At one point near where the intakes enter one end of the turbine room the narrow space between the property line and the station building made it necessary to tunnel it through rock for a distance of 135 ft.

Circulating water discharges into the canal approximately 500 ft. below the intakes, and by way of a 9-ft. x 9-ft. reinforced concrete horseshoe-shaped conduit. It was built in an open trench on the top of the rock formation and was designed for the future completed station building, one-half of which has been erected. The flow line of the discharge conduit is 1 ft. above the normal river stage at the turbine building and descends on a 0.22 per cent grade toward the canal. Discharge pits have been built into the discharge tunnel below the flow line to seal the condenser discharge, and the water discharge entrance into the conduit is by means of flanged castings set in the concrete walls. Manholes inside the building at each discharge pit and outside the building at 100-ft. intervals permit the conduit to be inspected readily.

The discharge conduit crosses the steam railroad right-of-way at right angles, then turns parallel to the tracks and canal with eight openings from the main discharge through the canal wall in a distance of 112 ft. 6 in. The tops of these discharge openings into the canal are approximately 5 ft. below normal water stage. The take-off ducts dip sharply from the main conduit to the canal outlet. The extreme end of the main discharge conduit is temporarily closed so that future extensions parallel to the canal, affording additional openings into the canal, may be provided when necessary, or in case it is desired to discharge the circulating water farther downstream from the intake.

The size of the openings both for intake and discharge were figured for a flow of 160,000 gal. per minute, or 20,000 gal. per minute for each of the eight units in the initial station installation. At this rate of flow the openings are sufficiently large to produce a discharge speed of only 1.19 ft. per second, which reduction was necessary in order not to interfere with small boats passing in the canal.

Two 30-in. cast-iron pipes are laid over the outside walls of each intake conduit. These pipes are continuous from taps in the discharge-water conduit to the inlet at the canal end of the intake, and they were provided to protect the intakes from clogging with needle ice. To accomplish this, valves were installed in these cast-iron connections to the discharge system which may be opened and hot water discharged into the canal, at the mouth of the intakes. This method of providing protection against the effect of low temperatures in the circulating water supply is quite novel, and as the hot water is taken from the discharge conduit the only expense attached to the installation and its operation is that of laying and maintaining the pipe line from the turbine room to the intake structure at the canal.

TURBINE ROOM ARRANGEMENT AND EQUIPMENT

The turbine room and basement for auxiliaries are 174 ft. long x 61 ft. 6½ in. wide, with four galleries on one side, 21 ft. 10½ in. in width. The turbine room is served by a 50-ton Whiting crane. In the present building the turbine room is 15 ft. longer than half of the future completed station and will accommodate four units, two of which have been installed. Each turbine foundation consists of two parallel walls resting on bed-rock and extending to within 18 in. of the main turbine floor level. These walls are so placed and spaced that the surface condenser may be dropped in place under each turbine by the overhead crane. The turbine proper rests on an I-beam grillage, supported

in turn on the two concrete foundation walls. Special attention was given to the design and installation of these turbine concrete foundations in view of the fact that their bases are below water level in the river.

A novel feature in connection with the circulating pump equipment is that it was installed 45 ft. below maximum high water and only 1 ft. above the low-water stage in the Ohio River. This made it necessary to seal all pipe into the concrete conduit to prevent flooding during high-water, when all the waterways inside the building are under pressure and all the pumps operate under a head.

The 6000-kw horizontal Westinghouse turbo-generators are equipped with 20,000-sq. ft. Worthington surface condensers. The dry vacuum pumps were manufactured by the Laidlaw-Dunn-Gordon Company. Circulating water is supplied to each condenser by a Worthington 26-in. tri-rotar centrifugal pump, driven by a G. E. steam turbine, and with an emergency 30-in. pipe connection to the circulating pump of the other turbine. The units are set in pairs with condensing auxiliaries in a pit between the two foundations. Thus the first two units will be spaced 45 ft. apart and the second and third units will be 30 ft. apart. In this way one operator can take care of the auxiliaries of two units. This arrangement also permits them to be cross-connected more readily and economically. The dry vacuum pumps, the main circulating pumps and the hot-well pumps are so connected and arranged that either generating unit may be used with either of the auxiliaries. A 4-in. two-stage Worthington hot-well pump driven by a 27-hp Terry steam turbine completes the auxiliary steam turbine equipment.

The electrical output of the generator is 13,200-volt, three-phase, twenty-five-cycle current, and all switching and transmission is without transformation. Generator excitation, regulated by a Tirrill regulator, is furnished at 100/125 volts for the main generators, and is supplied by a 30-kw motor-driven generator installed in conjunction with two Westinghouse steam turbine-driven generators, one 100-kw and one 150-kw. These exciter generators also supply energy to the house-lighting circuits and provision is made also for a supply of alternating current to the lighting circuits from a 20-kw, 440/110-volt transformer. As an extra precaution against failure of lighting service other lighting circuits are arranged so that in case of an emergency the 600-volt series lighting connected to the trolley circuits may be used to furnish temporary light.

The first 2000-kw rotary converter has been installed on one of the foundations provided for it beside the auxiliary pit and feeds the trolley sections in the vicinity of the new generating station. This substation equipment is tied in with the two city substations by way of a 600-volt direct-current trunk line. This installation required three 750-kw single-phase oil-cooled, step-down transformers rated at 13,200/440 volts.

Oil for turbine lubrication is furnished from oil filters installed in the basement. From these duplicate Marsh pumps force the filtered oil to a tank installed on the industrial railway platform over the coal bunkers in the boiler room. At this elevation oil may be supplied to all parts of the turbine without pumping, should a breakdown occur in the oil-pressure system supplied by pumps. Oil for the auxiliaries, such as the dry vacuum pumps, boiler-feed pumps, etc., is provided by an individual tank system connected to each unit. Oil for these is stored and filtered in a manner similar to that used in the turbine oiling system.

GALLERY ARRANGEMENT

A four-level gallery adjoins one side of the turbine room. On the lowest gallery, which is below the tur-

bine room floor, the conduit carrying the underground transmission cables is brought in from the street. From the conduit the cables radiate through the necessary cable-end bells, supported from a central concrete wall which also supports the transformer compartments. A view of one end of this lower gallery is shown in one of the illustrations. It extends the full length of the turbine room and is completely separated from the basement under the turbine room floor by a 13-in. brick curtain wall. All openings between this gallery and the turbine room are fitted with doors so that it may be entirely closed and used as an air chamber to supply air to the turbines. An air intake is provided outside of the station at one end of this lower gallery, and air is taken into this chamber by way of louvered openings. After the air passes through the intake into this lower gallery it is screened through $\frac{1}{4}$ -in.-mesh copper screens covered with cheesecloth and set at 30 deg. to the direction of the air current. Galvanized-iron air ducts lead from this lower gallery under the generator end of each turbine.

A machine shop is located on the main floor gallery along with the tool and store rooms and the oil switches controlling the high-tension generator and feeder circuits. The latter are 13,200-volt, three-phase circuits and are installed in a concrete switch and bus structure built in two parallel sections. At the present time these two sections are divided at their mid-point, so that there are four sections of the high-tension bus with an oil switch connecting each end and one in the center of each main section. The bus and feeder arrangement is such that each section of the bus connects one generator and four feeder switches, each generator having two oil switches in series and each feeder a single oil switch. Disconnecting switches are provided in each phase and on both sides of each oil switch in the usual manner so any one may be cut out of service for repairs or cleaning.

The complete high-tension bus structure was built for four generating units and sixteen feeders. The bus was installed for this complete station, but the total number of feeder oil switches were not installed at this time. Until such time as a fifth unit may be necessary a temporary jumper was installed at one end of the high-tension structure. All generator switches are non-automatic and the feeder oil switches and junction bus section switches are automatic and provided with inverse time-limit relays.

Offices, drafting room and laboratory, switchboards and the main desk control board were installed on the first gallery above the turbine room floor. The panels for the control desk and exciters as well as outgoing a.c. and d.c. feeders and the turbine desk control board were placed at one end of this gallery; that is to say, they will be at the center of the turbine room building when it has been enlarged to conform to proposed future extensions. A balcony extends into the turbine room beyond the gallery line just in front of the control board, so that an operator, by stepping on it, may have a clear view of the turbine room floor below. This arrangement obviates the disadvantage that is caused by having the switchboard operator too remote from the turbine room.

The electrical and mechanical features of this new generating station were designed by the motive power department of the Louisville Railway under the direction of F. H. Miller, superintendent of motive power. D. X. Murphy & Brother, of Louisville, were employed as architects, and the Henry Bickel Company, of Louisville, contracted for all excavation, underground waterways and concrete foundations. The electrical and mechanical equipment was purchased under contract for its installation.

Pending Anti-Trust Legislation*

The Author Considers the Five Bills to Regulate Interstate Trade Now Before Congress and Discusses Their Effect on Trade Conditions

BY GUY E. TRIPP, CHAIRMAN BOARD OF DIRECTORS WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY

I am very glad to have this opportunity of expressing my views upon the business questions now before Congress, and, while they are the views of one who has given his entire life to business, I hope that I still retain the ability to see also the human and social side of these questions, for I have an uneasy feeling that the neglect of this side explains many of the difficulties we have in understanding the temper of the people.

Whether it is economically sound or not, the public has the belief that practically all business should be roughly divided into two classes, the one comprising the natural monopolies of public necessities—in other words, public utilities—the other comprising the naturally competitive private business undertakings. Personally, I find no fault with such a division, but manifestly these two distinct classes require different legislative treatments. That public utilities should be regulated and not have the free hand that naturally competitive business requires is sound doctrine, but only when such regulation carries with it an obligation to protect such utilities against the menaces which confront competitive business. If we restrict opportunities we must reduce the risks.

Almost nothing has remained unthought of in the way of regulation and restriction, and the cheerfulness with which regulatory burdens have been heaped upon our public utilities is discouraging, when it is remembered that hardly a single voluntary act for protection has been heard of.

Public utilities should be protected against competition, inadequate rates, demands for excessive service, unreasonable and unjust damage claims, federal regulations superimposed upon state regulations and, most important of all, against oppressive demands of labor. Under present conditions the mere threat of a labor strike on a railroad is sufficient almost automatically to produce an increase in wages or cause railway managers to relinquish their right to enforce discipline in the interest of the safety of the public and economy of operation, as instanced by the recent strike on the Delaware & Hudson Railway. The best evidence that our legislators have abandoned their campaign of punishment and have become sincerely desirous of doing the fair thing by our public utilities will be shown when someone has the courage to introduce a bill intended effectually to prohibit strikes and lockouts on railroads.

The various railroad securities bills which have been proposed almost wholly ignore the investigations of the Hadley securities commission, which recommended first of all that publicity be required and pointed out objections to any further regulation of securities until publicity had shown what might be needed. However, we already have state supervision of railroad securities quite generally, and I believe that federal supervision would be found an improvement, provided it supersedes that of the states. I have not heard it suggested, however, that the states' right in this respect could or would be taken from them; therefore superimposed regulation may be imminent, and such a condition is justly to be feared by the railroads.

BASIS OF COMPETITIVE BUSINESS

While, therefore, railroads and other public utilities need special legislation for both regulation and protection, a naturally competitive business (like that in which I am engaged) stands on an entirely different basis, and if competitive conditions are maintained for it, as I believe they should be, neither regulation nor protection of the character just mentioned has any place in its dealings with the government.

If one cannot manufacture his goods and sell them as cheaply as his competitor can he must eventually fail and, if his employees force him to the issue, he can shut up his shop, and both he and his employees will be out of income for a longer or shorter period, but the general public welfare is not vitally affected.

A great deal of the proposed legislation at Washington is directed toward creating or maintaining conditions which, in the mind of the legislators, will tend to insure competition among this class of industries which, as I have said, are to be distinguished from public utilities. In so far as these measures will be effective in the direction of securing sane competition, I believe they are wise.

Monopoly is not in itself objectionable; in fact, it is often the most effective way of dealing with industrial affairs. In Germany it is fostered and protected by the government to a large extent, with the result that the commercial supremacy of that country in the markets of the world has been established within a comparatively few years of the most rapid business growth perhaps that has ever been seen.

But I believe that our political institutions and the temper of our people are not adapted to monopolistic methods that are in restraint of trade, and that fair competition in business will make a more contented public, a more secure government, and in the end give greater protection to property. Therefore I am in favor of all fair and reasonable legislation sustaining that theory.

Fair or sane competition is hard to define. To my mind free competition is not sane competition. The biggest business in the country was founded almost entirely upon the principle of free competition, namely, that of making prices what and when you will and taking all the business from your competitor that you can. If this business is a monopoly, it grew to be so without the aid of interlocking directorates or the alleged money trust; it became a monopoly simply by the practices of free competition.

Therefore, now considering the various business measures now pending, particular attention should be given to the question, Will they or will they not assist in securing sane competition, not free competition?

The five bills now proposed are an interstate trade commission bill, an interlocking directorates bill, a Sherman law definition bill, a trade relations bill and an anti-holding company bill. It is not my purpose to attempt a detailed discussion of these measures, for in the details lie endless differences of opinion, many real and imaginary dangers and much sincere and insincere befogging of the issues. I believe that the safest viewpoints for the busy citizen are:

*An address made before the Chamber of Commerce of the United States, Washington, D. C., on Feb. 12, 1914.

First, are they based upon the right principles?

Second, is it probable that acts can be framed which will sustain these principles without doing more harm than good?

TRADE COMMISSION BILL

A trade commission seems to me to be needed in a well-rounded plan of business legislation. No other agency can so well collect information, conduct investigations and determine facts for the guidance of the legislature and courts, and that in the last analysis is all the power that the bill gives it.

No great harm can come from elaborate powers given the commission to allow it to get papers and documents except expense and bother to the corporations. It would be a physical impossibility for it to exercise its full powers in this direction, hence it is futile to make statistics as to how many freight trains it would take to convey the papers to Washington.

I object to the provision that the commission may from time to time make public such information in such form and to such extent as it may deem necessary. There is danger of telling our competitors too much and giving half truths to the public. It is unnecessarily harsh publicity, and I hope the bill will finally be toned down in this respect.

THE INTERLOCKING DIRECTORATES BILL

This bill attempts in four short sections to say who shall not be directors in corporations, to the end that competitive conditions shall be created and preserved. In my opinion, as at present drawn, it will wholly fail in its object and will foster the very thing that it aims to prevent.

It will tend to create dummy boards and enable responsible men to exercise as much control as ever without the restraining influence of personal responsibility. It will tend to create one-man power corporations, and thus render more unstable the investments of the public. It is based on a mistaken or exaggerated notion of the Machiavellian activity of the interlocking director.

I have been in business all my life, and I have no hesitation in saying that those terrible charts of control through interlocking directors are worse than worthless. As an instance, enough misinformation has been gleaned from them to bring out the statement that the General Electric Company and the Westinghouse Electric & Manufacturing Company are only alleged competitors. I say that is untrue.

If the whole interlocking directorate bill should be wiped out except the last section, and that should simply provide that the fact of a common director shall be *prima facie* evidence instead of conclusive that no competition exists between two corporations, it would probably be ample to cover the situation. In its present condition the bill is likely to do much more harm than good.

THE SHERMAN LAW DEFINITION BILL

This bill defines certain acts as restraints of trade which now are interpreted by the courts one way or the other as they are more or less small and insignificant.

It is said by the lawyers that under this bill as now drafted no concern could enter into an agreement with any labor union. If this is so, I imagine it will be promptly changed. It is also said that the bill imposes upon every concern, no matter how small, weak or insignificant, the same prohibitions which the Sherman act as now interpreted provides shall be applicable only to concerns so large as to threaten competition.

This is a bill for a lawyer to interpret, but if it defines with precision what a corporation officer may or may not do to escape criminal prosecution it will be an

improvement upon the present uncertainty. However, a careful reading of its very short and concise paragraphs leaves one with a feeling that the definitions are fully as vague as the Sherman act itself, and, instead of improving, it further complicates a situation which had begun to be clarified.

TRADE RELATIONS BILL

This bill makes it a violation of the Sherman act to discriminate in price for the purpose of injuring a competitor or to fix a price upon the understanding that the purchaser shall not deal in the goods of a competitor, and it prohibits mines from refusing to sell to responsible people who apply to purchase. The prohibition against discrimination in prices is intended to create sane instead of free competition, and I think may prove to be a good provision. As to prohibiting the fixing of prices upon the understanding that the purchaser shall not deal in the goods of a competitor, I do not view that as revolutionary, although it might cause inconvenience to some to adjust themselves to it. On the whole I think it is fair. The provision concerning mining companies is aimed to do away with price fixing, but I am not sufficiently familiar with that business to say how it would work.

It seems to me that there should be included in this bill a provision such as that recommended in the report of the committee on interstate commerce, from which I quote: "There ought to be a way in which men in such a venture could submit their plan to the government and inquiry made as to the legality of such a transaction; and, if the government was of the opinion that competitive conditions would not be substantially impaired, there should be an approval, and in so far as the lawfulness of the exact thing proposed is concerned there should be a decision, and, if favorable to the proposal, there should be an end to that particular controversy for all time."

Section 13 of this bill, which permits any person to sue out an injunction against threatened loss or damage, might subject a large company to a multitude of strike suits. It should certainly be amended.

ANTI-HOLDING COMPANY BILL

I have never seen a draft of this bill, and I believe none has been printed, so a consideration of it is somewhat premature, but I consider it fraught with more danger than any other of the business bills proposed.

It will be impossible to prohibit all holding companies without financial disaster, and just how the good can be separated from the bad in an act of Congress I cannot imagine. Public utility holding companies, for example, are sound in principle, even though some are not so in practice. Practically all large corporations are holding companies to some extent, and in many cases they are compelled to be so by the operation of state laws. This bill deserves the most careful analysis.

Such a brief summary of these bills is entirely inadequate for any other purpose than to point out the extent to which the federal government proposes to regulate the business affairs of the country, and I have some fear that the impression which will be conveyed by the views which I have expressed will be one of doubt as to whether I am a reactionary or a progressive. I believe no good results can be obtained through wholesale condemnation, and I do not fear the principles which I have outlined, but I do fear the unknown dangers of untried legislation, and should have preferred to see such vital changes tried one at a time; but, if that cannot be, I hope the government will finally resolve all doubtfully dangerous provisions on the side of our intimidated and apprehensive business interests.

Operating Features of Norumbega Park

This Article Gives Operating Statistics Regarding a Popular Park Situated 10 Miles from the Center of Boston—Particulars Are Given of the Cost of Installation and Earnings of Some of the Principal Attractions, Which Include a Theatre and a "Zoo"

Norumbega Park, at Auburndale, Mass., on the lines of the Middlesex & Boston Street Railway Company, has been in operation since 1897. Although its area is but 12 acres, it has become one of the most noted street railway pleasure resorts in the East. The park is but 10 miles from the center of Boston and has been conservatively managed from its opening. It represents the intensified development of a property worth about \$250,000 and appeals to a class of patronage much superior to that visiting the usual beach resort. The location of the park on the east bank of the Charles River and on Commonwealth Avenue, the finest automobile thoroughfare in Greater Boston; its easy access by through cars from Boston and the Newtons; its discriminating amusement features, and its administration with special reference to refined tastes, have yearly attracted the most desirable class of visitors. No special days are set apart for social organizations. In the seventeen seasons of its service to the entertainment-seeking public about 6,000,000 persons have entered its gates, and the patronage has increased from 287,000 in the opening year to a recent maximum of 413,000. The Sunday patronage averages about twice that on weekdays. The park is operated by the Norumbega Park Company.

The park occupies a hilly tract bordering what is perhaps the most famous canoeing water course in the country, and although the resort is an inland one and about an hour's ride from the sea, its popularity appears little affected by the attractions of Boston's shore resorts. The class of recreation which is available at Norumbega has always drawn adherents from the Greater Boston district, which has a population of about 1,500,000 and a large appreciation of the pleasures of the open-air theater, the "zoo" and the river. The more boisterous amusements of the beach resorts on the Boston North and South Shores have not been found necessary here, and the reputation of Norumbega Park rests upon its satisfaction of more esthetic demands for entertainment than are associated with resorts catering to rough-and-tumble pleasures. The insistence of the management upon the maintenance of an atmosphere at all times congenial to women and children, the high quality of vaudeville presented, the varied attractions of the grounds and the quiet satisfaction afforded by the concessions permitted have all been factors in the financial success of the property. The park is a thoroughly profitable enterprise, and its management is enthusiastic as to the field of such undertakings when carried on by experienced men.

CAR SERVICE

It is noteworthy that the park draws a very large patronage from points on the system of the Boston Elevated Railway Company, although a visit to the property under such conditions costs 25 cents for the round trip, including the park admission. By the terms of its charter the Boston Elevated Railway Company has the right to collect a 5-cent fare from every passenger traveling upon its lines in the same general direction. The regular admission to the park is 10 cents per person, only children in arms being admitted free, but on the Middlesex & Boston system a 15-cent round trip

rate is in force which includes admission to Norumbega. The net admission of 5 cents in conjunction with a round-trip ticket on either system affords a desirable revenue to the park, while at the same time it encourages patronage throughout practically the entire Boston metropolitan district. The Boston Elevated system ends at Lake Street, Chestnut Hill, about 6 miles from the Park Street subway station, and at Newton Corner, 7 miles west of the city. Norumbega Park is about 4 miles west of Lake Street and about 3.5 miles from Newton Corner. Through cars are operated at all sea-

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NORUMBEGA
PARK & ZOOLOGICAL
GARDEN
 FAMOUS STEEL OPEN AIR THEATRE

GRANDEST
 OF ITS KIND
 IN THE WORLD

HIGH CLASS VAUDEVILLE AND MUSICAL COMEDY
 AFTERNOONS 3.30
 EVENINGS 8.05

FINE
 RESTAURANT
 CANOEING
 THE FAMOUS SPORT

BEAUTIFUL POWER LAUNCH TRIPS
 A HOST OF OTHER ATTRACTIONS

CARS FROM ALL POINTS MARKED **NORUMBEGA PARK**

Norumbega Park—Colored Poster

sons of the year from Park Street, Boston, to Auburndale, via Lake Street, and at times when the traffic conditions require it through service is given between Newton Corner, Waltham and the Dudley Street station of the rapid transit lines of the Boston Elevated company and the Park. The Newton and Waltham through service is required every afternoon and evening during the park season, and the through service to and from Dudley Street is maintained during the same portion of the year. Last year about fifty parties, of from twelve to 125 each, came in special cars.

The Dudley Street service provides quick and convenient means of reaching the park from a large suburban area on the south side of Boston, including the South End of the city proper, Roxbury and a considerable portion of Dorchester and Forest Hills. The Boston through car service is maintained on a fifteen-

minute basis during the park season, double-headers being run when the traffic necessitates. The round-trip tickets including park admission are sold by conductors on the Middlesex & Boston cars, and crews are changed at the boundaries of each system. This arrangement enables the Boston Elevated Railway to handle its Norumbega Park traffic upon the same basis as its regular local business, and up to the present time no attempt has been made to introduce express service in connection with the handling of this through travel. The elimination of the former change at Lake Street, however, has unquestionably been a decided factor in stimulating travel.

HANDLING TRAFFIC IN THE PARK

The arrangements at the park for handling traffic are unusually effective and occupy but little space. All cars delivering passengers at the park are operated around a loop of about 90-ft. radius and are stopped under a covered platform outside the park proper but within a few feet of the ticket offices and entering turnstiles. The unloading platform is about 60 ft. long and is separated from the loading platform, which is a continuation of it, by a high fence. The loading platform is

of the loop is connected with the main-line trackage of the company in Commonwealth Avenue.

THE THEATER

The park is opened daily at 10 a. m. during the season, which begins about May 20 and closes in seventeen weeks, or about Sept. 20. The evening closing hour is 10:30 o'clock. In order to give the concessionaires in the park a reasonable time after each theatrical performance to attract patronage, the theater program is one hour forty-five minutes in length for each performance. The curtain rises at 3:30 p. m. and 8:05 p. m. each week day, and on Sundays no vaudeville performance is rendered, but in its place a concert is given. As forty minutes are left between the end of the evening entertainment and the close of the park, the peak load which would otherwise result on the car service is greatly cut down, and the departure of patrons is fairly regular.

The theater is the chief attraction of the property and is one of the finest open-air structures of its class in the world. It was built in 1910 at a cost of \$60,000 and seats 3500 persons. The auditorium is covered by an umbrella-type roof carried on steel trusses, without

a single interior column. The floor is of concrete and there are 700 free benches and 2800 folding seats, the latter being sold at 50, 25 and 10 cents according to location. When the park was opened a rustic theater was one of the first attractions, and in the opening season the patronage totaled \$2,164. The first covered theater was built in 1904, and the receipts of the theater that year were \$12,394. The covered theater was destroyed by fire in 1909 and a temporary theater was built in eight days to enable the season to be finished, the public being invited by advertisements on the Middlesex & Boston cars and in the daily press to visit the park and watch the rapid erection of the temporary structure. Since the completion of the present theater the receipts have risen to a maxi-

mum of \$23,523 in a single season, and the popularity of the performances is steadily growing. The theater is provided with a stage 37 ft. long and 35 ft. deep, and the property and dressing rooms are equipped with about sixty-five sprinkler heads installed by the General Fire Extinguisher Company, of Providence, R. I., and operated on the water-service system of the city of Newton, the pressure being 100 lb. per sq. in.

