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CONTENTS.

Dust Guards

The Engineering Association standard journal boxes of all sizes are designed with a dust guard slot in the rear wall and the standard axles of the association have a dust guard seat from 2 in. to 2½ in. wide between the journal and the wheel seat. While this would seem to indicate that dust guards were intended to be used in all electric car journal boxes they seldom are used. The purpose of a dust guard is to prevent oil from working back along the axle into the motor axle bearings and out on the wheels and to prevent dust and dirt from getting into the waste and oil in the journal box. Great care is taken to machine the lid and hold it down tight by springs or bolts in order to keep dirt from getting in the front of the box, but the opening in the back of the box is left entirely unprotected when a dust guard is not used. It is true that most dust guards are not so effective as they might be in keeping the oil in and the dust out, but even a poor dust guard is better than none at all. Dust guards are very cheap and it is worth while to maintain them in all journal boxes. One company has a standing rule that a new dust guard shall be applied to every box that is removed from an axle for any reason, regardless of the condition of the old dust guard. This keeps them in fairly good condition all the time. The journal lubrication costs of this company, it might be mentioned, are low, due to the small waste of oil and the better condition of the packing in the boxes.

Economy and Efficiency

In discussing the application of efficiency methods to engineering work many persons confuse efficiency with economy. To the engineer in charge of new construction or routine maintenance a mandate from the executive office to economize conveys only one meaning, to lay off every possible man, stop buying and using material, and, in general, to skimp the job. Much the same idea prevails regarding the institution of efficiency methods. The engineer who attempts to increase the efficiency of his department by reducing the number of men employed, using second-hand material where new material is needed and in other similar ways reducing the expenditures is working in the wrong direction. Efficiency does not necessarily imply doing the same work with fewer men, but, instead, doing more and better work with the same number of men. The bad effects of a policy of retrenchment and economy are sure to follow a temporary saving, whereas the highest degree of efficiency work may cost more at the start but save large amounts in the future. Much routine maintenance work on an electric railway property remains undone because no men can be spared to attend to it or no money is appropriated to buy the necessary material for

proper repairs. The useful life of the apparatus is materially shortened by such neglect and the annual cost is greatly increased. For example, a few loose joints develop in a piece of track laid in a paved street, and no attention is paid to them because the track force is engaged on some large job. The track foundations, the rails and the paving are soon badly damaged, and it is necessary to make expensive repairs which are not warranted by the remaining life of the whole piece of track. The temporary economy secured by not spending a little money on the bad joints is a mere fraction of the value of the shortened life of the track which results from such a policy. The efficiency method would be to tighten the joints and grind them to a smooth surface as soon as possible and before the foundation or the paving was badly damaged, thus prolonging the life of the whole track at small expense.

Regulation of Capitalization

Complete regulation of railway capitalization was not favored by all the representatives of public commissions who attended the last annual meeting of the National Association of Railway Commissioners. The report made on this subject, an abstract of which is published elsewhere in this issue, refers specifically to the law of New York State and the administration of the statute by the commission which has jurisdiction. As the commission of the Second District has authority over practically all of the steam railways operating in the State, it is evidently that body which the members of the committee had in mind in the preparation of the report. The important results mentioned are that full money value, or as nearly as may be estimated, is obtained for bonds and notes, while par is paid for stock. The proceeds are then applied to proper capital purposes, not replacements, with wholesome effect on the fixed capital accounts. During the discussion on the report the opinion was expressed that governmental regulation went far enough if it supervised merely to make sure that the money realized from the sale of securities was applied to expenditures that could properly be capitalized. This would avoid the unfortunate results experienced in at least one prominent instance in Massachusetts, where the sale of additional shares of stock is authorized only at prices close to the market values. In that State the analysis of earnings of a large railroad corporation showed that its full dividends had not been earned and adequate provision for maintenance had not been made. The dividend rate was reduced and the price of the stock declined many points below the figures at which the shares had been sold by order of the regulating commission. While the sale of stock at par, pro rata, to existing shareholders would afford a profit to the purchasers in the case of a prosperous company paying a sufficient rate of dividend to maintain the price of the security well above par, the holders could realize the profit if they chose to sell and would therefore have less, if any, ground for complaint against the State, should the price decline greatly in the distant future In the same degree in which a State supervises railway capitalization it is morally, if not legally, responsible and will be so held by the public. Reasonable regulation, which opens opportunities for fair profit, will accomplish more in the development of public utility properties than a rigid supervision which leaves no hope of gain for enterprise.

PLANS FOR INCREASING THE ASSOCIATE MEMBERSHIP

An important question now before the new executive committee of the American Electric Railway Association is the best method of carrying out the recommendation of President Brady at Atlantic City of an enlarged field of usefulness for the association through a greatly increased associate membership. With the general advisability of such a step all will agree. The association is capable of greater things that it can now do with its support of less than 400 companies and only about 1300 associate members. To live up to its opportunities it should have at least twice that number of active members and ten times that number of associate members. We believe that the time will come soon when the management of every electric railway company will feel that active membership in the association is necessary. But it is our purpose here to discuss only the possible plans for increasing the associate membership, because the opportunities for growth there seem greater at present.

There are two ways in which the associate membership can be increased. One is through the addition in large numbers of railway men who are not now associate members. The other is to place the associate membership on such a basis as to make it appeal to all others who are closely identified with the industry, such as those engaged in the manufacture of electric railway apparatus. These are the problems to be solved by the committee on associate membership, and some light may be thrown on their answer by a study of the organization of similar national bodies.

So far as the first class of members is concerned, the feature of the associate membership of the National Electric Light Association which has been the greatest factor in the growth of that association has been the plan of "company sections." In fact, the tremendous increase in membership of the National Electric Light Association during the past two years under its present plan of organization has undoubtedly suggested the adoption of a somewhat similar plan in the railway association. The membership in each company section in the electric light association is confined to the employees of one member company, except that occasionally several member companies in one city unite in forming a company section. These sections have their own meetings under the auspices of the national body and discuss matters connected with the industry but related principally to the local property. The popularity of these local organizations is shown by the fact that the New York Edison Company's section—for instance—has a membership of over 1000 and the Commonwealth Edison Company's section in Chicago has a membership of over 1300. Some railway men have expressed doubt as to whether there is the same opportunity to organize company sections among the employees of a railway company and say that the employees of an electric lighting company include a proportionately larger number of men with considerable engineering knowledge, like inspectors, line men and station engineers. Others on the contrary believe the opportunity

among the railway companies to be far greater and advocate the inclusion in a railway company section of trainmen, as well as of inspectors and other higher officials. If this was done the opportunities in the railway industry would greatly exceed those in the lighting industry.

These matters would have to be settled by a careful study of the field. Nevertheless, we believe in the general plan of company sections. Its success among the lighting companies is certainly a strong argument in its favor. Moreover, as practically 25 per cent of the railway companies in this country also do a lighting or power business and so are familiar with the company sections plan, it does not possess the element of newness to a large proportion of the companies which are members of the American Electric Railway Association.

The second plan which we have mentioned for increasing the associate membership of the association relates to the manufacturers and their representatives. At present they come in contact with the association and the policies which it represents only once a year, yet their prosperity is closely bound up with that of the railway companies and all should be working for the common good. In this connection it is interesting to recall that at the time of the reorganization of the American Electric Railway Association in 1905 the relation of the manufacturers to the association formed one of the most serious problems considered. One suggestion made by the manufacturers was that their association should be an affiliated association, somewhat on the same basis as the other affiliated associations, and should be part of the main organization; but other counsels prevailed and the Manufacturers' Association was made in the constitution an "allied" association and not an "affiliated" association. The proposition to change this plan of organization comes now not from the manufacturers but from the parent association. The best way in which this may be done cannot be decided offhand, but President Brady's address pointed out the desirability of uniting for the common welfare all of the interests concerned in the industry represented by the association.

The electric railway industry is passing through a critical period in its history and needs the assistance and support of all those who wish to see the industry develop instead of stagnate. It has been estimated that there are more than 250,000 officials and other employees of electric railway companies in the country and that there are in addition more than 100,000 men engaged largely in the manufacture of electric railway apparatus. If even a small portion of this number—say only 5 per cent—should become associate members of the association within the next two or three years it would be of immense advantage. With even 10,000 interested members, a small number compared with the importance of the industry, in touch with the main office of the association and acquainted with its plans and policy, a great deal of good would be accomplished. President McCarter has already announced, in behalf of the new executive committee, the intention of directing the work of the association along even broader lines than have heretofore been attempted and the inauguration of plans which will make membership in the association even more attractive than before. Now is the time to pull together in the furtherance of this policy.

THE SOUTHERN PACIFIC ELECTRIFICATION

Those of our readers who have followed the descriptions published in the ELECTRIC RAILWAY JOURNAL of the electrification by the Southern Pacific Company of its Alameda, Oakland and Berkeley suburban lines will realize that a piece of work of considerable magnitude has been carried out in the Far West quietly and without attracting anything like the attention from the electrical engineers of the country that the same work would have attracted if it had been executed, say, within 1000 miles of New York City. These articles appeared in our issue of Feb. 4, 1911, which described the power house and substations; in the issue of June 17, 1911, which described the motive power equipment and repair shop, and in the issues of Oct. 21 and 28, 1911, which contained an account of the overhead line construction and distribution system of the company.

The total cost of the first stage of this work, as just nearing completion, is approximately $10,500,000. Ordinarily a piece of electrification involving such a first cost receives the distinguished consideration of many consulting engineers and manufacturers, all of whom are naturally interested to devote a considerable part of their time and attention to its successful outcome. The past history of large electrification problems bears abundant testimony that often these influences complicate an already complex situation. The Southern Pacific project, however, is unique in that the entire work of design, specification, purchase and construction was carried out wholly within the organization of the railroad company as it stood at the time the work was ordered, with its engineering force augmented by assistant engineers and draftsmen who had received their training in the larger electrification undertakings of the East. It is also unique in that in every case the contract requirements have been exceeded by the performance of the apparatus under acceptance tests. In all the work that passed through the hands of the designing engineers no appropriation has been exceeded, there has been no extra on any contract, nor has there been a single error that cost money to rectify; and the total cost of engineering has been less than 3 per cent.

The construction work was executed by the organized construction forces of the company, its work being inspected and in general directed by the designing engineer's office as regards compliance with the plans and specifications. In no case was it necessary to go outside of the company's organization for any part of the work. Even the dinner given in the Fruitvale power house to the San Francisco Section of the American Institute of Electrical Engineers, described in our issue of June 3, 1911, was carried out to an admittedly successful conclusion by the commissary department of the railroad company, one of its standard dining cars being placed within the power house for this occasion.

The entire work may be taken as an example of the independence of thought and action of the engineers in the Far West, a condition brought about largely, no doubt, by their geographical isolation from the large Eastern centers of engineering activity. It also affords a striking illustration of the resources in men, money and materials of one of the larger railroad organizations.

Electric Locomotives of the Prussian-Hessian State Railways

This Article Describes Three Locomotives with Novel Types of Drive Built or Under Way for the Recently Electrified Dessau-Bitterfeld Line

An article on the Dessau-Bitterfeld electrification of the State railways of Prussia and Hesse published in the Nov. 4 issue described the power generating and distributing system. The present article relates to the three locomotives which have been furnished for this line by the Allgemeine company.

DESIGN OF HIGH-SPEED PASSENGER LOCOMOTIVE

The passenger locomotive shown on page 1021 is built for a speed of 68 m.p.h. Its total length over buffers is 41 ft. and its fixed wheel base is 9 ft. 8 in. A diameter of 63 in. was selected for the driving wheels, which revolve at 400 r.p.m. or more at the maximum speed. This speed, which is high compared with that of steam locomotives, was adopted without hesitation by the engineers in charge of the work because of the absence in the electric locomotive of large reciprocating masses.

Dessau-Bitterfeld Electrification—Express Train in Service

It will be noted that the two leading axles of the passenger locomotive are combined in a pony truck, while a single or "Adam" axle is used at the trailing end. The two driving axles have a parallel crank drive with an intermediate crank shaft which is driven from a motor mounted high in the frame. This arrangement provides such good balance that the locomotive runs smoothly at all speeds. It has even run without difficulty at the highest permissible speed with the trailer axle in front.

The motor is placed vertically over the intermediate crank shaft, an arrangement which is advantageous in motor mounting. The intermediate crank-shaft bearing is constructed in four parts and is adjusted both vertically and horizontally by means of wedges. Further, as this bearing is somewhat inaccessible, a safety device in the form of a fusible metal plug is placed in the bearing and is connected with the main air tank by a pipe. This pipe leads to an alarm whistle in the motorman's cab. If the bearing becomes hot, the plug melts and the compressed air operates the warning whistle. The form of the driving rods corresponds to the usual construction on German steam locomotives.

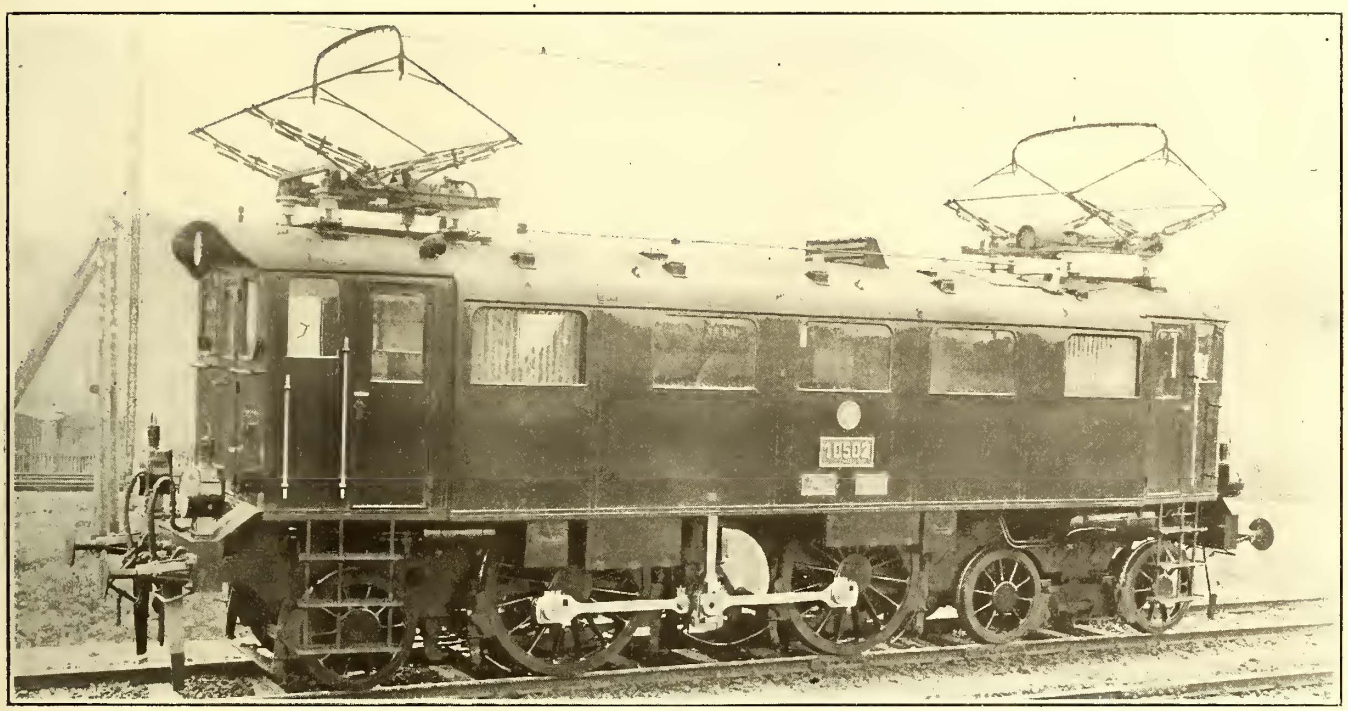
ELECTRICAL EQUIPMENT OF HIGH-SPEED PASSENGER LOCOMOTIVE

The locomotive is driven by an a.c. commutator motor of about 1000 hp on the hourly rating. The motor frame is attached to the transverse girders of the locomotive and can be adjusted in place by means of wedges and pressure screws. Its open construction permits a convenient inspection of the commutator brushes. Its tractive effort and speed are regulated by the ordinary contactor control. The current is taken at 10,000 volts by means of two pantograph collectors, is led through a choke coil which serves as a protection against excess pressures, and thence is conducted to the main oil switch. The latter has auxiliary and main contacts. An equalizing resistance is placed behind the auxiliary contacts in order to reduce the shock when the motor is switched in to the circuit. The current passes from the oil switch to the high-tension winding of the main transformer and from the latter through a current transformer to ground. The low-tension winding of the main transformer has several taps so that the motor voltage may be varied according to the tractive effort and speed required. These different transformer voltages are switched in by eight contactors, and the circuit is broken by two pairs of contactors, each of which is connected in parallel. Thus there are twelve contactors in all.

A static balancer with special taps is provided to adjust the armature winding to a special voltage, thus enabling the ratio of the voltages between the armature winding and the compensating winding to be regulated in accordance with the speed at which the locomotive is traveling. The regulation of the tractive effort and speed is carried out at the controller, whose upper and lower

cylinders can be revolved independently of one another. The upper cylinder regulates the tractive effort and the lower cylinder adjusts the commutation. Their operation from the motorman's cab is effected by two hand-wheels placed one above the other. The different speeds are marked on the lower hand-wheel so that the motorman can easily adjust the wheel to the correct position in accordance with the position of the speed indicator. The armature of the motor is short-circuited at starting by means of a throw-over switch, which is operated by means of a compressed-air cock on the controller.

Another feature worthy of note is a release device for the oil switch. This device is operated by the brake and prevents the motorman from switching in the oil switch when the brake is on. The oil switch may be released by a push-button in the motorman's cab. The control current for the contactors is supplied by an auxiliary coil of the main transformer. This transformer is erected in a ventilated shaft adjoining one of the cabs. The main oil switch is mounted above it, so that the switching-in and release handles project into the cab. The contactor chamber adjoins the apparatus compartment.



Dessau-Bitterfeld Electrification—High-Speed Passenger Locomotive

Two ball-bearing current collectors are used for current collection. They easily follow any alteration in the height of the trolley wire. The bow type of current collectors originally used proved unsuitable for high speeds as they would not remain in position when under heavy wind pressure.

The working results hitherto obtained with this locomotive have been exceedingly satisfactory. In tests at Bitterfeld the locomotive developed a maximum tractive effort of 20,900 lb. at starting. The average starting acceleration with a train of 280 metric tons was 0.62 ft. per second per second. To determine the efficiency of the locomotive seven trips with short lay-overs were made between Bitterfeld and Dessau and back, with a train weighing 250 tons. On one trip from which the hourly rating was determined the weight of the train was 350 tons. With an external temperature of 20 deg. C. the maximum temperature of the motor was 70 deg. at the end of the seven trips. The locomotive was also successful in drawing a freight train weighing 596 tons.