In 1913 out of 204 possible performances only four were omitted. The show consists of five or six acts, with a weekly change of program, comedy, singing, acrobatic work, monologues, playlets, moving pictures and other vaudeville being scheduled. Feature films are sometimes run for thirty minutes without a break, the cinematograph equipment being located in a fire-proof house mounted in the auditorium near the rear seats. A motor-driven baggage hoist is a feature of the stage equipment, a chute being provided at the rear to facilitate handling heavy trunk and boxes. In addition to the sprinklers, the theater is protected against fire by hand extinguishers and four hose streams are available from hydrants within 50 ft. of the auditorium. About \$13,000 a year is expended for stage attractions at present. These are furnished through the office of



Norumbega Park—East Court

about 75 ft. long, and both platform sections are about 20 ft. wide. After unloading, the car proceeds to the loading platform, or, if it is scheduled for a lay-off, it is run past the latter and operated into a storage carhouse holding sixteen fourteen-bench cars, the carhouse being situated immediately beneath an attractive restaurant building which is the central feature of the park entrance.

Four spur tracks are run into the storage carhouse from the single-loop track which serves the park entrance, and the building contains a lobby and lavatory for the use of car-service employees. The storage of cars within a few feet of the gates enables fluctuations in traffic occasioned by departing visitors to be promptly handled and eliminates dead mileage. Additional car storage is available, with repair facilities, at the Auburndale shops of the Middlesex & Boston company, situated about an eighth of a mile from the park. The office of the park manager is at one side of the unloading platform, and access to the restaurant may be had either from the platform or from the interior of the park by a bridge spanning the loop track. The office of the division superintendent is in a cottage structure adjacent to the storage carhouse. Each end

J. W. Gorman, of Boston, Mass. In the winter the interior of the theater is protected by canvas walls.

THE ZOOLOGICAL GARDEN

A "zoo," representing an investment in animals of \$4,100, is managed by the Norumbega company and is one of the best features of the property. It is situated on the lower side of the grounds near the river and is free to all visitors. On Sundays it is immensely popular. It contains about 150 specimens, including two buffaloes, a lion, a lioness, two leopards, a puma, wolves, lynxes, two bears, a white jack-ass, monkeys, birds and other small animals. The buildings and "zoo" equipment cost an additional \$10,000, but the investment pays well. In one year about 12,000 lb. of meat is consumed, together with 10.5 tons of hay and vegetables in bulk. The bears are maintained in a large open-air inclosure with adjoining den and the exhibits are all kept at the park through the winter. Tropical animals and birds, the former including the lions, puma, leopards and monkeys, are housed in winter in circular quarters heated by a central stove. Pipes from the stove radiate to the various animal drinking water troughs to facilitate the supply of water at the proper temperature. In one winter the principal animals were taken to Cuba and exhibited at Havana, but they are preferably maintained at Norumbega.

OTHER ATTRACTIONS

The concessions include rifle range, box-ball alleys, restaurant, soda pavilion, photographic studio, boat and



Norumbega Park—Main Path to Theater

canoe house and two casinos. All of these are under the strict control of the company, being leased, as are all of the concessions, on a percentage basis. One of the best money-making features operated by the park management is a merry-go-round, 50 ft. in diameter, which holds sixty-five persons and runs at 8 r.p.m. It

contains fifty-two "animals" set three abreast and is gear-driven by a 10-hp, 600-volt direct-current motor supplied with energy from the railway feeders. The merry-go-round was rebuilt last year at a cost of \$11,000, of which \$8,500 represented new machinery. This equipment is one of the best in the country, well lighted and attractive, and its popularity as compared



Norumbega Park—River and Boathouses

with the former installation is evidenced by the fact that in 1913 the patronage was 179,473 persons compared with 96,000 in the preceding year. The usual length of ride is five minutes for the customary price of 5 cents. When the equipment is in service one ticket seller and two operators are on duty. Six tickets are sold for 25 cents. On holidays the length of ride is somewhat curtailed if the number of waiting patrons is large.

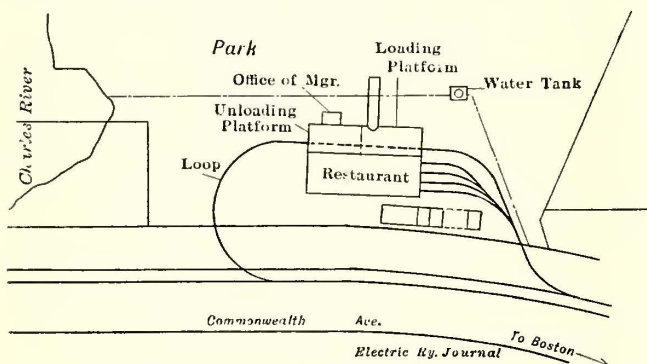
About 3000 canoes are kept in livery at the park boat-house and 300 other canoes, including a few boats, are maintained on a rental basis. On pleasant Sundays in the summer the portion of the Charles River lying within about 2 miles on each side of the park is thronged by thousands of canoeists. Two gasoline launches are maintained by the company and round trips down the river toward Waltham, costing 10 cents per passenger, are run frequently. The launches seat twenty-five persons each and the round trip occupies about twenty minutes, the speed being about 8 knots per hour. A great variety of souvenirs are sold by the company at the park, a stock of about \$2,000 value being carried in picture post cards, flags, canes, bric-à-brac and other material. Outside the park the company operates a garage where automobiles are checked at 25 cents each and gasoline and minor supplies are sold. Bicycle-checking facilities are maintained, but the patronage has fallen from 36,000 wheels per season in the first year of the park's service to 500 in 1913. The automobile garaging has increased tenfold, however, and last year 3830 machines were garaged at Norum-

begs. All occupants of automobiles pay the regular 10-cent admission fee if they desire to enter the park. Practically no carriages are checked to-day, although this business used to be a feature. No fireworks or balloon ascensions are given at the park, and the wooded character of the property and its limited area preclude aviation exploits. The entire park is inclosed by a heavy wire fence.

LIGHTING AND ADMINISTRATION

The electrical service of the park is supplied by the Edison Electric Illuminating Company of Boston, Mass. A total of 2192 incandescent lamps is in service, the sizes ranging from 4 cp to 32 cp. Edison alternating service is used in the operation of thirty-five 8-cp lamps in the theater orchestra pit and in supplying 16-cp lamps in the green room, moving-picture booth and ticket office of the theater, and direct current to one 6.6-amp flaming-arc lamp hung over the center of the stage and to ten 6.6-amp inclosed-arc lamps hung from the roof of the auditorium. Forty arc lamps are used about the grounds, besides incandescent lamps in various buildings and on paths. A general policy of replacing carbon-filament lamps by tungstens is now under way.

The summer staff of the park consists of about fifty employees, all of those coming in contact with the public being uniformed. There are five special police, two matrons, fourteen theater attendants, of whom eleven



Norumbega Park—General Lay-Out of Grounds

are ushers, six gardeners, two electricians, three merry-go-round attendants, four souvenir clerks, three ticket takers and eleven laborers and caretakers. All these report directly to the park manager, who is occupied with the property throughout the year. In the closed season one watchman and two "zoo" attendants are required. The other employees usually return to the park yearly after spending the closed season in other occupations. Repairs are made under the direction of the park manager and extensive jobs by contract.

The advertising campaign is begun three weeks before the park opens, posters being placed in cars, in elevated and subway stations, in waiting rooms and other public places, with some use of billboards. About two weeks before the opening date small advertisements are run in the Boston and suburban press, and larger advertisements are run during the following week. Throughout the season a ten-line advertisement is run in the Boston dailies and the suburban weeklies. Small folders outlining the attractions of the park are widely distributed, particularly through the Bay State Street Railway Company's Trolley Information Bureau at 309 Washington Street, Boston, and the Information Bureau of the New England Street Railway Club at 12 Pearl Street, Boston. All Norumbega Park cars are provided with triangular blue flags carried on the trolley pole and advertising the park by a "Follow the flag"

slogan, and full directions as to reaching the park are posted in the important transfer stations of the rapid transit lines of the Boston Elevated Railway. A striking electric sign emphasizing the route to the park is also operated at the Boylston Street subway station in Boston. Effective advertising is done at the park on a 10,000-gal. water tank used in the operation of sprinklers in the restaurant and park offices. This tank is mounted about 75 ft. above the ground near the entrance, and the top and railing of the tank are outlined by 150 8-cp incandescent lamps, forming a display which can be seen for several miles.

Plans for the coming season include the construction of a swimming pool for high diving, exhibition swimming, diving horses and other aquatic features. The pool will be formed in a reinforced concrete tank, 40 ft. long, 12 ft. wide and 12 ft. high near the river bank.

Careful accounts are kept in the manager's office of the expenses and receipts of the various features of the park. Entries are made daily of the readings of each turnstile entrance, there being four in service, of the total admissions between 10 a. m. and noon, between noon and 6 p. m., and in the evening. Against each day in the season are also listed the various kinds of tickets received, number of automobiles checked, merry-go-round patronage, weather conditions, classification of theater patronage, casino earnings, income from concessions, revenue from the sale of souvenirs, earnings of launches, payments for salaries, temperatures, rainfall, lost performance data, cost of stage attractions, advertising, music and other data. Last year the park expended about \$4,000 in advertising in the Boston dailies. The park is under the management of Carl Alberte, who has had direct charge of the property since its opening. George M. Cox is general manager, with headquarters at Newtonville, Mass.

AMERICAN ELECTRIC RAILWAY ASSOCIATION COMMITTEE ACTIVITIES

Chairman W. J. Harvie has called a meeting of the A. E. R. A. committee on the joint use of poles for Feb. 24 and 25. The meeting will be held at the headquarters of the American Electric Railway Association in New York. The very important matters discussed at the meeting held Jan. 28 will be considered further.

Chairman L. H. Palmer of the rules committee of the Transportation & Traffic Association has appointed a sub-committee to confer with a sub-committee of the joint committee on block signals for electric railways in regard to the recommendations of that committee regarding block-signal rules. The sub-committee comprises C. P. Wilson, general manager Indianapolis, Columbus & Southern Traction Company, chairman; F. W. Cohen, vice-president Lake Shore Electric Railway, and Mr. Palmer. The two sub-committees will probably meet in Chicago on March 16 for consultation, just prior to a meeting of the joint committee scheduled for March 17.

J. M. Waldron, signal engineer of the Interborough Rapid Transit Company, states that the meeting of the joint committee is held in March in Chicago in order that the members may have the benefit of studying the elaborate exhibits which form an important feature of the meetings of the American Railway Signal Association and the American Railway Engineering Association. The meeting of the joint committee will be taken up with the discussion of reports from the members prepared in accordance with a schedule laid out at the mid-winter meeting of the American Electric Railway Association.

MEETING OF MASSACHUSETTS STREET RAILWAY ASSOCIATION

At the regular monthly meeting of the Massachusetts Street Railway Association in Boston on Feb. 11, Newton W. Bolen, general superintendent Public Service Railway Company, Newark, N. J., presented a paper entitled "Some Features of Electric Railway Departmental Organization." Mr. Bolen also read a paper written by H. C. Donecker, assistant general manager Public Service Railway, who was unable to attend the meeting. The title of this paper was "Welfare Work." President H. H. Crapo was in the chair, and the meeting, which was held at Young's Hotel, was one of the most enthusiastic this season. Abstracts of the papers are given below.

DEPARTMENTAL ORGANIZATION

On the lines of the Public Service Railway of New Jersey, with 5000 men in the transportation department and nearly as many in other branches of the company, it is apparent that departmental organization of a high standard is imperative. The one salient feature of co-operation stands out strongly.

The transportation department organization is shown by the accompanying chart. The ranking officer in the department is the general superintendent. An assistant general superintendent, six division superintendents, a superintendent of timetables, a superintendent of em-

and the Jersey suburbs adjacent to Philadelphia. The Bergen division is composed of the lines radiating from Edgewater, opposite 130th Street, New York City. The traffic of this division depends largely on the ferry service maintained by the company between New York and Edgewater. The principal towns are all residential suburbs of New York. Each division superintendent has in his jurisdiction a mileage and traffic equal to a good-sized system in itself.

The division superintendents are called together frequently by the general superintendent, and such matters as apply to the operation of the system as a whole are discussed. Either the general superintendent or his assistant visits each division weekly or oftener. Division superintendents conduct meetings in turn with supervisors at which matters pertaining to the individual lines are disposed of. The timetable department, reporting directly to the general superintendent, plays an important part in the operation of the system, for in no way can operating expenses get out of proportion to gross earnings more quickly than by means of badly constructed timetables. The work of this department increases as the demand for statistical data in connection with utility commission reports becomes more frequent. The employment and training of men requires daily consultation with the heads of those departments, while the marine department brings up an entirely different set of problems for consideration and disposal.

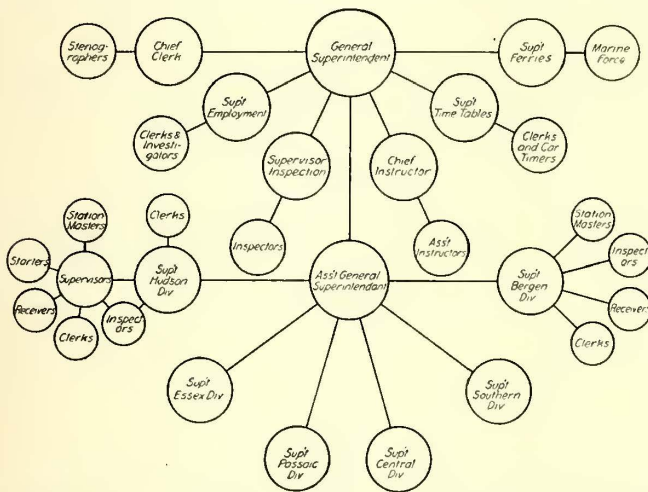
Through all these closely related branches of the department must run the spirit of co-operation and mutual helpfulness. It is an evidence of the broad-gauged policy of the management that, while the administration of the system is departmental rather than divisional, strictly departmental lines are not observed, and the division superintendent and division master mechanic or the division roadmaster settle to the satisfaction of all concerned many matters of joint operation which arise daily. In this way much red tape is eliminated and interdepartment letter writing reduced to the minimum. The operating officers naturally have no constructive duties.

WORKS COMMITTEE

The size of the property, covering 1077 sq. miles of territory and having 900 miles of track, makes it necessary that departmental organizations be kept in touch with each other by some means that precludes lost motion and crossed lines of endeavor. This need is met by the works committee, composed of the general manager and department heads. The object of the committee is to advance by preparation of reports and discussions the interests of the company. Its members consist of the general manager, assistant general manager, general auditor, general claim agent, general superintendent, superintendents of maintenance of way, distribution and buildings, mechanical engineer and engineer of maintenance of way. The company operates no power stations, purchasing all its energy.

The officers of the committee consist of a chairman, vice-chairman and secretary, the first-named being the general manager of the company. The committee meetings are held at the office of the general manager on Monday at 9 a. m. weekly, unless notice is received in writing from the secretary to the contrary. In the event of any member not being able to be present he delegates an assistant to attend, who has the right of discussion and vote. Standing committees are maintained on accounting, claims, transportation, track and roadway, power and distribution, buildings and structures, equipment, property and right-of-way, and public affairs. The personnel of the committees is as follows:

Accounting: general auditor, engineer maintenance of way, general claim agent, real estate agent.



Public Service Railway—Organization of Transportation Department

ployment, superintendent of inspection, chief inspector and a superintendent of ferries compose his organization of officials. Reporting to the division superintendents are the supervisors, who in turn direct the work of the station masters, inspectors and other members of the supervisory force.

The property is divided into six physical divisions. Hudson division contains Jersey City, Hoboken and all the territory adjacent to the North River from Bergen Point to Weehawken and west to the Hackensack River. Essex division centers about Newark, the first city in the State and the thirteenth in the United States. From Newark lines radiate in all directions to the densely populated sections of Essex County. The Passaic division contains two important cities in the textile industries field, Paterson and Passaic, with lines radiating to the adjacent suburban sections. The Central division covers a territory of 200 miles, with Elizabeth as its easterly limit and Trenton as its western boundary. The Southern division embraces the territory south and west of Trenton and contains the city of Camden

Claims: general claim agent, general auditor, general superintendent.

Transportation: general superintendent, general auditor, superintendent of distribution.

Track and roadway: superintendent of maintenance of way, superintendent of distribution, mechanical engineer.

Power and distribution: superintendent of distribution, superintendent of maintenance of way, superintendent of buildings.

Buildings and structures: engineer maintenance of way, superintendent of buildings, mechanical engineer, general superintendent, real estate agent.

Equipment: mechanical engineer, general superintendent, engineer maintenance of way.

Property and right-of-way: engineer maintenance of way, general superintendent, general auditor, real estate agent.

Public affairs: assistant general manager, general superintendent, general auditor, engineer maintenance of way.

The personnel of special sub-committees may be decided by the chairman at any meeting.

No subject assigned to a committee is discussed before the works committee unless a written report is made by the chairman of the committee receiving the assignment. The chairman of each committee is responsible for the committee's report. In making reports the chairman of each committee includes the date of each meeting and the names of those attending. Other members are called into consultation when necessary, and information may be obtained from other properties. The committee reports contain analyses of the more important elements, with arguments pro and con, and are as brief as is consistent with the scope of the topics discussed, leading up to conclusions when it is possible to do so.

The effect of obtaining the unbiased viewpoint of the members of the works committee on the various subjects brought up is undoubtedly good, and the need of obtaining all the facts before presenting a report is productive of incisiveness not always obtained when a department head makes a decision hurriedly, perhaps on the recommendation of a subordinate.

WELFARE WORK

Since the inception of the welfare plan of the company on Jan. 1, 1911, the number of trainmen leaving the service by resignation and discharge has dropped from 4153 in 1911 to 2363 in 1913, despite the fact that the number of men required to operate the cars is constantly increasing. As part of the general scheme of welfare, the employees of the combined railway, gas and electric companies are protected by four types of insurance, health, life, old age and accident. The company assumes the entire cost. Accident insurance is provided by the State employers' liability act of 1911, the elective compensation feature of which the company accepted, operating it in conjunction with its own welfare plan and thereby increasing the scope of the act.

Under these insurance plans the employees received through the welfare committee, in 1913, \$91,077.71, of which \$54,296.36 was paid for disability due to illness or death therefrom and for superannuation, the remaining \$36,781.35 having been paid for injury and death from accident. For the two years 1911 and 1912 the employees received \$144,662.51, of which \$101,123.57 was for illness and death from it and for superannuation, and \$43,538.94 was for injuries and deaths from accidents.

Not the least of the agencies for encouraging the interest of the employees in the success of the property

are the social and athletic events that for several years have been prominent features of the Public Service Railway. The social features were vigorously continued in 1913. In Essex County alone 114 social gatherings of employees and families were conducted by the social organizations at the respective carhouses. The Southern Division social clubs, with the ladies' auxiliaries, conducted thirty-three entertainments and outings, and similar activities marked the year in the Hudson, Bergen, Passaic and Central divisions. Much interest has been displayed by the wives and mothers of trainmen in the ladies' auxiliaries connected with a number of carhouses, and their influence appears on the side of better and closer relations between the company and the platform men, all of which are secured at little or no cost to the company. The general superintendent and members of his staff were in attendance at a large proportion of the entertainments held in different parts of the property.

A successful baseball season was enjoyed by the two leagues comprising the Public Service Railway circuit. The eighteen teams forming the Northern League, representing a like number of carhouses, played an average of ten games each, while the Southern League finished a successful series of games. The culminating features were the presentation of gold watches by the president and second vice-president to the members of the winning teams, the affair winding up with a banquet at Hoboken. The field day at Hilton Oval was marked by great enthusiasm and was a timely event, coming in the crucial days of the Paterson labor troubles. The pool tournament is now attracting the attention of many trainmen and the contest for the general manager's trophy is spirited. The social and athletic features have repaid several times over all that they have cost in the harmonious relations engendered between the company and its employees.

ADDITIONAL COMMITTEE APPOINTMENTS OF THE ACCOUNTANTS' ASSOCIATION

Members of committees of the American Electric Railway Accountants' Association, in addition to the names made public previously, have been announced by President M. W. Glover as follows:

The accounting members of the joint committee with the American Electric Railway Claims Association, known as the claims accounting committee, consist of H. J. Davies, Cleveland, Ohio, and H. J. Jumonville, New Orleans, La.

G. W. Kalweit, Milwaukee, Wis., has been appointed a member of the committee on prepayment car accounting.

W. H. Forse, Jr., Anderson, Ind., has been appointed a member of the joint committee with the Engineering Association on life of railway physical property in place of H. E. Weeks, Davenport, Iowa, resigned.

W. S. Barker, of Newark, N. J., has been appointed chairman of the committee on overhead charges in place of P. S. Young, Newark, N. J., resigned.

During the severe snowstorm of Feb. 14, which blocked suburban travel about New York for several days, the trains of the New York, Westchester & Boston Railway were operated practically without delay except between 7 a. m. and 9 a. m. on the first day of the storm. No trouble of any kind was experienced with the single-phase equipment. All told there were 101 late trains and 112 on time on the Westchester line on the first day of the storm. Of the delayed trains fifty-four were less than five minutes late and forty-seven were between five minutes and thirty-five minutes late.

ADVANTAGES OF COMPANY SECTIONS

R. B. Stearns, vice-president The Milwaukee Electric Railway & Light Company, has sent to Secretary Burritt a written discussion of the paper by Mr. Schreiber on company sections read at the last midyear meeting of the American Electric Railway Association. That paper was published in abstract on page 250 of the issue of this paper for Jan. 31. An abstract of Mr. Stearns' discussion follows:

"It is difficult to determine the cause of so little apparent interest by member companies in this movement. Certainly if the managers of the street railways could see the amount of interest in the Milwaukee company section of the American Electric Railway Association or the Milwaukee section of the National Electric Light Association there would be no further hesitation in promoting the features of the association. There are only three company sections now organized after a period of two years, namely, those of The Milwaukee Electric Railway & Light Company, the Public Service Railway and the Denver Tramway.

"Where are the others? Is it not time to begin a campaign among your own men—to train them to think of your business, to understand your troubles, to have confidence in the justice of your complaints?

"There has been a great amount of discussion and deliberation over the need of more publicity of the affairs of the street railway business—a campaign of enlightenment, or education if you please, of the public. The expenditure of a large sum of money for such a propaganda has been referred to by your president in his address, and a strong committee has been suggested to consider the subject. This plan contemplates ways and means to enable the industry to put before its patrons and the various municipal and state authorities facts and figures, principles and axioms to indicate that the business is sick, that it needs relief from further onslaughts, that its service now costs more than the price paid, and that when the public understands its case justice will be done, some kind of treatment will be administered and the sick business will recover.

"Now, why not begin the publicity at home among your own employees by taking them into your confidence? Experiment on them if you please; organize a company section; adopt short by-laws and procedure. When you return, announce the plan in detail, together with the purpose of the movement. Appoint a committee from the men who stay at home. Authorize them to begin the work. The men will do the rest. Then watch your company section grow and spread real publicity and education through your business. Give the question of subjects some thought. Assist in outlining subjects of real mutual interest to your supervisory force. Drop in to see the members in action conducting a real street railway convention at home. Encourage it. Why not take the association to your employees and associates if you cannot bring them here?

"Mr. Schreiber in his paper stated that 400,000 employees were engaged in the street railway business. Five per cent, or 20,000, is a low estimate of the probable company section members if the movement is encouraged. Seven hundred and fifty members represent those now enlisted in the three company sections.

"Let this army of recruits start out at an early date filled with your propaganda, and in their daily work they will come in contact with the thousands whom you are seeking to reach. Give your own men a chance to feel that they are doing some real work.

"The Milwaukee company section has been the means of bringing to light many steady men hidden away in the shops, stations and other places, unfamiliar with the views and policy of the company except as they

have read them in the daily papers. The class of employees who have joined the section are what is ordinarily termed the supervisory force, but no restrictions prevent any employee in the service of the company joining it.

"There exists no selfish motive in an appeal for the company section movement. Anything which this association undertakes should be done right. It authorized the movement because the street railway business needed it, and an honest effort should be put forth to ascertain the reason for the apparent failure of member companies to respond.

"It is important that we appreciate that only when the problems of the company are fully understood by the employees and by them disseminated to the public can we expect the public to be fair. A good start in educating the employees will be to authorize your company section now. Take your own employees into your confidence."

COMMUNICATION

WHY USE ANY KIND OF JOURNAL BRASS?

FRICTIONLESS METAL COMPANY

CHATTANOOGA, TENN., Feb. 17, 1914.

To the Editors:

The matter discussed in your issues of Jan. 31 and Feb. 14, namely, whether the M. C. B. brass should be discarded, is a subject that has been close to my heart and has had my thought and study ever since the days of link pins, whistling down brakes and hot boxes in all railway service; and while that vision is before me I want to say that it took the best known metallurgical chemist of his day—a man in the employ of America's greatest railway—nearly twenty years to find the real cause of hot-box troubles and to apply the simple remedy of lining the brasses with babbitt metal made from a proper formula. Like many another good man of the past and present, he could not or would not—until absolutely forced to try out the theory—accept the fact that to reduce both friction and wear in the bearings of any kind of machinery it is necessary to use soft metals in contact with hard ones.

Railway employees, officers and passengers of a good many years ago will remember the sudden change from delayed passenger and freight service, with the attendant loss of time and money, to the almost perfect service of M. C. B. brasses lined with softer metals than the brass itself. In the light of that experience, why use brass at all when other and cheaper metals are strong enough for any service and any well-posted mechanic knows how to unite soft metals to malleable iron?

However, assuming that brass is the better metal for the purpose, and perhaps easier for attaching the soft metal lining, why not try out to a finish brasses of the proposed full semicircular cross-section type and thus obtain, if necessary, a standard for electric service, which has its own special requirements different from those of the steam roads? After all, there is too much talk and writing on these subjects and not enough of actual investigation by experiment and practice.

ROBERT H. EVANS, General Manager.

[The question of our correspondent as to the necessity for the use of brass for journal bearings is an interesting one. The basic objection to the use of malleable iron, faced with babbitt, is that when the babbitt wears through the journal is certain to be badly damaged. With brass only a comparatively mild heating takes place. However, the original reason for the brass bearing may be traced back to the needs of practically uninspected freight cars. With closely inspected bearings this need might easily cease to exist.—EDS.]

Equipment and Its Maintenance

Short Descriptions of Labor, Mechanical and Electrical Practices in Every Department of Electric Railroading

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

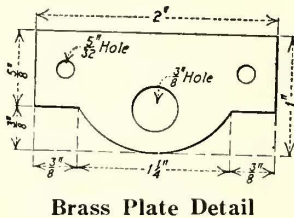
IMPROVEMENTS ON K CONTROLLERS

BY R. H. PARSONS, ELECTRICAL FOREMAN THIRD AVENUE RAILWAY, NEW YORK

Undoubtedly nearly all readers of this paper have had much experience with the standard K controller. Those whose work has brought them in close contact with that controller therefore may be interested in the means that we have used to overcome the small troubles incident to the K type.

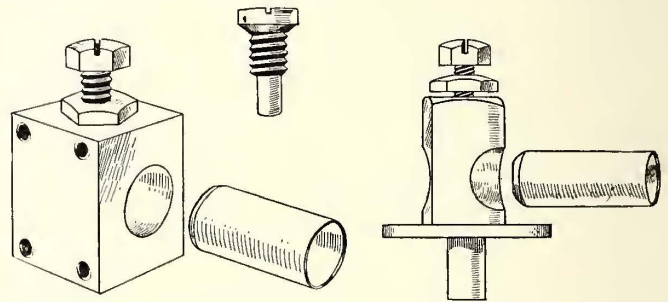
The brass top was loose on a large percentage of the controllers which came into the shop for overhauling. Sometimes the screws were loose and sometimes they were broken; at other times they were missing. Frequently the holes were worn so badly in the top that the screw did not hold. In too many cases, also, the holes were broken out of the tops, the same condition applying to the thumb screw which holds the top of the upper main cylinder bearing cap.

The loose tops were due to many causes. One was that as the controller was close to the vestibule or dash rail, access was difficult to the countersunk screws which held the top to the frame, thus making it necessary to loosen the controller from the dash or vestibule and tip it over toward the front to inspect and tighten these screws. When the controller was new all tops were nicely fitted to each frame, all holes were properly countersunk and all screws fitted; but when the controllers were changed from car to car and the tops removed from one controller to another it



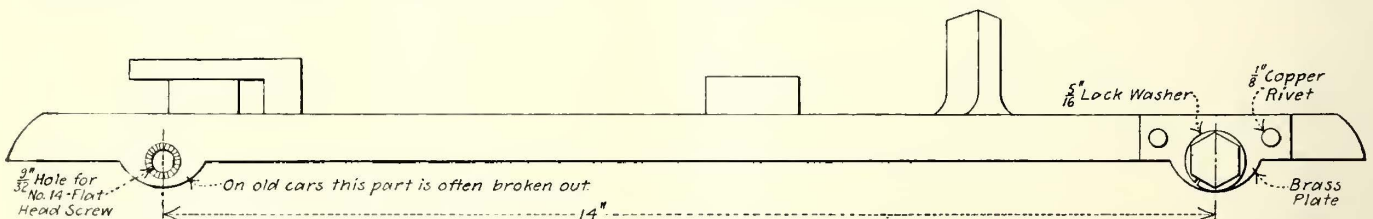
Brass Plate Detail

the cable leads and thereby causing a short-circuit. Another trouble arose from the fact that screws of brass were used to hold the top to the back. Brass is a proper material to prevent rusting, but we found that the slot was easily torn out by a heavy screwdriver and that the screw was quickly broken. Altogether the arrangement of the controller top was unsatisfactory.



T-1 Terminal for Blow-Out Coil of K-27 Controller with Sleeve Removed; Sherardized Round-Head Screw for Water Cap; and T-2 Terminal for Connection Board of K-27 Controller with Sleeve Removed

To remedy these faults we took a brass plate, made in accordance with an accompanying sketch, which we riveted on the brass top, over the old $\frac{1}{4}$ -in. countersunk holes, with a flush $\frac{3}{8}$ -in. hole. We then redrilled and tapped to $\frac{5}{16}$ in. the holes in the controller frames, made them standard as to location, then fastened the top to the frame with a hexagon head sherardized $\frac{5}{16}$ -in. x $\frac{7}{8}$ -in. cap screw. We also redrilled and tapped to $\frac{5}{16}$ in. the hole in the brass top for the screw which was to replace the old thumb screw hold-



Back View of Controller Top, Showing at the Left the Old Countersunk Screw Hole—At the Right the Method Described

was found that the latter were not all standard and interchangeable. First, someone would file a hole out a little, then someone else would file it a little the other way, and so on, until the hole was so much larger than it should have been that even if the screw was tight the top would still be loose. On account of this non-interchangeability it was often found that the tight installation of the tops would bind the shafts of the control and reverse cylinders. Further, on account of worn top cylinder bearings, the bearing could not be properly tightened if the thumb-screw hole in the bearing cap was made to match the hole in the brass top. Soon the cylinder bearing would be loose and the thumb screw would drop out, frequently falling down among

ing the top cylinder bearing to the top and drilled the hole in the bearing to $\frac{3}{8}$ in. We then applied the same-sized screw as for the back.

As we now had the difference between the $\frac{5}{16}$ -in. screw and the $\frac{3}{8}$ -in. hole, we could set the top so that it would not bind the main or reverse cylinder, and by using a light $\frac{5}{16}$ -in. lock washer we could be assured that it would remain tight. The $\frac{5}{16}$ -in. x $\frac{7}{8}$ -in. cap screw used has a hexagon head which is fitted by a wrench attached to the cap screw holding the pole piece to the magnet core. This wrench is in all of our controllers, and the same one is used to tighten the set nuts of the finger-adjusting screws so that one wrench can be used for tightening all of the screws.

When water collars were removed from the control cylinder and reverse cylinder stem it was a common practice to block the cylinder and turn the collar with a Stilson wrench, thus breaking off the set screw, or to split the collar with a chisel. The reason for this was that the collar was held by a special screw which was turned in flush with the former. As these set screws would rust and the slot would break, it was impossible to get them out. To overcome this a screw was designed as shown in the accompanying sketch. This is like the original screw except that it is fitted with a generous round head with a good slot, and it is also sherardized. After the installation of these screws no difficulty was found in removing them with a large screwdriver, thus saving the screws and the water caps. At the same time, the large head will stand a good pressure of the screwdriver, and the collar can be made perfectly tight.

On account of the loosening of cylinder bearing caps, standard 5/16-in. lock washers are used under the heads of the cap screws which hold the reverse cylinder, and a special lock washer is used in connection with the cap screws which hold the main cylinder bearings. The size of this special lock washer is 11/16-in. "O" diameter, 7/16-in. "I" diameter and 1/16-in. thick. These washers have stopped loose bearing caps entirely.

Because of the heavy currents which pass through K-27 controllers on our larger cars, the wires soldered into the terminals at the back of the connection board would often melt out from the terminals. As these terminals were not designed to carry heavy currents, the result was a small arc or excessive heating from the high resistance between the set screw and the wire, causing the solder to melt.

The motor lead and resistance terminals were taken care of by tinning the leads well and by tightening the set screws, but this was not sufficient for the two trolley terminals. To overcome this burning a new terminal was designed for the T-1 connection on the blow-out coil and for the T-2 connection on the board as shown in the accompanying sketch. These terminals are of ample capacity and are fitted with a sleeve. The wire is soldered full size into the sleeve and the sleeve makes a tight fit into the terminal. This change has entirely eliminated the burning out of wires at the connection board terminals.

The doors of all K-8, K-9, K-10 and K-11 controllers were fitted originally with a permanent hinge on the right side and had bolts with thumb nuts on the left side so that the cover could be opened but not removed. When all of these controllers went through the shop they were equipped on both sides with hinge bolts and thumb nuts, as was formerly the case on the right side only. Hence the cover can now be removed entirely and better inspection facilitated.

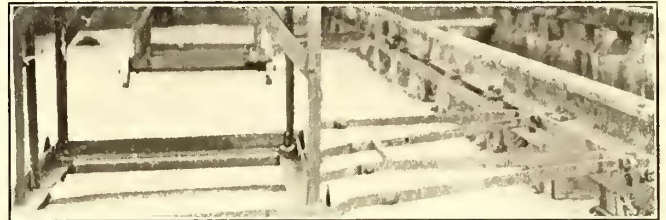
The electric arc-welding outfit used in our shop has been described in an earlier issue of this periodical, although not especially in connection with controller work. However, we use it extensively in repairing broken frames, renewing lugs, etc., and also in building up the worn shafts of controller cylinders, which are then machined to their original size.

The Illinois Traction System, Peoria, Ill., reports that during the past year it has filled or replaced with concrete and steel over 3000 ft. of wooden bridges. During the present year this company expects to continue the good work of replacing temporary structures with permanent ones. At the same time it will profit by past experience either to enlarge the waterways to meet maximum high-water requirements or to reduce their size if the waterways are now larger than necessary.

ROLLING CAR-WASHING STANDS REPLACE LADDERS AT BOSTON

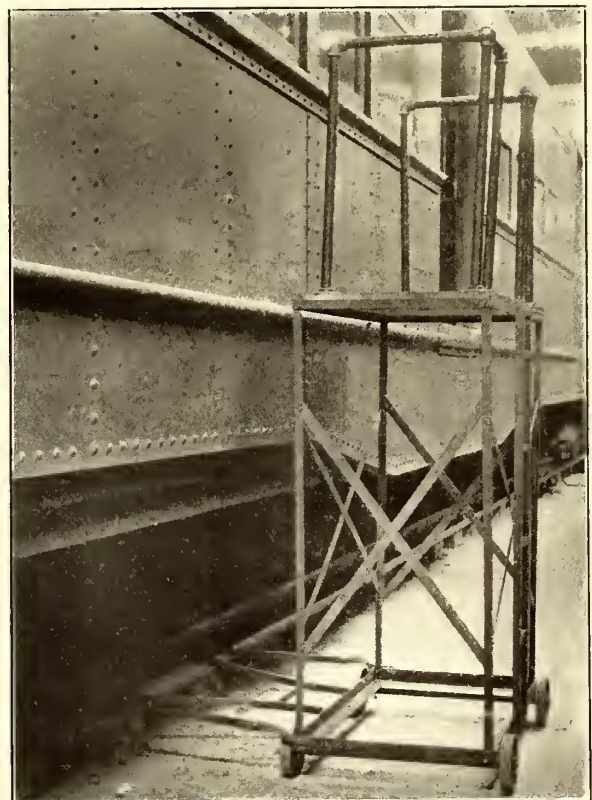
BY M. DERMODY, NIGHT FOREMAN ELIOT SQUARE SHOPS,
BOSTON ELEVATED RAILWAY

At the Eliot Square (Cambridge) shops of the Boston Elevated Railroad Company a specially designed type of car-washing platform has lately been placed in service, with the result that about one-third more work can be done per car cleaner than by the old method of



Car-Washing Platform—Attachment to Ties at Base

washing from a ladder. The apparatus consists of a portable platform which is carried in a light frame running on wheels bearing on the shop floor and held in line by a horizontal truss-shaped extension resting at one end on the frame and carried at the other end on a 1/4-inch x 2-in. strap-iron bar which is fastened parallel to the track by means of the ties. In using the platform the washer ascends from the floor by a narrow



Car-Washing Platform—Showing Attachment to Ties and Use of Carriage Wheels

ladder carried vertically against the frame, and as fast as a given portion of the car area is covered pulls himself along parallel to the side of the car by hand, without being obliged to descend to the floor. The saving in fatigue is remarkable as compared with the old process of washing from a ladder. The cars in this shop are 70 ft. long and are used for subway service.

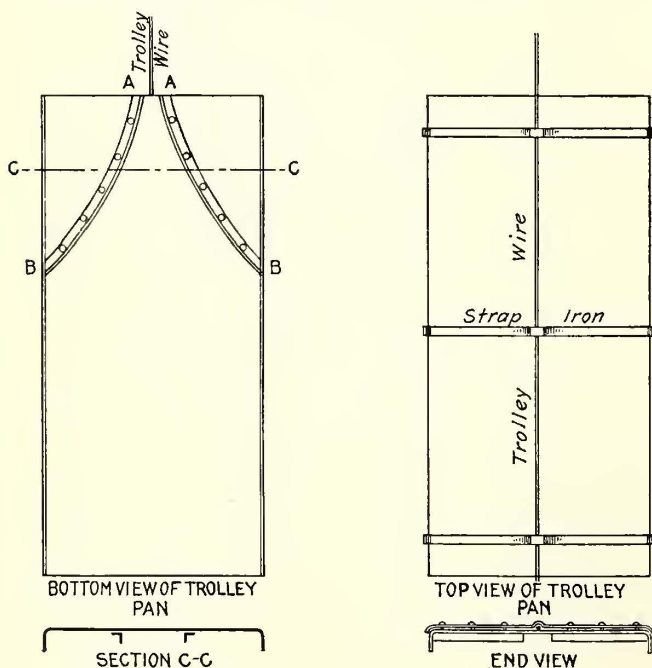
The platform is about 3.5 ft. long and 2 ft. wide, and is set 5 ft. above the floor. It is surmounted by railings 2 ft. 7 in. high, built of 1-in. pipe. The platform is 1 in. thick, and the main frame is built of $\frac{3}{4}$ -in. x $\frac{1}{4}$ -in. angles, with $\frac{1}{8}$ -in. x 1-in. diagonal bracing as shown. The bottom framing is of $\frac{1}{4}$ -in. x 2-in. iron bars, and the wheels, which are provided with self-lubricating graphite bearings, are each 7 in. in diameter and $1\frac{1}{4}$ in. in tread. These wheels are set 28 in. apart on the outside. The distance from the top of the car to the floor is 11.5 ft. The guiding truss or forked portion of the frame is 2 ft. wide and is hinged at four points so that the truss will fold back against the main frame when the equipment is not in service.

The frame clears the standard car by 2 in. when in use. Eight of these equipments are now in service, there being one on each side of each track. The standard track length in the carhouse is about 420 ft. In our latest design, we use a special form of forked truss to guide the platform frame, the outer bar being $\frac{3}{8}$ in. wide and $1\frac{1}{2}$ in. in height, and running on the guide rail by small wheels carried in the fork ends. The hinges are of $\frac{3}{8}$ -in. bolt construction. The portable platform equipments were designed by the writer, and cost about \$5 each.

TROLLEY PAN WITH ANGLE-IRON GUIDES

BY THOMAS O'HANLON, WIRE SUPERINTENDENT YONKERS (N. Y.) RAILROAD

For some time the Yonkers Railroad was troubled with delays due to the difficulty which its men had when turning the poles of cars at terminals. Sometimes several minutes were lost in getting the wheel on the wire, especially on dark nights. To eliminate this, the



Home-Made Trolley Pan, Yonkers Railroad

writer designed and installed an overhead guiding pan which has now been in successful use for several months without any injury to wheels or harps.

As indicated in the accompanying sketches, we took a piece of galvanized sheet iron, about 22 in. wide and 4 ft. long, and bent down each side far enough to make a flange about 2 in. deep. Upon this we found and

marked the smallest width of the groove at the outgoing end as at *AA*. Next, points about 18 in. distant from this end were located along the edge as indicated at *BB*, and then 1-in. angle irons were rounded and cut to the proper length to make a converging curve for the trolley wheel between points *BB* and *AA*. The pan was slightly arched and the rounded angle irons bent to fit the arch, the work being done with great care to avoid buckling. The angle irons were next attached to the bottom of the pan with roundhead bolts. Upon this three pieces of forged strap iron were bolted transversely over the pan and made to extend beyond it for an inch or so. Exactly at the middle of each strap an arch was formed to fit tightly over the trolley wire of the size in use. The straps, of course, were placed as near the ends as possible in order to keep the wire in continuation with the center line of the groove. The pan was installed by running the trolley wire through the arch formed in the strap irons, and then the bolts which secured the straps to the pan were tightened to insure a firm hold on the wire. After assurance that the trolley wire was thoroughly grounded on the pan, the standard span wire at this point was attached to the strap irons by means of wood strain insulators, thereby making the pan ready for use.

At first the motorman had some difficulty in stopping the cars at a position where the trolley wheel would be sure to go into the pan groove, but this was overcome by making a prominent "stop" mark on the pavement.

STEEL FREIGHT TRAILER CARS FOR MICHIGAN

A big step forward in the design of all-steel baggage and freight trailers for service on interurban electric railways is represented by the four cars which have recently been delivered to the Michigan United Traction Company by the St. Louis Car Company. Views of one of these cars, as taken at Jackson, Mich., are reproduced in the accompanying engravings. The view of the exterior shows the use of end doors, while that of the interior indicates clearly the construction of the side posts and carlines as units. These cars were designed by R. C. Taylor, master mechanic of the railway.

The general dimensions are as follows: length of car body over the bumpers, 50 ft.; length over the vestibule sheathing, 48 ft.; width over the sheathing, 8 ft. 11 in.; width inside, 8 ft. $8\frac{1}{2}$ in.; distance between the centers of the Bettendorf solid cast-steel M.C.B. trucks, 30 ft. The trucks are fitted with Griffin F.C.S. wheels of 3-in. tread with $1\frac{3}{16}$ -in. x $\frac{7}{8}$ -in. flanges. The bodies are finished inside and out with Sherwin-Williams No. 1 green, while the bumpers, trimmings and trucks are finished with locomotive black.

The bottom framing includes side sills of 7-in. x $3\frac{1}{2}$ -in., 15-lb. angles, intermediate sills of 7-in., 12.25-lb. channels and center sills of 7-in., 15-lb. I-beams. The bumper irons are 7-in., 12.25-lb. channels bent to a 5-ft. radius curve and riveted to the longitudinal member by double strap irons. Hedley anti-climbers of heavy section are riveted on the outside of the bumper irons. Cover plates of $\frac{1}{8}$ -in. x 40-in. steel are also riveted to all longitudinal sills and bumper irons at each end. Push-pole sockets are riveted on the four corners of the bumper channel. The cross braces are 5-in., 5.5-lb. channels riveted to the longitudinal sills by angle plates. Needle beams of 8-in., 18-lb. members are spaced 6 ft. 6 in. center to center. The main truss rods are of $1\frac{1}{2}$ -in. diameter with $1\frac{3}{4}$ -in. upset ends at the turnbuckles. For receiving the needle beam and main truss rods 16-in. queen posts are used. The body bolsters are box girders with 12-in. x $\frac{3}{8}$ -in.

cover plates riveted on the top and bottom longitudinal sills and fitted with 7-in. channels which are riveted to the top and bottom plates.

As previously noted, a feature of the body framing is that the side post and carlines are made in one piece, this consisting of a 3-in., 5.5-lb. I-beam riveted to the side sills by double angle plates. The door



Interior, Showing Unit Carline and Post Construction

posts have 4-in., 5-lb. channels riveted to 3-in. I-beams. Two 6-ft. sliding doors at the center on each side and one 28-in. swing door at each end in the center are provided for freight handling and train intercourse respectively. The doors are furnished with seal fasteners. Inside of the car 1/8-in. sheets are riveted to the



Steel Freight Car in Service

posts as shown in the view of the interior. The outside sheathing is of 3/32-in. steel with 3/32-in. cover plates riveted to the I-beam posts. A letter panel of 1/8-in. x 8-in. steel extends in one continuous piece from corner post to corner post. A 1/8-in. x 8-in. plate is riveted opposite the outside panel on the inside rivet, extending from corner post to corner post. Similar

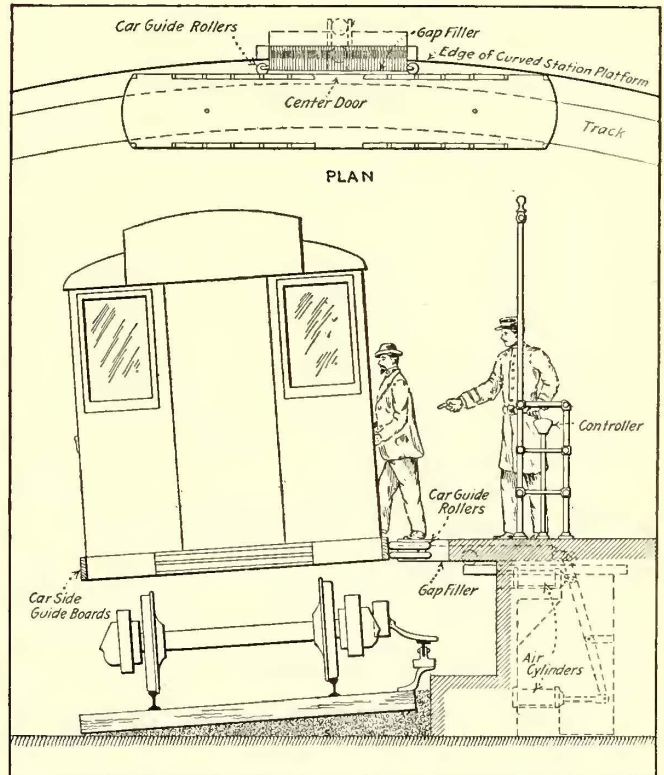
plates are installed to curve around the vestibules, both inside and outside.

The roof is of 1/16-in. steel sheets with cover plates of the same material curved to conform to the carlines and riveted to the flanges of the I-beam carlines. The running board, which extends the full length of the car, is attached to insulated wooden carlines. The floor is of 1 3/4-in. yellow pine nailed to longitudinal nailing pieces which are bolted to steel sills. Threshold plates of 3/16-in. thickness are attached at all door openings. Skid racks, 1/2 in. x 2 1/2 in. x 6 in., are bolted to the side sills under the side-door openings.

The car is wired with steel conduit for ten lights in the center of car. The conduit extends to the outside of each end of the car, with flexible couplings and 5 ft. of weatherproof wire to connect to the other cars of the train. In addition to hand brakes with vertical wheels, all cars have Westinghouse freight-car brake equipment. The brake pipe is attached with a flexible hose to a Tomlinson radial drawbar.