FREIGHT LOCOMOTIVE

The freight locomotive is constructed for a maximum speed of 43.4 m.p.h. All axles are used for driving, so that the entire weight of the locomotive can be utilized for adhesion. The total length of this locomotive is 34 ft. 5 in. over the buffers and its total wheel base is 15 ft. 9 in. One of the end axles has a play of ½ in. on each side to obtain flexibility on curves. With a driving wheel of 41-in. diameter the locomotive can develop a maximum tractive effort of approximately 22,000 lb. measured at the periphery of the driving wheel. A parallel crank driving through an intermediate crank shaft is used as on the passenger locomotive. In this case, however, the motor is not placed vertically over the intermediate crank shaft, but in such a manner that the driving rods form an angle of 45 deg. with the horizontal. This arrangement gives a much more favorable distribution of the strains on the intermediate crank shaft because only a part of the torque has to be transmitted from one side of the intermediate crank shaft to the other. The two cranks are set at an angle of 90 deg. to one another. A rigid connection is obtained between the motor shaft and the intermediate crank shaft in this locomotive by the use of a steel casting which is bolted to the frame. The form of the intermediate crank shafts, the motor bearings and the other parts of the driving mechanism corresponds to that adopted for the passenger locomotive. The driving and coupling rods lie in the same plane, however, and the coupling rods are connected to the driving rods by links.

The electrical equipment of the high-tension circuit and of the low-tension circuit, including the apparatus for such auxiliary purposes as lighting and compressed air, corresponds to that of the high-speed passenger locomotive. The arrangement of the apparatus in the locomotive is also exactly alike. The chief difference is in the smaller size of the motor and the system of brush regulation.

The locomotive has one single-phase motor with an hourly rating of 800 hp. The regulation of the motor at starting differs from the method followed in the passenger locomotive, as an attempt has been made to change the direction of rotation and to effect starting by a shifting of the brushes. The axis of the brushes is moved from the neutral position to one side or the other according to the desired direction of travel until there is obtained a given angle of torsion which corresponds to the end position of the brushes. An indicator in the engineer's cab gives the

brush position or the commutating step. The shifting of the brush rocker is done through a screw drive. The brush rocker is mounted on rollers and is connected with the nut of the driving screw through a driving rod. The driving screw is turned mechanically from the engineer's cab by means of the controller. A view of the motor with the movable rocker is shown on this page. Further regulation is

Dessau-Bitterfeld Electrification—Cab of Freight Locomotive

effected by altering the motor voltage by means of a step transformer, the separate steps of which are switched in by a mechanically operated controller. A static balancer is employed to obtain good commutation at all speeds. This balancer is constructed as a step transformer, and its function is to permit the regulation of the ratio between the voltages in the main winding and the compensating winding. An extra pair of controllers is provided so that the locomotive can also be used for switching.

The locomotive is now employed for drawing passenger and freight trains. It is well suited for passenger service because its high starting torque gives rapid acceleration, so that it can easily keep to the schedule notwithstanding its lower maximum speed.

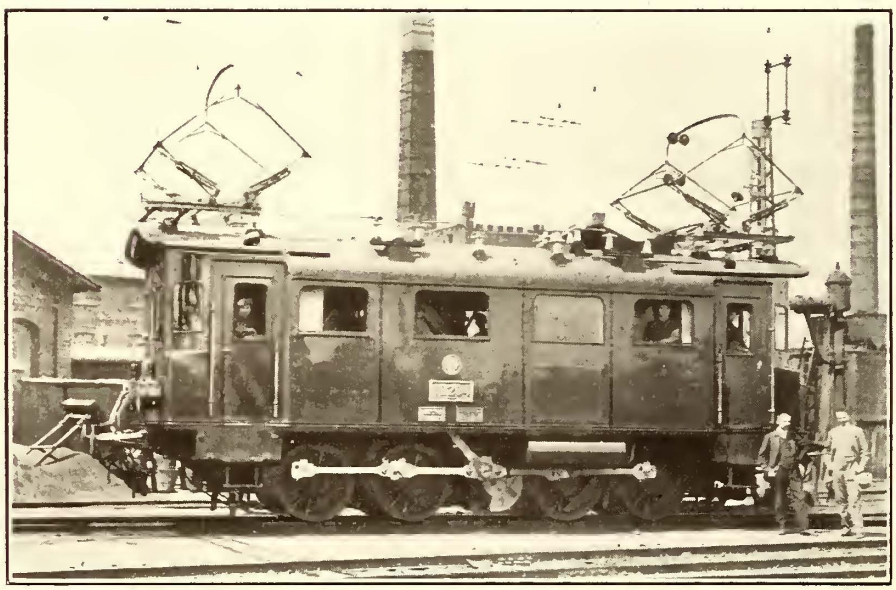
THIRD LOCOMOTIVE

In addition to these two locomotives, the railway authorities have placed an order with the Allgemeine company for another locomotive of special construction, which will also be delivered this year for test on the Dessau-Bitterfeld line. It is intended for heavy train service on tracks with steep grades similar to those, for example, on the Lauban-Königszelt line in Silesia, the electrification of which will be undertaken shortly. This locomotive must be capable of drawing express trains at speeds up to 68.2 m.p.h. and heavy freight trains at lower speeds.

This locomotive will have four coupled axles to permit the development of maximum tractive effort. Accordingly the locomotive is to be equipped with two motors, each having an hourly rating of 900 hp, which will give it a maximum tractive effort of 23,100 lb. The motors will drive the axles by means of a parallel crank drive, both drives being connected to one intermediate crank shaft, which will be supported between the two center driving axles. The driving rods will be placed at an angle of 45 deg. to the horizontal. This arrangement will allow a favorable distribution of the strains on the intermediate crank shaft. Even when two motors are used, only one intermediate crank shaft is required, and, owing to the special nature of the drive, it is believed much more favorable conditions will exist than if two separate crank shafts were used.

This locomotive will differ appreciably from the other two designs, both in its external construction and in its system of control. The regulation of the motor voltage will not be effected in steps by means of a transformer but uninterruptedly through a rotating transformer whose core will be revolved by an auxiliary motor controlled from the motorman's cab. The commutation, however, will also be adjusted with a static balancer, the separate steps of which will be placed in circuit by a special switch, corresponding with the speed.

The two motors will be mounted near the center of the locomotive. The main transformer will be placed between them but will be slightly raised to enable the heat generated to be dissipated easily through the ventilators in the roof. The rotating core transformer will be mounted near one cab, and the mechanically operated switches for cutting out the motors and adjusting the commutation will be placed in a single case mounted above the motors. The motor-compressor and heating boiler will be placed close to the other cab. Arrangements have been made also to heat this boiler with electrical energy by the use of resistances.



Dessau-Bitterfeld Electrification—View of Freight Locomotive and of Its Single-Phase Motor with Brush Rocker

The principal data for this locomotive are as follows: Total length measured over the buffers, 46 ft. 3 in.; total wheel base, 31 ft. 9 in.; diameter of driving wheels, 58.5 in.; diameter of trailer wheels, 39.2 in.; pressure on driving wheels, 16 tons; weight available for adhesion, 64 tons.

Printing Shop of the Milwaukee Electric Railway & Light Company

This Printing Department Has Been Conducted by the Company Since June, 1906—During the Last Year This Department Turned Out $24,000 Worth of Stationery

The printing shop of the Milwaukee Electric Railway & Light Company was established as a department of that company in June, 1906. When this office was started, the only work which it handled was that of the transportation department and comprised the printing of transfers, trip sheets, etc. Gradually the scope of the work was enlarged until now practically all the printing of the company, with the exception of Milwaukee city tickets, is done at the printing shop, which is located in the Public Service Building.

As an indication of the variety of the work handled, it may be stated that nearly 900 forms are printed for the company. The work includes ruling of an intricate nature on some of the larger forms. On some of the larger books used in the accounting department the binding is done outside, but with this exception all the binding is done in the office. The superintendent of printing, H. A. Rogers, is a practical printer with a knowledge of press work. The total force consists of eleven persons, including the superintendent. The shop is an open one and employees work nine hours a day and are paid on a monthly basis.

REQUISITIONS

When a department is in need of a new form a requisition is made and sent to the purchasing department. The heading of this requisition is published herewith. The copy is then sent to the comptroller's office, where it is edited and censored and a form number supplied, after which it is sent to the printing shop. When the stock of a standard form becomes exhausted, the stationery storekeeper requisitions the purchasing department for a supply and this order is sent to the printing shop. The finished

The Milwaukee Electric Railway & Light Co.
PRINTERY TIME SLIP

Name ..... Date 19

Occupation .....

JOB NO.	CHARACTER OF WORK	FROM	TO	TOTAL TIME
			Total Time	

Each Employe is expected to fill out this slip and place it on Superintendent's desk at the close of each day. Time spent on work not directly chargeable to a specific job should be distributed among the various job numbers.

Milwaukee Printing Shop—Time Slip Filled Out by Employee

product is sent to the stationery storeroom, where all departments must procure supplies of this nature on a form, "Requisition and Receipt for Supplies."

JOB TICKET

When the requisition is received in the print shop a job ticket is made out in envelope form for the purpose of a record of all details in connection with the work. This envelope is 6½ in. × 9½ in. It has spaces for a job order number and several divisions in which provision is made for a statement of the name of the person who ordered the work, the authority for the order, the dates on which the order was issued and received, the name of the person to whom the material is to be delivered and the date on which the material is needed. There is also provision for a statement of the quantity and description of stock and of the

ORDER NO. _____ REQUISITION NO. 1050

The Milwaukee Electric Railway & Light Co.
REQUISITION FOR PURCHASE

_____ 191

Material Required for _____

To be delivered at _____

QUANTITY	DESCRIPTION	DO NOT WRITE IN THIS COLUMN

Milwaukee Printing Shop—Requisition for New Stationery

color of ink desired. The details of the binding are also noted on the envelope. The face of the envelope is reproduced on page 1024.

COST TICKET

When the work on the material is begun in the printing shop a cost ticket is made out by the superintendent. The form of this ticket is also shown. It is designed to show all the details of the men employed, time, amount, etc., involved in each job. In order that these details may be kept accurately, employees are required to use time slips which are given to the superintendent at the close of each day. The time that is spent on work and cannot be charged directly to a specific job is distributed among the various job numbers. The form of the time slip used by employees is reproduced.

In accounting for the operations the superintendent of printing makes out a monthly report. The form of this statement is shown and it provides for a statement of the cost of production of the work handled each month. In computing this cost the superintendent of printing uses, as a basis, the figures of the National Cost Congress; that is to say, he computes the cost of doing the work on the basis adopted as standard by that congress and then deducts 10 per cent from the figures. The net cost therefore is assumed to be 90 per cent of the standard cost fixed by the congress. With these figures as a basis the department showed last year a profit of over 13 per cent on the output.

The classification of printing bureau accounts used by this department in its reports is as follows:

851: Salary of superintendent and clerks. Salary of superintendent of printing bureau and salary of clerks keeping cost accounts not directly chargeable to specific job numbers.

852: Operating wages, wages of printers, apprentices and helpers. This account to be distributed on cost sheets from daily time report of the various job numbers.

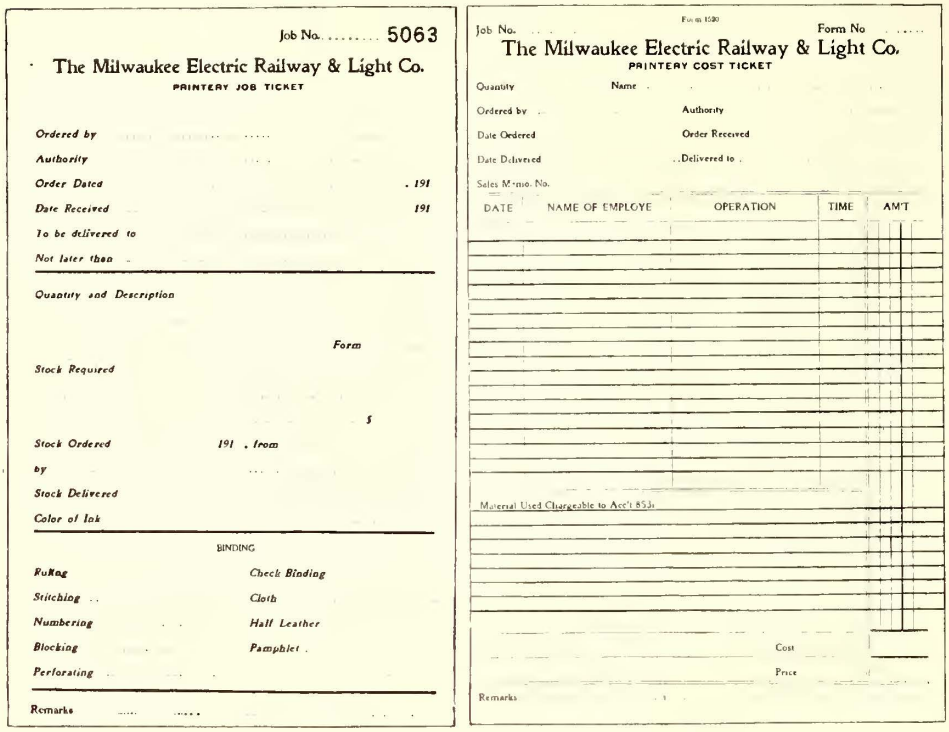
853: Materials. Cost of paper, cloth for banners, plates, directly chargeable to job numbers and all material purchased or drawn out of stock for the various job numbers. This account to be distributed on cost sheets from invoices or from stock manifest. (Make no charge to this account unless accompanied by a job number.)

854: Miscellaneous expense and supplies. Stationery and printing used in the printing bureau, benzine, kerosene,

rags, gage pins, inks, staples, binding cloth, glue, padding, etc. not charged to specific job numbers.

855: Power. Cost of power to operate equipment.

856: Rent. Cost of rent including light and heat, $125.



Job No. 5063

The Milwaukee Electric Railway & Light Co.

PRINTERY JOB TICKET

Ordered by

Authority

Order Dated . 191

Date Received 191

To be delivered to

Not later than

Quantity and Description

Form

Stock Required

$

Stock Ordered 191 . from

by

Stock Delivered

Color of Ink

BINDING

Ruling — Check Binding

Stitching — Cloth

Numbering — Half Leather

Blocking — Pamphlet

Perforating

Remarks

Job No. Form No

The Milwaukee Electric Railway & Light Co.

PRINTERY COST TICKET

Quantity Name

Ordered by Authority

Date Ordered Order Received

Date Delivered Delivered to

Sales Memo. No.

DATE	NAME OF EMPLOYE	OPERATION	TIME	AMT

Material Used Chargeable to Acc't 853:

Cost

Price

Remarks

Milwaukee Printing Shop—Job Ticket and Cost Ticket

857: Repairs and renewals. Repairs to printing presses, ruling machines, paper cutters, and all other tools and appliances, including replacement. (Sharpening of knives to be charged to account No. 854.)

858: Renewal of type and plates. Replacing worn-out type, cost of plates not chargeable to account No. 853, etc.

859: Insurance, taxes, interest and depreciation. Monthly charge to cover insurance, taxes, interest on investment and depreciation.

Equipment valuation	$20,000
Insurance	1 per cent
Injuries and damages	1 per cent
Taxes	2 per cent
Interest	5 per cent
Depreciation	10 per cent
Total—$3800	19 per cent

Charge $316.67 per month for fixed charges.

Monthly charge to cover any possible expense in connection with injuries and damages is 1 per cent on the total output.

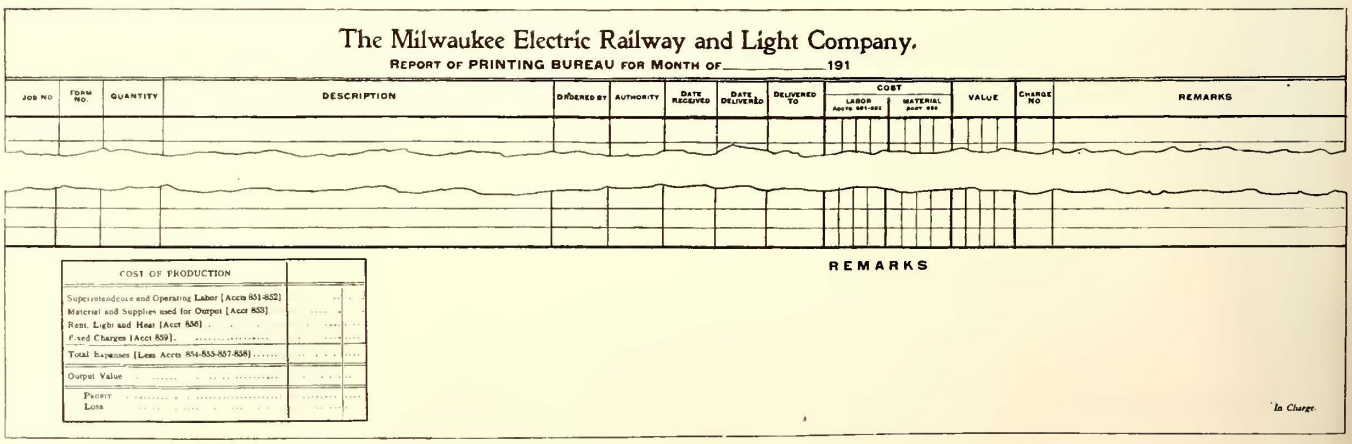
The floor space occupied by the print shop measures 26 x 127 ft. in area. The shop is charged by the company the regular commercial rate for all power used. During the last year the printing department charged $23,000 worth of work to the Milwaukee Electric Railway & Light Company and $1,000 worth of work to companies affiliated with that company. From the sale of scrap paper $250 was realized. Some of the costs of the department are as follows: Salaries, $5,000; materials and supplies used, $9,000; repairs, including some installation work, $225; power, $90; rent, $1,500; renewal of type and plates, $30.

In meeting the charges in the classification the proportionate monthly amount is deducted each month. The cost of the work is kept down by the fact that the company has no overhead charges or expenses for solicitors and no debts to consider. Everyone employed is actively engaged in producing work which is definitely needed for some purpose in the operations of the company.

The plant consists of a Harris automatic press which prints transfers and conductors' receipt books, besides doing other work; a 42-in. Miehle press, a Colt job press and a Chandler & Price-Gordon job press; a Bloomfeld & Rapp special ticket-printing machine, a punch, perforator, paging machine, stitcher, Hickok ruling machine and a baling machine. The latter is used for waste paper.