EXTENSIBLE PLATFORM IN NEW YORK SUBWAY

For some time past the Interborough Rapid Transit Company, New York, has been at work on a mechanical device to eliminate dangerous gaps between cars and platforms at those subway stations which are located on curves. The accompanying view presents what has been accomplished so far. The plan view shows a curved track and the position of the gap-filling device at the station, while the elevation shows how passengers may leave or enter the car safely. A station plat-



Extensible Platform in New York Subway

form man controls the operation of the device. In many cases these objectionable gaps are due to the fact that the subway tracks parallel curved streets overhead, and also to the use of island passenger platform stations. Where the curves are concave the center of the car is at quite a distance from the platform edges, but where the curves are convex the gap exists

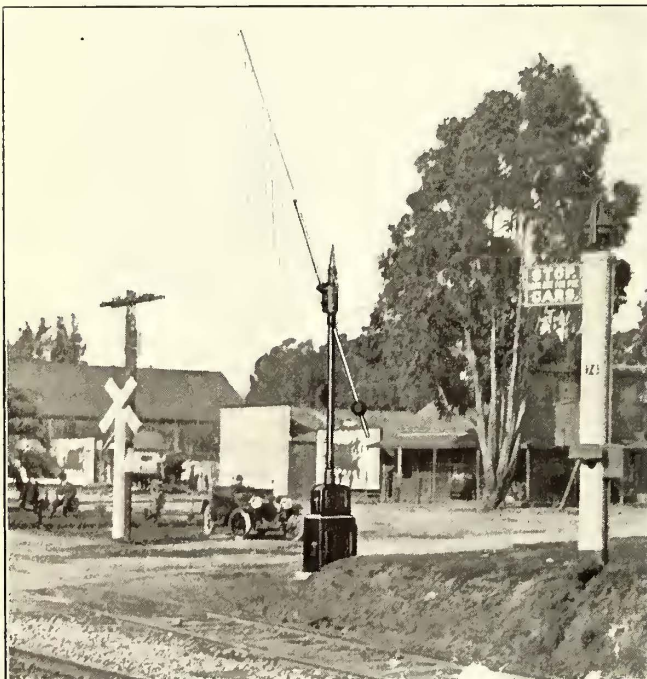
at the end platforms. The extensible platform operates for either case as follows:

When ten-car trains are in service the device operator takes his stand at a point where the forward end of the train is expected to stop, and an instant or two before the first car in the train reaches the stop he moves his controller handle to the operating point. This action energizes solenoids which admit air to the air cylinders, *E*. The operation of these cylinders projects grated segments of the station platform to cover the intervening space to the car before the train comes to a stop. This grating is maintained in a level plane so that its use will not affect the natural movement of the passengers. The grating remains in position until the train has proceeded about 7 ft. to 8 ft. on its outward journey, whereupon it recedes under the station platform through the action of the moving train and an automatic reversal of the electro-pneumatic cylinder. The preliminary tests with this device have been so satisfactory that the company is now installing a trial equipment at the Fourteenth Street station.

REMOTE-CONTROL CROSSING GATE

The Cook Railway Signal Company, Denver, Col., has recently installed for the Southern Pacific Railway the remote-control crossing gate shown in the accompanying illustration. The crossing protected by this gate is on the principal street of Decoto, a small town about 30 miles from Oakland on the main line of the Southern Pacific. About forty passenger trains, some high-speed, and from ten to twenty freight trains pass this crossing daily. At this installation the gate is operated by means of a track circuit, which is the method usually preferred by steam lines.

For electric railways the manufacturer builds special



Crossing Gate, Southern Pacific Railway

track instruments which leave the rails free for the traction return circuit. This track instrument is located, say, $\frac{1}{2}$ mile from the crossing, and the control of the gate is established through the medium of wires connected with the gate-operating mechanism. Another track instrument placed at the crossing and similarly connected releases the gate when the train passes the crossing.

In some instances where electric trains run very close together it is necessary to have two or three of these track instruments between the $\frac{1}{2}$ -mile distance point and the crossing, for if but one instrument at each end of the zone was in existence and two or more trains were in the zone at the same time, the first train passing the crossing would "clear" the "danger" signal.

The gate-operating outfit consists of a motor-driven worm-gear mechanism so interconnected by means of a magnet clutch as to cause the gate arm to fall to the "danger" or horizontal position upon the cutting off of the current, and to cause the operating mechanism to raise the gate arm to the "clear" position upon the return of current. The device can be modified to meet the individual conditions of any railway.

The mechanism which operates the gate is larger than the one which the company uses for its automatic block signal installations, because in some localities it is necessary to provide sufficient energy to operate an arm up to 30 ft. in length, which under snow and sleet conditions must have a more powerful mechanism than would be required in southern countries. The mechanism operates with no sudden jerks or movements and has very few parts, with consequent low maintenance. The absence of dash-pots, hooks, ratchets and dogs make access and adjustments easy.

The fall of the gate arm to the "danger" position is not a sudden drop, as it is controlled by a band brake, which in turn is controlled by a governor. This brake and its governor connection are so constructed that they are adjustable, thus giving a quick or an extremely slow fall to the "danger" position.

During the day the gate protection consists of a bell, a semaphore, a flexible barrier and a moving arm, and at night of a bell, a red light, an illuminated semaphore and an illuminated barrier.

SELF-TIGHTENING CABLE CLAMP

The accompanying illustration shows a new self-tightening cable clamp for dead-ending and supporting feeder cables, made by the Automatic Cable Clamp Company, Donora, Pa. By the ingenious lever construction of this clamp the cable is gripped with a force proportional to the tension applied. As it is boltless, it can be attached in a minute. It holds the tighter the greater the strain imposed, and can be removed quickly as soon as the tension is released. When power cables



Boltless Cable Clamp

are dead-ended with these clamps, the insulation is first removed from the cable for a distance of 5 in., after which the clamp can be attached in far less time than the old methods, and without soldering. Sharp turns and difficult adjustments are rendered easy with this cable clamp. The clamp is built to withstand strains of 10,000 lb. and is intended for cables of 250,000 to 1,000,000 circ. mil in cross-section.

News of Electric Railways

Charging Off Obsolescence in Cleveland

The city officials of Cleveland, Ohio, and the Cleveland Railway have agreed upon plans for charging off the value of discarded power houses and obsolete cars and overdrafts in the maintenance fund and the matter was presented to the City Council for approval on the evening of Feb. 16. The action on this agreement will probably be favorable, although it will mean an increase in fare commencing some time in mid-summer. The date will be governed by the condition of the interest fund as affected by the deduction of monthly sums to make good the deficits.

The value of discarded power equipment and obsolete cars was fixed at \$705,347 and, beginning in March, the company is authorized to deduct \$12,000 a month from its gross receipts until this amount is wiped out. It was further agreed that the company should deduct \$6,000 a month until the overdraft of \$217,444 in the maintenance, depreciation and renewal fund is made good. This total of \$18,000 a month will of course decrease the interest fund and bring about an increase in fares when the interest fund is reduced below \$300,000. The agreement was referred to the committee of the Council on street railways.

On Jan. 1, 1914, the interest fund was about \$363,000. It is thought that this will be increased as a result of the January and February operation, in which surpluses are expected. On May 1 the increase in the regular maintenance allowance will begin and this will still further decrease the interest fund.

The settlement of the value of discarded power and other equipment fixes the sum about \$190,000 less than the original estimate. This was due to taking the reproduction value of second-hand machinery in the old Forest City power house of the 3-cent line built under the Johnson administration.

Mr. Witt was invited recently by the street railway committee to accompany the members on a tour of inspection of the carhouses and yards of the Cleveland Railway, especially the new building on St. Clair Avenue. Mr. Witt said that the expenditures so far had been approved by him and that he did not care to accompany the committee. In regard to the cost of the St. Clair building Mr. Witt said he would continue to recommend that all new structures be made artistic.

Council failed on Feb. 16 to take action on the approval of the company's request for the expenditure of \$518,000 for track renewal and resurfacing work. Councilman Stolte objected to the estimates on the ground that they are too high. Mr. Witt explained that the company had merely asked for an approval of \$40,000 a mile for the renewal work, but that this does not mean that the amount will be actually expended unless it is necessary. The work will all be done under the supervision of his department, and if the full amount is not needed it will not be spent.

A resolution has been adopted by the Council requesting Mr. Witt to investigate the cost of track renewal in the ten largest cities of the country and report to the Council.

Report on Municipal Railway Extensions in San Francisco

In compliance with the resolution of the Board of Supervisors of San Francisco, Cal., M. M. O'Shaughnessy, city engineer, has filed a report covering the exact routes which have been decided upon for the extension of the Municipal Street Railway, the progress made in their construction and the number of persons these roads will be able to carry to and from the Panama-Pacific International Exposition site. His report is dated Jan. 29, 1914. The bond issue authorized on Aug. 26, 1913, provided the sum of \$3,500,000 for the construction and purchase of double-track street railways aggregating 16.35 miles in length together with the necessary equipment. The Van Ness Avenue and Chestnut Street lines, which will be the first completed, will probably be placed in operation on or before Sept. 1, 1914, and the Church Street line will probably be placed in operation on or before Feb. 1, 1915. Ninety per cent of the material necessary for the construction and equipment of the lines

has been ordered and the contracts for the remainder will be let before March 1.

With the 100 cars which it is proposed to purchase and the forty-three cars now owned by the city it will be possible to transport a maximum of 19,125 persons to and from the exposition an hour. Mr. O'Shaughnessy expresses the opinion that the transportation so furnished will be sufficient during the days of average attendance at the exposition. He says, however, that the service will be inadequate during special days when the attendance is in excess of 100,000 persons.

Contracts contemplating the expenditure of \$871,814 were entered into on Jan. 2. The principal items included in these are for rails and rail joints from the United States Steel Products Company, totaling \$150,014; for car bodies from the Jewett Car Company, Newark, Ohio, totaling \$295,000, and for motors and car equipment from the Westinghouse Electric & Manufacturing Company, totaling \$232,600.

The maximum capacity of each of the cars now in use on the Geary Street line is 125 persons. The maximum capacity of each of the proposed new cars is 150 persons. The capacity of the terminal loops at the exposition will be 400 cars an hour, or 50,000 persons an hour. The capacity of the terminal loops and tracks of the proposed street railways is far in excess of the number of cars which it is probable the city will own at the time of the exposition. Mr. O'Shaughnessy estimates 31,125 persons an hour as the maximum number which may be transported to and from the exposition by municipal and private lines combined.

Storage Battery Cars Meet Emergency in Blizzard

The storm which swept up from the South on Feb. 13, 1914, covered the greater part of the North Atlantic States with a mantle of snow on Feb. 14 which reached 10 in. in New York. The snow began to fall about 7 p. m. on Friday in the metropolitan district and continued until about 11 a. m. on Saturday. The wind attained a velocity of 70 m.p.h. at one time and the drifts which followed greatly delayed all traffic and resulted in isolated cases in the complete suspension of operations. Early Monday morning snow began to fall again and continued for several hours. In New York 16,000 men and 1200 cars were put to work at once after the first storm to clear the principal thoroughfares, but it was many hours before the work that they did became apparent to any appreciable extent.

Surface car traffic in metropolitan New York was particularly hard hit by the storms. Outlying lines were in some instances compelled to abandon service temporarily on account of the huge drifts and in the city proper a great deal of difficulty was encountered in keeping the underground conduit lines in operation. The snow drifted into the slots and as soon as the plows and sweepers were sent over the lines all vehicle traffic immediately took to the streets thus cleaned. Service on the Forty-second Street line of the Third Avenue Railway, equipped with the conduit, would probably have been a complete failure except that the management of the company withdrew its storage battery cars from the belt and other lines and operated them on Forty-second Street, perhaps the most important crosstown line in the city. Pressed suddenly into an emergency service by the Third Avenue Railway to replace cars of nearly twice their size and carrying capacity, the storage battery cars relieved a tie-up which had existed for many hours. On the Broadway line of this company service also had to be abandoned from Broadway and Forty-second Street to 162d Street. Service on the lines in the Bronx, Yonkers and Westchester County was only slightly upset by the heavy snowfall.

On lines operated by the New York Railways seventy-five sweepers and thirty cleaners were steadily at work, and in only one instance did slot trouble develop to a degree sufficient to interrupt traffic. That was on the block between 114th and 115th Streets, on Amsterdam Avenue, and there inconvenience was largely avoided by switchback of

the cars on both sides of the break during the few hours the slot was being cleaned out.

The cases cited are probably the only ones of actual suspension of traffic on city car lines, but the operation of surface cars was slow and uncertain. This condition was largely due to factors outside of the control of the companies, the most important of which is the tendency of motor-car and truck traffic to stick to the cleared space on the car tracks, when the rest of the street is heaped with piles of snow.

As a climax to the two storms previously mentioned it began to rain during the night of Feb. 18. As the rain continued the temperature fell and the streets became coated with a glaze of ice. Throughout the entire metropolitan district pedestrians were compelled to abandon the ice-coated sidewalks and take to the middle of the street. The ice coated the overhead trolley wires and the third rail on the elevated lines, and traffic on some of the latter lines was seriously interrupted. This was particularly true of the elevated lines in the suburban districts of Brooklyn. In fact service on practically all the elevated lines of the Eastern Division of the Brooklyn Rapid Transit Company and on several of its Southern Division lines was demoralized during the early rush hours.

Differences Over Operating Agreement in Kansas City

The receivers for the Metropolitan Street Railway, Kansas City, Mo., have notified the officers of the Kansas City & Western Railway, running to Leavenworth, Kan., that the Metropolitan Street Railway will not receive the interurban cars after Feb. 23, the companies failing to reach the expected agreement. The Metropolitan Street Railway has been receiving the Leavenworth cars at Eighteenth Street and Central Avenue, Kansas City, Kan. The action by the receivers follows a disagreement extending back about a year. The matter of transferring passengers at Eighteenth and Central Avenue was laid before the Kansas State Public Utilities Commission about a year ago. The commission held that transfers should be given by both lines at that point, and that the Metropolitan Street Railway and the Kansas City & Western Railway should divide the fares equally. The decision was appealed by the Metropolitan Street Railway and the case is now pending in the United States District Court. The order, according to the receivers, is unjust, inasmuch as the Kansas City, Kan., line is only 1½ miles long, while the Metropolitan Street Railway's lines on the Missouri side are far more extensive. The utilities commission took the attitude that under present conditions residents of the Kansas side, or those passing through that section to the Missouri side, are paying 10 cents car fare, and that the fare should be only 5 cents. The Metropolitan Street Railway wished to take over the cars of the Kansas City & Western Railway at the city limits, but the proposal was rejected by the interurban company. The Metropolitan Street Railway's ultimatum followed. After Feb. 23, therefore, passengers arriving in Kansas City, Kan., will transfer to a Metropolitan Street Railway car, paying both that company and the interurban 5 cents.

Alderman Hoffman, of the streets, alleys and grades committee of the upper house of the Kansas City Council, refused his sanction when the committee considered the ordinance requiring the Metropolitan Street Railway to build double tracks on Twenty-fourth Street from Grand Avenue to Main Street by June 1. Mr. Hoffman believed the tracks should be extended through to McGee Street and he reported such an ordinance to the City Council at its meeting on Feb. 16. Attorneys for the receivers of the Metropolitan Street Railway also sent a tentative ordinance to the Council on that date. It provides for a franchise until 1925 for a double-track railway from a connection with the Summit Street line at Twenty-fifth and Summit Streets, east on Twenty-fifth Street to Broadway, north on Broadway to Twenty-fourth Street, east on Twenty-fourth to the new station plaza, and after crossing the plaza to a point where it will be intersected by Twenty-third Street, thence east on Twenty-third to a connection with the Grand Avenue line, together with the right to cross Main Street and make connections with the Main Street line where the tracks on the plaza intersect. Mayor Jost stated he wanted time in

which to deliberate on the new measure before lending it any encouragement.

Administrative Committee to Negotiate Toledo Franchise

At the regular meeting of the City Council of Toledo, Ohio, for the week ended Feb. 14, 1914, steps were taken to negotiate for street railway service at once through an administrative committee of seven members. The service must be furnished upon a 3-cent fare basis and any and all legitimate bidders will be considered. The resolution creating the committee follows:

"Resolved by the Council of Toledo that a committee of seven be and the same is hereby created as follows: The Mayor, the president of Council, the city solicitor and four members of the Council to be chosen by the president of the Council. When organized this committee shall act as a standing committee with full powers to enter into any and all negotiations, conduct all conferences, and do any and all things relative thereto in securing terms and proposals for a street car franchise, starting work on the matter immediately, always with a view to obtain information and bids in the open market for the best and most reasonable street car service in and for Toledo, on the basis of a 3-cent fare, and to make a full and complete report of its proceedings to Council not later than March 23, 1914."

Mayor Keller, Vice-Mayor Hassenzahl and City Solicitor Thurstin will, under this resolution, act upon the committee and the president of Council will shortly appoint the other four.

Mayor Keller was not present at the meeting, but the following letter prepared by him was to the members of the Council:

"In view of the expiration of the principal grants to use the streets of the city by the Toledo Railways & Light Company on March 27 next, I would urge the immediate passage of a resolution authorizing the appointment of a committee to enter into negotiations to accomplish an early settlement of the traction question, and to that end to obtain bids and other information in the open market for the best and most reasonable street car service in and for Toledo on the basis of a 3-cent fare and to make a full and complete report at the earliest possible date.

"Every member of your body is pledged to a 3-cent fare with universal transfers, and this should be the basis of negotiations with no deviation from that pledge. The sooner this question is settled the better.

"If the company operating at present does not find it expedient to deal on this basis we will be compelled to seek elsewhere for this service or acquire the properties. Whichever plan is finally determined upon must be to the full and entire satisfaction of all the people.

"I therefore urge immediate action in this matter with every confidence that your efforts will ultimately be successful."

The Toledo Commerce Club has decided to investigate the street railway settlement matter, and, if possible, aid in bringing about an early adjustment. To that end the officers will probably arrange to confer with F. R. Coates, president of the Toledo Railways & Light Company, and with Mayor Keller of Toledo.

Objection to Cincinnati Loop

City Solicitor Schoenle, of Cincinnati, Ohio, has voiced his objections to the city's building the loop proposed by former Mayor Hunt. He said that the plan is good and the city needs the improvement, but that the Cincinnati Street Railway should build and operate it. He is in favor of giving the company a franchise for this purpose, on condition that a certain percentage of the receipts be paid to the city for the privilege.

The Cincinnati Street Railway has brought suit in the Common Pleas Court against A. C. Gilligan, collector of internal revenue, to recover \$10,801, which was paid as a special excise tax under protest. The company's property is operated under lease by the Cincinnati Traction Company, and the suit is being brought to test a point that will be of interest to all companies whose property is leased to operating companies.

Rossland Electrification Deferred.—The Canadian Pacific Railway has decided to defer for the present the work of carrying out its Rossland electrification in British Columbia. It was proposed to equip the line for operation at 2400 volts direct current, with four locomotives of the heaviest type.

Uniform Accounting System for Ohio.—The Ohio Public Utility Commission, acting under authority of a new law, has employed a firm of accountants to prepare a uniform system of accounting for all public utilities operating in the State, those owned by municipalities being included with the privately owned corporations.

Accounting Conference in Pittsburgh.—A conference has been called in Pittsburgh of the members of the public service commissions of Ohio, Pennsylvania and West Virginia with the idea in mind of agreeing upon a uniform accounting system for the three states, so that the commissions may co-operate in their rate making and valuations. This is because of the number of corporations which furnish service in all three states.

Partial Operation of Brooklyn Subway Proposed.—The Public Service Commission for the First District of New York has notified its chief engineer and its counsel that it is in favor of the prompt operation of the Fourth Avenue subway from the Municipal Building, Manhattan, to the Twenty-fifth Street station on Fourth Avenue, Brooklyn. The commission favors the preparation of a contract for the installation and equipment of the entire line, so that work may be begun immediately upon the receipt of track materials.

Special Subway Committee in Pittsburgh.—A committee of the City Council of Pittsburgh, Pa., was appointed on Feb. 17 to work with the city law department on an ordinance providing for the construction of a subway in that city. Heretofore it has been impossible for the city and the several subway companies to come to terms mutually agreeable. Another committee was named to confer with the Pittsburgh Railways to secure if possible some concessions in the matter of transfers. Lately the company put in force a rule that transfers would not be issued except when asked for at the time a cash fair was paid.

Winnipeg Hydroelectric Developments.—Sir William Mackenzie, president of the Winnipeg (Man.) Electric Railway, has announced that The J. G. White Engineering Corporation, New York, N. Y., has been engaged by the Winnipeg Electric Railway to complete surveys, explorations, designs, plans and estimates for a large hydroelectric development near Winnipeg. It is understood that the ultimate development will be considerably in excess of 100,000 hp, and that the immediate development for which complete designs and plans are to be prepared will be for 40,000 hp. Work is to be completed as rapidly as possible.

The I. C. C. Investigation of the New Haven.—Formal orders for the investigation of the financial transactions of the New York, New Haven & Hartford Railroad issued on Feb. 14, 1914, by the Interstate Commerce Commission, under the Senate resolution, named the following roads, in addition to the New York, New Haven & Hartford Railroad, as respondents: Boston & Maine, Maine Central, Central New England, and New York, Ontario & Western. The place and date of hearings have not been set. In the meantime, says the commission's order, the investigation will be carried on "by such other means and methods as may be deemed appropriate."

Iowa Blue-Sky Act Unconstitutional.—The State District Court of Polk County, Iowa, has enjoined the enforcement of the Iowa "blue-sky" act. The court expressed itself as satisfied that the object of the law was to prevent fraud, but found the law to be a violation of the fourteenth amendment of the Constitution in that it takes "from the owner of property without due process of law the right to sell and dispose of the same and from the individual, co-partnership or corporation the right and liberty to engage in the business of buying and selling stocks, bonds and other securities." The decision holding the Michigan "blue-sky" law to be unconstitutional was referred to in the *ELECTRIC RAILWAY JOURNAL* of Jan. 31, 1914, page 281.

Franchise Agreement in Newark.—The agreement covering the new franchises to be received by the Public Service Railway in connection with the erection of a terminal and the re-routing of certain lines in Newark, N. J., has been adopted by the Board of Works. The agreement was read

twice as an ordinance on Feb. 5, was read again on Feb. 12 and, after being signed by the Mayor, will be sent to the Board of Public Utility Commissioners for approval. By the adoption of the agreement in its present form the company wins its contention that there should be a clause designed to prevent making a round trip on payment of one fare. As the clause stands now in the agreement it provides that a passenger shall not be entitled to a transfer to a car running substantially parallel to and within 2000 ft. of the car on which he paid his fare.

Appraisal of Property in Akron Asked.—At a recent meeting of the City Council of Akron, Ohio, a motion was passed to the effect that the State Public Utilities Commission be requested to value the property of the Northern Ohio Traction & Light Company in Akron. This action was taken in accordance with a recommendation made by A. B. du Pont some time ago. He stated that such a valuation would help to determine whether the company could grant the concessions demanded by the city in connection with the franchise negotiations or whether it would be fair to award a revised franchise with modified conditions. Councilman Whittemore objected to the motion. He contended that it would be better for the city to make its own settlement with the company, particularly as the commission will be engaged for some time in endeavoring to value the properties at Cleveland and Cincinnati.

Savannah River Hydroelectric Development Completed.—The opening of the hydroelectric power plant located on the Savannah River 9 miles above Augusta, Ga., was celebrated on Feb. 16. In the morning there was an excursion to carry the visiting guests and prominent citizens of Augusta to the site of the dam and power house. In the evening the city was left in darkness while power from the new plant was being turned on. The trip from Augusta was made at the invitation of the Augusta-Aiken Railway & Electric Corporation, and some of those on board the special train were F. Q. Brown, of Redmond & Company, president of the Augusta-Aiken Railway & Electric Corporation and of the Georgia-Carolina Power Company; R. Lancaster Williams, of Middendorf, Williams & Company, New York and Baltimore, and a party of friends; J. W. Steel, banker, Philadelphia; the officers and prominent members of the Merchants & Manufacturers' Association of Augusta and J. H. Pardee, president, and J. K. Choate, vice-president of The J. G. White Management Corporation. The party inspected the dam and the power house from which power is carried to Augusta. Power is transmitted at 44,000 volts on a great span of wires across the Savannah River to feed additional mills and industries in South Carolina.

Contract for Additional New York Rapid Transit Section.—The Public Service Commission for the First District of New York has awarded to the Oscar Daniels Company, the lowest bidder, for \$914,400 the contract for the construction of Section No. 1 of Route No. 18, the White Plains Road branch of the existing subway. This branch runs from Bronx Park, the present terminus of the Lenox Avenue subway, up White Plains Road to 241st Street, near the northern city boundary. Section No. 1 extends from the subway terminus to Burke Avenue. The contract for section No. 2, extending from Burke Avenue to 241st Street, was awarded about a month ago to Alfred P. Roth. The line on this extension will be a three-track elevated railroad. The commission has also opened bids for the construction of section No. 2 of route No. 16, the Jerome Avenue branch of the Lexington Avenue subway. This is the section from 182d Street north over Jerome Avenue to Woodlawn Road. The lowest bidder is the Cooper & Evans Company, at \$1,076,831. The contract for Section No. 1 of this line, extending from 157th Street to 182d Street, has already been awarded to the Oscar Daniels Company. The line from 157th Street to Woodlawn Road will be a three-track elevated railroad, and will be operated by the Interborough Rapid Transit Company with trains from both subway and elevated lines.

Contracts for Third-Tracking New York Elevated Lines.—Theodore P. Shonts, president of the Interborough Rapid Transit Company, New York, N. Y., announced on Feb. 13, 1914, that the contracts had been let for third-tracking the Second, Third and Ninth Avenue elevated railroads in Manhattan and the Bronx. The work is to be done by a group of three contracting firms, the Terry & Tench Company,

Inc., the Snare & Triest Company and the T. A. Gillespie Company. Each will perform that portion of the work which is assigned to it by the chief engineer of the Interborough Rapid Transit Company. The remuneration of the construction companies is to be the actual cost of the work, plus 15 per cent profit. Mr. Shonts explained why the contracts had been let by selection and not after public bidding. The contracts, he said, would cover the use of the plants, tools and machinery which belong to the three firms mentioned, as well as the services of Messrs. Snare, Triest, Terry, Tench and Gillespie, who would give their personal attention to the job. Moreover, there would be no sub-letting of any part of the work, because the firms were equipped to perform the entire work themselves, as they had on hand extensive and expensive machinery adapted to this very kind of construction. The work is very difficult, requiring the laying of additional tracks without interfering with the regular operation of the elevated trains.