The net result of operation of the print shop is that the work of printing is done as a rule for about 10 per cent less than the price of outside printers. In the effort to keep the cost of production as low as possible, the stock for transfers is bought in car-load lots. The net cost of transfers to the company is about 8½ cents per thousand and this price does not include any allowance for the printing office for changes in forms, which amounts to something each year. No charge is made for experiments in forms.

As an example of the many classes of forms and books printed by the printing department, the following may be mentioned: Cash-fare receipt for interurban cars; income account, employees' record, condensed income account and balance sheet, line article record, daily record of contracts secured, conductors' record of transfers issued, daily report of conductors' ticket and transfer errors, daily report



The Milwaukee Electric Railway and Light Company.

REPORT OF PRINTING BUREAU FOR MONTH OF _____ 191

JOB NO	FORM NO.	QUANTITY	DESCRIPTION	ORDERED BY	AUTHORITY	DATE RECEIVED	DATE DELIVERED	DELIVERED TO	COST LABOR Accts. 851-852	COST MATERIAL Acct. 853	VALUE	CHARGE NO	REMARKS

REMARKS

COST OF PRODUCTION	
Superintendence and Operating Labor [Accts 851-852]	
Material and Supplies used for Output [Acct 853]	
Rent, Light and Heat [Acct 856]	
Fixed Charges [Acct 859]	
Total Expenses [Less Accts 854-855-857-858]	
Output Value	
Profit / Loss	

In Charge.

Milwaukee Printing Shop—Form of Monthly Report

of cars operated, record of transfers issued to conductors, register readings and mileage and conductors' returns, blueprint record, meter test record, utility department order, electric salesman's daily report, feeder report, boiler inspection report, record of names of witnesses of accidents, car repair notice, conductors' daily cash remittance slip, complaint card, conductors' trip sheet, substation load record, consumers' electric service record, time slips for rolling stock and other departments, load record of transformer station, report of unusual electrical operation and trouble, installation record, conductors' report of accidents, form for statement of accidents by witnesses, voucher, bill for electric service, consumers' billing record, work order notification, statement of distribution of stores delivered, payroll analysis, traffic statistics, pay roll, balance sheet, statement of tickets issued by conductors, passengers carried and earnings by days and stations.

REASONS FOR THE CHOICE OF 16 2-3 CYCLES FOR PRUSSIAN STATE RAILWAYS

An article by an official of the Prussian State Railways in *Elektrische Kraftbetriebe und Bahnen* for Oct. 4, 1911, explains why the Prussian State Railways have decided to make 16⅔ cycles their standard frequency for trunk-line electrification. In the first place, it was desired that the generating plants should be of such character that they could supply current most economically for both the railway service and lighting and industrial motor circuits thereby securing the best possible load factor. The standard frequency in Germany for lighting and industrial purposes is 50 cycles, which is too high for the most efficient railway operations. To effect a compromise advantage will be taken of the efficiency of synchronous converter sets, which are better and cheaper than asynchronous motors for changing three-phase current to single-phase current. When synchronous motor-generator sets are used there is a definite ratio between the frequency of the three-phase current and that of the converted current. For instance, a 50-cycle synchronous motor-generator set changes the frequency in the ratio of 50:3, giving an output of 16⅔ cycles, which is 1⅔ cycles higher than the frequency hitherto used in Germany for heavy electric traction. The use of 16⅔ cycles gives a greater choice in the selection of converter sets, as either synchronous motors of high efficiency or asynchronous motors may be used, according to conditions. Furthermore, the use of synchronous motors improves the power factor of the distribution system. What has been said about synchronous machines with regard to generating single-phase current from three-phase current is also true of the opposite case.

The use of 16⅔ cycles will also increase slightly the capacity and efficiency of the transformers. The weight of a 16⅔-cycle transformer is 4 per cent to 5 per cent less than that of 15-cycle transformers of the same capacity. The conditions for the turbines and motor-generator sets are also a little more favorable, and there is no great difference in the efficiency of the distribution systems in the two cases.

Of course the reason for choosing a very low frequency for railway electrification was to insure the most favorable conditions for the locomotives and other electrical parts of the railway equipment. It was not absolutely essential to choose 15 cycles, and, as a matter of fact, the present 15-cycle machines will operate on 16⅔ cycles with very little loss in efficiency or increase in commutator sparking and heating. The writer in the German paper mentioned points out that under American conditions, where 60-cycle, three-phase current is so largely used for lighting and industrial motor circuits, synchronous converter sets could be used to change it economically to 15 cycles, of which it is a perfect multiple.

INSTRUCTING TRAINMEN IN THE ECONOMICAL USE OF POWER

Special emphasis has been laid of late upon the efficient application of power at the hands of trainmen and other car service employees, and both in preliminary training and inspection of operating performance much has been accomplished in the direction of educating the men most closely concerned in the handling of equipment in its economical use. To carry this work of conservation a step further the Boston Elevated Railway Company has just had printed a 32-page pamphlet on the "Economical Use of Power," the text being based upon a paper read several months ago before the Boston Elevated Efficiency Club by John W. Corning, electrical engineer of the company. The pamphlet is planned for the special use of motormen and other employees more or less intimately connected with the use of power for car and train propulsion, heating and lighting of rolling stock, buildings and stations. It constitutes a species of elementary practical textbook which is certain to be found of great value in the broadening of the training of transportation employees in the principles and uses of electricity on the system.

The booklet presents the general theory of power generation and supply from a central alternating-current plant through to the rolling stock, the technical points involved being explained in clear and simple language. There are half a dozen excellent diagrams giving analogies between the flow of water and the transfer of electricity along a circuit, and the chain of operations occurring between the unloading of the coal barge at the power station wharf and the return of current to the negative bus from the track. Many points of general interest are also covered, such as the annual expenditure of about $1,000,000 by the company for power, the fact that modern standards of car design and speed require at least 50 per cent more power per passenger than a few years ago, the evils of wasted power, differences between "power" and "energy," underlying principles of generation, transmission, conversion and distribution.

The fundamental electrical units encountered in electric railway work are then explained, together with the elements of lighting, motor service and heating. An interesting point is that the ordinary eight-bench open cars of the company require about 8 kw in power station capacity, compared with 12 kw for a ten-bench car; 24 kw for a 25-ft. closed car; 26 kw for a 26½-ft. closed car; 56 kw for a No. 3 semi-convertible car; 76 kw for an elevated car, and 120 kw for a Cambridge subway type of car. Of the yearly power output of the company, 78 per cent is used in car propulsion, 9 per cent in line losses, and lighting and heating from 5 to 6 per cent each. Air brakes require 2 per cent of the yearly output. The power required for car lighting in Boston varies from 640 watts to 2.56 kw, and at present about 1500 surface and 216 elevated cars are in use on the Boston system. Between the best and poorest motorman the difference in power consumption for a given run may be as high as 30 per cent. The booklet also gives the following results of tests, showing the effect of keeping the brakes on: First run, brakeshoes clear of wheel, power consumed by wattmeter measurement 1.72 kw-hours per car-mile; second test, pressure of 24 lb. applied to brake handle, power required 3.54 kw-hours per car-mile, or an increase of 106 per cent over free running; third test, pressure 36 lb., power required 5.36 kw-hours per car per car mile, an increase of 212 per cent over free running.

The booklet also includes brake diagrams showing the pressures at different points in the rigging under various conditions of service and emphasizes the importance of always aiming to secure the maximum safety in operation.

Reports at the Convention of the National Association of Railway Commissioners

The Reports of Especial Interest to Electric Railway Companies Were That on Railway Taxes and Valuations and That on Railway Capitalization—Abstracts Are Presented

At the annual convention of the National Association of Railway Commissioners held in Washington, D. C., Oct. 10-13, a report was presented by the committee on railroad taxes and plans for ascertaining a fair valuation of railway properties. The report was prepared by Edward M. Bassett, formerly a member of the New York Public Service Commission, First District, and was approved by the members of the committee with one exception.

An abstract of the report follows:

USES FOR A VALUATION OF A PUBLIC UTILITY PROPERTY

"A valuation of a railroad or other public utility may be made for various purposes: (1) private purchase, including the purchase or marketing of securities; (2) public purchase for municipal or government ownership; (3) taxation; (4) rate making; (5) accounting and capitalization.

"A state commission will have nothing to do with valuations for the first purpose above stated but will be required to make valuations for any or all of the other four purposes. Thus the Wisconsin Railroad Commission has been required to make valuations of waterworks for the purpose of municipal purchase; the official valuations of railroads in Michigan and Wisconsin were for tax purposes, the official valuation of railroads in Minnesota, Washington and South Dakota primarily for rate purposes, and the official valuation in Texas for the purpose of regulating the issue of stocks and bonds.

"It is a question of prime importance whether a valuation for one of these purposes may be used for the other purposes also. It may happen that fair value for one purpose is the same as fair value for another, but in order to determine what is fair value for any specific purpose it is necessary to think it out with reference to this purpose only, and when we discuss the theory and elements of valuation it seems necessary that we should have in mind a specific purpose that the valuation is to serve. It appears to us that considerable confusion in the discussion of the subject of valuation has arisen either from lack of attention to this fact or from the false assumption that value may be ascertained without reference to purpose.

CONFUSION OF THE TERMS "COST" AND "VALUE"

"Some of the trouble doubtless arises from a confusion of the terms 'cost' and 'value.' Cost is not necessarily value for any purpose, though it is an element in estimating fair value for almost any purpose. Thus fair value for rate purposes may be based largely on actual cost or on reproduction cost or on a composite of actual cost and reproduction cost. Considerations of equity may, as to certain elements of cost, lead to the acceptance of actual cost as the fairer basis, while as to other elements the cost of reproduction may be a better indication of present fair value for rate purposes. Take for example the question of promotion and other preliminary development costs. In a valuation for rate purposes, though cost of reproduction may be used as a general rule, it may seem more equitable to use actual cost of promotion, that is, the necessary cost of promoting the small initial plant, rather than the cost to-day of promoting a plant of the size of the present one, may be taken. Or, on the other hand, promotion cost may be entirely excluded from a valuation for rate purposes and considered only in fixing the fair rate of return.

"This leads to a fundamental distinction between fair value for rate purposes and fair value for purchase, condemnation or taxation. The thing of real importance in a rate case is not the fair value of the property alone or the fair rate of return alone, but the product of the two. This product is the net return that the owners are to receive for the use of their property. If the total net return is adequate, it is immaterial, in so far at least as the justice of the result is concerned, whether, for example, there is allowed a 7 per cent return on a valuation of $1,000,000 or a 5 per cent return on a valuation of $1,400,000, as the net return is $70,000 in either case. In a case of condemnation or municipal purchase, however, the valuation is final and all important. In fixing commercial value, market value or fair value under condemnation for the purchase of a plant operating under a perpetual franchise, the net return under legal or reasonable rates is often the chief determining factor. The net return is capitalized at the rate considered fair for the purpose, and the result is taken as the fair market or commercial value. Thus, recurring to the above illustration, a net return of $70,000 capitalized on a 5 per cent basis gives a valuation of $1,400,000. And if in this case the present value of the physical plant has been found to be $1,000,000, the difference, $400,000, is attributed to franchise and going value. Owing to the fact that the rate of return ordinarily deemed reasonable in a rate case is in excess of the rate of capitalization that determines commercial value, the commercial value will ordinarily exceed the fair value for rate purposes. One rule for determining fair rate of return that has considerable merit is to allow a rate of return that would be adequate at the present time to induce investment in a new enterprise of similar character. The state must consider the effect of its action on new enterprises as well as merely seeing that the property of the present owner is not confiscated. In doing so a going value is created for purposes of sale.

VALUES FOR RATE-MAKING PURPOSES AND FOR TAXATION

"If it is decided that a public utility should be taxed on its total value as a going concern—that is, its commercial, market or sale value—then franchise and going value will be included. If, on the other hand, the public-utility plant is to be taxed precisely as other real estate, the cost of reproduction less depreciation will be the basis. There is no inherent inconsistency in using one method of valuation for tax purposes and another method for rate purposes. The tax, by whatever method assessed, is considered an operating expense in fixing rates, and is therefore borne by the user of the service wherever rates of charge are strictly regulated. Methods of ad valorem taxation must be worked out with an eye single to what is just and practicable in taxation, and methods of valuation for rate purposes must be worked out with an eye single to what is just and constitutional in rate making.

VALUE OF MISPLACED OR PARTIALLY OBSOLETE PLANT

"The misplaced or partially obsolete plant or road is the one that causes greatest difficulty in valuations for any purpose. A street railway is constructed chiefly to carry passengers to a certain terminal, but currents of travel having changed it cannot possibly earn interest on its actual cost. Under such conditions the plant or line as a whole must be recognized as partially obsolete, and the best gage of its present depreciated value will in many cases be its fair market value. A general reduction in the rates of a road or plant of this kind seldom comes up for official consideration, but it very frequently happens in valuing any comprehensive railroad or street-railway system for rate purposes that there are certain lines that are partially obsolete though the system, as a whole, is earning a profit.

For such partially obsolete or partially used lines, neither actual cost nor reproduction cost, nor reproduction cost less existing physical depreciation, furnishes any basis for fixing fair value for rate purposes. The value that will be most appropriate will be a value based on the earnings of the line as a part of the system and will thus be closely related to market or commercial value. But though in a rate case we can base the value of a particular part of a comprehensive system on earnings or market value, we cannot base the value of the whole system on market value, as the market value depends on the scale of rates charged, and the rate scale is the question at issue. The market value of the system will depend largely on the net return that may be earned under the rate scale allowed.

RELATION OF CAPITALIZATION TO VALUE FOR RATE-MAKING PURPOSES

"The books of a company, kept from the start in accordance with a correct accounting system, would show a capital account that would be closer to what seems a just, fair value for rate purposes than any other single basis. But owing, perhaps, to lack of accounts kept as above, the court decisions have given greater weight to cost of reproduction or cost of reproduction less depreciation than to actual cost in determining fair value for rate purposes. Capitalization, or the amount of stock and bonds issued (which may be a very different amount from the book assets), might also, if issued under strict supervision from the start, be a most important element in fixing fair value for rate purposes. If the bonds, however, were issued either at a premium or at a discount this fact would have to be taken into account. The same may be said of stock issued at a premium. Both brokerage and deferred interest or discount proper are a part of the amount that the company must pay on its borrowed capital. They should both be paid out of earnings during the term of the bonds.

"An ideal system of capitalization and accounting would assume that the stockholders contributed and dedicated a certain amount of money for the construction, equipment and operation of the public utility; that they added to this contribution from time to time as capital purposes demanded; that proper repairs were always made and charged to operating expense; that no deferred maintenance was allowed to creep in; that the life of each element of construction and equipment was accurately estimated and reserves out of earnings set aside, so that as each element was worn out or became inadequate or obsolete it could be exactly replaced, no more and no less, out of its respective reserve; and that all payments made for the use of money were made out of earnings and not in any case added to capitalization. Let us suppose that the stockholders of this ideal system would expect only a reasonable interest return on their investment, perhaps plus a sum to represent their service in carrying on the public utility. In such a corporation the capitalization shown on its books could be taken as a valuation for rate making, or for capitalization in case of merger, consolidation or reorganization. It would not necessarily be a valuation for taxation, condemnation, sale or sale of securities. The process of rate making would be the adjustment of rates from time to time so that they would yield a fair return to the investors. The valuation for taxation, condemnation, sale or sale of securities might be either more or less, according to supply and demand and the various causes that produce fluctuations in price. The ideal conditions of our illustration can probably never be realized either on the corporation or the governmental side. No human prescience can fix the time when construction or equipment will become obsolete or inadequate. Even the period of normal wear is at best a good guess, for wear is never uniform and materials always will vary in quality. Consequently the valuation for rate making and the capitalization and book value will tend to differ.

CONCLUSION

"We have said enough perhaps to indicate that valuation for any purpose is a very complicated matter, but that valuation for rate purposes is the most difficult and complicated of all. We have shown, too, that the term value is meaningless unless made with reference to some particular purpose, and that any attempt to find a common single basis of valuation is futile.

"We wish to acknowledge, with thanks, the assistance of R. H. Whitten, librarian of the Public Service Commission of the First New York District, in the framing of this report."

The members of the committee who signed the report are as follows: Edward M. Bassett, New York, chairman; John F. McClure, Indiana; Clyde B. Aitchison, Oregon, and G. McD. Hampton, South Carolina. Mr. Hampton added to the report that he believed in arriving at a fair and just valuation of railroad properties, and that to this end the net earnings of such railroads should be taken into consideration. John C. Lawrence, of Washington, dissented from the opinions expressed in the report.

RAILWAY CAPITALIZATION

A report of the committee on railway capitalization was presented at the annual meeting of the National Association of Railway Commissioners held in Washington, D. C., on Oct. 10 to 13. An abstract of the report follows:

REGULATIONS IN DIFFERENT STATES

"The regulation of the issuance and sale of railway stock and bonds and other forms of railway securities has been practised in Massachusetts and New York during many years. Wisconsin provides in its statutes for such regulation by its Railroad Commission, and several other states have undertaken the task. Latterly the statutes of various states have been amended, with a view to rendering more precise and effective the restrictive legislation in those states upon this subject. For a long period Massachusetts has undertaken to place regulating restrictions upon railway capitalization. In that state much of the pioneer work in the development of this class of regulation has been done. Regulation of railway capitalization by the states is extending and becoming a fixed part of effective schemes of governmental railway supervision.

"It has not been practicable for the committee to compare the work of the state commissions as relating to regulation of railway capitalization issues, but it is important that such labor of comparing statutes, extensive though it be, should be undertaken by a committee of the association at an early day, so that it may be definitely stated how far uniformity has progressed, and conclusion be reached as to the extent that greater uniformity is desirable. The committee on this subject should also take under consideration the practical necessity of uniform treatment by two or more state commissions of a stock or bond application presented by a carrier operating in each state. These applications have hitherto been given like determination in Massachusetts and New York as to lines operated in both states. This is not a matter of great difficulty, since the principles underlying the regulations are simple in the main and the object to be attained is the prevention of improper charges against the property.

INTEREST OF PUBLIC IN REGULATIONS FOR ISSUE OF SECURITIES

"In the issuance of these railway securities primarily the public is concerned in that they shall be sold for their full value and the proceeds applied to the construction or improvement of railway property. Secondarily, but in an important degree, the general public has strong interest in the proportion of stock to bonds and in the improvement of railway properties without unnecessary additions to the bond interest or fixed charge account. Unnecessary additions to the carrier's debt account impose limitations upon the ability of the carrier to keep up or improve its service and directly charge the revenues of the carrier which are derived from the carrying of passengers and property. It is not difficult to see how the existence of heavy debt

burdens impels railway managers to seek in every practical way to increase rates.