New Viaduct in Chattanooga.—The new McCallie Avenue viaduct, in Chattanooga, Tenn., has been completed. Warner Park is at the eastern end of the viaduct and just to the southeast lies the National Cemetery. The old bridge, which the new viaduct supplants, was a weak link of the fine boulevard which leads from the center of the business district through the city to Missionary Ridge and its magnificent Crest Drive, on the road to Chickamauga Park. Twenty thousand dollars of the cost of the new viaduct was contributed by the city of Chattanooga, about \$8,000 by the Chattanooga Railway & Light Company and \$70,000 by the railroads. The McCallie Avenue viaduct is 735.5 ft. long, made up of twenty-one spans. It is 60 ft. wide, allowing a 40-ft. roadway and a 10-ft. sidewalk on either side. The clear driveway on each side of the double track for street cars is 12 ft. The entire surface, except sidewalks, is paved with brick. Ornamental posts, each carrying a 108-watt Mazda lamp, furnish illumination. The longest span is 30 ft., and the piers are from 12 ft. to 30 ft. high, including footings. The grade of the eastern approach is 5.3 per cent, and of the western approach 5.5 per cent. Twelve railroad tracks pass under the viaduct at an angle of about 70 deg. Over the tracks the viaduct rises to a maximum height of 26 ft.; at either end it is about 18 ft. from the ground, as the street approaches it on a fill.

Change in Ownership of Historic Texas Property.—Brief mention was made in the *ELECTRIC RAILWAY JOURNAL* of Feb. 14, 1914, page 382, of the sale of the property of the Laredo Electric & Railway Company, Laredo, Tex., to Messrs. Morrison and McCall, St. Louis, and their associates. R. W. Morrison, representing the purchasers, has assumed the management of the company. Added interest attaches to the change in ownership on account of the fact that the railway lines of the company are claimed to be the first operated by electricity west of the Mississippi River. The Laredo Electric & Railway Company was organized in 1892. Prior to that time the Laredo Improvement Company, organized in 1887, had installed a lighting plant and the same year had built a street railway. The Laredo Electric & Railway Company took over the properties of the Laredo Improvement Company, which installed electricity in 1889. It was the first international electric street railway in the United States, as the line served Laredo and crossed the international bridge into Nuevo Laredo, Mexico, as far as the custom house on the outskirts of that city. The line continued to be operated into Nuevo Laredo for a number of years, but owing to complications between the company and the owners of the bridge, service to Mexico was discontinued. Later a separate system was established in Nuevo Laredo, Mexico, and the power for the operation of cars was furnished by the local company.

Jefferson Avenue Line Decision in St. Louis.—The United Railways' contention of its right to operate the Jefferson Avenue line, St. Louis, Mo., under existing franchises was upheld recently by a decision of Circuit Judge Rhodes E. Cave, as noted briefly in the *ELECTRIC RAILWAY JOURNAL* of Feb. 14, 1914. The decision is a defeat of the city's effort, by a quo warranto proceeding, to obtain a writ of ouster, on the ground that the Jefferson line franchise expired Feb. 6, 1912. Judge Cave holds that the United Railways is not entitled to operate the Jefferson line, as con-

tended, under the Central Traction franchise, but that it is entitled to operate it under the St. Louis Transit Company franchise, which will expire March 18, 1939. The opinion of the court sets forth the steps by which the United Railways took over the Jefferson line. The decision reads in part: "Thus heralded into the lists and put to the combat for the right of its existence, in so far as its Jefferson Avenue branch is concerned, the defendant comes both doubly armored, to wit: claiming the right to operate under both Ordinance 19,352, known as the Central Traction, expiring on April 12, 1948, and Ordinance 19,738, known as the St. Louis transit ordinance, expiring on March 18, 1939; and proclaiming that even should its outer armor prove too weak and of no avail, yet in no event can the pointed query—by what right?—of the relator penetrate its inner coat of mail and reach the vitals of its right to continue the operation of the Jefferson Avenue line until March 18, 1939."

LEGISLATION AFFECTING ELECTRIC RAILWAYS

KENTUCKY

W. A. Shawler has introduced a bill in the Kentucky Legislature requiring electric railways to furnish separate coaches for negro passengers. A similar requirement is now imposed on steam lines. The interurban companies are now required to have separate compartments for white and colored passengers in each car, but it is asserted that on occasion white people invade the colored passenger compartment and at other times the negroes overflow into the section intended for the white passengers. A bill introduced by E. D. Stone in the House providing for a maximum charge of 2 cents a mile by public carriers was acted upon unfavorably at first, but the vote has been reconsidered and the bill placed on the calendar.

MASSACHUSETTS

The proposed repeal of the act passed last year giving the New York, New Haven & Hartford Railroad authority to develop electric railway facilities in the Berkshire district has been vigorously assailed before the committee on street railways. Three bills are before the General Court for this purpose. Representative Washburn led the opposition to this repeal, contending that the policy of the federal government in New England transportation matters is vacillating. He strongly commended the unification of the steam and electric railway systems planned by former President Mellen of the New Haven company. Senate Chairman Coolidge urged leaving the law on the statute books until conferences can be had with the federal authorities.

The committee on metropolitan affairs heard recently the petition of Senator Horgan to abolish the Boston Transit Commission and transfer its powers and duties to the Public Service Commission. Prof. George F. Swain, chairman of the board, refuted the contention that the board is a burden upon the city. He stated that the entire cost of its work is ultimately repaid the city by the Boston Elevated Railway in subway rentals. He pointed out that the board has work under way amounting to \$20,000,000 outlay.

The Bradstreet bill providing that if a passenger on a street car cannot get a seat the conductor shall give him a rebate check, two such checks being redeemable for another fare, was heard this week by the committee on street railways. The bill is a copy of the Norris bill now before Congress and applicable to the District of Columbia. Arthur A. Ballantine, for the Boston Elevated Railway, and Bentley W. Warren, for the Massachusetts Street Railway Association, who appeared in opposition, pointed out its impracticabilities as an operating proposition. A hearing was also held upon the Cummings bill on the public ownership of street railways. The opposition urged that action be deferred pending further investigation.

Leave to withdraw has been reported by the street railway committee upon the bill requiring the use of an earth, asphalt, brick or wooden block surface between rails and 18 in. outside in the construction of new street railway track.

NEW JERSEY

Two hearings were held at Trenton recently on Assembly bills Nos. 13 and 99, the first of which is known as the "no-seat-no-fare" bill. It provides that where a passenger on an electric railway is unable to secure a seat he shall be

entitled to a rebate check, and that two rebate checks shall entitle him to one free ride. Bill No. 99 seeks to establish a minimum requirement for adequate service on street railways. It proposes a plan for arriving at the average number of passengers per line and requires the street railways to supply cars with a total seating capacity equivalent to this average. John J. Burleigh, second vice-president of the Public Service Corporation, said that to enforce the provisions of the "no-seat-no-fare" bill would be impossible. Regarding the bill which defined adequate service he said that this matter was one for the judgment of the Board of Public Utility Commissioners, not a legislative matter. Others who appeared in opposition to the measures were John L. O'Toole for the Public Service Railway, George B. Cade for the Atlantic Coast Electric Railway, Gaylord Thompson for the New Jersey & Pennsylvania Traction Company and J. K. Choate for the Morris County Traction Company.

NEW YORK

A bill has been introduced in the Assembly to amend as follows the railroad law in relation to the qualifications of certain employees of railroads:

"Qualifications of certain employees of railroads. All motormen engaged in operating electric multiple unit trains with one or more cars with high-speed brake or electric engines or gasoline engines or other power must have at least one or more years' experience on steam or electric railroads, must be familiar with train orders, with the standard code of signals, hand signals and book of rules, before operating a passenger or freight train in the transportation service. A record of such experience and of the time of entry upon such service shall be made by the company and furnished to the public service commission in respect to each such employee at the time of the beginning of such employment. Employees taken from different departments of the train transportation service to be made motormen on elevated or subway trains must enter into the yard service for at least one year for the purpose of becoming familiar with the hand signals and book of rules, standard code of signals, train orders, the handling of motor cars and the making up of trains and the nature of the power equipment on such railway, before they are permitted to move a motor car or train on any part of the main track of such railway. Such employees during such probationary period shall be classed, as at present, motor-switchmen. A record as to such employees shall be kept by the company and furnished to the public service commission when they enter such service, relating to the same matters as the record first above mentioned. A violation of the provisions of this section by any railroad corporation, officer or servant thereof, or by any such employee, shall constitute a misdemeanor, punishable by imprisonment for not more than one year or a fine of \$500, or both."

An amendment to the railroad law introduced in the Assembly to require toilet facilities to be provided on the passenger cars of all steam, electric or other interurban passenger cars reads as follows:

"Every person or corporation owning or operating a steam, electric or other interurban railroad for the carriage of passengers in the State shall, before Jan. 1, 1915, cause to be erected in every passenger car thereof properly equipped toilets. Every person or corporation failing to comply with this section shall be liable to a penalty of \$100 for each day such violation occurs. Such penalties shall be cumulative and more than one penalty may be recovered in the same action in any court of competent jurisdiction. The public service commission of the proper district shall enforce the provisions of this section."

A bill has been introduced in the Assembly to amend the penal law in relation to publicity to be given to strikes and lockouts by requiring employees seeking new laborers to advertise such strikes and lockouts. A bill has been introduced in the Assembly to amend Section 97 of the railroad law in respect to the rate of interest on municipal bonds. Another bill introduced in the Senate would amend Chapter 481 of the Laws of 1910, entitled "An act in relation to railroads, constituting Chapter 49 of the Consolidated Laws," in relation to the completion and operation of certain street surface railroads.

Senator McClelland of New York has introduced a bill to

amend the tax law relative to the franchise tax on corporations. It substitutes an entirely new schedule of rates as follows: Three-quarters of a mill on each \$1 of the par value of capital stock if no dividend is declared; 1½ mills on any portion of capital stock on which a dividend of less than 6 per cent is declared or made. The stock is to be assessed at not less than its actual value and not less than the average price at which it is sold during the year. But if this would produce a less amount than a tax of three-quarters of a mill on the par value of all the stock issues then the tax is to be at the latter rate. Where a dividend of 6 per cent or more is declared on any stock the tax is to be at the rate of one-quarter of a mill for each 1 per cent of dividends on each dollar of the par value of such stock. A minimum tax of \$2 is provided. The bill would make the tax applicable to every foreign corporation doing business in the State except banking corporations, fire, marine, casualty and like insurance companies, cooperative fraternal insurance companies and building and loan associations.

OHIO

The Mills bill, providing for the issue of bonds by municipalities for the acquisition of public utilities, was passed by both houses of the Legislature on Feb. 16, but it contained the Kramer amendment which specifies that the bonds must be a lien against the property acquired and not against the credit of the city. The provision that bonds shall be in the amount of \$100 each was retained in the bill.

PROGRAMS OF ASSOCIATION MEETINGS

I. E. C. Publicity Meeting and Dinner-Dance

Announcement is made of the interchange of the dates of the International Electrical Congress publicity meeting and the congress dinner-dance to be held during the midwinter convention of the American Institute of Electrical Engineers at New York. According to the revised program the publicity meeting will be held in the auditorium of the Engineering Societies Building, New York City, on Wednesday evening, Feb. 25, when a number of prominent speakers will tell of plans for the congress and the San Francisco exposition, and of the scenic and electrical features of the trip across the continent. On Thursday evening, Feb. 26, the International Electrical Congress dinner-dance will be held at the Hotel Biltmore.

Gas, Electric & Street Railway Association of Oklahoma

The Gas, Electric & Street Railway Association of Oklahoma will hold its 1914 convention on May 13, 14 and 15 at the Lee-Hutchins Hotel, Oklahoma City, Okla. The program for the meeting as now arranged contemplates the presentation of about a dozen papers. Some of the papers which have already been decided upon follow:

Paper, "The Effect on Revenue and Accidents Resulting from Car Design with Folding Steps, Prepayment Features, etc.," by J. J. Johnson, assistant general manager of the Oklahoma Railway, Oklahoma City, Okla.

Paper, "Motor Drive," by A. P. Little, professor of electrical engineering at the Oklahoma Agricultural and Mechanical College.

Central Electric Railway Association

In conjunction with the annual meeting of the Central Electric Railway Association in Cleveland on Feb. 26 and 27, the Cleveland supply men who are members of the association offer to all of the members of the association and their friends an invitation to attend a smoker in the banquet hall of the Hollenden Hotel on the evening of Feb. 25 at 8 o'clock. Refreshments will be served and entertainment offered in the way of music and vaudeville acts from the theaters. The ladies who come to the convention will be tendered a theater party on the same evening while the men in attendance are at the smoker. The Cleveland members hope that a large number will arrive the evening before the meeting so as to partake of the entertainment.

Financial and Corporate

ANNUAL REPORTS

Stock and Money Markets

Twin City Rapid Transit Company

Feb. 18, 1914.

The market in New York was extremely sensitive to-day. Early in the day there were sharp price concessions. On advices from Washington that the President favored early action on the railroad rate advances bullish operations followed. Shortly after noon there were further advances of around a point in the railroad issues. Toward the close the market sold off. The final tone was weak. Rates in the money market to-day were: Call, 2 per cent; sixty days, 2½ @ 2¾ per cent; four months, 2¾ @ 3 per cent; six months, 3 @ 3¼ per cent.

In the Philadelphia market to-day Philadelphia Rapid Transit sold down to 18¾. Local issues were in light demand.

In the Chicago market the total of transactions was small, but the market range was broad.

The feature of the Boston market to-day was the decline of Boston & Maine to 43.

The trading in stocks in Baltimore to-day was narrow and dull. The bond market continued active. The transactions totaled \$74,800, par value.

Quotations of traction and manufacturing securities as compared with last week follow:

	Feb. 11	Feb. 18
American Brake Shoe & Foundry (com.)	95½	96¼
American Brake Shoe & Foundry (pref.)	142	144
American Cities Company (com.)	36½	36
American Cities Company (pref.)	64	61¾
American Light & Traction Company (com.)	350	353
American Light & Traction Company (pref.)	106	106
American Railways Company	39	39¼
Aurora, Elgin & Chicago Railroad (com.)	37	39
Aurora, Elgin & Chicago Railroad (pref.)	81	79
Boston Elevated Railway	84	82½
Boston Suburban Electric Companies (com.)	7	7
Boston Suburban Electric Companies (pref.)	60	60
Boston & Worcester Electric Companies (com.)	*6¼	*6¼
Boston & Worcester Electric Companies (pref.)	39	40
Brooklyn Rapid Transit Company	91¾	92¾
Capital Traction Company, Washington	107¾	109
Chicago City Railway	170	170
Chicago Elevated Railways (com.)	20	20
Chicago Elevated Railways (pref.)	65	65
Chicago Railways, pteptg., ctf. 1.	91½	92
Chicago Railways, pteptg., ctf. 2.	32½	33¼
Chicago Railways, ptepts., ctf. 3.	7½	7½
Chicago Railways, pteptg., ctf. 4.	2¾	2¾
Cincinnati Street Railway	107	107
Cleveland Railway	105	105
Cleveland, Southwestern & Columbus Ry. (com.)	*5	*5
Cleveland, Southwestern & Columbus Ry. (pref.)	*26	*26
Columbus Railway & Light Company	13	13
Columbus Railway (com.)	75	a75
Columbus Railway (pref.)	a90	a90
Denver & Northwestern Railway	71	71
Detroit United Railway	71	71
General Electric Company	146¾	148¾
Georgia Railway & Electric Company (com.)	118	118½
Georgia Railway & Electric Company (pref.)	85¾	85¾
Interborough-Metropolitan Company (com.)	15¾	15¼
Interborough-Metropolitan Company (pref.)	61	61
International Traction Company (com.)	30	*30
International Traction Company (pref.)	a85	*85
Kansas City Railway & Light Company (com.)	19½	19½
Kansas City Railway & Light Company (pref.)	35	35
Lake Shore Electric Railway (com.)	5	5
Lake Shore Electric Railway (1st pref.)	82	82
Lake Shore Electric Railway (2d pref.)	20	20
Manhattan Railway	130¼	130
Massachusetts Electric Companies (com.)	10	11¼
Massachusetts Electric Companies (pref.)	62	62
Milwaukee Electric Ry. & Light Co. (pref.)	95	95
Norfolk Railway & Light Company	24½	24½
North American Company	69	71¼
Northern Ohio Traction & Light Co. (com.)	64	70
Northern Ohio Traction & Light Co. (pref.)	101	101
Philadelphia Company, Pittsburgh (com.)	45¾	44¾
Philadelphia Company, Pittsburgh (pref.)	42¾	43
Philadelphia Rapid Transit Company	18½	18¾
Portland Railway, Light & Power Company	53	53
Public Service Corporation	110	112
Third Avenue Railway, New York	44½	43¾
Toledo Traction, Light & Power Co. (com.)	20	20
Toledo Traction, Light & Power Co. (pref.)	80	80
Twin City Rapid Transit Co., Min'apolis (com.)	107¼	105½
Union Traction Company of Indiana (com.)	11½	11½
Union Traction Company of Indiana (1st pref.)	80	80
Union Traction Company of Indiana (2d pref.)	14	14
United Rys. & Electric Company (Baltimore)	25½	25¼
United Rys. Inv. Company (com.)	22½	22¼
United Rys. Inv. Company (pref.)	47½	46
Virginia Railway & Power Company (com.)	53	53
Virginia Railway & Power Company (pref.)	95	95
Washington Ry. & Electric Company (com.)	90	87½
Washington Ry. & Electric Company (pref.)	87	87½
West End Street Railway, Boston (com.)	72¼	72
West End Street Railway, Boston (pref.)	93	92
Westinghouse Elec. & Mfg. Company	70½	70½
Westinghouse Elec. & Mfg. Co. (1st pref.)	115	116

* Last sale. a Asked.

The statement of receipts and expenses of the Twin City Rapid Transit Company, Minneapolis, Minn., for the years ended Dec. 31, 1913, and 1912, follows:

	1913	1912
Receipts		
Revenue from transportation	\$8,818,177	\$8,147,199
Revenue from operation other than transportation	52,158	61,768
	<u>\$8,870,336</u>	<u>\$8,208,967</u>
Expenses		
Maintenance of ways and structures	\$394,527	\$364,050
Maintenance of equipment	347,453	370,251
Traffic expenses	40,913	39,943
Conducting transportation	2,923,629	2,680,496
General and miscellaneous	794,119	743,261
Total operating expenses	<u>\$4,500,640</u>	<u>\$4,198,001</u>
Net operating revenue	\$4,369,695	\$4,010,966
Taxes		
	1913	1912
Taxes	\$586,128	\$538,289
Depreciation and renewals	1,060,000	775,000
	<u>1,646,128</u>	<u>1,313,289</u>
Surplus available for fixed charges and dividends	\$2,723,566	\$2,697,676
Dividends:		
Fixed charges	\$975,311	\$990,941
Preferred stock	210,000	210,000
Common stock	1,206,000	1,206,000
	<u>2,391,311</u>	<u>2,406,941</u>
Net income to surplus account	\$332,254	\$290,735

C. G. Goodrich, president of the company, says in part:

"By comparison with the year 1912 the following increases during 1913 are shown:

Gross earnings	\$661,368.59	or 8.06 per cent
Operating expenses	302,639.51	or 7.21 per cent
Net operating revenue	358,729.08	or 8.94 per cent

"The following causes increased operating expenses beyond normal:

"1. It was decided in June to increase the wages of the employees in the operating and mechanical departments. This increased rate of pay for the half year caused an increase in the pay-roll of \$102,243.

"2. Our normal taxes were increased \$30,180 and under the new federal income tax law it was necessary to apportion \$17,659, which is an additional tax over that paid for 1912.

"During the year 107 cars were ordered built in the company shops. This entire order will be completed and the cars in service by Feb. 15, 1914.

"There was built and put into operation 10.46 miles of new track and extensions.

"The directors have appropriated from surplus the sum of \$1,060,000, which has been added to the depreciation and renewal reserves.

"To provide for new construction during the year 1914 the directors have sold \$652,000, par value, of bonds, as follows:

From the insurance fund investment	\$107,000
From the renewal fund investment	160,000
Certified but unissued bonds of the first consolidated 5 per cent mortgage, due Jan. 15, 1919	192,000
Certified but unissued consolidated mortgage bonds, due on Oct. 1, 1928	193,000

"The expenditures for new construction follow:

New power	\$475,202
New shops and tools	46,348
Car equipment	367,229
Carhouses	16,153
Track and paving	334,461
Real estate, buildings, miscellaneous	65,689
	<u>\$1,305,082</u>
Expended for renewals	525,603
Total construction and renewals	\$1,830,685

"From the accumulated surplus the directors have appropriated the sum of \$1,275,000 to the reserve for depreciation and renewals. This has been deemed advisable on account of insufficient charges for depreciation in past years.

"Regular quarterly dividends have been declared by the directors and paid, aggregating the sum of \$1,416,000, being at the rate of 7 per cent on the preferred stock and 6 per cent on the common stock."

Statistics of revenue passengers carried, transfers redeemed, etc., follow:

	1913	1912
Revenue passengers carried.....	175,895,811	162,407,993
Transfers redeemed.....	63,914,277	57,584,451
Operating, per cent of earnings, taxes included.....	57.35	57.71
Operating, per cent of earnings, taxes, depreciation and renewals included.....	69.30	67.14
Per cent on preferred stock earned and paid.....	7.00	7.00
Per cent on common stock earned (after depreciation and renewal charges).....	7.65	7.45
Per cent on common stock paid.....	6.00	6.00

Track mileage and passenger statistics follow:

Total miles, single track.....	62.89
Total miles, double track.....	161.09
Total miles, special track.....	27.31
Total miles, all tracks reduced to single.....	412.38
Average total miles, all track reduced to single, operated during 1913.....	406.20
Total miles street and right-of-way occupied by tracks.....	219.06
Average total miles street and right-of-way occupied by tracks, operated during 1913.....	216.15
Gross passenger earnings per mile, single track.....	\$21,629.66
Gross passenger earnings per mile, street occupied by tracks.....	\$40,647.55
Gross passenger earnings.....	\$8,785,968.00

York Railways

The comparative statement of income, profit and loss of the York (Pa.) Railways for the fiscal years ended Nov. 30, 1912, and Nov. 30, 1913, follows:

	1912	1913
Gross earnings.....	\$710,471	\$761,904
Operating expenses.....	\$366,520	\$397,530
Allowances for depreciation.....	15,589	16,735
Total.....	\$382,109	\$414,266
Net earnings.....	\$328,362	\$347,638
Miscellaneous income.....	4,229	5,257
Total income.....	\$332,591	\$352,895
Fixed charges and taxes.....	252,328	256,978
Net income.....	\$80,263	\$95,917
Dividends.....	64,000	80,000
Surplus for period.....	\$16,263	\$15,917
Surplus Dec. 1, 1912.....		\$60,889
Total surplus Nov. 30, 1913.....		\$76,806

Gordon Campbell, president of the company, says in part: "Gross earnings have increased at a rate somewhat higher than that of the previous year. The influence of improved service continues to be felt. Earnings from the light and power company are augmented by the addition of the business of a section of the county to the southeast of York, having its center about 8 miles from Centre Square, and including the boroughs of Red Lion, Dallastown, Yoe and Windsor.

"Two extensions of the city lines were projected and completed during the year, one from the Prospect Street line via East Princess Street, Yale Street and Prospect Street, forming a loop; the other a branch-off, 2400 ft. long, from George Street on Jackson Street. The extension of the Prospect Street line into Elmwood and Green Hill is calculated to stimulate new growth on this line. A short piece of track on Albemarle Street from East Princess Street to Market Street, 6720 ft. long, was taken up and relaid on the new route. Double track was laid on West Market Street from West Street to Belvidere Avenue.

"Rolling stock was increased by the purchase of three additional passenger cars and one snow sweeper. These cars are designed for suburban use and are of steel underframe, in type semi-convertible, with tandem sash. Their length is 34 ft. over corner posts and 47 ft. over all, and their seating capacity is fifty-two people. The trucks and motor equipment are of the latest type and suitable for high speed.

"The York & Windsor Electric Light Company was acquired by purchase of stock and bonds, and the Edison Light & Power Company was formed by the merger of the Edison Electric Light Company, the York & Windsor Electric Light Company, with franchises in Yoe, Dallastown and Red Lion, and fourteen suburban lighting companies, having franchises in their respective boroughs and townships surrounding and adjacent to York.

"To provide properly for the needs of the newly acquired territory a substation was built in Red Lion in combination

with a freight station for the railway; the transmission line was reconstructed, a three-phase line of No. 2 copper wire was installed to replace the No. 4 two-phase line, and 50-ft. poles in Dalastown and Red Lion replaced the old electric light poles and, by combination, many of the railway poles, thus providing equipment to take on substantial power business already partly contracted for in the new territory."

West Penn Traction & Water Power Company

The statement of the West Penn Traction & Water Power Company, Pittsburgh, Pa., for the year ended Dec. 31, 1913, showed gross earnings of \$4,705,613, an increase of \$1,297,027; expenses and taxes of \$2,675,568, an increase of \$846,109; net earnings of \$2,030,045, an increase of \$450,918; and fixed charges of \$1,184,118, an increase of \$289,370. The surplus remaining was \$610,927, an increase of \$61,548. A comparative statement for two years follows:

	1912	1913
Gross earnings.....	\$3,408,586	\$4,705,613
Operating expenses and taxes.....	1,829,459	2,675,568
Net earnings.....	\$1,579,127	\$2,030,045
Fixed charges.....	794,748	1,184,118
Balance.....	\$784,379	\$845,927
Guaranteed dividends.....	235,000	235,000
Surplus.....	\$549,379	\$610,927

The gross and net earnings of the system for a series of years ended Dec. 31, 1913, show:

	Gross	Net
1904.....	\$909,734	\$379,637
1905.....	1,060,238	480,480
1906.....	1,409,493	635,516
1907.....	1,603,100	761,733
1908.....	1,551,138	691,874
1909.....	1,767,915	786,575
1910.....	2,042,002	1,054,360
1911.....	2,260,287	1,148,006
1912.....	3,408,586	1,579,127
1913.....	4,705,613	2,030,045

Scranton-Binghamton Merger Hearing

A hearing was held before the members of the Public Service Commission of the Second District of New York recently on the application of the Scranton & Binghamton Railroad for permission to acquire the capital stock of the Binghamton Railway. The application states, among other things, that the Scranton & Binghamton Railroad is to supply power to the Binghamton Railway. It is agreed that any and all contracts between the Scranton & Binghamton Railroad and the Binghamton Railway for the use of cars, tracks and terminals, as well as all contracts for supplying power and the rates for hauling coal by the Scranton & Binghamton Railroad, shall be submitted to the commission before being put into effect. It is also proposed that for a period of two years the cash assets and securities owned by the Binghamton Railway shall be used only for the benefit of the Binghamton Railway, under the direction of the commission; that for a period of two years the net receipts of the Binghamton Railway shall be applied to the payment of interest on its debt and the improvement of its property, and that no further dividend shall be declared by the Binghamton Railway for two years from July 1, 1914. The application was dated Feb. 7, 1914, and was signed for the Scranton & Binghamton Railroad by T. J. Foster, vice-president.

It is proposed to operate an electric railroad between Scranton, Pa., and Binghamton, N. Y., a distance of about 62 miles, with branches to Montrose and Susquehanna, Pa., and also to Lake Winola, Pa. The road is already in operation to Nicholson, 21 miles from Scranton, and there is a branch to Lake Winola, 6 miles. A section of 18 miles from Nicholson to Montrose, Pa., is now under construction and should be completed and in operation within a year. Cars are run between Scranton and Nicholson every hour between 6 a. m. and midnight and between Scranton and Brookside every half hour, and at intervals cars carrying coal from a mine operated by an individual operator are also run over the road to Nicholson as well as express cars carrying milk and other general merchandise. Until the new construction is formally turned over to the Scranton & Binghamton Railroad it has been deemed advisable to have the line operated on behalf of the contractor by the Scranton & Binghamton Traction Company. The road,

as projected from Nicholson to Binghamton, will reach Foster, Brooklyn, Montrose, New Milford, Hallstead and Susquehanna.

The Scranton & Binghamton Railroad has an authorized capital of \$500,000, of which \$250,000 has been issued. All of the stock is owned by the Scranton & Binghamton Railway, a Delaware corporation, having a capitalization of \$6,000,000, the stock of which is being issued from time to time as the road is built and bonds of the Scranton & Binghamton Railroad are sold. The Scranton & Binghamton Railroad proposes to purchase the stock of the Binghamton Railway at \$60 a share. More than 90 per cent of the stock has been contracted for and efforts are being made to purchase the rest which is outstanding.

Among those who appeared at the hearing before the Public Service Commission were Lewis E. Carr, attorney for the applicant; G. Tracy Rogers, president of the Binghamton Railway; George E. Green, vice-president of the Binghamton Railway; S. B. Michael, assistant secretary of the Scranton & Binghamton Railroad; T. C. Dougherty, engineer of the Scranton & Binghamton Railroad, and W. C. Bates, chairman of the transportation committee of the Chamber of Commerce of Binghamton.

Adjournment of the hearing by the commission was taken to a date to be fixed by the commission.

Capitalizing Prospects in Reorganizations

Referring to the tendency in the case of reorganizations to placate the holders of the securities of the old company with paper representing frequently nothing more than prospects, the *New York Times Annalist* said editorially in the issue of Feb. 16, 1914:

"It is not uncommon for a railroad to emerge from a receivership with a larger capitalization than before, only so rearranged in form that a smaller proportion draws fixed interest. The remainder is 'something for the old security holders.' It need not have any intrinsic value; it represents what is hoped for. In time the property may grow up to those nominal securities and be able to pay dividends on them. Bankers, on contemplating a reorganization in which bondholders will have to be asked to take subordinate claims and stockholders to put up new money, always have in mind a certain amount of paper over and above intrinsic values, which will have at least the appearance and physical feeling of 'securities.' The old security holders know that the extra paper has no present value, but imagine that it will sell for something, on prospects, and are altogether better satisfied than if the new capitalization had been confined to the actual earning power of the property. Thus, almost invariably, a reorganized company starts out fresh from bankruptcy, with either bonds on which interest payments are deferred, or shares on which dividends for a number of years will be quite impossible, or both—generally both."

American Water Works & Guarantee Company, Pittsburgh, Pa.—The receivers of the American Water Works & Guarantee Company met on Feb. 16, 1914, with H. H. Pierce, a New York attorney, representing the stockholders' protective committee, and plans for the reorganization of the company and its subsidiaries and the ending of the receivership were discussed. After the meeting an officer of the company said that the plans for the reorganization would probably be announced by March 1.

Batavia (N. Y.) Street Car Company, Inc.—A committee has been named to carry on a bond-selling campaign to raise \$20,000 with which the city of Batavia proposes to secure an interest in the lines of the Buffalo & Williamsville Electric Railway in Batavia and extend and improve the property, which will be re-incorporated as the Batavia Street Car Company, Inc. The par value of the bonds will be \$100 and they will run for twenty years, paying 5 per cent interest. Under the terms of the agreement entered into Batavia must subscribe \$20,000 worth of bonds and the Federal Storage Battery Car Company \$20,000.

Chicago (Ill.) Railways.—W. W. Gurley, general counsel for the Chicago Railways, explains as follows the application of the company to the Public Utilities Commission of Illinois for permission to issue \$1,400,000 of bonds and

\$4,000,000 in short-term notes: "As we do the work required under the traction ordinance during the year we borrow the money needed and give interim certificates as security. Later we take up these certificates with bonds, but we are not permitted under the ordinance to issue bonds until the work has been completed and only to the extent of the actual value of the improvement. Last year we issued about \$4,000,000 of interim certificates for money borrowed. As the work was completed we issued bonds to redeem these certificates, but there still remains about \$1,400,000 in certificates to be retired. We will need between \$4,000,000 and \$5,000,000 to pay for work this year, and we shall have to issue interim certificates the same as heretofore."

Duquesne & Dravosburg Street Railway, Duquesne, Pa.—The courts have been asked to appoint a receiver for the Duquesne & McKeesport Land Company, the Duquesne & Dravosburg Street Railway and the United Development Company. The petition is filled by a committee of the stockholders of the companies.

El Paso (Tex.) Electric Company.—The El Paso Electric Company has increased its common dividend from an 8 per cent to a 9 per cent basis, by the declaration of a quarterly dividend of \$2.25 per share, payable on March 16 to stock of record March 4. Dividends at the rate of 8 per cent per annum have been paid quarterly since June 16, 1913.

Gary & Interurban Railway, Gary, Ind.—At the annual meeting of the Gary & Interurban Railway, the board of directors was increased to seven members by the election of Edwin W. Poe, vice-president of the Baltimore Trust Company, Baltimore, Md., and Philip L. Poe, of Poe & Davies, bankers, Baltimore, Md.

Grand Valley Railway, Brantford, Ont.—Judgment was reserved by the Appellate Division at Osgoode Hall, Toronto, Ont., on Feb. 6, on the application made on behalf of the Grand Valley Railway for an extension of time to enable it to raise funds to meet its obligations to the city of Brantford. The company owes the city \$7,000 for taxes, and the latter has been authorized to take possession of the railway property. The application was opposed by the Brantford authorities. Counsel for the bondholders of the company supported the application for an extension of time. It was stated that an offer had been made for the purchase of the company's assets, which, if accepted, would enable the company to meet all its obligations.

Idaho Railway, Light & Power Company, Boise, Idaho.—Holders of the \$3,212,000 first and refunding bonds of the Idaho-Oregon Light & Power Company are receiving a form of deposit agreement from a committee composed of Alvin W. Krech, chairman; Edmund Seymour, E. J. Emmons and J. E. Ramsey. The committee suggests that it would be well for the holders of the bonds to deposit their holdings with the committee so that advantage may be taken of any feasible plan which may be arranged. The committee explains that the action was brought about at the solicitation of a number of bondholders who did not wish to deposit with the Priest committee. The Fuller committee, recently resigned, submitted a reorganization plan to the bondholders, which provided for the sale of the property to the Idaho Railway & Light Company through the issue of income bonds to the power company bondholders. This was opposed by the Priest interests and following the resignation of the Fuller committee the Priest committee was formed. The property will be sold on March 16, 1914.

Jackson Railway & Light Company, Jackson, Tenn.—The Jackson Railway & Light Company has increased its capital stock from \$600,000 to \$700,000. The new stock is all preferred.

Joliet, Plainfield & Aurora Railroad, Joliet, Ill.—Minority bondholders of the Joliet & Aurora Interurban Railroad, which was sold recently at a master in chancery sale at Geneva for \$250,000 to a syndicate of majority bondholders headed by N. W. Halsey & Company, assert that the majority bondholders refused to let them participate in the pool.

Lehigh Valley Transit Company, Allentown, Pa.—The \$1,000,000 of refunding and improvement 5 per cent bonds of the Lehigh Valley Transit Company were purchased by a syndicate, headed by Brown Brothers & Company and Edward B. Smith & Company and composed of other well

known bankers and banking houses. The loan will be placed by the members of the syndicate with their own clientele and will not be advertised or offered publicly.

Manhattan Bridge Three-Cent Line, New York, N. Y.—The Manhattan Bridge Three-Cent Line on Feb. 11, 1914, declared a quarterly dividend of 1½ per cent, payable on March 2, putting the corporation's stock on a 6 per cent basis.

Oakland, Antioch & Eastern Railway, Oakland, Cal.—The Railroad Commission of California has authorized the Oakland, Antioch & Eastern Railway to issue \$500,000 of its first mortgage 5 per cent thirty-year bonds under its mortgage to the Union Trust Company, San Francisco, Cal., and to pledge the bonds, together with other bonds to a total of \$1,167,000, as collateral security for an issue of \$700,000 of notes under the trust agreement. The funds will be applied to develop the property and to liquidate indebtedness.

Pittsburgh & Butler Street Railway, Pittsburgh, Pa.—A hearing will be held on March 3 by the Public Service Commission of Pennsylvania on the application for the approval of the merger of the Pittsburgh & Butler Street Railway and the Butler Passenger Railway.

Schenectady (N. Y.) Railway.—Three new directors have been elected by the stockholders of the Schenectady Railway. A. H. Smith, president of the New York Central & Hudson River Railroad, has succeeded W. C. Brown, who resigned recently from the New York Central Railroad; H. S. Vanderbilt has succeeded F. A. Harrington and W. S. Updike has succeeded W. C. Noyes.

United Light & Railways Company, Grand Rapids, Mich.—The 1 per cent extra dividend to be distributed on April 1, 1914, in addition to the regular quarterly dividend of 1 per cent on the common stock of the United Light & Railways Company is payable in common stock. The regular payment is payable in cash, as usual.

Dividends Declared

Brockton & Plymouth Street Railway, Brockton, Mass., 3 per cent, preferred.
 Manhattan Bridge Three-Cent Line, New York, N. Y., quarterly, 1½ per cent.
 Rochester Railway & Light Company, Rochester, N. Y., quarterly, 1¼ per cent, preferred.
 Tennessee Railway, Light & Power Company, Memphis, Tenn., quarterly, 1½ per cent, preferred.

ELECTRIC RAILWAY MONTHLY EARNINGS

ATLANTIC SHORE RAILWAY, SANFORD, MAINE						
Period	Gross Earnings	Operating Expenses	Net Earnings	Fixed Charges	Net Surplus	
1m., Jan., '14	\$21,997	\$20,779	\$1,218	\$661	\$557	
1 " " '13	22,292	20,064	2,228	466	1,762	
CUMBERLAND COUNTY POWER & LIGHT COMPANY, PORTLAND, MAINE						
1m., Dec., '13	\$205,547	*\$116,063	\$89,484	\$63,576	\$25,908	
1 " " '12	175,134	*102,012	73,122	56,510	16,612	
12 " " '13	2,354,797	*1,312,873	1,041,924	714,273	327,651	
12 " " '12	2,128,388	*1,201,334	927,054	644,774	282,280	
FEDERAL LIGHT & TRACTION COMPANY, NEW YORK, N. Y.						
12m., Dec., '13	\$2,329,164	*\$1,389,032	\$940,132			
12 " " '12	2,167,507	*1,253,155	914,352			
GRAND RAPIDS (MICH.) RAILWAY						
1m., Dec., '13	\$121,731	*\$71,591	\$50,140	\$12,421	\$37,719	
1 " " '12	106,978	*65,608	41,370	14,252	27,118	
12 " " '13	1,294,347	*796,551	497,796	166,633	331,163	
12 " " '12	1,233,588	*700,230	533,358	175,225	358,133	
NEW ORLEANS RAILWAY & LIGHT COMPANY, NEW ORLEANS, LA.						
1m., Jan., '13	\$639,544	\$310,495	\$329,049	\$208,338	\$120,711	
1 " " '12	616,657	297,138	319,519	189,527	129,992	
12 " " '13	6,924,425	3,600,382	3,324,043	2,446,514	877,529	
12 " " '12	6,652,936	3,420,357	3,232,579	2,233,587	998,992	
PHILADELPHIA (PA.) RAPID TRANSIT COMPANY						
1m., Jan., '14	\$2,006,527	\$1,202,056	\$804,471	\$802,682	\$1,789	
1 " " '13	2,002,067	1,228,131	773,936	769,000	4,936	
7 " " '14	14,246,065	8,338,091	5,907,974	5,598,842	309,132	
7 " " '13	13,928,192	8,344,906	5,613,286	5,329,921	283,365	
REPUBLIC RAILWAY & LIGHT COMPANY, YOUNGSTOWN, OHIO						
1m., Jan., '14	\$257,978	*\$152,278	\$105,699	\$43,089	\$62,610	
1 " " '13	244,341	*148,566	95,775	45,816	49,959	
12 " " '14	3,011,307	*1,847,676	1,163,631	533,538	630,093	
12 " " '13	2,710,158	*1,633,306	1,076,852	529,986	546,866	

*Includes taxes.

Traffic and Transportation

Ruling of the Pennsylvania Commission Regarding Free Transportation

Numerous requests have been presented to the Public Service Commission of Pennsylvania, by railroads and street railways and persons interested, for an administrative ruling upon the questions whether or not the issuance of free passes to officers and employees of railroads to be used for the transportation of dependent members of the families of such officers and employees, and whether or not the according of free transportation by common carriers to policemen and firemen in the discharge of their public duties, are violations of the act of July 26, 1913, known as the public service company law.

A public hearing in this matter was held by the commission at Harrisburg on Jan. 20, 1914, at which representatives of railroad and railway companies and others appeared. After careful consideration the commission is of the opinion that the meaning of the provisions of the law of July 26, 1913, are not such as to require the commission to regard as a violation of the law the practice of railroad companies in issuing free passes to their officers and employees to be used for the transportation of dependent members of the families of such officers and employees. This practice has had the sanction of custom since the adoption of the pass provision of the constitution of 1874, and the act of June 15, 1874, passed to carry that provision of the constitution into effect. The commission has therefore ruled that the granting without unfair discrimination by railroad companies of free passes to their officers and employees, to be used for the transportation of dependent members of the families of such officers and employees, will not be regarded by the commission as a violation of the provisions of the law. The commission is further of the opinion that free transportation, without unfair discrimination, by common carriers, on behalf of the commonwealth, or on behalf of any municipality thereof, of policemen in the performance of their public duties, and similarly, that free transportation, without unfair discrimination, by common carriers, on behalf of any such municipality, of firemen in the performance of their public duties, is not such free transportation as is prohibited by the provisions of the public service company law, and will not be regarded by the commission as a violation of the law.

Plans for Delivering Farm Produce in Philadelphia

Brief mention was made in the ELECTRIC RAILWAY JOURNAL of Feb. 14, 1914, page 384, of the campaign which has recently been inaugurated in Philadelphia for reducing the high cost of living and developing a system of municipal markets to bring the producer into closer touch with the consumer, that the farmer may receive more for his product and the consumer buy at reduced cost. The present municipal administration, under Mayor Blankenburg and Director Cooke of the Board of Public Works, has assigned Chief William H. Ball, of the Bureau of Public Properties, to work out the plan. Mr. Ball has enlisted in his work Edward C. Spring, manager of the interurban division of the Lehigh Valley Transit Company, representing the traction interests.

The present City Councils of Philadelphia have a bill before them known as the "interurban curb market bill." This measure, which has been in Councils for nearly a year, has recently been brought forward and will probably be passed by the Councils in the near future. This will give the Department of Public Works the right to establish municipal markets at such objective points as will serve the interests of the city to the best advantage. These markets will be under the direction and supervision of Mr. Ball and his assistant, Miss Lippincott, superintendent of markets. The farming districts outside of Philadelphia will be organized into farmers' associations which will be represented at the various markets in Philadelphia. A common pool among the farmers will defray the expenses of this representative or any assistants that he may have, also the rental necessary at the various market houses. In the future the farmer will load his goods on the electric railway

and consign them to his representative in Philadelphia. The representative in Philadelphia will in turn make returns direct to the farmer. This will enable the farmer to dispose of his product direct and eliminate the middleman. At the same time the people of Philadelphia will benefit by receiving better and fresher produce at reduced cost.

Differences Regarding Service in Detroit

Differences have arisen between the members of the Detroit Common Council and the officers of the Detroit (Mich.) United Railway in regard to service. The Council, through a resolution offered by Alderman Bliel, declared the company was overcrowding the cars and that the service had been materially reduced since the seven-for-a-quarter agreement of Aug. 7. He called upon the corporation counsel to take action under such city ordinances as gave him authority to compel a greater amount of service by the company. The company also was cited to appear and explain what changes in the service have occurred since the low-fare agreement became effective. The company had taken no action in reply up to Feb. 16, and it is evident from the Feb. 20 issue of *Electric Railway Service*, which is published weekly in the interest of the company, that the railway proposes to resist any attempts to compel an increase in service where the increase is not justified by the business. The company states officially in its paper that "the people of Detroit are getting all the service the Detroit United Railway can give for the money," and it maintains that a scientific investigation will prove this assertion to be true. The company contends it is physically impossible to operate more cars during the rush hour and insists that more tracks must be built by the city or the company before this can be done.

Although injunction proceedings are pending in the courts to prevent the construction of the Junction Avenue cross-town line, authorized several months ago by the City Council, the Detroit United Railway, the Père Marquette Railroad and the Wabash Railroads will appear before the State Railroad Commission on Feb. 26 to discuss the crossings which will be required for the proposed line. The city has been asked to have a representative present.

Group Insurance for Pittsburgh Employees

J. D. Callery, president of the Pittsburgh (Pa.) Railways, addressed the following communication to the employees of the company under date of Feb. 9, 1914:

"The Pittsburgh Railways is pleased to announce to its employees that it has been able to secure a blanket policy from the Equitable Life Assurance Society of the United States, insuring the lives of its employees over one year in the service of the departments mentioned below.

"The company pays all the expenses of this insurance.

"Upon the death, from any cause whatever, of any of the said employees, of two years' service or more, his family will receive checks from the Equitable Life Assurance Society for approximately his previous year's wages, payable monthly over a period of one year.

"The family of any one of said employees who has served our company for one and less than two years will, in lieu of the above, receive approximately one-half his full year's wages, payable as above. We have thus far been able to effect this insurance for employees in the following departments: maintenance of way, barns and shops, overhead lines department, substations, monthly employees of the transportation department, general office force—from the president down.

"This insurance is now in effect, dating from Feb. 1, 1914. A form to designate the member of your family to whom you would wish the money paid will be furnished you. Please fill out this form and return promptly, that you may receive your individual policy stating the amount and to whom it would be paid."

Special Rates to Charitable Institutions.—The Pittsburgh & Butler Street Railway, Pittsburgh, Pa., has asked the Public Service Commission of Pennsylvania to pass upon the question of the company continuing the practice of special rates in favor of certain charitable institutions located along the railway.

Operating Changes at Bowling Green.—The Southern Traction Company, Bowling Green, Ky., has installed fare boxes and made other alterations in its cars to enable it to put the pay-as-you-enter system into effect. The company has also adopted the plan of having its cars stop on the "near" side of the street.

Transporting Letter Carriers in Tacoma.—On Feb. 1 the Tacoma Railway & Power Company, Tacoma, Wash., withdrew its special rate on commutation city tickets to the post office department of twenty-five for \$1, and is now selling regular city tickets to that department at the regular rate of twenty-two tickets for \$1.

Serious Accident in Pittsburgh.—Forty persons were injured on Feb. 14 at 11.30 p. m. when an East Liberty express car of the Pittsburgh Railways ran into an open switch at Liberty and Millvale Avenue. The car turned over on its side. All of the passengers were more or less bruised and about forty were taken to the West Penn Hospital to be treated for their injuries.

Decision on Transfer Exchange in Buffalo.—In a decision handed down by a justice of the Supreme Court in Buffalo, N. Y., it is held that the refusal of the International Railway and the Buffalo & Lake Erie Traction Company to accept and interchange transfers will not subject either company to a penalty. A judgment secured in a lower court for \$50 is set aside by the opinion.

Short Municipal Road in Oakland.—The city of Oakland, Cal., owns a railroad 390 ft. long in front of the new City Hall. The line is under lease to the San Francisco-Oakland Terminal Railways for a period of ten years. The rental is \$1 a foot per year. All the city owns is the roadbed. The municipal road is an extension of the Washington Street line of the terminal corporation.

Smoking to Be Prohibited in Wheeling.—The Wheeling (W. Va.) Traction Company plans to issue an order to prohibit smoking on its cars. At present the company permits smoking on the front end of closed cars, while in the summer the last three seats of open cars are reserved for smokers. There is considerable popular demand for the smoking privilege in connection with suburban traffic handled by the company, however.

Carhouse Signs in Washington.—The Public Utilities Commission of the District of Columbia has prepared a design for a sign to be erected at carhouses to warn drivers of vehicles against the danger of accidents at such places. The commission has prescribed the places at which such signs shall be erected and has issued an order directing the Washington Railway & Electric Company and the Capital Traction Company to erect the signs in accordance with the commission's instructions.

Kansas City Automobile Ordinance Amended.—The upper house of the Kansas City Council has passed an amendment to the traffic ordinance recently adopted, clarifying the definition of the safety zone. By the provisions of the amendment auto drivers must stop 10 ft. in the rear of street cars which have stopped to take on or discharge passengers, and may not run 10 ft. to the right or left. The amendment will prevent differing interpretations of the ordinance by police judges. Violation of the ordinance is punishable by a fine of not less than \$1 nor more than \$500.

Advertising Schedule Changes in Topeka.—The Topeka (Kan.) Railway resorted to the advertising columns of the daily papers recently in announcing a change of schedule on the Asylum-South Topeka division. Ten-minute service was put into effect. While the daily papers considered the change of enough importance to mention as a matter of news, the railway company further impressed the better service on the public by using 6 in. of space, triple column. It was explained that the schedule, given in full, would prevail between the hours of 6 a. m. and 8 a. m. and between 5 p. m. and 7 p. m.