"The owners of railway stock and the owners of railway mortgage securities have direct interest in the prevention of unnecessary additions to bond and other general debt accounts. Whatever increases the equity of shareholders serves their interest, and whatever adds to the property value without increasing the debt renders more secure the investment of the bondholder. Nevertheless, the history of our railroads bristles with financial transactions inimical to the interests of the owners and creditors of these great properties. The interests of stockholders and bondholders and of the people as compulsory customers of the railways have not been, in the absence of governmental regulation, protected in any reasonable degree. That such regulation is indispensable to the conservation of the true interests of the corporation, its shareholders and creditors, and the interests of the general public, is fast coming into general recognition.

REGULATION IN NEW YORK STATE

"Regulation of railway corporations in New York in respect to capitalization may be referred to briefly. For many years the State has had upon its statute books a law prohibiting the issuance of stock or bonds except for money, property or labor performed. The law was a mere form, and its prohibitions were evaded with ease and impunity. In 1907 the public-service commissions law was enacted, providing for full investigation and restriction by the commission of the issuance and sale of stock, bonds, notes and other evidences of indebtedness for certain specified purposes, namely, acquisition of property; completion, extension or improvement of facilities; improvement or maintenance of the service, or discharge or lawful refunding of obligations. To this was added in 1910 a provision permitting reimbursement of the carrier's treasury for moneys expended from income during five years preceding for any of such purposes, except maintenance of service and except replacements.

"Under the law as it has been interpreted by the commission and courts of the State, replacements are not permitted to be capitalized. Under the most exceptional conditions and for very short terms an order may issue to cover a temporary financial exigency. The minimum price at which bonds or other evidences of debt may be sold is specified in each order, and all stock must be issued upon the basis of par value. The policy of the commission in respect of new companies authorized to build a railroad is to make such allowance for preliminary work and for organization as in each case seems reasonable. This justly takes the place of the former extravagant absorption of stock and sometimes of bonds for the purpose of satisfying individual claims for promotion services. The commission allows full and even ample compensation for such services as may be shown in each case. This fully recognizes valid claims but prevents exploitation of the corporation.

"These statutory provisions and their administration are referred to generally as an example of regulation for capitalization that is working well and without creating hardship upon the carriers. The important results are that the full money value, or as nearly as that may be estimated, is obtained for railway bonds and railway notes. All stock issued under the law represents a full par value return, the proceeds are applied to proper corporate purposes, and fixed capital accounts of the companies, which represent a statement of the cost value of the property, are growing more and more to be mathematical statements instead of estimates of value designed frequently to swell the asset side of general balance statements.

EFFECT OF PROPER REGULATION OF CAPITALIZATION

"The proper regulation of railway capitalization avoids determination as to the propriety of proposed improvements or betterments or the extension of lines by new construction, and in general those matters of corporate policy which should be left undisturbed in the judgment of the company's board of directors. On the other hand, such regulation to be effective does necessarily include prevention of the capitalization of replacements and any other part of operating expenses or any of the interest charges. While emergency measures must be recognized, and at times heroic steps to save a company from insolvency should be sanctioned, they constitute rare exceptions to be treated on their merits with a full view as to the company's ability shortly to recover from the financial embarrassment so presented. The duty of a railroad company to refrain from producing 'water' in its capitalization is so thoroughly recognized that the terms 'prevention of fraud' and 'prevention of waste' in the issuance and sale of stock, bonds and other evidences of debt and use of the proceeds may be taken as the underlying purposes of the exercise of governmental power in respect of railway securities. Such recognition has been reached through the exposition of repeated mistakes on the part of railway managers in the past, decisions of courts, frequent agitations resulting in expressions of public opinion, the concurrence of wise railway officials and of financiers, and latterly the successful operation and administration of restrictive laws in the states.

"In the operation of such laws it has been demonstrated that, after all, financial arrangements can be made as they were before, while the purchase price of new security issues is increased greatly by the knowledge of investors that the corporate purposes to which the proceeds of the securities are to be applied have been subjected to an impartial government investigation and have been found to call for expenditure of the money involved. Those only who have interest in charging the debt securities of railroads with extortionate selling discounts or in serving other personal ends opposed to the welfare of the corporation are to be counted as opposed to reasonable restrictions upon the issuance of such securities.

RELATIVE EFFECT OF THE ISSUE OF STOCK AND BONDS

"A practice followed by a great number of carriers in the past and at the present time is to issue bonds for all, or practically all, betterments and improvements. It is clear that starting with a stated amount of stock and a stated amount of bonds and constantly increasing the bonded debt as the necessity for capital expenditure arises does not operate at any time to increase the value of the shareholders' equity. It does operate to increase the fixed charges. After long operation a railroad company should be able to decrease rather than increase its mortgage debt, or at least be paying a substantial percentage of the cost of betterments and improvements from the income without issuing bonds to cover such percentage of betterment or improvement cost. It should do this while at the same time accumulating a surplus which it keeps available for use in times of sparse traffic offerings. This is no more than ordinary business prudence should dictate and a course that is pursued by prosperous business corporations. The ever-swelling fixed charge, except as met by increased traffic returns, tends constantly to diminish net corporate income. It prevents or diminishes the return to stockholders and is well calculated to destroy in the end the value of the shareholders' equity in the property. By that course the reproduction value of the property may be increased, but the net earning capacity of the property may be decreased. The real test of the commercial value of a railroad property is found in its net earnings.

"The practice of capitalizing all improvements and betterments has been followed in Great Britain to such extent as to awaken serious apprehension for the continued prosperous operation of various companies and fear that governmental aid may be necessary in the not distant future. It is encouraging to note that banking interests are not oblivious to the situation and that in the case of many smaller companies they have insisted that new mortgages

shall contain a clause that future improvements and betterments shall not be made from mortgage bonds beyond a stated per cent of their cost. A similar safeguard might well be inserted in the mortgages of all companies and the influence of financiers be directed upon boards of directors to the end that some fair percentage of the cost of improvements and betterments shall always be paid from income without subsequent capitalization.

If the railroad companies of this country had been subjected to reasonable regulation of their capitalization during all of the past five or six decades, Black Fridays would rarely appear upon the pages of financial history and sudden receiverships of railroad corporations with makeshift reorganizations would not constitute frequent blots upon the record of our greatest of business industries. With such sane regulation and common business prudence in railroad affairs, is it not altogether probable that rates scheduled upon a low basis with reference to actual transportation conditions would have remained low and the violent disruption of rate adjustments due to asserted necessity for increased revenues would rarely have occurred?

FEDERAL AND STATE REGULATION

"As all are doubtless advised, federal regulation of railway capitalization has been proposed and is now under consideration. State commissions are not necessarily opposed to a policy of federal regulation on this subject. The interests of the states are concerned chiefly in the preservation of state authority over corporations which must be organized under state laws. All questions as to the exercise of state and federal authority in matters of railway capitalization must be deferred for consideration pending the actual proposals for federal supervision which may be announced."

The members of the committee who made the report were as follows : Martin S. Decker, New York, chairman; O. P. Gothlin, Ohio; James M. Ambler, Maryland; Charles A. Prouty, Interstate Commerce Commission; H. T. Clark, Jr., Nebraska; C. L. Glasgow, Michigan, and Robert R. Prentis, Virginia.

IMPROVEMENTS OF THE INTERNATIONAL RAILWAY OF BUFFALO

The International Railway of Buffalo is reconstructing 6100 ft. of double track on Main Street, which is the principal thoroughfare in the city. Eight inches of crushed stone are placed under treated ties, which are spaced 2 ft. apart. A 124-lb., 9 in., open-hearth girder rail, section 124-432 of the Lorain Steel Company, is used. Tie plates and screw spikes are used and, at distances of 5 ft., tie rods. Concrete filling is employed between the ties and Medina sandstone blocks have been adopted for the paving. In the reconstruction a great deal of special work located in places where it was not in constant use, as at switches for emergency purposes, has been replaced by unbroken main-line frogs and switches of the Wharton type.

One of the principal changes affecting the movement of traffic which has been made by the International Railway is the rerouting of the Elmwood and Hoyt lines, two of the heaviest lines of residential traffic in the city. These lines were formerly operated on Main Street in the central business district and their transfer has relieved materially the congestion of traffic on that thoroughfare. The opening of a new street by the city permitted the company to route the two lines on Franklin Street, which is two blocks from Main Street.

L'Industrie Electrique for Oct. 10, 1911, contains an illustrated description of the single-phase traction system of the Haute-Vienne district in France. The total length of the lines is 345 km (207 miles) and comprises four lines, all starting from Limoges. Use is made of single-phase current at 10,000 volts supplied from two stations.

THE HUMANE SIDE OF ACCIDENT WORK

BY F. W. JOHNSON, SUPERINTENDENT OF BUREAU FOR PREVENTION OF ACCIDENTS, PHILADELPHIA RAPID TRANSIT COMPANY

Of the many complex problems presented by modern electric railroading, none offers wider scope for discussion or greater latitude for the exercise of genius by minds of a practical turn than does that portion of it which has to do with its resultant casualties. It is inevitable that in all manner of human progress there must be an expenditure or sacrifice of one character or another commensurate with the results obtained or sought. Whether the cost so incurred will be excessive necessarily depends primarily upon the peculiar circumstances surrounding each individual effort.

The present age, admittedly intensely practical, experiences difficulty in viewing a business proposition from any standpoint other than that of pure commercialism. Appeals to the higher emotions invariably are looked upon as evidences of weakness or of sentimentality, and therefore deserving of no special consideration in business. Selfishness, unfortunately, all too often seems to form the keystone of the standard of ethics consciously or unconsciously adopted by many who have achieved success in commerce.

Whatever may be one's views upon such matters, it is pertinent to inquire whether such standards may justly be invoked when one is charged with a high moral responsibility; when the physical well-being, nay the very existence, of another may rest in the balance. Can one consistently take into consideration only the legal aspects of so great a responsibility? Are we, as public servants, entirely fulfilling our duty toward humanity when we merely apportion a certain stipulated sum of money as recompense for the taking of a life or the infliction of severe personal injuries, when by the exercise of greater diligence we might have avoided entirely this loss to society? It is one thing to consider such matters as abstract problems. It is quite another to look upon them as concrete examples of our own shortcomings.

ITS APPLICATION TO ELECTRIC RAILWAYS

I know of no public movement which arouses within one a truer appreciation of our real duty toward others than does this. There can be no greater responsibility placed upon us than that of being intrusted with the lives and safety of our fellow beings. Whether we are proving ourselves worthy of this stewardship can best be answered by an appeal to our innermost conscience. I recall a case in point which occurred some years ago and will serve to make plain the principle involved. A carpenter, in very moderate circumstances, had fallen asleep upon the track at night, while in an intoxicated condition, and shortly thereafter had been struck and killed by a passing car. The accident clearly was of an unavoidable character, and so far as I can recall, no claim for damages ever was presented by his heirs. The matter subsequently attracted the attention of an executive. Actuated solely by humane impulses of a high order, he forthwith ordered the cars of this particular line to be equipped with headlights of a more powerful type, as a means of preventing the recurrence of similar mishaps, irrespective of any question of legal responsibility.

One can arrive at a proper appreciation of this kindliness of heart only by considering it in conjunction with other incidents of a like nature. Comparisons are odious only in so far as they reflect adversely upon ourselves, and it is but natural that we should disapprove in others what we may at times condone in ourselves. Suffice to say, the moral obligations involved in the conduct of our daily affairs are not always so clearly recognized as in this instance, nor always obeyed even when so recognized.

I cannot but look upon the man who responds to these nobler emotions, more particularly when endowed with a

special responsibility, as a public benefactor. His part in the general scheme may be ever so insignificant, yet if he is laboring genuinely and sincerely in the interest of safety for his fellows, he cannot but inspire confidence and arouse admiration. If his contemporaries are of insufficient depth of mind to appreciate his true worth, it is their misfortune and not his. The better qualities in our lives are bound to prevail, the less worthy to sink into oblivion.

AVOIDABLE ACCIDENTS

The ultimate results of serious mishaps oftentimes are so far-reaching in their effects as to seem almost incredible. I once knew of a single case which permanently changed for the worse the entire course of several persons' lives. Instances wherein a person's subsequent usefulness, either to himself or to others, has been seriously impaired or even destroyed are of too frequent occurrence to justify mention. Many of these injuries arise out of what are commonly termed "avoidable accidents," and in this sense they instantly become of vital importance to our subject. Avoidable accidents may be either liability or non-liability in character, serious or otherwise in consequences, costly or inexpensive in results, and they may occur through the negligence of either the plaintiff or the defendant. The term is a most liberal one, and its field of activity to one engaged in accident work is proportionately broad.

It is not to be inferred that I advocate the exercise of this compassion along impracticable lines or to fantastic lengths. It is neither to be expected nor desired that one shall take up with every new safety device which may be perfected or with every new theory which may be exploited. Such a course would shortly defeat its own ends. There is, however, middle ground upon which one may safely tread and which is not difficult of ascertainment if only one sincerely and conscientiously seeks it.

CAUSES OF AVOIDABLE ACCIDENTS

Many causes doubtless contribute to permit of the continued existence of a condition which makes possible the constant recurrence, without serious opposition, of severe mishaps of an avoidable character. We shall eliminate most of these for the moment and consider only such as have a more or less direct bearing upon our immediate subject. These may briefly be summarized under the following captions :

"Indolence." A disinclination to act, not openly admitted or even recognized in some instances, but constituting nevertheless a very real obstacle to the successful development of our subject. It does not necessarily extend to nor impair activities in other directions.

"Inherited acquiescence." The acceptance, consciously or unconsciously, of the erroneous impression that "accidents are a part of the business," and something, therefore, to be looked upon with feelings akin to complacency. "Inherited," because of its intimate connection with the subject of railroading in past years.

"Skepticism." A natural aversion to anything new in railroading and especially to prevention-of-accident work. Usually encountered in representatives of the old school, so to speak.

"False economy." The apparent inability to realize that good business principles are just as applicable to this phase of railroading as to any other. It requires the expenditure of money to make money, and inversely, in accident work, to save money.

The precise application of these citations may at first seem somewhat obscure until it be known that these factors have in the past militated strongly against the successful introduction into railway accident work of the broad principles of humanitarianism. Obstacles such as these may not be swept aside in a day; greater forces will eventually be brought to bear upon a subject of such vital import to society; the march of human events is irresistible, however, and it is not given to any individual long to stay its progress or to retard its ultimate destinies.

INDIFFERENCE CHANGED TO REALIZATION

I have often remarked the seeming indifference with which many successful men of affairs will regard an apparently abstract theorem until suddenly some striking incident arises which instantly gives concrete, definite existence to that which formerly had appealed to them only as a vague, intangible possibility of the future. Of incalculable assistance is this to the development of advanced accident work in the electric railway field. A simple illustration will suffice:

A prominent operating official of an interurban property had never devoted any especial thought to the accident situation upon his lines other than in so far as it directly affected his receipts and expenditures. His interest in the subject was purely a commercial one, and in this respect he differed in no essential degree from many others similarly situated. One evening, quite unexpectedly, he chanced to be an eye-witness to a most distressing fatality which might have been entirely avoided through the instrumentality of certain reasonable changes in operating conditions at this particular point. Not only were these changes immediately effected but other situations of like nature received similar consideration.

Almost against his will, and probably without realizing the fundamental changes in his very nature, that official forthwith became a humanitarian of a practical type. Equally serious accidents, almost identical in character, had produced no such startling effect upon him in past years. That the impression received that night was not of a passing nature has since been well demonstrated by the ceaseless vigilance with which he now scrutinizes every such detail of his management.

Can we say that such a man isn't bigger and broader and better in his acknowledgment of human impulses? Can we consistently compare with him the man who, under similar circumstances, considers only the financial or legal possibilities involved? Can we justly characterize such a man as being sentimental or emotional or impractical, because his dominating consideration is that of safety for the traveling public of which even the very members of our own immediate families form a part? Is he the less valuable to his employers and to the general public because he possesses sufficient wisdom to recognize the existence of a very real community of interests between the two?

There comes to mind a tragic occurrence which happened many years ago, when advanced accident work was more or less of an unknown quantity, and has ever since appealed to me most strongly. An established rule of the company concerned prescribed that motormen should pass standing cars, on double track, at a very slow rate of speed. Late one afternoon a comparatively new motorman thoughtlessly disregarded this regulation as he approached a standing car. An instant later a small child darted out from behind the stationary car, and to his horror he recognized his own daughter. Had the dramatic intensity of that tragedy been strikingly portrayed at the time to all motormen throughout that system, it could not but have proved a most powerful agent for good. But, unfortunately, there was lacking within the management the requisite germ of humaneness, for its officials concerned themselves almost exclusively with the examination of the probable legal principles involved. In other words, the commercial instinct predominated over the humanistic.

The really ideal combination in accident work comprises a happy blending of the practical with the humane, each enhancing the value of the other, and both contributing to the common good. The true significance of this will in time appeal to us with ever increasing force as the various stages of its irresistible development unfold.

In Accident Bulletin No. 40 the Interstate Commerce Commission reports 410 persons killed and 3264 injured on electric lines doing an interstate business.

Meeting of Engineering Association Committee on Standards

Eight Proposed Standards and Three Recommended Practices Submitted to the Committee for Approval Before Being Sent Out to Member Companies for Adoption by Letter Ballot Were Considered in Detail—The Proposed Standards Were Approved, but the Proposed Recommended Practices Were Rejected and Will Not Go to Letter Ballot—Manufacturers Were Called in to Discuss the Specifications for Heat-Treated Axles

The committee on standards of the American Electric Railway Engineering Association held a meeting in New York City on Nov. 6 and 7 to discuss the proposed standards and recommended practices submitted by the various standing committees and approved at the convention held in Atlantic City last month. Under the new rules of procedure which were adopted at the last convention the committee on standards is continued in office until a new committee is appointed. It is necessary under these rules for the committee on standards to pass on all proposed standards and recommended practices approved by the convention but not previously passed on by the committee on standards. Eight proposed standards and three proposed recommended practices were discussed by the committee at this meeting. The following members of the committee were present: Paul Winsor, Boston, Mass. (chairman); M. H. Bronsdon, Providence, R. I.; J. H. Hanna, Washington, D. C.; H. H. Adams, New York; M. V. Ayres, Nyack, N. Y.; J. M. Larned, Pittsburgh, Pa.; Martin Schreiber, Newark, N. J.; A. F. Hovey, New York; E. R. Hill, New York, and E. B. Katté, New York. Two members of the committee, F. G. Simmons, Milwaukee, and L. T. Crecilius, Cleveland, Ohio, were unable to be present. Charles Hewitt, Philadelphia, also was not present as he has resigned from the committee owing to his company's withdrawal from membership in the American association.