Stenographers as Assistants to Division Superintendents.—The Metropolitan Street Railway, Kansas City, Mo., has added forces of stenographers to its two largest divisions, those at Forty-eighth and Harrison and Ninth and Brighton. The stenographers, it is believed, will take much routine off the shoulders of division superintendents and make for increased efficiency all around. Heretofore stenographers have been used only at the main offices of the company. Besides doing typewriting, the stenographers will super-

wise the making of trainmen's accident reports and other reports made by trainmen, will look up tracers for the claim department, etc.

Methuen Service Petition.—The Massachusetts Public Service Commission has received a petition from the selectmen of Methuen asking that transfers be granted on the Haverhill line of the Bay State Street Railway; that turn-outs be so placed that the company may be able to run cars at fifteen-minute intervals between Lowell and Haverhill; that additional night car service be given from the Lawrence transfer station to Methuen, and that a fifteen-minute schedule be placed in effect in rush hours in the Methuen district. The petitioners desire one car every fifteen minutes instead of two cars every thirty minutes on the Lowell-Haverhill route.

Hearing at Boston Upon Dewey Square Transfers.—The Public Service Commission of Massachusetts gave a hearing on Feb. 4 upon the petition of members of the Legislature residing in the Suffolk districts for the establishment of surface car transfer facilities at Dewey Square, Boston. C. S. Sergeant, vice-president of the Boston Elevated Railway, appeared for the company, and in response to the suggestion of Chairman McLeod that the granting of transfer privileges is desirable between Atlantic Avenue surface cars running north of Dewey Square and cars operating in Dewey Square and Dorchester Avenue, stated that the company would endeavor to put the desired arrangements into effect.

Public Co-operation Requested in Chicago Safety Crusade.—Co-operation of the public to aid street railway motormen in protecting persons from injury was urged recently by H. L. Brownell, safety inspector of the Chicago Surface Lines, before the Cook County Truck Gardeners and Farmers' Association. He said: "Put lights on your wagons; get clear promptly of street cars; don't take chances, and when you're afoot use the same precaution crossing a street-car track as you would crossing a strange steam railroad track. Know where you are going and keep your eyes open." In closing he stated, "Our motormen are human. They don't want accidents. You don't want them. Let's work together to prevent them."

Re-routing in Buffalo.—As the result of a conference held in Buffalo with members of the Public Service Commission of the Second District of New York by Edward G. Connette, president of the International Railway, and merchants representing various business men's organizations, another re-routing of service in Buffalo will be made on several of the lines which are now operated through the down-town business district. Two of the east side lines will be taken off Main Street and will be routed down a street running parallel to Main Street but three blocks to the east. In the spring as soon as switches and cross-overs can be installed another east and west side line will be connected to make a through route from one end of the city to the other. The International Railway is gradually eliminating the division of the city at Main Street by connecting the east and west side lines into through routes.

Arbitration Award in Augusta.—The majority of the board of arbitration which has been considering the question of the wages of the employees of the Augusta-Aiken Railway & Electric Corporation, Augusta, Ga., reports that "conditions as represented to us do not warrant an increase for the year 1914." The evidence presented by the employees showed approximately twelve hours of work daily, at rates varying from 17 cents to 22 cents an hour, which it was contended were insufficient in view of the high cost of living. On the other hand, the company showed that it was in anything but a flourishing condition financially; that the prevailing hours of labor were not unusual; that the wages were the highest paid in any of nineteen cities which it named in the Southeast and that the gross earnings per car mile were the lowest among all but two of the cities named. During the eleven years from 1900 to 1910, inclusive, the former owners of the property increased the pay of the men an average of a fraction over 1 cent an hour, while the present owners, coming into possession of the property in 1911, increased the pay 4 cents an hour in less than two years' time. In other words, for eleven years prior to 1911 the men received an increase of about 7 per cent in wages, while during less than two years the present owners increased the pay of the men about 30 per cent.

Personal Mention

Mr. Pomeroy Ladue has been appointed purchasing agent of the San Francisco-Oakland Terminal Railways, Oakland, Cal., to succeed Mr. John Wells.

Mr. Frank J. Duffy, manager of the Southern Railway & Light Company, Natchez, Miss., has been elected chairman of the committee of depositors of the First Natchez Bank.

Mr. George W. St. Pierre, master mechanic of the San Francisco-Oakland Terminal Railways, Oakland, Cal., has been appointed superintendent of equipment of the company.

Mr. D. C. O'Dowd, superintendent of the Carrollton car-house of the New Orleans Railway & Light Company, New Orleans, La., has been appointed superintendent of the railway lines included in the southern division of the company.

Mr. C. C. Johnson has been appointed general manager of the Vicksburg Light & Traction Company, Vicksburg, Miss., to succeed Mr. A. J. Bemis. Mr. Johnson was formerly connected with the Chickasha (Okla.) Street Railway.

Mr. F. E. Scovill, who for more than nine years has held the position of manager and secretary of the Laredo Electric & Railway Company, Laredo, Tex., for the G. Bedell Moore estate, has resigned, following the sale of the property to Mr. R. W. Morrison, St. Louis, Mo., and associates.

Mr. Thomas Penney, former president of the International Railway, Buffalo, N. Y., and now a member of the law firm of Norton, Penney, Spring & Moore, attorneys for the corporation, has been appointed general counsel for the company with supervision over the law and claims departments.

Mr. R. W. Morrison, who with his associates has purchased the property of the Laredo Electric & Railway Company, Laredo, Tex., has been elected president of the company to succeed Mrs. G. B. Moore, and has assumed the management of the company, succeeding Mr. F. E. Scovill, who has managed the company for some time for the G. Bedell Moore estate.

Mr. A. Ludlow Kramer has resigned as vice-president of the Equitable Trust Company, New York, N. Y., to become president of the Electric Properties Company, succeeding Mr. John F. Wallace, resigned. Mr. Wallace will hereafter devote his time to the affairs of Westinghouse, Church, Kerr & Company, all the stock of which is owned by the Electric Properties Company.

Mr. E. C. Sherwood has resigned as general foreman of shops of the Coney Island & Brooklyn Railroad, Brooklyn, N. Y., to accept the position of general foreman of car equipment with the Manhattan & Queens Traction Corporation, Long Island City, N. Y. Previous to his connection with the Coney Island & Brooklyn Railroad Mr. Sherwood was with the New York (N. Y.) Railways as general foreman of the mechanical department.

Mr. J. Paulding Edwards, who for the last eight years has served the Northern Electric Railway of California in the capacity of consulting, constructing and operating electrical and mechanical engineer, has retired from the construction and operating departments of the company and has been appointed consulting engineer for the company with headquarters at 201-202 Farmers & Mechanics' Bank Building, Sacramento, Cal. In addition to his work for the Northern Electric Railway Mr. Edwards has entered general practice as a consulting engineer.

Mr. Grover Squires, assistant division superintendent at the Thirty-first and Holmes division of the Metropolitan Street Railway, Kansas City, Mo., has been transferred to the Ninth and Brighton division in the same role. The change is a promotion, because of the greater importance of the latter division. He succeeds Mr. George Bogert, who returns to the mechanical department of the company. Mr. Squires is succeeded as assistant division superintendent at Thirty-first and Holmes by Mr. E. H. Holcomb, until recently day clerk at the Forty-eighth and Harrison division.

Mr. George N. Brown, electrical engineer of the New York State Railways, Syracuse Lines, has also been appointed chief instructor in the school of the company for the Syracuse territory. It is planned to increase the effi-

ciency of the school of instruction for men seeking employment. The usual two weeks' training will be given prospective motormen and conductors, and there will be a system by which the work of the new employees will be recorded for a period of one year from their entrance into the service. Mr. Brown will have two assistants in his work and the schoolroom in the Tallman Street carhouse will be equipped with new apparatus for demonstration purposes.

Mr. C. A. Alderman, formerly of Buffalo, and for the last fifteen months vice-president and chief engineer of the Ironwood & Bessemer Railway & Light Company, Ironwood, Mich., and Ashland, Wis., has resigned and opened an office temporarily in Ashland. Mr. Alderman, who took a civil engineering course at the University of Wisconsin, has been in municipal, hydroelectric and railroad engineering since 1885. Among the works with which he has been connected are the Saxon Falls hydroelectric development on the Montreal River, the electric railway from Ironwood to Bessemer, Mich., and filters and settling basins for the Ironwood water-works. He is at present making surveys and plans for two small hydroelectric projects in northern Wisconsin.

Mr. I. R. Carson has superseded Mr. J. F. Gregory as superintendent of the Westport & Belt division of the Metropolitan Street Railway, Kansas City, Mo. Mr. Carson formerly was assistant superintendent of the Forty-eighth and Harrison division, perhaps the most important of the company. He is a young man who entered the electric railway business at an early age. Mr. Carson originally was a trainman, and was later made division clerk, finally being promoted to the assistant superintendency of the Forty-eighth and Harrison division and later to the position mentioned. He has been succeeded as assistant superintendent of the Forty-eighth and Harrison division by Mr. Frank Hainline, until recently day clerk at the same division.

Mr. J. Q. Brown, assistant manager of the San Francisco-Oakland Terminal Railways, Oakland, Cal., has resigned, effective on March 1. Mr. Brown has long been regarded as one of the most able operators on the Pacific Coast. He invented the roller pantograph trolley, used on the Key Route, Southern Pacific and other roads, and also the movable railing now used on the platforms of the prepayment cars in Oakland and San Francisco. He designed and directed the construction of the Yerba Buena power station, one of the most complete and economical plants of its kind in the West. He has had charge of the design and erection of the distribution system, signals, rolling stock, shop and maintenance of all electrical and mechanical apparatus on the San Francisco-Oakland Terminal Railways. He is a member of the American Society of Mechanical Engineers.

Mr. Harry B. Ivers, who has resigned as general manager of the Lewiston, Augusta & Waterville Street Railway Company, Lewiston, Maine, to become connected with the Frank Ridlon Company, Boston, Mass., the control of which he purchased recently, was the guest of honor at a banquet arranged by the employees of the company and held on Feb. 16. About forty employees of the company and a number of personal friends of Mr. Ivers attended. Speeches were made by Mr. John R. Graham, president of the company; Mr. William H. Newell, one of the directors; Mr. E. T. Munger, the new general manager; Mr. G. W. Bowie, general superintendent of the system; Mr. John E. Nelson and Mr. Ivers himself. Mr. William B. Skelton acted as toastmaster. Mr. Ivers was presented with a gold watch, chain and thirty-second degree Masonic charm, which was handed him as a remembrance from the entire organization of the Lewiston, Augusta & Waterville Street Railway. The presentation was made by Mr. Thomas Vaughn, president of the relief association of the company.

Mr. W. J. Grambs, superintendent of light and power of the Puget Sound Traction, Light & Power Company, Seattle, Wash., has been promoted to the position of assistant to President Jacob Furth. Mr. Grambs engaged in the electrical business in Seattle in the spring of 1888 and established and organized the Northwest Electric Supply & Construction Company. This company installed the first incandescent electric lighting plant in the Northwest, and successively represented the Edison United Manufacturing Company, the Sprague Electric Railway & Motor Company, the Edison General Electric Company, the General Electric Com-

pany and the Northwest General Electric Company. In 1899 Mr. Grambs resigned his position with the General Electric Company to accept the position of purchasing agent of the Seattle Electric Company. In 1905 he was appointed contract agent of that company and two years later sales manager. In November, 1911, he was appointed superintendent of light and power. Between the years 1896 and 1899 Mr. Grambs acted as receiver for several of the street railway and lighting properties in Seattle.

Mr. Henry W. Thornton, general superintendent Long Island Railroad, Long Island City, N. Y., and president of the Northwestern Railway, which is a consolidation of the Meadville & Conneaut Lake Traction Company and the Meadville Traction Company, Meadville, Pa., has been appointed general manager of the Great Eastern Railway of England. Mr. Thornton was born on Nov. 6, 1871, and was educated at the University of Pennsylvania. He entered railway service in 1894 as a draftsman with the Pennsylvania lines west of Pittsburgh. From that time until November, 1899, he was consecutively assistant engineer on construction for the Cleveland & Marietta Railway, topographer attached to the chief engineer's office of the Southwest system of the Pennsylvania lines, assistant in the engineers' corps of the Pittsburgh division of the Pennsylvania lines, assistant engineer in field work attached to the chief engineer's office of the Southwest system, supervisor of yards at Columbus, Ohio; assistant engineer of the Cincinnati division and assistant engineer assigned to special work. From November, 1899, to March, 1901, Mr. Thornton served as engineer of maintenance of way of the Erie & Ashtabula division of the Northwest system of the Pennsylvania lines west of Pittsburgh, and from March, 1901, to May, 1902, he was superintendent of the Marietta division of the Northwest system. From May, 1902, to Dec. 23, 1903, he was superintendent of the Cleveland, Akron & Columbus Railway. Subsequently he served as superintendent of the Erie & Ashtabula division of the Northwest system of the Pennsylvania lines west of Pittsburgh. On Feb. 1, 1911, he was appointed assistant general superintendent of the Long Island Railroad and on Nov. 14, 1911, he was advanced to general superintendent of the company. The Great Eastern Railway is in many ways like the Long Island Railroad, with which Mr. Thornton has been connected. It does a large seaside business. Mr. Thornton would be well qualified by his previous experience on the Long Island Railroad to supervise the electrification of the line, should that change be decided as advantageous. He expected to sail from London on the *Mauretania* for New York on Feb. 15.

Mr. Philip J. Kealy resigned on Feb. 1 as engineering assistant to Mr. Bion J. Arnold, to accept the position of assistant to Mr. R. J. Dunham, chairman of the board of directors of the Kansas City Railway & Light Company, Kansas City, Mo., and president of the Sioux City (Ia.) Service Company. Mr. Kealy will act as consulting engineering expert and will be in charge of the public relations of the several public service corporations of which Mr. Dunham is the executive head. Mr. Kealy is not yet thirty years of age. He is a civil engineer by profession, and after completing his technical training at the University of Illinois, entered the employ of the Board of Supervising Engineers, Chicago Traction, as field engineer. In 1910 he entered the service of the Arnold Company, and has since been employed to carry out the valuation of the property of the Consolidated Traction Company, and subsequently was engaged on traction report work. In 1911 he acted as assistant in charge of the valuation of the property of the Seattle (Wash.) Electric Company and the International Traction Company, Buffalo, N. Y. During the early part of 1912 he was engaged on the details of the reorganization of the International Traction Company, his analysis of that company's capital expenditures for the previous eleven years being subsequently approved in total by the Public Service Commission of the Second District of New York. In July, 1912, Mr. Kealy went to Kansas City as Mr. Arnold's assistant in charge of the valuation of the Metropolitan Street Railway. After completing the valuation work he acted as engineering adviser to Mr. Dunham and Mr. Ford J. Harvey, the receivers, in the franchise negotiations which followed Mr. Arnold's report. In the summer of 1913 he was Mr. Arnold's principal assistant in charge of the report on the value

of the Toronto Railway made for Mayor Hocken of that city. The preliminary franchise negotiations were concluded in Kansas City last October, and Mr. Kealy was named in the agreement as the company's representative on a board of control of two men to control the operation, construction and auditing of the proposed new company. The franchise was subsequently withdrawn by the receivers. Mr. Kealy will be located temporarily in Kansas City for the next few months on matters pertaining to the reorganization of the Kansas City Railway & Light Company.

OBITUARY

Jackson Stout, a contractor who built several electric and steam railroads in Kansas, died at his home at Wichita on Feb. 13. Mr. Stout was seventy-eight years old.

William A. Broadhead, formerly connected with the Pacific Electric Railway, Los Angeles, Cal., is dead. The funeral was held from the home of his uncle, Mr. William B. Broadhead, vice-president of the Chautauqua Traction Company and founder of the woolen mills in Jamestown, N. Y. Mr. Broadhead had lived in Los Angeles for the last thirteen years. He was forty-six years old and unmarried.

John W. Callahan, general manager of the Chicago (Ill.) Tunnel Company, died at his home in Chicago, Feb. 12, 1914. Mr. Callahan was born at Salem, Ohio, in November, 1862, and began active railroad work as foreman of a Pennsylvania Railroad section crew when a boy. He located in Chicago in 1882 and, after filling various railroad positions, was made general superintendent of the Indiana Harbor & Belt Line Railroad. In September, 1906, he resigned that position to become general manager of the Chicago Tunnel Company, but in February, 1910, returned to his former position as general superintendent of the Indiana Harbor & Belt Line Railroad. In May, 1912, he re-entered the service of the Chicago Tunnel Company as general manager.

William H. Boardman, for many years president of the *Railroad Gazette*, now the *Railway Age Gazette*, and for eight years its editor, died at his home in Ridgefield, Conn., on Feb. 16, 1914. Mr. Boardman was born in Dixon, Ill., on Aug. 3, 1846, and was graduated from the University of Michigan, where he took the two degrees of bachelor of arts and civil engineer. After working for a time on the *Dixon Telegraph*, owned by his father, Mr. Boardman entered the service of the *Railroad Gazette*, then owned by A. N. Kellogg and published in Chicago. The editorial direction of the paper at that time was in charge of S. Wright Dunning, Chicago, and Matthias N. Forney, New York. Mr. Boardman's principal work at first and for many years after was in the business department. Following the Chicago fire in 1871 and the sale of the *Railroad Gazette* to Messrs. Dunning and Forney, who moved it to New York, Mr. Boardman served as bookkeeper, cashier, treasurer, advertising manager and office manager. In 1883 he bought most of Mr. Forney's holdings, and on Jan. 1, 1887, those of Mr. Dunning, who then retired from active connection with the paper. Mr. Boardman then became president, and from that time until forced to retire by illness he gave his entire time to the paper and to the affairs of what is now the Simmons-Boardman Publishing Company, publisher of the *Railway Age Gazette* and the *Signal Engineer*. In February, 1903, Mr. Henry G. Prout, who for sixteen years had been editor of the *Railroad Gazette*, withdrew, and Mr. Boardman assumed the duties and responsibilities of editor. In the following year the property was enlarged through the purchase of *Transport*, of London, now the *Railway Gazette*, and in 1908 was still further enlarged by the purchase of the *Railway Age*, which was consolidated with the *Railroad Gazette* under the present name. Mr. Boardman was one of the progressive forces in technical journalism in this country. He always had a very broad conception of the functions of a technical paper and of its possibilities in the way of improving the conditions of the industry which it represented. These high ideals, coupled with Mr. Boardman's wide knowledge of the field and his natural ability, enabled him to set a high standard in his chosen profession and to leave a lasting impression upon it. As a man, Mr. Boardman possessed a charming personality, and his enthusiasm in everything which he undertook was a source of inspiration to everyone who came in contact with him.

Construction News

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

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

RECENT INCORPORATIONS

***Atlanta & North Georgia Railroad, Atlanta, Ga.**—Application for a charter has been made by this company in Georgia to build a 50-mile electric or steam railway from Atlanta via Bolton, Roswell, Crabapple, Alpharetta and Cumming to Creighton, Ga. Headquarters: Atlanta. Capital stock, \$1,200,000. Incorporators: A. B. Kellogg, James N. Ellis, J. H. Drewry, R. W. Underwood, J. N. Johnson, Jr., S. O. Vickers, E. C. Rupley and J. W. Tindall, Atlanta; J. M. Estes and H. P. Hoyt, Kirkwood, Ga.

***Indianapolis & Frankfort Railroad, Indianapolis, Ind.**—Incorporated in Indiana to build an electric railway from Indianapolis to Frankfort, 55 miles. J. J. Turner, Philadelphia, Pa., president.

***Newark, Williamson & Northern Railway, Williamson, N. Y.**—Application for a charter has been made by this company in New York to build a railway to be operated by steam, electric or other mechanical power. Capital stock, \$150,000. Incorporators: Adelbert H. Williams, Abram F. DeHond, Chares I. DeZutter, Kingsley M. Davies and Frank S. Wilder, all of Williamson, N. Y.

***Interurban Company, Ltd., Toronto, Ont.**—Incorporated in Ontario to build an electric railway and other public utilities in Ontario. Capital stock, \$5,000,000.

FRANCHISES

Birmingham, Ala.—The Birmingham Railway, Light & Power Company has received a franchise from the Council on Avenue F from Twentieth Street to Elmwood Cemetery in Birmingham.

Birmingham, Ala.—The Birmingham, Ensley & Bessemer Electric Railway has asked the Council for a franchise to extend its lines in Birmingham.

***Parker, Ariz.**—W. H. Tharpe, Parker, and associates have received a franchise from the Council for a proposed electric railway in Parker and vicinity. Application will be made at once to the Interior Department for right-of-way through the reservation. Work will be begun within the next sixty days.

Fresno, Cal.—The Fresno Traction Company has received a certificate of public convenience and necessity to construct an electric railway over certain streets and highways in the county of Fresno, to cross certain streets at grade, and to construct an undergrade crossing beneath the tracks of the Santa Fé Railway. Certain specifications are prescribed to be complied with by applicant in the construction of said crossings.

Tama, Ia.—The Iowa Railway & Light Company has asked the Council for an extension of time on its franchise to extend its tracks on McClellan Street and Main Street in Tama.

Hagerstown, Md.—Henry A. Bester, Jr., representing the Washington County Traction Company, Hagerstown, has received a forty-year franchise over East Washington Street in Hagerstown. This railway will connect Security, Leitersburg, Chewsville and Smithsburg. [E. R. J., Feb. 14, '14.]

Orange, Mass.—The Miller's River Street Railway has asked the Public Service Commission for approval of the extension of time on its franchise to Jan. 20, 1915, in which to complete the construction of its railway in Orange and Erving. This railway will connect the lines of the Northern Massachusetts Street Railway and the lines of the Connecticut Valley Street Railway. D. P. Abercrombie, secretary. [E. R. J., May 17, '13.]

Springfield, Mass.—The Springfield Street Railway has received a franchise from the Council to double-track and relocate its line on the south side of the state highway from a point near Lee's Crossing to the West Springfield town line.

Billings, Mont.—The Billings Traction Company will ask the Council for a new franchise in Billings.

Buffalo, N. Y.—The International Railway has asked the Council for a year's extension of time on its franchise to build a line on Bailey Avenue from Clinton Street to Main Street in Buffalo.

Jefferson, Ohio.—Henry Orth, Chardon, representing the Chardon, Jefferson & Meadville Railway, has received a franchise from the Council in Jefferson. This is part of a plan to build a 30-mile line to connect Chardon, Hampton, Fontville, Rock Creek and Jefferson, Ohio, and Linesville, Pa. C. H. Felton, 735 Williamson Building, Cleveland, secretary. [E. R. J., Feb. 7, '14.]

Banks, Ore.—The United Railways has asked the Council for a franchise in Banks. It is planned to build an extension from Wilkesboro to Banks.

Hazeldell, Pa.—The Lehigh Valley Transit Company has asked the Council for a franchise in Hazeldell. This is part of a plan to extend the new Ellwood line to connect New Castle and intermediate cities.

Memphis, Tenn.—H. D. Brennan and associates have asked the Council for a franchise to build a 1-mile extension on Castalia Avenue in Memphis.

Corsicana, Tex.—The Dallas, Corsicana & Palestine Railway has received a year's extension of time on its franchise from the Council in Corsicana. This 150-mile railway will connect Dallas, Corsicana and Palestine. C. R. Hall, Palestine, secretary. [E. R. J., Oct. 18, '13.]

Houston, Tex.—The Houston Electric Company has received a franchise from the Council for an extension through Sunset Heights northwest of Houston. Work on this branch will be begun at once.

Seattle, Wash.—An extension of the Beacon Hill line has been authorized by the Board of Public Works and the Puget Sound Traction, Light & Power Company has received permission to extend the line on Beacon Avenue from Hanford Street, the present terminus, to Spokane Street in Seattle. Work on the proposed extension will begin in the immediate future, giving transportation facilities to the Jefferson Park district upon its completion.

TRACK AND ROADWAY

Helena (Ark.) Southwestern Railroad.—Work will be begun within the next sixty days by this company on its 20-mile line from Helena southwest to Pillows Hill. E. C. Nelson, Helena, is interested. [E. R. J., Dec. 6, '13.]

Little Rock Railway & Electric Company, Little Rock, Ark.—This company has awarded a contract to Donohoe & Company for the grading of the Biddle Street extension in Little Rock.

Fresno & Clovis Interurban Railway, Fresno, Cal.—Grading will be begun on March 1 by this company for its line between Fresno, Clovis and Academy. F. S. Granger, Clovis, president. [E. R. J., Feb. 7, '14.]

Pacific Electric Railway, Los Angeles, Cal.—This company has placed an order for 4000 tons of girder rails. An extension of the Fifth Avenue line in Pomona into Chino and possibly on into Ontario is being contemplated by this company.

San José (Cal.) Railway.—As the result of an agreement made recently by this company to reconstruct as a standard-gage line its present narrow-gage line from East San José to Linda Vista the State Railroad Commission has made an order extending the company's time. The reconstruction from Twenty-sixth Street to the King Road and the easterly city limits must be completed by August next and that of the line from the King Road to Linda Vista by February, 1915. The new construction ordered will be about 4 miles in length, and work upon it will be begun early this spring.