Secretary Litchfield first read the new rules of procedure for the committee on standards. Mr. Winsor pointed out that the committee on standards was not empowered to amend in any way the proposed standards submitted to it; it could only approve or disapprove. In the latter event the proposed standard would not be submitted to member companies for letter ballot and the subject would have to go over for at least one year. He requested that in order to save time the discussion be confined to the desirability of approving or disapproving the proposed standards as submitted.

SPECIFICATIONS FOR CABLES AND SECTIONS OF TROLLEY WIRE

The first proposed standard discussed was the specifications for high-tension, three-conductor, paper-insulated, lead-covered cable, submitted by the committee on power distribution. The specifications were considered paragraph by paragraph. There was some discussion as to the interpretation of the first paragraph under "Insulation." The committee on power distribution amended this paragraph on the floor of the convention in order to make it clear that the thickness of the paper insulation should be determined by multiplying the thickness of a single layer of paper by the number of layers and not by measuring the thickness of the insulation, including the gum filler, as it was laid on the cable. On motion, the specifications for high-tension cables as submitted were approved by a unanimous vote of those present. After the vote was taken it was suggested that the attention of next year's committee on power distribution be called to the possible ambiguity of the first paragraph under the heading of "Insulation."

The specifications for single-conductor, paper-insulated, lead-covered cable for 1200-volt circuits were considered next. There was only short discussion of these specifications, and they were approved by unanimous vote of those present.

The proposed standard sections for grooved trolley wire of sizes other than No. 0000 were approved by unanimous vote of those present.

SPECIFICATIONS FOR OVERHEAD CROSSINGS

The specifications for overhead crossings of electric light and power lines were then taken up. Mr. Katté, who is also a member of the committee on electricity of the American Railway Engineering Association, said that these specifications had not yet been approved by either the American Railway Association or the American Railway Engineering Association. The steam railroads had raised a number of objections to them. Among these objections Mr. Katté mentioned the following:

Section 13. The clearance between conductors carrying current not exceeding 10,000 volts should be 9 in.; that between conductors carrying current exceeding 10,000 volts but not exceeding 14,000 volts should be 12 in.

Section 18. Strong objection was made to the use of ungrounded guy wires, and the addition of the words "provided guys are not grounded to permanently damp earth" after each sentence was suggested.

Section 27. The wind pressure assumed in calculating the loads on the conductors should be 12 lb. per square foot instead of 8 lb.

Section 30. The wind loads assumed in the design of the poles and towers should be 18 lb. per square foot instead of 13 lb.

Section 49. The species of timber which may be used for wooden poles should be specified definitely.

Section 51. Open-hearth steel should be definitely specified for use in steel structures.

Section 55. The ratio of length of compression members to least radius of gyration should be reduced so as to prevent weak and flimsy structures from being used.

The members of the committee were impressed with the importance of the objections raised by Mr. Katté, but it was not believed that the objections warranted holding up the adoption of the specifications for another year. When the vote was taken Mr. Katté was the only member of the committee who was opposed to approving the specifications as submitted. He agreed to incorporate his objections in a minority report, and a motion was then passed that a recommendation be made to the executive committee to incorporate this minority report together with a majority report in the letter ballot to be sent out. Another motion was carried that a recommendation be made to the executive committee requesting it to instruct the committee on power distribution to keep in touch with the disposition of these specifications by the American Railway Association and the American Railway Engineering Association during the coming year so that such amendments to the specifications may be drafted and approved next year as will meet the objections of the steam railroads to the specifications as they now stand.

SPECIFICATIONS FOR NO. 00 COPPER TROLLEY WIRE

The next subject considered was the specifications for No. 00 round hard-drawn copper trolley wire. Secretary

Litchfield pointed out the difference between these specifications and those recently adopted by the American Society for Testing Materials. The principal difference in the two specifications was that the Engineering association specification required a torsion test whereas the American Society for Testing Materials specification did not. Mr. Winsor and Mr. Hovey spoke in favor of the torsion test, as they believed this test would disclose defects in the wire which could not be discovered by any of the other tests to which the wire might be subjected.

To ascertain the reasons for omitting the torsion test in the American Society for Testing Materials specification, Mr. Gray, of J. G. White & Company, who was a member of the committee of that society which drew up the specifications, was asked to explain the reasons why this action had been taken. Mr. Gray said that the committee of the American Society for Testing Materials originally began its work by preparing specifications for all sizes of hard-drawn copper wire. Trolley wire came under this classification, but the specifications were not meant to cover that class of wire only. His experience had been that the torsion test was easily affected by many conditions which it was impossible to control, particularly in the case of the smaller sizes of wire. For this reason the committee of which he was a member did not believe it was a very reliable test. However, he thought that there was no question about its value in detecting certain kinds of defects in trolley wire, and he had frequently purchased trolley wire under specifications requiring such tests. On motion the specifications as submitted were unanimously approved as standard.

SPECIFICATIONS FOR HEAT-TREATED AXLES

On Tuesday morning at 10:30 the committee met by appointment representatives of the Carnegie Steel Company, the Midvale Steel Company, the Standard Steel Works, Gulick-Henderson & Company, the Pennsylvania Inspection Bureau and the Jones & Laughlin Steel Company. The subject for discussion was the specifications for heat-treated shafts and similar parts. The specifications were read and discussed paragraph by paragraph.

Mr. Gulick thought that the amount of discard should be definitely stated. He suggested a minimum limit of 25 per cent. This could be obtained at all mills making blooms for axles. He favored inspection of the blooms as they were produced from the ingots.

Mr. Barba, Midvale Steel Company, said that a requirement of 25 per cent discard would be entirely acceptable to his company, but he did not believe it would produce the desired results. It was possible to discard 25 per cent on some blooms and still have segregation.

In a written communication Mr. Replogle, Cambria Steel Company, suggested that the chemical composition be changed so as to make the maximum phosphorus 0.04 per cent for steel made by the acid process and 0.02 per cent for steel made by the basic process. Mr. Winsor asked if steel made by the acid process containing 0.05 per cent phosphorus was better than steel made by the basic process but containing the same percentage of phosphorus.

Mr. Barba said that all steel for axles should be low in phosphorus. The basic process of manufacture tended to reduce the amount of phosphorus in the steel. In order to get as low as 0.05 per cent phosphorus in acid steel, careful selection must be made of the materials. Referring to the chemical composition required by these specifications he thought it would be impossible to make steel having a chemical composition with the maximum values permitted by the specification and at the same time meet the physical tests required. The manufacturers did not object to the physical tests imposed by these specifications, as they were being met every day in practice.

Mr. Gulick called attention to the requirement that the elastic limit should be determined by an extensometer. He thought an elastic limit of 50,000 lb. measured in this way was easily equivalent to an elastic limit of 58,000 lb. measured by the drop of the beam.

Attention was called to the possibility of interpreting Paragraph 6 to mean that a test should be taken from every ten axles or every 100 axles. The treating-plant heat referred to in this paragraph included at least two processes, in one of which the axles were handled in lots of ten, and in the other in lots of 100. The intention of the specification was that the test should be made from every ten axles in a heat.

F. R. Phillips, Pittsburgh Railways, wrote a letter calling attention to the fact that the methods of heat treatment of different manufacturers were widely different, and he thought that the exact method of heat treatment should be specified. The consensus of opinion of those present at the meeting was against this conclusion, as it was believed that the details of the treatment should be left to each manufacturer.

After a vote of thanks had been given to the representatives of the manufacturers, a motion was made and carried that the specification be approved for adoption as standard. The vote was unanimously in favor of adoption.

Mr. Schreiber then moved that the executive committee be requested to refer these specifications to the proper standing committee during the coming year, with instructions to keep in touch with the action of the American Society for Testing Materials, and to call the attention of the standing committee to the fact that the following points were raised in the discussion:

(1) The possibility of reducing phosphorus and sulphur in the steel.

(2) The desirability of defining a standard for extensometers to be used in determining the elastic limit.

(3) The desirability of designating precisely the number of axles represented by one treating-plant heat.

(4) The desirability of describing more exactly the round-edge mandrel used for making cold-bend tests.

(5) The necessity of limiting the number of times that steel may be re-treated if it fails to meet the requirements.

THIRD-RAIL CLEARANCES

The third-rail clearances and the definitions of third-rail gage and bond, submitted by the committee on heavy electric traction, were unanimously approved.

ACTION ON RECOMMENDED PRACTICES

The three proposed recommended practices submitted for approval included the location of automatic train stops, code of instructions to employees for fire protection, and book of rules and regulations for the government of employees of the way department.

Mr. Hill moved that in view of the fact that the American Railway Association and the American Railway Engineering Association had appointed committees to study the location of automatic train stops this subject be referred back to the committee on heavy electric traction, with instructions to confer further with the committees of those two associations. The motion was unanimously carried.

Mr. Adams opposed the adoption of the rules of instructions to employees for fire protection. He thought that the indorsement of the association in convention was sufficient in cases of this kind, and that it was not necessary or desirable to adopt such rules as recommended practices. On motion the committee on standards indorsed these instructions, but did not approve them for adoption as recommended practice. The same objections were raised to the rules for the government of employees of the way department and the same action was taken.

The meeting then adjourned.

Sir H. Bell, in his remarks as chairman at the annual meeting of the Buenos Ayres Western Railway in London on Oct. 17, stated that it was the intention of the directors to electrify the suburban system as far as Moreno, a distance of 22 miles.

ELECTRIC EXPRESS SERVICE OF BAY STATE STREET RAILWAY

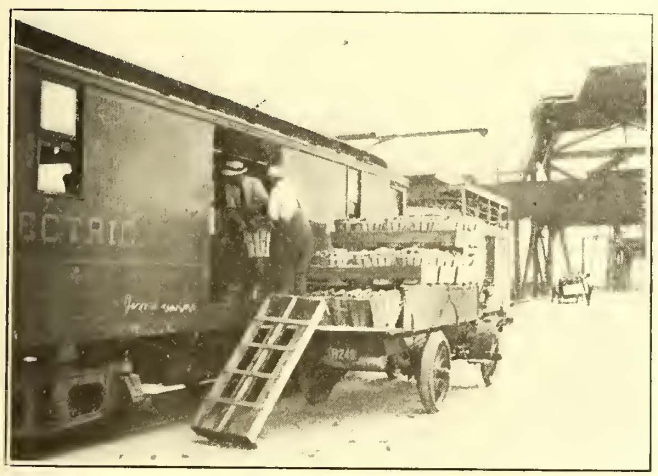
The electric express service of the Bay State Street Railway Company, which was extended Sept. 11 to connect the service already established with Boston, added to the company's shipping points the important industrial centers of Quincy, Braintree, South Braintree, Randolph, Avon and Holbrook, as well as affording an outlet from Boston for the company's express service south of that city. The company now has 142 shipping points, including those of connecting electric express service by other companies.

Company's Symbol

During the season the Bay State Street Railway handled a car of peaches a day from Somerset, Mass., and Portsmouth, R. I., to the market towns in southern Massachusetts and to Boston. Other farm products handled were

Latest Type of Electric Express Car

strawberries from Dighton and cranberries from the producing centers. Industrial products from Brockton, Taunton, Providence, Fall River and other manufacturing centers are being shipped largely by the Bay State's electric service. Merchandise shipped to Boston is landed at the



Loading Peaches from Farmer's Auto Truck to Express Car

newly enlarged Neponset freight station on the southern edge of the city and thence distributed by team and auto truck to various parts of Boston. The development of the service during the first month of operation is very gratifying to the officers of the company.

CIRCULAR ON A. E. R. A. WORK

In a communication addressed to the associate members of the American Electric Railway Association under date of Nov. 6, 1911, H. C. Donecker, secretary, announces that the proceedings of the recent convention are well under way and that it is hoped to have them ready for distribution before Jan. 1, 1912. Pamphlets containing the addresses delivered at the recent convention are now being prepared as part of the publicity work of the association and will soon be ready for distribution. Attention is directed to the need of educational work by the associate members, who are requested to read the remarks made by President Brady in regard to the part that associate members should take in this campaign.

The executive committee of the association, recognizing that associate members frequently desire to secure copies of the proceedings of the affiliated associations, has ruled that these volumes be sold to associate members by the association at cost on application to the secretary.

The association is not prepared to make a definite announcement concerning its plans for the coming year, but hopes to address a communication shortly to the associate members in regard to plans for still further broadening the scope of the association. The dues of the associate members for the year ending Sept. 30, 1912, are payable. Even with the increased membership, delinquencies in the matter of dues among associate members in 1911 amounted to only 4 per cent.

Appreciation is expressed of the increase in the attendance of associate members at the various sessions at the last convention, and of the more general participation of associates in the discussions. The hope is expressed that there will be no diminution in this interest in the future years.

FARE HEARING BEFORE CONNECTICUT COMMISSION

The Public Utility Commission of Connecticut has before it for consideration the petition of residents of Manchester for a reduction in the fare from 15 cents to 10 cents over the line of the Connecticut Company between Hartford and Manchester, a distance of 9.2 miles. The first hearing was held in Hartford on Oct. 18, 1911. At this hearing it developed that there were three 5-cent zones between Hartford and Manchester. The first extended from the Hartford City Hall to Burnside, a distance of 3.8 miles with a short lap-over. The second fare zone, from Burnside to Laurel Park, was 1.6 miles, and the third zone, from Laurel Park to Manchester, was 3.8 miles. On a commutation ticket the fare was 10 cents. A transfer was given in Hartford.

On Oct. 19 M. J. Leary, general passenger agent of the company, gave some statistics on other fares in the State. He said that the rate on the Manchester line was about 1½ cents a mile. On the Farmington line the fare was 15 cents and the distance 9.332 miles. No transfer was given beyond Farmington. On the South Glastonbury line the fare was 15 cents and the distance 9.74 miles, without transfer at the terminus. On the Branford line the fare was 15 cents and the distance 9.6 miles. From New Haven to Derby the fare was 15 cents and the distance 9.3 miles, but transfers were given. From New Haven to North Haven the fare was 15 cents and the distance 8.3 miles with a lap-over.

C. V. Wood, traffic manager of the Springfield (Mass.) Street Railway, testified that it was not possible to charge less than 1½ cents a mile without jeopardizing the original investment.

L. S. Storrs, vice-president of the Connecticut Company, said at the continued hearing on Oct. 25, 1911, that it was impossible to tell just what the receipts of the Manchester line were, because they could not be isolated from the component parts of the system in Hartford.

J. K. Punderford, general manager of the Connecticut Company, said that to operate on a mileage basis would mean the establishment of many fare stations, with stops

only at the stations. Very few people were affected by the short zone mentioned in the present instance. He said that in 1904 the average wage of conductors and motormen on all the systems of the Connecticut Company was 20 cents an hour. On June 1, 1911, the average was in excess of 25 cents an hour. Last year the company paid the State about $500,000 in taxes, and about $75,000 had been paid toward a new bridge in Hartford. Street sprinkling cost the company about $20,000 a year. The company paid about $40,000 annually for the removal of snow. An appropriation of $84,000 had been made to double track the Manchester line and provide new cars. If the present conditions continued Mr. Punderford saw no way for the company to meet its obligations but to increase its fares.

On Oct. 26 Mr. Leary testified further in regard to distances and fares on other lines in Connecticut. At this hearing counsel for the petitioners asked to have the books of the company produced at the hearing. The commission took this request under advisement. Benjamin I. Spock, counsel for the company, said that he was willing to have the books on hand for convenience in answering any specific question that might be asked, but he could not see the utility of an extended investigation of the accounts of the company, as the returns of the company were all on file with the commission for reference.

STANDARD STEEL WIRE GAGE

Upon the recommendation of the Bureau of Standards, at Washington, a number of the principal wire manufacturers and important consumers have agreed that it would be well to designate the wire gage known as the Washburn & Moen gage as the "steel wire gage." In cases where it is necessary to distinguish it from the British standard wire gage it may be called the "United States steel wire gage."

The only gage for steel wire which has been recognized in acts of Congress is the Birmingham gage. The Treasury Department has for many years used this gage in connection with importations of steel wire, and the adoption of succeeding tariff acts with provisions for the assessment of duty according to gage numbers gives legislative sanction to the gage. Until certain provisions of the tariff act are amended the Treasury Department probably cannot discontinue the use of the Birmingham gage. It should, however, be abandoned by all other users, since the gage itself is radically defective, and it is nearly obsolete, both in the United States and in Great Britain, where it originated.

For copper wires and wires of other metals the gage universally recognized in the United States is the "American wire gage," also known as the "Brown & Sharpe gage." No confusion should arise between the steel wire gage and the American wire gage, because the fields covered by the two gages are distinct and definite.

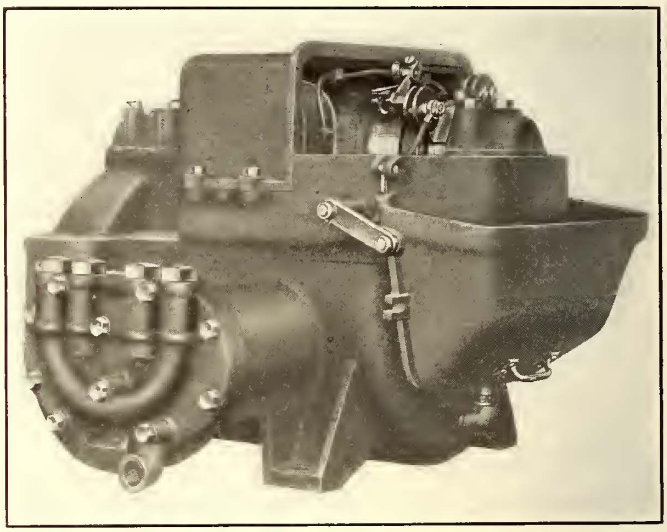
SIMMEN SIGNALS FOR INDIANAPOLIS AND CINCINNATI

The Indianapolis & Cincinnati Traction Company, Charles L. Henry, president, has arranged with the Simmen Automatic Signal Company for the installation of its protective apparatus on 18 miles of this high-speed single-phase railway. The Simmen signal system provides the dispatcher with continuous records of not only the position of each car in the protected territory, but also the speed at which it is running through the blocks; also it gives the dispatcher means for setting "proceed" and "caution" signals in the motorman's cab. The principle of operation of these signals has been described in this paper and was recently outlined in the report of the joint committee on block signals of the American Electric Railway Engineering and Transportation & Traffic associations.