***Petaluma, Cal.**—Work has been begun on a preliminary survey for a 7-mile electric railway from Taylor station in Petaluma to Graton, Occidental and Camp Meeker. Ultimately this line will be extended to the coast. Among those interested are J. H. Brush, M. C. Meeker and George P. McNeary, Petaluma.

Stockton (Cal.) Electric Railway.—This company is asked to consider plans to extend its line from Stockton Street down Fourth Street to the Southern Pacific station at Townsend Street in Stockton.

East Washington Heights Traction Company, Washington, D. C.—A 1½-mile extension will soon be built from the Pennsylvania Avenue bridge over the East Branch of the Potomac River via Twining City to Randle Highlands by this company.

***Athens, Ga.**—Henry Hadgson, W. T. Bryan and associates are considering plans to build an electric railway from Athens, Ga., to Anderson, S. C., via Hartwell.

Chicago (Ill.) Railways.—This company has awarded a contract to the Lorain Steel Company for 20,000 tons of 9-in., 133-lb., girder rails for its lines in Chicago.

Mattoon, Shelbyville, Pana & Hillsboro Traction Company, Pana, Ill.—President Robert Johns of this company has issued a call for all stockholders to meet in Charleston, Ill., March 5, to vote on a resolution requesting the board of directors to dissolve the company. The corporation was organized several years ago, and obtained a right-of-way for a line between Hillsboro, Pana and Shelbyville, and connecting with the Mattoon, Charleston, Paris & Terre Haute line at Mattoon. The proposition will be abandoned.

Indiana Utilities Company, Angola, Ind.—This company expects to purchase several amusement attractions for parks.

Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind.—Plans are being made to extend the Lewis Street line to the city limits of Fort Wayne.

***Madison, Ind.**—L. S. Cook, Madison, Ind., plans the construction of an interurban electric line between Madison and Cincinnati. The route proposed is by way of Florence, Vevay, Markland, Patriot, North's Landing, Rising Sun, Aurora and Lawrenceburg, Ind., and Miamitown, Ohio. At the latter point it is proposed to form a junction with a line which has been projected from Rushville, Ind., to Cincinnati via Brookville, Ind., and Harrison, Ohio. A right-of-way for the proposed line has already been secured.

Keokuk (Ia.) Electric Railway.—This company has been asked to consider plans for an extension of its lines in Keokuk from Nineteenth Street to Carroll Street and down Fifteenth Street to Des Moines Street, thence to Fifth Street to join the present West Keokuk line.

Waterloo, Cedar Falls & Northern Railway, Waterloo, Ia.—Plans are being made for an extension from Cedar Falls to Marshaltown, via Grundy Center and Dyke, a distance of 60 miles.

Hutchinson & Northern Railway, Hutchinson, Kan.—Petitions are being circulated in Hutchinson to hold an election for the purpose of voting \$30,000 bonds to aid this company to build its 14-mile line from Hutchinson to Burrton. W. S. Thompson, Hutchinson, is interested. [E. R. J., Jan. 31, '14.]

Joplin & Pittsburg Railway, Pittsburg, Kan.—Plans are being made for an extension from Twenty-sixth Street and Baxter Street in Joplin, Mo., to Shoal Creek, south of Joplin.

Wichita Railroad & Light Company, Wichita, Kan.—A short extension will be built by this company in Wichita during the year.

Louisville (Ky.) Railway.—Plans are being considered for a 1-mile extension of the Chestnut Street line to Shawnee Terrace. Application for a franchise for this branch will be made in the near future.

***Algiers, La.**—Surveys are being made to build a 4½-mile line from the lower terminal of the present electric line in Algiers to the parish line. Local capital is said to be behind the enterprise. Construction will be begun within the next few weeks. This line will be operated independently of the present electric railway facilities in Algiers.

Winnipeg (Man.) Electric Railway.—This company is asked to consider plans for an extension from Gypsumville to the north of Manitoba, to join the government line at Reed Lake, and from Broadview to Sturgeon Bay.

Worcester (Mass.) Consolidated Railway.—Plans are being considered by this company for an extension from West Boylston to Oakdale.

Grand Rapids (Mich.) Railway.—Plans are being considered by this company to extend its Lafayette-Stocking line as far east as Kalamazoo Avenue in Grand Rapids.

Duluth (Minn.) Street Railway.—This company is asked to consider plans to build an extension on Fifty-fourth Ave-

nue east from Superior Street to Glendale Street in Duluth.

Hannibal Railway & Electric Company, Hannibal, Mo.—Final surveys are now being made on the Palmyra Avenue route in Hannibal for an extension to Riverview Park.

Metropolitan Street Railway, Kansas City, Mo.—This company placed in operation on Feb. 11 its new Argentine-Minnesota line. It extends from the western extremity of Argentine, in Kansas City, across the Kaw River, through Armourdale to Tenth Street, north to the business section of Kansas City, through the packing house district and over the James Street viaduct to the stockyards.

Missouri Valley Traction Company, St. Joseph, Mo.—Steps for the dissolution of this company, incorporated in 1907 to build an electric line from St. Joseph to Excelsior Springs, will be taken at a meeting of the stockholders to be held soon in St. Joseph. The company was successfully launched, but the panic of 1907 put an end to the financing of the project, and since then the electric line connecting St. Joseph, Kansas City and Excelsior Springs has been built. The headquarters of the company has been in St. Joseph. The following statement has been made by H. G. Krake, secretary, relative to the company and its proposed dissolution: "This company was organized in 1907 to construct an electric interurban line from St. Joseph to Excelsior Springs, with a branch line from Lathrop to Mirabile. Funds were secured through the sale of capital stock of the company. Active work was carried forward for several months. About the time the preliminaries were sufficiently advanced to arrange for financial aid for construction, the panic of November, 1907, occurred and stopped progress in that direction for the time. Later several unsuccessful efforts were made to interest financial support in the enterprise." [E. R. J., Dec. 13, '13.]

United Railways, St. Louis, Mo.—It has been decided to extend this company's line in Kirkwood from Main Street to Geyer Road in the near future.

Billings (Mont.) Traction Company.—This company has asked the Council for permission to supplant its storage battery system with the overhead trolley system.

Butte (Mont.) Electric Railway.—Plans are being considered for an extension of the Oregon Avenue line of this company from the intersection of Dewey Street and Hill Street across the flat and into the Gilman addition.

New York Consolidated Railroad, Brooklyn, N. Y.—This company has ordered approximately 18,000 tons of rails for completion of the Center Street loop. The American Bridge Company will supply 5000 tons on the above order.

Interborough Rapid Transit Company, New York, N. Y.—This company has placed an order for 5000 tons of standard section rails.

Southern Power Company, Charlotte, N. C.—This company has awarded a contract to the Parker-Brooks Construction Company, Macon, Ga., to build 5 miles of new track in connection with hydroelectric development at Look-out Shoals, N. C.

Newbern-Ghent Street Railway, Newbern, N. C.—A 15-mile extension from Newbern to Trenton, N. C., is being contemplated by this company.

Cleveland (Ohio) Railway.—Plans are being made to build a line on West Sixty-fifth Street from Clark Avenue to Denison Avenue in Cleveland this spring, thus completing a belt line around the city.

Arthur, Ont.—Surveys are being made for the proposed Hydro-Electric Radial Railway route from Hespeler to the Georgian Bay. A line from Hespeler as far as Fergus has already been surveyed, and it is expected to have the survey completed through Garafraxa to Arthur in a few weeks.

Mount McKay & Kakabeka Falls Railway, Fort William, Ont.—It is planned to electrify and extend this company's lines during the year. The power for the electrification will be obtained, for the time being, from the Kaministiquia Power Company.

St. Mary's, Ont.—Citizens of St. Mary's and of the townships of Blanshard, Biddulph and London have passed a resolution to be forwarded to the Hydro-Electric Power Commission requesting a survey and estimates of the proposed radial railroad from London to Stratford, via London Town-

ship, Granton, Biddulph, Blanshard, St. Mary's and Stratford, and also a line from St. Mary's through Blanshard westward to join with the Huron line and on to Grand Bend, and to report on the most advantageous route for an electric railway through that district.

Portland Railway, Light & Power Company, Portland, Ore.—About 2 miles of new track will be built by this company in Portland during the year.

Hershey (Pa.) Transit Company.—Preliminary work will soon be begun on this company's line between Elizabethtown and Hershey.

Pittsburgh, Steubenville & Wheeling Street Railway, Pittsburgh, Pa.—This company has awarded the contract to the Nisbet Engineering Company to build this line from Pittsburgh through northern Washington County to Wheeling with a side line to Steubenville. At McDonald the Washington branch will extend through Primrose and Hickory to Washington. It is expected that work will be begun in the spring. W. H. Hildebrand, Pittsburgh, Pa., president. [E. R. J., April 26, '13.]

Moose Jaw (Sask.) Electric Railway.—Plans are being considered for two extensions in Moose Jaw, one from the South Hill district and the other from a section forming a loop along Main Street to Thirteenth Avenue, and thence to Athabasca Street.

Chattanooga Railway & Light Company, Chattanooga, Tenn.—Work will be begun at once by this company for an extension of the Missionary Ridge line from Rossville to Chickamauga Park via Green Lake.

Nashville (Tenn.) Traction Company.—Plans are being made to begin work within the next few weeks on this 34-mile line in Nashville. W. O. Palmer, Nashville, president. [E. R. J., Feb. 14, '14.]

Austin (Tex.) Street Railway.—This company is asked to extend its lines in Austin to Waller Street and Chicon Street at once.

Dallas, Corsicana & Palestine Railway, Dallas, Tex.—Arrangements are being completed by this company to build soon its 150-mile line from Dallas to Palestine and Corsicana. L. E. Mitchell, Dallas, president. [E. R. J., Oct. 18, '13.]

Dallas (Tex.) Northwestern Traction Company.—This company, which plans to build a 50-mile electric railway between Dallas, Wichita Falls, Denton and Krum, is making preliminary plans for the construction of its proposed road and has elected the following officers: E. P. Turner, Dallas, president; J. P. Blount, Denton, vice-president; E. J. Fry, Dallas, treasurer; Benjamin B. Crain, Dallas, secretary, and George Williams, Dallas, chief engineer. [E. R. J., Feb. 7, '14.]

Laredo Railway & Light Company, Laredo, Tex.—Extensive improvements of its lines are being planned by this company.

Uvalde & Leona Valley Interurban Railway, Uvalde, Tex.—A 22-mile extension from Uvalde to Batesville is being planned by this company for the near future.

Blaine-Lynden Electric Railway, Blaine, Wash.—The organization of this company to build an electric line between Blaine, Lynden and Bellingham has been perfected. Right-of-way has been secured and construction will be begun in the spring. Capital stock, \$250,000. Officers: John J. Pinckney, Blaine, president; Lester Livingston, secretary, and Howard Seabury, Blaine, attorney. [E. R. J., Jan. 17, '14.]

Shenandoah Valley Railway, Martinsburg, W. Va.—Work will be begun in the spring by this company on the line from Williamsport, Md., through Martinsburg, Winchester, Strasburg, Woodstock and southward as far as Harrisonburg. A spur will probably be built to Washington eastward from Winchester through Berryville and thence to Bluemont, the southern terminal of the Washington & Old Dominion Electric Railway. Clarence E. Martin, Martinsburg, is interested. [E. R. J., Feb. 7, '14.]

Chippewa Valley Railway, Light & Power Company, Eau Claire, Wis.—During the next six weeks this company will award contracts to build 4 miles of new interurban track in the vicinity of Eau Claire.

Wisconsin Railway, Light & Power Company, Milwaukee, Wis.—During the year it is planned to rebuild about 2 miles of track in Milwaukee.

SHOPS AND BUILDINGS

Lewiston-Clarkston Valley Railway, Lewiston, Idaho.—Plans are being made by this company to build a new carhouse in Clarkston, Wash., during the year. F. L. Strum, Lewiston, president.

East St. Louis & Suburban Railway, East St. Louis, Ill.—This company has awarded a contract to the Murphy Construction Company, East St. Louis, for the construction of a four-story building at Collinsville Avenue and Main Street in East St. Louis to be used for the offices and waiting room of the company and the office and salesroom of the East St. Louis Light & Power Company. The structure will be of brick and reinforced concrete. The cost is estimated to be about \$70,000.

Tri-City Railway, Davenport, Ia.—Preparations are being made by this company for the construction of an addition to its new carhouses on Fifth Avenue in Rock Island. Two more bays will be added to the carhouse on the East Side, and the old frame structure which was the original carhouse and shops and is now used for a repair shop is to be torn down to make way for the new building. This addition will furnish accommodations for forty more cars. The cost of the improvements is estimated to be about \$40,000.

Arkansas Valley Interurban Railway, Wichita, Kan.—This company has completed its new depot in Newton.

Bay State Street Railway, Boston, Mass.—The new carhouse located on Middlesex Street near Burnside Street in Lowell has been completed. The structure is 145 ft. x 288 ft. and 40 ft. in height. It contains 2 miles of track and this is divided into ten different lengths.

Springfield (Mass.) Street Railway.—This company is asked to consider plans to build a new passenger station at Ware.

Columbus Railway, Power & Light Company, Columbus, Ohio.—The Rose Avenue carhouse has been converted into a car-building plant by this company and a full equipment of machinery has been placed in it.

Toronto (Ont.) Railway.—It is reported that this company plans to build soon two new carhouses in Toronto.

Regina (Sask.) Municipal Railway.—Plans are being made by this company for an addition to its carhouse in Regina.

POWER HOUSES AND SUBSTATIONS

Augusta-Aiken Railway & Electric Corporation, Atlanta, Ga.—This company has completed its new power plant at Stevens Creek and has placed it in operation.

Holyoke (Mass.) Street Railway.—Among the improvements planned for this company's power house at Holyoke will be additions to the boiler and engine rooms so that there will be an additional overload capacity of 3000 hp. A concrete coal pocket will also be built at the plant.

Escanaba (Mich.) Traction Company.—Plans are being considered by this company to build a new dam on the Escanaba River, 2 miles from Gladstone. This will add to the capacity of the company's power plant on the Escanaba River.

Mahoning & Shenango Railway & Light Company, Youngstown, Ohio.—All contracts for equipment for this company's new Lowellville power house addition have been awarded and bids are now being asked for the construction of the new building. About \$250,000 is being spent in these improvements to the plant.

Dominion Power & Transmission Company, Hamilton, Ont.—In connection with the new steam plant to be built by this company it is announced that contracts have been awarded to the Canadian Westinghouse Company for the initial electrical equipment.

Charleston-Isle of Pines Traction Company, Charleston, S. C.—This company is now using the power to operate its lines from the power house of the Consolidated Company through the cable recently installed under the Cooper River. The Sullivan's Island power house hereafter will be used only for reserve purposes.

West Virginia Traction & Electric Company, Wheeling, W. Va.—Extensive improvements are being planned by this company to increase the capacity of its power plant 40 per cent.

Manufactures and Supplies

ROLLING STOCK

Charlotte (N. C.) Electric Railway expects to purchase six 40-ft. closed passenger cars.

Trenton & Mercer County Traction Corporation, Trenton, N. J., is in the market for ten cars.

Memphis (Tenn.) Street Railway has issued specifications for about twenty-five passenger cars.

Sunbury & Susquehanna Railway, Sunbury, Pa., is in the market for four double-truck city cars.

Wisconsin Public Service Company, Green Bay, Wis., is in the market for four cars for city service.

Pittsburgh (Pa.) Railways has issued specifications for 225 new steel double-truck passenger cars.

Easton (Pa.) Transit Company has ordered six single-truck cars from The J. G. Brill Company.

Walla Walla Valley Railway, Walla Walla, Wash., expects to purchase one electric locomotive.

New York State Railways, Syracuse, N. Y., is reported to be working on specifications for new cars.

New Orleans Railway & Light Company, New Orleans, La., has issued specifications for about fifty passenger cars.

Philadelphia & Garrettford Street Railway, Upper Darby, Pa., has ordered five double-truck cars from the Jewett Car Company, weighing about 50,000 lb. each.

Pottstown & Phoenixville Railway, Pottstown, Pa., expects to purchase during 1914 six semi-convertible cars, to be equipped with four-motor equipments, brakes, heaters and fenders.

Stone & Webster Management Association, Boston, Mass., has ordered for its subsidiary, the Puget Sound Traction, Light & Power Company, twelve passenger cars from the St. Louis Car Company, through Wendell & MacDuffie, Eastern representatives.

Centerville Light & Traction Company, Centerville, Ia., expects to purchase two passenger cars and one combination baggage and express car for operation on the proposed electrification of the Southern Iowa Traction Company, a steam road recently purchased by the Centerville Light & Traction Company, as noted in the ELECTRIC RAILWAY JOURNAL of Feb. 7, 1914, page 332.

Evanston (Ill.) County Traction Company, noted in the ELECTRIC RAILWAY JOURNAL of Jan. 31, 1914, as having purchased ten double-truck city prepayment cars from the St. Louis Car Company, has increased this order to twelve cars and has specified the following details for these cars:

Seating capacity.....	40	Hand brakes,
Weight of car body.....	16,000 lb.	St. L. Car Co. vertical
Length of body.....	28 ft.	wheel and Peacock.
Length over vestibule..	41 ft.	Heaters.....
Width over sills.....	8 ft. 6 in.	Headlights
Width over all.....	8 ft. 8 in.	Motors
Body...steel girder "T" post		Sanders.....
Interior trim.....	cherry	Sash fixtures..
Headlining	Agasote	Seats, style..
Roof	arch	Seating material...
Underframe	steel	Step treads.....
Air brakes.....	National 3-A	Trolley catchers...
Bumpers	Anti-climber	Trucks.....
Car trimmings.....	bronze	Ventilators
Control...Gen. Elec. K-51A		Special devices, etc.,
Couplers.....	St. L. Car Co.	Root track scrapers,
Curtain fixtures..	Cur. Sup. Co.	sol. flash signal system,
Curtain material..	Pantasote	Louis Car Co. door mech-
Fenders or wheelguards..	H.B.	anism.

TRADE NOTES

Carbon Steel Company, Pittsburgh, Pa., announces that having discontinued the office of assistant to the president in charge of sales upon the resignation of H. W. Finnell, it has appointed C. F. Blue, Jr., as general sales agent with headquarters at Pittsburgh.

Keyes Products Company, New York, N. Y., has appointed Raymond H. Pilson, Munsey Building, Washington, D. C., as Southern sales agent for the products of this company.

Mr. Pilson has acted for some time as Southern representative of the Hale & Kilburn Company and of other interests.

New York Air Brake Company, New York, N. Y., has appointed Scott R. Hayes as assistant to the president, effective March 1. Mr. Hayes recently resigned from the position of vice-president of the Railway Steel Spring Company.

Oshkosh Manufacturing Company, Oshkosh, Wis., has appointed the Union Electric Company, Pittsburgh, Pa., as its Pittsburgh agent and has arranged with it to carry a large and representative stock of its construction tools and specialties on hand ready for prompt shipment. This has been arranged so that Eastern jobbers can use this stock to advantage.

Prepayment Car Sales Company, New York, N. Y., announces that it furnished the prepayment door and step control devices for the center-entrance cars of the Manhattan & Queens Traction Corporation, New York, N. Y., and for the single-truck convertible car of the Union Railway, New York, N. Y., which installations were described in the ELECTRIC RAILWAY JOURNAL for Feb. 14, 1914.

American Electric Car Company, Saginaw, Mich., has been organized with a capital stock of \$1,250,000. The company is a consolidation of the Argo Electric Company, of Saginaw, the Broc Electric Company, Cleveland, Ohio, and the Borland-Grannis Company, Chicago, Ill. The headquarters and plants of the company will be in Saginaw. C. W. Brand, president of the Broc Electric Company, is president, and Theodore Huss, Saginaw, Mich., is secretary and treasurer.

ADVERTISING LITERATURE

National Tube Company, Pittsburgh, Pa., has issued Bulletin No. 19, containing a complete list of its products manufactured for mechanical and commercial purposes.

Esterline Company, Indianapolis, Ind., has issued a catalog describing its "Golden Glow" lamps for automobiles, motorcycles, street cars, locomotives, steamships, harbors and industrial uses.

Oshkosh Manufacturing Company has issued a booklet descriptive of its new guy anchor, which can be had upon request of either the company at Oshkosh, Wis., or the nearest jobber.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has issued Section DS 842 of its trolley line material catalog, which describes various bracket arms for direct and catenary construction.

More-Jones Brass & Metal Company, St. Louis, Mo., has issued an attractive folder on trolley wheels. Particular attention is called to the method of getting the best foundry results in the manufacture of the fifty styles of trolley wheels.

Reliance Manufacturing Company, Massillon, Ohio, is distributing a sixty-four-page catalog on its different types of nut locks for every service. This company has recently enlarged its plant at Massillon and has branch selling offices at New York, Detroit, Chicago and San Francisco.

Ohio Brass Company, Mansfield, Ohio, has issued a folder describing its O-B trolley catcher, which is designed to prevent the trolley wheel from jumping and catching on the overhead. The pole is caught after short travel and held, and it will not step up or climb on the rebound. The folder also describes the O-B trolley base.

Esterline Company, Indianapolis, Ind., has issued a folder describing its graphic voltmeters, ammeters, wattmeters and speed recorders for recording line voltage, station curves, consumers' load curves, maximum demand periods, arc light circuit records, electric traction traffic conditions, electrolysis investigations and shop motor tests. This company has also issued new price sheets for its meters and transformers.

Root Spring Scraper Company, Kalamazoo, Mich., has issued a catalog describing its spring life guard. This guard is held from slipping down from the oscillation of the car by a heavy coiled spring which, when released by an object striking the gate, is sprung to the pavement and the guard is held firmly by the same spring. It is impossible for an object to get under, through, or the guard to rise when once in the basket. The catalog also describes the No. 6 scraper. A testimonial statement is given by the

Grand Rapids Railway Company and the Michigan United Traction Company.

H. M. Byllesby & Company, Chicago, Ill., have issued a reprint from the *Engineering Record* describing their construction of the Coon Rapids Hydroelectric Development on the Mississippi River, which is owned by the Northern Mississippi River Power Company and leased to the Minneapolis General Electric Company. Otto E. Osthoff was chief engineer, W. R. Thompson manager of engineering and construction, and J. William Link hydraulic engineer. Construction was carried on by the force-account method under W. T. Walker, construction superintendent, and W. B. Saunders, resident engineer.

Niles-Bement-Pond Company, New York, N. Y., has issued a large and copiously illustrated catalog on the subject of its electric traveling cranes, built to operate continuously. Quiet operation is secured by the use of gears with teeth cut from solid stock. After discussing various accessories, such as d.c. motors, cage and controllers, bridge girders, bridge ends, bridge drive for box section girders, standard crane trolley, trolley with independent auxiliary hoist, mechanical load brake, electric brakes, bottom blocks and grab bucket trolley, the catalog concludes with a series of photographs showing installations of electric cranes in the shops of a number of large steel foundries and car and locomotive manufacturing plants.

Asbestos Protected Metal Company, Beaver Falls, Pa., has issued a catalog accompanied with sample copies of a new form of prepared roofing which it has named Aegisroll. The body or base of this roofing is wool felt impregnated by waterproofing and completely enveloped in a coating of asphalt compound. To the upper surface of this base is attached pure asbestos felt, while the lower surface is protected by a coating of crushed quartz. Both the asbestos and the crushed quartz are embedded in their respective surfaces while the asphalt is hot and they are therefore permanently attached. Owing to the advancements made by this company in permanently coloring asbestos felt, the roofing can be furnished in a variety of attractive colors, making possible for the first time artistic combinations between roofs and the color treatment of the building.

NEW PUBLICATIONS

Psychology in Daily Life. By Carl Emil Seashore. 226 pages. D. Appleton & Company, New York and London. Cloth bound, \$1.50 net.

This book is the first of the "Conduct of Mind Series," the purpose of which is to provide readily intelligible surveys of selected aspects of the study of the mind and its applications. The volume brings relevant psychological principles to bear upon popular interests and practical concerns. The several chapters deal with topics such as play, the law of illusion, mental measurement, mental health and mental efficiency. The illustrations, liberally provided, are so well chosen that they at once suggest how completely the daily life is conditioned by the psychological basis. The style of direct address has been retained in the book, with the result that it has the character of a non-technical personal message from one in a technical workshop.

The Truth About the Railroads. By Howard Elliott. 260 pages. Houghton, Mifflin Company, New York and Boston. Cloth bound, \$1.25.

The several chapters of this book were first written as addresses to be delivered on various occasions and in various places. Mr. Elliott discusses among other topics the following: "Co-operation between the railway owner, the railway employee and the railway user," "The conservation of railway service," "Rate making and the government" and "Public opinion—its effect on business." The writer has taken the public into his confidence and endeavored to counteract the so-called public antagonism to railroads by giving more complete information concerning them. The book is written in an easy, simple, yet logical and well-constructed style, and it should make the public see more clearly some of the practical problems that confront railroad managers.