A NEW TYPE OF AIR COMPRESSOR FOR CARS

A new and improved type of air compressor for car and locomotive brake equipments recently has been developed by the Allis-Chalmers Company, Milwaukee, Wis. The accompanying illustration shows the general appearance of the machine, which is designated by the makers as Type AA-7. While intended primarily for brake equipments the compressor is equally well adapted for stationary use where moderate volumes of compressed air are required at pressures up to 100 lb. per square inch.

The motor, in general, is very similar in design to railway motors. The armature is built upon a spider so that the shaft may be removed and replaced without rewinding. Particular attention has been given to the design of the brush holders and their insulation. A simple and reliable adjustment is provided for regulating the tension of the brush springs. This device is self-locking and the adjustment cannot be lost. The motor field frame is split and the entire armature may be taken out by removing the bearing caps and upper half of the field frame. The bearings are made of bronze and are of extra large size. Herringbone gears cut from solid steel blanks are used. The gear is cut from 0.40 carbon cast steel and the pinion is



New Type of Air Compressor

cut from 0.50 carbon bar steel, heat treated. The use of a large pinion and coarse pitch teeth adds to the life of the gears.

The compressor body is carefully designed to provide ample strength where needed and at the same time to eliminate unnecessary weight. An opening is provided opposite the cylinders for inspection of the crank-shaft bearings, connecting rods, etc., and to facilitate the removal of the pistons without removing the motor base. An improvement in the design of the cylinder head is the absence of all pipe connections. The suction and discharge ports in the cylinder head register with ports in the compressor body which lead to the suction and discharge pipe connections on the top and bottom of the compressor body. The cylinder head may be removed, therefore, without disturbing the piping connections.

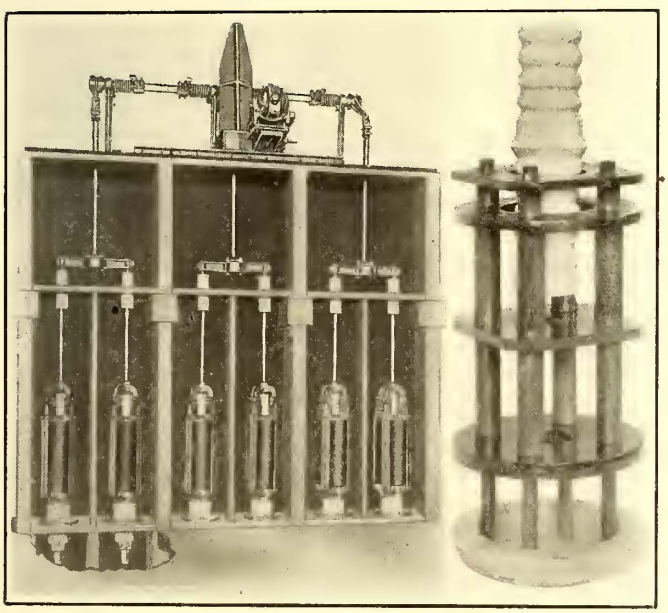
STARTING OF 20,000-KW TURBO-GENERATOR IN NEW YORK EDISON STATION

The first of the three 20,000-kw Curtis turbo-generator sets which are being installed by the General Electric Company in the Waterside Station No. 1 of the New York Edison Company was placed in regular service on Nov. 3. This is the largest turbo-generator yet built, and the three

machines with a total capacity of 60,000 kw will displace four reciprocating engine units with a total capacity of only 14,000 kw. The floor space occupied by one turbine unit is 297 sq. ft., whereas one of the 3500-kw engine-driven units occupies 918 sq. ft. The dimensions of the base of the machine are 17 ft. 6 in. x 17 ft. The weight is approximately 420 tons, of which 112 tons are in the revolving field, shaft and turbine wheels. The turbine wheels are 13 ft. in diameter, contain 7200 buckets and operate at a normal speed of 750 r.p.m. The generator is of the four-pole, three-phase, 25-cycle type, wound for 6600 volts. The turbine is of the six-stage type, designed to operate on 175-lb. gage pressure, 100 deg. superheat and 1½ lb. per square inch absolute back pressure in the exhaust chamber. The guaranteed steam consumption under these conditions is 15 lb. at half load, 14.4 lb. at three-quarters load and 15 lb. at full load. An idea of the size of the unit may be gained from the statement that if the turbine were fully loaded for twenty-four hours it would require about 7,200,000 lb. of steam, to generate which would necessitate burning 400 tons of coal in the boilers. To condense the steam 86,000,000 gal. of water would be required, and to cool the generator windings would require 115,000,000 cu. ft. of air.

RECENT DEVELOPMENTS IN OIL-SWITCH DESIGN

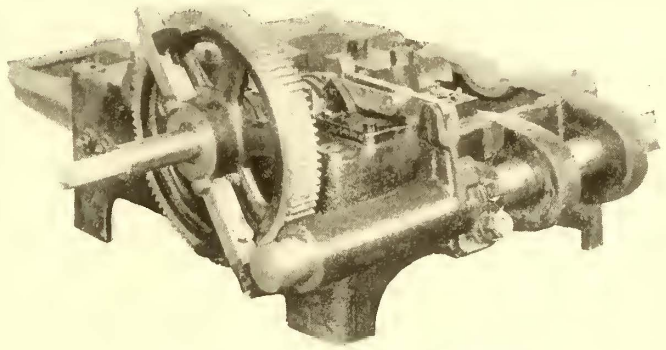
The motor-operated "H" type of oil switch for rupturing large capacities was developed by the General Electric Company at a time when the kilowatt capacity of generating units was comparatively small, the operating speeds low and the regulation poor. The introduction of large high-speed steam turbines has brought about a demand for switching apparatus of high rupturing capacity. The company has therefore added the "H-6" and "H-7" types, which are identical with other "H" switches except for



Triple-Pole, Single-Throw, 2000 Amp., 15,000-Volt Oil Switch and Baffle Plate

a few details necessary to adapt them to different styles of cell construction. Both switches carry the different phases in separate cells, but in the "H-7" oil switch further separation is secured by adding barriers between the breaks of each phase.

The secondary contacts consist of a movable cylindrical rod, which makes contact with the inner surface of four segments of a cylinder, which are secured in position by helical springs. This arrangement insures heavy and uniform contact pressure and also automatically compensates for any wear of the surface of either the stationary contact segments or the cylindrical contact rods. When the arc is ruptured any resulting burning takes place on the bell mouth of the stationary contact and the rounded tip at the lower end of the movable contact rod. In no case is damage caused to the working contact surfaces. The contacts are self-aligning and easily renewable. Additional contacts, known as primary contacts, are also provided for current capacities above 300 amp. These serve only to carry most of the entire current while the switch is closed.



Locking Device for H-6 Oil Switch

The movable primary contacts consist of double sets of contact fingers made of drop-forged copper, fastened to a movable cross-head by flat springs with copper laminations and reinforcing springs. The tension of these springs insures good contact, but does not retard the opening of the switch. The stationary primary contacts are wedge-shaped copper blades which are fastened to the top of the oil vessel. This construction imparts a distinct rubbing movement to the contacts when they open and close.

The diameter of the oil vessels has been increased from 8 in. to 10 in. and the thickness of the steel walls has also been increased. Another improvement consists of baffle plates of the new design illustrated. These plates check the movement which is imparted to the oil by the expansion of the arc-formed gases and allow the gases to escape while the oil itself drops back into the oil vessel.

The switch is opened and closed by compression springs. The operating motor does not actually throw the switch, but serves merely to compress the springs. The weight of the movable parts of the switch is counterbalanced so that when the switch operates the force of the compression springs closes the contacts by throwing the lever to approximately 1½ in. from the opposite position, after which the motor compresses the springs for the remainder of the distance. The operating springs are held in compression by the main operating toggle of the switch and by a dog bearing against a roller-stop which, when released, allows the switch to operate. The main operating toggle is slightly over center when the switch is at rest. Thus the pressure of the dog against the roller stop is merely sufficient to overcome the tendency of the main toggle to buckle.

A new locking mechanism has been developed to remove the chance of trouble which might occur with the old switches if the toggles were not properly set. Although primarily developed for the "H-6" and "H-7" switches, this feature will henceforward be embodied in the design of all switches of the "H" type. The "H" type switches are built in current capacities up to 4000 amp and 14,000 volts. They are also made for potentials up to 70,000 volts and will operate satisfactorily on systems whose combined load is not greater than 50,000 kw. In many cases, however, they can be recommended for rupturing capacities in excess of this, depending upon the particular features of the installation. They are supplied in two forms according to the character of service in which they will be used. In one form the poles are in parallel sets of two; in the other the poles are arranged in tandem.

News of Electric Railways

Progress of Negotiations for Unification in Chicago

The negotiations for the unification of the traction properties in Chicago, which were opened as a result of the joint letter from Samuel Insull, Henry A. Blair and Ira M. Cobe to Mayor Harrison, as noted in the Electric Railway Journal of Oct. 28, 1911, page 963, have resulted in a number of conferences being held. At the opening conference Gilbert E. Porter represented Mr. Insull and the elevated railroad interests, Lennard A. Busby spoke for Mr. Cobe and the Chicago City Railway, and Williston Fish represented Mr. Blair and the Chicago Railways in the absence of W. W. Gurley. Mr. Busby read a statement from all the companies as a basis for negotiations, but said that later each company might desire to speak for itself. Eight considerations were set forth by the companies as a basis on which the problem must be worked out, as follows:

1. Universal transfers, not only between surface lines, but also between surface and elevated lines for a single fare.
2. A subway system for the use of both surface and elevated lines in the congested downtown district.
3. Adjustment of all matters in controversy in connection with the elevated loop structure.
4. Rapid transit service for each of the three great divisions of the city by means of through routing over elevated lines.
5. Through car service on both elevated and surface lines to be installed from time to time and maintained to the extent necessary and economically justifiable to meet traffic conditions.
6. First-class service and maintenance of the entire system in a high state of efficiency.
7. The right on the part or the city or its licensee to purchase the entire unified system at a fixed price.
8. A division with the city of net receipts, upon a basis to be agreed upon.

The statement made by the companies follows in part:

"This statement is made on behalf of all the companies. It is not intended to cover all the various phases of the traction situation, but is limited to a brief survey of the most important matters that will be discussed by the committee and the representatives of the companies. To the extent that the subjects are treated in this communication, however, the companies are a unit in their opinions. As to other matters which may arise in the course of the discussion, the companies will speak for themselves separately.

"There has been no formal declaration on the part of the Mayor and City Council as to changes and additions desired in the present transportation facilities, but, from statements appearing from time to time in the public press and from our experience in the transportation business, it may be said that an ideal transportation scheme for the city would include the following:

"(a) Universal transfers with a single fare.

"(b) Subway system to relieve downtown congestion.

"(c) Adjustment of all elevated loop questions.

"(d) Rapid transit by means of through routing on all elevated lines.

"We are of the opinion that with the ownership of the present lines vested in the eight different companies, with interests competitive in certain localities, and at times conflicting in matters of service, it is not possible to realize an ideal system of transportation.

"It is evident therefore that in order to obtain an ideal system unification of the present system is necessary. This means physical consolidation of the properties if possible, and the operation of all lines under single franchise, or under substantial franchises and with single ownership and control.

"The companies are a unit in the belief that a subway system is necessary to relieve the congestion of the surface and elevated lines in the business district and to afford adequate transit throughout the city. We tender the committee the companies' operating executives in all subway matters so far as they involve practical transportation problems.

"These men, by virtue of their experience, the positions that they hold, and the information in their possession, are far more familiar with the practical side of transportation in Chicago than any one not engaged in the business in the city could possibly be.

"In order that the present congestion in the downtown terminals may be relieved, the city is proposing to construct a system of subways to use in connection with the elevated and surface lines. It is clear that material errors in subway construction will forever impose a heavy burden upon the traction services.

"By universal transfers we mean the right to ride in any general direction over any surface or elevated line for a single fare. This would involve transfers from surface to elevated lines, in the main using the elevated lines for long hauls and the surface lines for carriers to and distributers from the elevated lines, so that a passenger could select the most rapid and comfortable route to his destination.

"The most rapid and comfortable transportation between the three great divisions of the city can be provided best by through routing of the elevated trains. Universal transfers, subject only to restrictions necessary to prevent fraud, would work an enormous change for the better in the transit facilities of the city. They would bring distant points within easy reach of each other and would encourage removal from the congested parts of the city to the suburbs, where land is cheap and home surroundings are cheerful and healthful."

As a result of the conference between the sub-committee of the transportation committee of the City Council and representatives of the traction interests the following plan of procedure has been agreed upon:

"A commission of experts is to be selected by the city to value the elevated properties, the basis of valuation to be agreed on between the committee and the elevated companies; a tentative unification ordinance is to be drafted by the railway companies with a representative of the city's legal department for submission to the general committee; all subway plans will be submitted to the general committee and the subway commission; a series of public hearings is to be held by the general committee for discussion of all questions."

Amendments to Detroit Municipal Ownership Act

Corporation Counsel Hally of Detroit has sent to the committee on charter and city legislation of the Detroit City Council several amendments to the Glinnan municipal ownership charter amendment which had been requested by that body. One of the principal points the committee desired to cover was the privilege of granting a franchise to private parties in case that course became advisable. Mr. Hally submitted the following clause:

"Nothing herein contained shall be so construed as to prevent the city of Detroit from making a grant to private parties in relation to a street car system on its streets."

Another amendment provides for filling vacancies on the board of street railway commissioners temporarily and permanently, and still another makes it possible to condemn street railway property if it cannot be purchased. This clause follows:

"Said board may purchase or lease or by appropriate proceedings as described by law, and in the name of the city of Detroit, condemn all or any part of the existing street railway property in the city of Detroit."

Mr. Hally said that a serious legal question arises with respect to the language used in Section 8 of the charter amendment, which makes it necessary for the street railway commissioners to negotiate not longer than six months and to determine in that time what steps may be taken in condemnation proceedings. The time might be too short to accomplish this work, as the plan and purchase price would have to be submitted to the electors for approval. The question that arises is whether the Legislature has the right to limit the time for negotiations, after the con-

stitution of the State has been amended to allow cities of the size of Detroit to exercise the right of municipal ownership. Mr. Hally has suggested the following clause for the charter amendment to cover this point:

"If it shall be found impossible or impracticable to purchase or lease existing street railway properties or if it shall be found impossible or impracticable to institute condemnation proceedings as aforesaid, then said board may with the consent of the people of Detroit in the manner prescribed by law make the necessary purchase of land," etc.

The municipal ownership committee, at a meeting on Oct. 30, 1911, adopted a resolution to the effect that the Common Council be informed that the committee recommends that the proposition of municipal ownership be submitted to the people for approval before the proposed street railway settlement is put to a vote.

Labor Changes on the Riverside Traction Company's Line

An interesting development of the strike on Oct. 11, 1910, of the employees of the Riverside Traction Company, of Camden, N. J., occurred Oct. 27, 1911, when the local union, which was No. 550 of the Amalgamated Association of Street and Electric Railway Employees of America, was dissolved. This local was formed immediately after A. Merritt Taylor was elected president of the company. Prior to the strike, the Riverside Traction Company had been in the hands of a receiver for about two years, the property was very much run down and the discipline on the road was lax. Immediately after he assumed the management of the company Mr. Taylor took steps to place the property in first-class operating condition and secure efficient operation. A number of men were discharged for disregarding the rules of the company, and the men joined the union almost over night. The strike lasted thirty-six hours. At its conclusion certain of the men who were discharged were reinstated, and a committee was formed to take up all grievances with the officers of the company. Thereafter, nearly every time that the committee urged the reinstatement of a discharged employee the evidence presented against him was so convincing that the committee reported that the discharge was justified.

As a result of the improved physical condition and discipline, the business of the company began to increase very largely, and the employees realized that their condition had really been very greatly improved. Finally this feeling took concrete form in the following letter dated Oct. 27, 1911, which was addressed to A. Merritt Taylor, president of the company, and was signed by every trainman who was a member of the local union:

"We union men, who are members of Division No. 550 of the Amalgamated Association of Street and Electric Railway Employees of America, decided to notify you that when you were elected president of the Riverside Traction Company the employees of this company who did not know you and the other officers you had appointed when you took charge were afraid that their interests might not be properly looked after unless they worked in a body, and for this reason they joined the union.

"You have been running the road over a year, and your management has been so fair to your employees we have decided there is no good reason why we need to keep the union up, as we can depend on you to protect our interests and deal fairly with us.

"We beg to notify you that the union on your road has gone out of business, and we have placed our future in your hands, because you have proved to us how fair you are to your employees under all conditions and at all times, and we are willing to depend entirely on your fairness with us in the future. This is why we put our future interest entirely in your safe-keeping."

Every man who signed this letter received the following letter in reply from Mr. Taylor:

"In reply to letter addressed to me under date of Oct. 27, 1911, signed by you and others, I shall endeavor to further your interests in every way that I consistently can, so long as you remain loyal in every respect to the Riverside Traction Company and conform to the rules thereof. Therefore, the records of conduct of all employees of this company prior to Oct. 27, 1911, will be discarded and a new book of records, beginning with Oct. 27, 1911, will be opened.

"I thank you for the kind expressions contained in your letter, and I hope that your new record from Oct. 27, 1911, on will enable me to vouch for you as a loyal and efficient trainman, which I shall be glad to be able to do.

"A duplicate of this letter is being mailed to every employee who signed the letter addressed to me under date of Oct. 27, 1911."

Changes in Organization in Milwaukee

A reorganization plan under which the business of The Milwaukee Electric Railway & Light Company and of its associated and controlled companies will be divided into three main departments went into effect on that property on Nov. 1, 1911. Heretofore the plan had been in effect which was followed under former President Beggs, the twelve department managers reporting direct to the president. Under the new system the general manager will deal with only three men directly. They are R. B. Stearns and S. B. Way, assistant general managers, and C. N. Duffy, comptroller.

Mr. Stearns, as assistant general manager in charge of the railway department, will have jurisdiction over the following departments of The Milwaukee Electric Railway & Light Company and Milwaukee, Light, Heat & Traction Company: way department, building department and drafting bureau, shop department, transportation department and claim department.

Mr. Way, as assistant general manager in charge of the light and power department, will have jurisdiction in the same companies over the following departments: power plant department, electrical department and sales department. He will also have charge of the following companies, whose managers will report directly to him: Milwaukee Central Heating Company, Racine Gas Light Company, Kenosha Gas & Electric Company, Watertown Gas & Electric Company and North Milwaukee Light & Power Company.

Mr. Duffy, as comptroller, will have jurisdiction over the following departments of The Milwaukee Electric Railway & Light Company and the Milwaukee Light, Heat & Traction Company: accounting department, purchasing and stores department, printing department and advertising and publicity department.

Several other changes in the organization have been announced. One is that Egbert Douglas, having resigned as commercial engineer, has taken charge of the sales department of The Milwaukee Electric Railway & Light Company, the Milwaukee Light, Heat & Traction Company and the Milwaukee Central Heating Company, with the title of sales manager. Another is that T. D. Crocker, while retaining his position as general superintendent of the Milwaukee Central Heating Company, has also been appointed commercial engineer, and, as such, will be in charge of the commercial engineering department of The Milwaukee Electric Railway & Light Company, Milwaukee Light, Heat & Traction Company and the Milwaukee Central Heating Company.

Operating Details in Cleveland

G. M. Dahl, street railway commissioner of Cleveland, was in Buffalo on Nov. 1, 1911, to investigate the operation of a fare register which he will probably recommend for use on the cars in Cleveland.

Since the cars in Cleveland have been fitted with stoves complaint has been made because conductors close the rear doors of the prepayment cars. Mr. Dahl, who ordered the doors left open during the summer in order to secure better ventilation, has not indicated what action he will take in this matter.

Emporia Line Opened.—The Emporia (Kan.) Electric Railway, promoted by Judge Dennis Dwyer, Dayton, Ohio, and his associates, has been completed and placed in operation.

United Railroads to Appeal Geary Street Case.—The United Railroads, San Francisco, Cal., has announced that

it will appeal to the Supreme Court of the United States the decision rendered recently by the Circuit Court of Appeals at San Francisco dismissing the injunction which the company had obtained restraining the city from proceeding with the work of re-equipping the Geary Street, Park & Ocean Railroad in Market Street west of Thirty-third Street for municipal operation.

Ohio Tax Commission's Authority Questioned.—The Ohio River & Western Railroad has begun proceedings to secure an injunction against the members of the Ohio State Tax Commission to restrain them from certifying to the State Auditor a tax of $6,653 against the company. The company asserts that the law under which the commission was created violates Sections 2 and 16 of the State Bill of Rights, sections of the Federal Constitution relating to interstate commerce and the fourteenth amendment to the Constitution.

Short Strike in Augusta.—A strike which lasted only a few hours occurred among the employees of the lines of the Augusta-Aiken Railway & Electric Company, Augusta, Ga., in Augusta on Oct. 31, 1911. The men who went on strike alleged that three employees had been discharged on insufficient grounds to warrant summary dismissal. It was agreed to submit the differences to a board of arbitration to consist of five members. This board upheld the discharge of one of the men, but recommended that the other two should be reinstated.

Employers' Liability.—The federal joint commission on employers' liability and workmen's compensation has voted to recommend a bill to Congress at the opening of the next session for a compensation system based upon a specified schedule of loss of earning power due to different classes of accident. The present idea is to have the losses determined by an administrative board of some kind, thereby eliminating lawyers' fees as far as possible. The railroads asked the commission to recommend only an elective or voluntary system. Hearings are now being held in Washington before the committee.

Another New York Subway Contract Let.—A contract for the construction of another section of the Lexington Avenue subway has been let by the Public Service Commission of the First District of New York and sent to the Board of Estimate for its approval. The section is No. 15, and lies just north of the Harlem River, including the beginning of the two branches, the Pelham Bay branch as far as 138th Street, just east of the Alexander station, and the Jerome Avenue branch to River Avenue and 157th Street. The contract was awarded to the Hagerty-Drummond Company, Philadelphia, Pa., whose bid was $3,829,129.

General Franchise Ordinance Passed in Los Angeles.—By a unanimous vote the Council of Los Angeles, Cal., has passed the general franchise ordinance prescribing the mode of procedure to be followed in granting franchises. The ordinance provides that a franchise can be awarded on the basis of the net annual receipts; on the basis of the gross annual receipts; for compensation in the way of reduction of fares; for a lump sum, or for monthly or annual compensation. The right is reserved to the Council to reject any and all bids when received. The ordinance has been approved by the Mayor and will be published in full by the city by Dec. 1, 1911.

Pearson Syndicate Proposes Development Work in Spain.—The Barcelona Company has been organized under the laws of Canada with a capital of $25,000,000, and with the head office at Toronto, to develop water power aggregating over 250,000 hp and also construct hydroelectric power plants to supply light and power to Barcelona and the northeastern section of Spain. The company has acquired one of the tramways in Barcelona and valuable concessions for suburban railways. The syndicate that will finance these enterprises is headed by Dr. F. S. Pearson. Associated with him is the same group that controls the Rio de Janeiro Tramway Light & Power Company, the Sao Paulo Tramway Light & Power Company and the Mexico Tramways.

Projected Electric Freight Railway.—The Nebraska Coal Company, Rawlins, Wyo., acting as the parent company, has had plans, estimates and surveys prepared for a railroad 200 miles long, to travel the lignite fields of Central Wyoming and provide transportation for coal from the mines of the company; oil from the Larsen oil field; lime and sandstone from the Rawlins Stone Company's quarries and ore from the hematite and nitrate deposits of the Seminole region, as well as wool and other products of the district. The plans include three large gas producer power plants operating electric units, the extension of the mines and quarries and addition of machinery. About twenty miles of the system will be equipped for electrical operation. H. Larsen, Rawlins, Wyo., is president and general manager, and Captain Hiram A. R. Gray, vice-president and consulting engineer.

Proposed Panama Trip.—A trip to Panama to view the work there is proposed by members of the American Institute of Electrical Engineers. The work on the canal has reached such an advanced stage that by May, 1912, the authorities expect to begin flooding the Gatun Lake and letting water into the various levels of the canal. The coming winter will therefore afford the best, and also the last, opportunity to inspect the work, as the canal will have approached completion without any part of it being under water. The committee hopes to receive sufficient applications to cover the capacity of two ships, one from New York and one from New Orleans, making a total of 176 passengers. The probable date of sailing from New York is between Jan. 20 and 30. The round trip fare per passenger not including accommodations on the Isthmus will be $125 from New York, or $95 from New Orleans.

Investigation of Railway Values in California.—More than fifty representatives of the various railroads of California appeared at an informal conference in San Francisco on Nov. 1, 1911, called by the Railroad Commission of California to discuss preliminary arrangements for an investigation into the value of railway property within the State by R. A. Thompson, engineer of the commission. As a result of the conference the railroads promised to present within thirty days blueprints and profiles of right-of-way, station and terminal properties designated by the Interstate Commerce Commission as "useful for public purposes," and Mr. Thompson, acting for the State Commission, extended the time of ninety days designated by the commission for the submission of permanent data and records to be retained by the board for reference. Later the railroads will supply an inventory of the rolling stock and other property in California.

Plans for Improving New York's River Front Railway.—Calvin Tomkins, commissioner of docks of New York, has submitted to the Board of Estimate his plans for the improvement of the West Side, including the elimination of the tracks of the New York Central & Hudson River Railroad from Eleventh Avenue. The railroad's own proposals had been referred to him, and in reporting them he suggests important modifications. While providing for an increase of the company's facilities, he opposes the permanent acquirement by the company of control of the water front. In general the two plans are alike. The company has proposed to spend $65,000,000 in increasing to six its present two-track line from Spuyten Duyvil to the Seventy-second Street yard, and in building an elevated road along the marginal way from the end of its Sixtieth Street freight yard to Cortlandt Street, on which the tracks now running at grade along Eleventh Avenue might be placed.

State Regulation of Public Service Corporations in the City of New York.—This is the title of a sixty-page pamphlet prepared by James Blaine Walker, assistant secretary of the Public Service Commission of the First District of New York, on the work of that commission from 1907 to 1911 in supervising subways, elevated roads, street surface roads and steam railroads, carrying 1,600,000,000 passengers and collecting from the public $77,943,772 in a year, and gas companies and electric companies selling $31,843,272 worth of gas and $25,382,823 worth of electricity in a year. In an introductory summary Mr. Walker reviews the changes and improvements made in the service and property of the public service corporations in New York City and the city's rapid transit lines in the four years following the creation of the Public Service Commission in 1907. The pamphlet is subdivided under the following headings: The Commission; Corporations Subject to Regulation; Regulation of Transportation Lines; Street Surface Car

Companies; The Elevated Railroads; Elimination of Grade Crossings; Gas and Electric Companies; Regulating Security Issues, and Rapid Transit Work.

Commissioner Lane Favors National Corporation Commission.—Franklin K. Lane, of the Interstate Commerce Commission, is reported to favor the creation of a national corporation commission similar in character to the Interstate Commerce Commission, with power to control and regulate large business enterprises and prevent ruinous competition. He is reported to have said: "It is my belief that the government should have power to determine, in the first instance, whether a railroad should run. I think it is only consistent with the theory upon which we are now proceeding that we should protect the railroad that is in existence against a competition that may be ruinous to it—that we should guarantee in a sense a certain territory to a railroad whose rates and services are under control and regulation by the State. I have in mind two instances which illustrate the necessity for such protection: One a case in which a railroad was built for the purpose of holding up a competing line to which it was eventually sold; another a case in which a territory was well served and the carrier in existence preparing for improvements which had been entirely stopped by reason of its being paralleled by another line."

PROGRAM OF ASSOCIATION MEETINGS

American Society of Mechanical Engineers

At the meeting of the American Society of Mechanical Engineers to be held in the Engineering Societies Building, New York, N. Y., on the evening of Nov. 14, 1911, three papers will be presented on autogenous and electric welding. One will deal with the general aspects of the subject, the origin and principles of each process and the apparatus used in each. The other two papers will deal with special phases of the subject. The paper on the origin and principles of each process will be presented by H. R. Cobleigh, of the International Steam Pump Company. The other papers will be presented by G. E. Pelissier, superintendent of the Goldschmidt Thermit Company, and C. B. Auel, assistant manager of works of the Westinghouse Electric & Manufacturing Company. These papers will be entitled, respectively, "Thermit Welding" and "Electric Welding." It is intended to confine the discussion to the topics of electric resistance welding; electric arc welding; thermit welding; oxy-acetylene welding; oxy-hydrogen welding.

Central Electric Railway Association

The following program has been announced for the meeting of the Central Electric Railway Association, which is to be held on Nov. 23, 1911, in Parlor D of the Galt House, Louisville, Ky.:

MORNING SESSION, 9:00 A. M.

Business session and reports of committees.

Paper, "Publicity," by J. J. Rockwell, of the special service department of the McGraw Publishing Company, New York, N. Y.

Paper, "Traffic," by F. D. Norvicl, general passenger and freight agent of the Indiana Union Traction Company, Anderson, Ind.

AFTERNOON SESSION, 1:00 P. M.

Paper, "Electric Locomotives for Interurban Freight Haulage," by F. E. Wynne, of the engineering department Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa.

Paper, "Lightning Protection," by E. J. Burdick, superintendent of power of the Detroit United Railway.

Paper, "Substation Operation," by J. E. Cochran, superintendent of lines and substations of the Ohio Electric Railway, Lima, Ohio.

This is the last regular meeting of the association for 1911 and the first meeting to be held in Louisville. The executive committee of the association will meet at 7:30 p. m. on Nov. 22, 1911, at the Galt House. Space for exhibits should be secured from Frank Eckert, manager of the Galt House.

Financial and Corporate

New York Stock and Money Markets

November 8, 1911.

Trading has broadened and prices until to-day have been on an upward scale. Steel shares, Reading and Union Pacific headed a downward movement in the early trading to-day, and, while partial recovery was made later on, many of the active stocks showed losses at the close. Approval of the reorganization plan for the American Tobacco Company was given by the United States Circuit Court to-day. The money market is devoid of feature. Quotations to-day were: Call, 2¼@2½ per cent; ninety days, 3½@3¾ per cent.

Other Markets

The railway securities figured prominently in the Chicago market to-day. The Chicago Railways series 1 and 2 made advances of 2 points, and the series 4 made a slight advance. Trading was fairly active throughout the entire list in Chicago.

Philadelphia Rapid Transit certificates advanced to 23¾ to-day, and Union Traction sold at 51⅝.

Business on the Boston Exchange has been brisk, and prices have been well maintained. United States Steel was the leading issue in to-day's market.

Demand for bonds in Baltimore has been fair, but otherwise the market has been without feature.

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

	Nov. 1.	Nov. 8.
American Light & Traction Company (common)	a291	a296
American Light & Traction Company (preferred)	a107	a107
American Railways Company	a44½	a44
Aurora, Elgin & Chicago Railroad (common)	a43	40
Aurora, Elgin & Chicago Railroad (preferred)	a85	a84½
Boston Elevated Railway	a126	a127½
Boston Suburban Electric Companies (common)	a15	a15
Boston Suburban Electric Companies (preferred)	a75	a75
Boston & Worcester Electric Companies (common)	a12	a8
Boston & Worcester Electric Companies (preferred)	50	a58
Brooklyn Rapid Transit Company	75½	77¼
Brooklyn Rapid Transit Company, 1st ref. conv. 4s	*84¼	84⅝
Capital Traction Company, Washington	127½	125
Chicago City Railway	a180	180
Chicago & Oak Park Elevated Railroad (common)	3	3
Chicago & Oak Park Elevated Railroad (preferred)	5	5
Chicago Railways, ptcptg., ctf. 1	a96	a98
Chicago Railways, ptcptg., ctf. 2	a32¼	a34
Chicago Railways, ptcptg., ctf. 3	a11	a11
Chicago Railways, ptcptg., ctf. 4	a7	a6¼
Cincinnati Street Railway	132½	129½
Cleveland Railway	a100¼	a104½
Columbus Railway (common)	83	83
Consolidated Traction of New Jersey	a75½	a75½
Consolidated Traction of N. J., 5 per cent bonds	a104½	a104½
Dayton Street Railway (common)	a25	a25
Dayton Street Railway (preferred)	a101	a101
Detroit United Railway	a79	a79
General Electric Company	150½	153¾
Georgia Railway & Electric Company (common)	a160	a160
Georgia Railway & Electric Company (preferred)	a93	a93
Interborough-Metropolitan Company (common)	15	14¾
Interborough Metropolitan Company (preferred)	45⅛	46
Interborough Metropolitan Company (4½s)	79½	79⅛
Kansas City Railway & Light Company (common)	a16¼	*16¼
Kansas City Railway & Light Company (preferred)	a44½	a44
Manhattan Railway	a136	a140
Massachusetts Electric Companies (common)	a22¼	a22
Massachusetts Electric Companies (preferred)	a94	a94½
Metropolitan West Side, Chicago (common)	*27	*27
Metropolitan West Side, Chicago (preferred)	*75	*75
Metropolitan Street Railway, New York	8	*8
Milwaukee Electric Railway & Light (preferred)	*110	*110
North American Company	a74	a73
Northern Ohio Light & Traction Company	*57½	a57½
Northwestern Elevated Railroad (common)	*30	*30
Northwestern Elevated Railroad (preferred)	*70	*70
Philadelphia Company, Pittsburgh (common)	a52¾	a53⅜
Philadelphia Company, Pittsburgh (preferred)	a42¾	a43
Philadelphia Rapid Transit Company	a23⅜	a23⅜
Philadelphia Traction Company	84½	84¾
Public Service Corporation, 5% col. notes (1913)	*94	*94
Public Service Corporation, ctfs	a110	a110
Seattle Electric Company (common)	a108	a108
Seattle Electric Company (preferred)	a101	a101
South Side Elevated Railroad (Chicago)	*95⅛	*95⅛
Third Avenue Railroad, New York	9½	11
Toledo Railway & Light Company	10	10
Twin City Rapid Transit, Minneapolis (common)	a107	a108
Union Traction Company, Philadelphia	a51¼	a51⅜
United Ry. & Electric Company (Baltimore)	18	18½
United Rys. Inv. Co. (common)	34¼	35
United Rys. Inv. Co. (preferred)	58	60½
Washington Ry. & Electric Company (common)	a41⅛	a43⅛
Washington Ry. & Electric Company (preferred)	a91	a90
West End Street Railway, Boston (common)	a87½	a88
West End Street Railway, Boston (preferred)	a102	a102
Westinghouse Elec. & Mfg. Co.	64⅞	65
Westinghouse Elec. & Mfg. Co. (1st pref.)	a120	a115

aAsked. *Last sale.

ANNUAL REPORTS

Montreal Street Railway

The annual report of the Montreal Street Railway for the year ended Sept. 30, 1911, makes the following showing:

Gross earnings		$4,775,300
Operating expenses		2,679,806
Net earnings		$2,095,494
Interest from Montreal Park & Island Ry. Co.		114,808
Total income		$2,210,302
From which deduct:		
City percentage on earnings	$325,194	
Interest	185,087	
Rental leased lines	7,123	
Taxes	56,500	
		583,904
Net income		$1,626,398
Dividend 10 per cent		1,000,000
Surplus		$626,398
From which has been appropriated for		
contingent account	$250,000	
Fire insurance fund	25,000	
		275,000
Transferred to general surplus		$351,398

E. A. Robert, the president, says in part in the report:

"The gross earnings increased during the year $422,749, or 9.71 per cent; the operating expenses $224,504, or 9.14 per cent; the net earnings $198,245, or 10.45 per cent.

"The gross earnings continue to show very satisfactory increases. The percentage of expenses to gross earnings is 56.12 per cent, against a percentage of 56.41 for the previous year.

"Your directors appropriated $25,000 from the surplus earnings as a credit to the fire insurance fund. The amount now at the credit of the fund is $571,539.

"During the past year the company secured an amendment to its charter, authorizing the sale, lease or transfer to any person or company of all its undertakings upon such terms as may be approved by the majority of the holders of the shares.

"On Oct. 5 last a special general meeting of the shareholders of the company was held for the purpose of considering the sale of the whole of its undertakings to the Montreal Tramways Company. The proposition as submitted was carried by the majority of the issued shares of the company.

"Owing to the continued rapid growth and congestion of the city our directors during the past year negotiated with the city of Montreal for the purpose of making a new contract which would be more applicable to the present day conditions.

"It is hoped that the amalgamation of this company with its subsidiary companies under the name of the Montreal Tramways Company will help speedily to complete the negotiations for a new franchise.

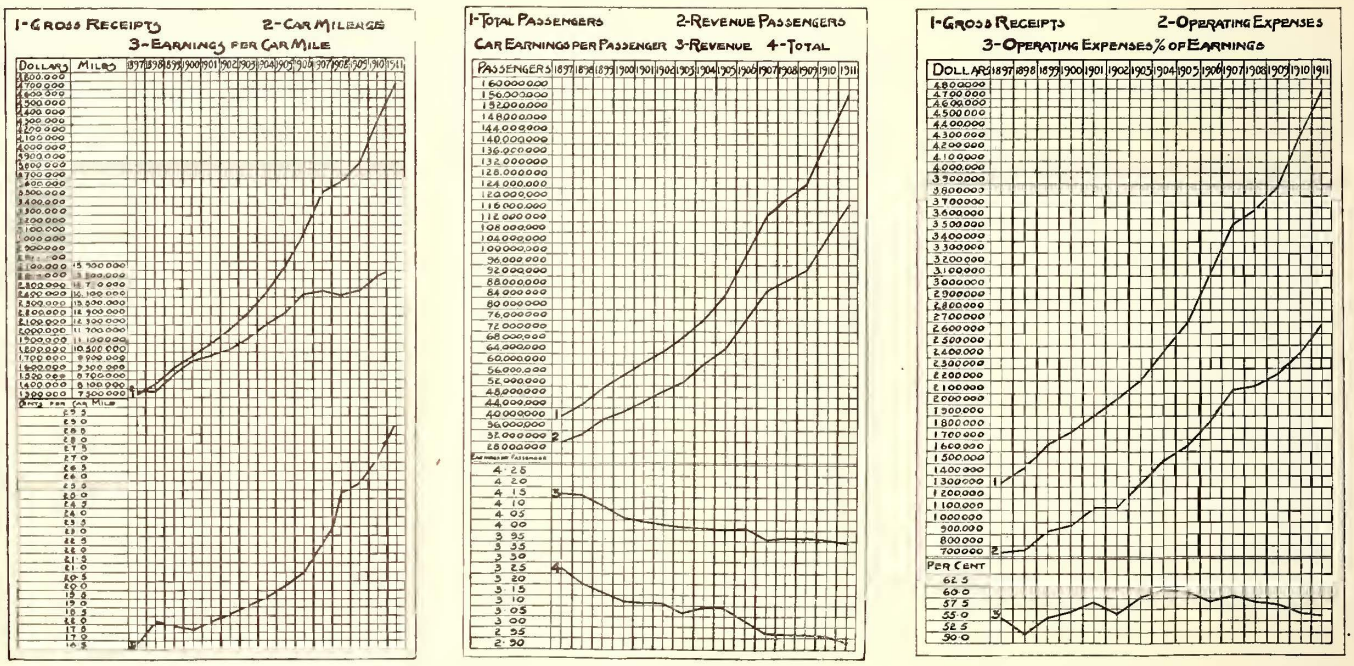
"The property has been maintained in a high state of efficiency, and a considerable sum has been spent in the upkeep of the track and rolling stock; the power plants and buildings are in excellent condition, it being the policy of your directors to spare no efforts or expense in this direction; yet, notwithstanding this the surplus earnings of the company are the largest in its history.

"Notwithstanding the above the operating expenses percentage of earnings has decreased.

"The company has continued its liberal policy toward its employees in respect to their wages, having increased them during the year.

"The company has paid to the city of Montreal taxes and percentage on earnings amounting to $380,678, on account of snow removal $73,364, a total of $454,043, being an increase over the previous year of $15,860.

"The gross earnings of the Montreal Park & Island Railway show an increase of $60,973, the operating expenses an increase of $27,843, the net results being $114,807, against $85,878 for the previous year.



Diagrams of Statistics of the Montreal Street Railway Covering the Years from 1890 to Date.

"Gross earnings of the Montreal Terminal Railway for the year are $134,019, the operating expenses $122,116, and taxes and percentage on city earnings $4,279, leaving a net result of $7,624."

In the table which follows there is given a comparison of traffic and other statistics of the Montreal Street Railway for the last three years:

	1911	1910	1909
Gross earnings	$4,775,300	$4,352,551	$3,874,838
Operating expenses	2,679,806	2,455,301	2,255,019
Expenses per cent of earnings	56.12	56.41	58.20
Net earnings	2,095,494	1,897,250	1,619,819
Passengers carried	118,268,080	107,241,406	95,376,373.
Car earnings per passenger—cents	3.94	3.95.	3.96
Transfers	40,488,545	36,437,123	32,285,208
Total passengers carried	158,756,625	143,678,529	127,661,581
Car earnings per passenger total carried —cents	2.93	2.95	2.96

As will be seen there has been a continuous increase in gross and net earnings. The increase in transfers issued in 1911 over 1910 is about the same as the increase in 1910 over 1909.

J. M. McIntyre has been elected to the board of directors of the Montreal Street Railway to succeed D. Lorne McGibbon, resigned.

Boston Elevated Railway

A summary of the business of the Boston Elevated Railway for the year ended June 30, 1911, follows:

Gross revenues from operation		$15,635,965
Operating expenses		10,119,064
Net operating revenue of owned and leased lines		$5,516,901
Interest on deposits, and from securities owned and interest charged to construction		344,742
		$5,861,643
Tremont Street subway rental	$211,750	
Less amount collected from Boston & Northern St. Ry	26,445	
	$185,304	
Interest on funded debt of West End St. Ry	716,180	
Dividend on preferred stock of West End St. Ry., 8 per cent	512,000	
Dividend on common stock of West End St. Ry., 7 per cent	846,848	
Dividend on stock of Somerville Horse R.R., 6 per cent	9,180	
Taxes on West End St. Ry	662,262	
Interest and taxes on leased property of Old Colony St. Ry	48,423	
Interest on leased property of the Boston & Northern St. Ry	904	
Rent of Newtonville & Watertown St. Ry	9,727	
Total payments on account of leased railways		2,990,828
		$2,870,814
Interest on funded debt	$556,000	
Taxes Boston Elevated Ry. Co	437,462	
Tax on earnings and U. S. corporation tax	145,109	
Washington Street tunnel rental	324,000	
East Boston tunnel rental	57,782	
		1,520,353
		$1,350,461
Dividend No. 21, paid Aug. 15, 1910, 3 per cent	$598,500	
Dividend No. 22, paid Feb. 15, 1911, 3 per cent	598,500	
		1,197,000
Surplus for the year		$153,461

The details of the gross earnings and operating expenses follow:

Earnings from operation:		
From passenger revenue		$15,199,971
From parlor, chair and special car revenue		28,013
From mail revenue		37,290
From miscellaneous transportation revenue		3,669
From station and car privileges		187,818
From rent of tracks and terminals		46,193
From rent of buildings and other property		106,652
From power		26,358
Total		$15,635,964
Operating expenses		
For maintenance of way and structures		$1,556,163
For maintenance of equipment		1,269,899
For general expenses		1,645,023
For traffic expenses		105,730
For transportation expenses		5,542,249
Total		$10,119,064

William A. Bancroft, the president, states in part in his report to the stockholders:

"The fiscal year now ends on June 30, and the annual meeting of the company is held on the first Monday of November.

"By vote of the stockholders of this company and of the West End Street Railway, Chapter 740 of the Acts of 1911 has been accepted by the respective companies. By vote of your directors and by vote of the City Council of Boston, approved by the Mayor, Chapter 741 of the Acts of 1911 has been accepted also. By these acceptances the consolidation of the properties and franchises of the Boston Elevated Railway and the West End Street Railway, amounting to a sale of the latter to the former, has been provided for in accordance with the terms of the act, and authority has been given for the construction of certain additional tunnels or subways, to be leased to this company, as well as for the extension of certain existing leases.

"No additional stock or bonds were issued during the year.

"Work has been prosecuted on the Cambridge subway and its attendant provisions, which are built by the company, as well as upon its connecting tunnel under Beacon Hill and the station under Boston Common and Tremont Street, which are built by the Boston Transit Commission under, or near, the existing Park Street subway station.

"The construction of the East Cambridge elevated extension is progressing. There remains to complete the station at Causeway Street, and to supply the ballast, track, signal equipment, and such other minor provisions as are necessary for operation. While it cannot now be determined with certainty at what time both these Cambridge thoroughfares will be in operation, it seems likely that they will be ready not later than next spring.

"Some expenditure has been made and some work done upon the Everett and Malden elevated extension. Land has been bought and considerable work done in the alteration of the Sullivan Square terminal, to adapt it to the operation of this new service. The company has nearly three years in which to build this extension.

"The company has had built fifty pre-payment cars, so called. They are an adaptation of the principle of the pay-as-you-enter cars, without the barriers and passages provided in cars so named, and which would make such cars unsuitable for our summer service. These cars are of the semi-convertible type, and are somewhat longer and wider than our previous types. The advantage of these cars, both to the public and to the company, is considered to be great. Fifty more of these cars have been ordered.

"To meet the requirements of our increasing patronage we have ordered twenty additional elevated cars, and deliveries are expected soon. We have ordered forty cars of unusual length and width and of large seating capacity for the Cambridge subway. As this subway will have no track connection with the Washington Street tunnel, it is feasible to operate such cars on this line and on its extensions, as provided by the recent legislation.

"The Stone & Webster Engineering Corporation has prosecuted with vigor the erection of the new power station at South Boston. The company is installing two 15,000-kw turbo-generators, and has an option on a third, room for which has been provided, although the boiler supply is intended for two units only. The main building is now approaching completion, and the construction is well advanced upon the necessary substations. About 150 miles of underground conduit have been laid to convey feeders.

"The several increases in wages have been maintained. We have made the usual contributions to meet the expenses of the two employees' mutual aid associations. We have continued our allowances to aged and worthy employees, incapacitated for further service, and awarded in satisfactory service money in December, in sums of $20 or $25, to such of the employees deemed worthy thereof, the sum of $79,765."

Traffic statistics compare as follows:

Round trips	5,990,691
Revenue car miles, elevated	8,523,434
Revenue car miles, surface	45,895,457
Revenue car miles, U. S. mail cars	228,305
Total revenue car miles	54,647,196
Revenue passengers on elevated and surface cars	305,098,665
Total revenue from car operation	$15,265,274
Average receipts per revenue passenger	4.991 cents

The meeting at which the report was presented was held on Nov. 6, 1911. It was voted to increase the number of directors from ten to twelve. Charles P. Hall was elected to the board to succeed Quincy A. Shaw, resigned, and George P. Gardner and Eugene V. R. Thayer were elected as the new members.

Chicago & Milwaukee Electric Railroad, Chicago, Ill.—Judge Carpenter, of the United States District Court at Chicago, set Nov. 9, 1911, for a hearing of the motion of attorneys for the Merchants' Loan & Trust Company to set aside an order made on June 23, 1911, to take the Chicago & Milwaukee Electric Railroad foreclosure case out of the hands of Master Morrison for the purpose of endeavoring to have a final decree of sale passed by the federal court. Inasmuch as the decree was not signed, the Merchants' Loan & Trust Company desired the matter to be placed again in the hands of the master.

Chicago & Southern Traction Company, Chicago, Ill.—Judge Walker of the Circuit Court at Chicago has signed a decree authorizing the sale of the property of the Chicago & Southern Traction Company under the mortgage to the Western Trust & Savings Bank. The amount of this mortgage is $2,500,000. At the date of the filing of the bill the amount of the unpaid coupons was $403,875 and the interest due thereon was $34,299. There is now due under the mortgage a total of $3,138,761.

Devils Lake & Chautauqua Transfer Company, Devils Lake, N. D.—The Stotlar Investment Company, Devils

Lake, N. D., has purchased the property of the Devils Lake & Chautauqua Transfer Company, which operates a five-mile railroad between Devils Lake, Greenwood, North Dakota Chautauqua Grounds and the State Military Grounds. It is proposed to electrify the line in 1912.

Georgia Railway & Electric Company, Atlanta, Ga.—Charles C. Harrison, Jr., & Company, Philadelphia, Pa., have purchased $519,000 of the refunding and improvement mortgage 5 per cent bonds of the Georgia Railway & Electric Company, due 1949, and sanctioned by the Railroad Commission of Georgia in July, 1911, on account of recent extensions and additions.

Milwaukee Electric Railway & Light Company, Milwaukee, Wis.—The Wisconsin Railroad Commission has authorized The Milwaukee Electric Railway & Light Company to issue an additional block of its 4½ per cent refunding and extension mortgage bonds dated Jan. 1, 1906, and due 1931. The authorized issue is $20,000,000 and with the $2,000,000 now to be put out there will be outstanding $9,728,000. Part of the issue is reserved to take up the $6,500,000 of first consolidated 5 per cent bonds.

New Hampshire Electric Railways, Haverhill, Mass.—Judge William M. Chase, Burns P. Hodgman and Albert S. Batchelder, masters appointed by the United States court to determine the facts on the motion of the New York Trust Company against the Portsmouth & Exeter Street Railway for a final degree of foreclosure and sale, have filed their report with the United States Court, in which is detailed the condition of the property and the masters' finding that the road can never be made to pay.

Salisbury & Spencer Railway, Salisbury, N. C.—Bird S. Coler, of Coler & Company, New York, N. Y., and president of the North Carolina Public Service Company, Greensboro, N. C., has concluded negotiations whereby Coler & Company have acquired a controlling interest in the Salisbury & Spencer Railway, which operates between Salisbury and Spencer. The company also operates a gas plant at Salisbury and does electric lighting.

Slate Belt Electric Street Railway, Pen Argyl, Pa.—A syndicate composed of L. H. Mountney, general manager of the Slate Belt Electric Railway, and E. A. Spear, Pen Argyl; Milton Flory and W. F. Jordan, Bangor; Dr. J. C. Keller, Wind Gap; G. A. Schneebeli, E. Schneebeli, D. M. Leopold and Dr. O. D. Schaeffer, Nazareth, and others is said to have concluded negotiations for purchasing a controlling interest in the Slate Belt Electric Street Railway.

San Francisco, Vallejo & Napa Valley Railroad, Napa, Cal.—M. McIntyre, of the San Francisco, Vallejo & Napa Valley Railroad, Napa, Cal., wrote as follows under date of Nov. 1, 1911, in regard to the affairs of the company: "The road defaulted on its interest of $1,500,000 in bonds and was sold at public auction in San Francisco for $700,000, the purchaser taking care of the floating debt of $400,000. Three bids were received, one for $500,000, a second for $600,000 and a third for $700,000. The first and third bids were made by the bondholders' committee consisting of James Irvine, John McKee, San Francisco, and G. R. Sheldon, New York. Mr. McKee is vice-president of the Mercantile Trust Company. The bondholders held all the stock of the company. The bondholders are to organize a new corporation. The bondholders' committee has appointed M. McIntyre as general manager of the property and T. V. Maxwell and M. McIntyre as direct agents of the San San Francisco, Vallejo & Napa Valley Railroad."

Toledo, Ann Arbor & Jackson Railroad, Toledo, Ohio.—The Toledo, Ann Arbor & Jackson Railroad, which was incorporated on Sept. 21, 1911, has taken over the property of the Toledo, Ann Arbor & Detroit Railroad, sold under foreclosure recently. The Toledo, Ann Arbor & Jackson Railroad will connect Toledo, Lambertville, Petersburg, Dundee, Azalia, Milan, Ann Arbor and Jackson, and Britton, Ridgeway, Tecumseh, Tipton and Jackson. The property of the Toledo, Ann Arbor & Detroit Railroad, which it took over, consisted of 18 miles of road, partly constructed. The line as now proposed will be 50 miles long.

Trenton & Mercer County Corporation, Trenton, N. J.—The Trenton & Mercer Traction Company, which operates the Trenton Street Railway under lease, has filed with the Secretary of State of New Jersey a certificate of increase of its capital stock from $10,000 to $400,000, consisting of $200,000 of preferred stock and $200,000 of common stock.

Wichita Railroad & Light Company, Wichita, Kan.—The Public Utilities Commission of Kansas has granted the Wichita Railroad & Light Company permission to issue $165,000 in bonds to refund outstanding bonds and improve the plant.

Dividends Declared

Northern Texas Electric Company, Ft. Worth, Tex., quarterly, 1½ per cent, common.

Pensacola (Fla.) Electric Company, 3 per cent, preferred.

Portland Railway, Light & Power Company, Portland, Ore., quarterly, 1 per cent.

ELECTRIC RAILWAY MONTHLY EARNINGS

BANGOR RAILWAY & ELECTRIC COMPANY.

Period.			Gross Revenue.	Operating Expenses.	Net Revenue.	Fixed Charges.	Net Income.
1 m.,	Sept.,	'11....	$57,994	*$22,885	$35,109	$13,159	$21,950
1 "	"	'10....	54,806	*21,998	32,808	12,005	20,803
3 "	"	'11....	173,719	*73,768	99,951	39,235	60,716
3 "	"	'10....	166,878	*72,688	94,190	35,720	58,470

CHATTANOOGA RAILWAY & LIGHT COMPANY.

1 m.,	Sept.,	'11....	$83,116	*$48,959	$34,157	$20,134	$14,023
1 "	"	'10....	77,022	*43,541	33,481	18,537	14,944
9 "	"	'11....	697,236	*406,756	294,180	177,933	112,547
9 "	"	'10....	650,947	*379,897	271,050	164,523	106,527

CLEVELAND, PAINESVILLE & EASTERN RAILROAD.

1 m.,	Aug.,	'11....	$39,901	*$20,058	$19,843	$8,705	$11,138
1 "	"	'10....	40,275	*19,052	21,224	8,163	13,061
8 "	"	'11....	244,915	*131,592	113,323	65,734	47,590
8 "	"	'10....	235,734	*120,879	114,855	64,491	50,364

COMMONWEALTH POWER, RAILWAY & LIGHT COMPANY.

1 m.,	Sept.,	'11....	$473,287	*$268,557	$204,730	$108,382	$96,348
1 "	"	'10....	428,778	*250,927	177,851	100,624	77,227
9 "	"	'11....	3,980,458	*2,304,382	1,676,076	939,646	736,430
9 "	"	'10....	3,695,777	*2,109,972	1,385,805	910,749	675,056

GRAND RAPIDS RAILWAY COMPANY.

1 m.,	Sept.,	'11....	$107,168	*$55,497	$51,671	$15,007	$36,664
1 "	"	'10....	101,019	*56,669	44,350	15,286	29,064
9 "	"	'11....	872,874	*492,785	380,089	135,361	244,728
9 "	"	'10....	856,661	*457,896	398,765	136,830	261,935

LAKE SHORE ELECTRIC RAILWAY.

1 m.,	Aug.,	'11....	$143,584	*$68,508	$75,077	$34,913	$40,164
1 "	"	'10....	139,896	*59,962	79,934	34,719	45,215
8 "	"	'11....	837,469	*443,620	393,849	277,687	116,162
8 "	"	'10....	198,656	*418,744	379,912	280,081	101,831

LEWISTON, AUGUSTA & WATERVILLE STREET RAILWAY.

1 m.,	Sept.,	'11....	$54,924	*$29,568	$25,356	$14,559	$10,797
1 "	"	'10....	53,599	*25,084	24,515	13,149	11,366
3 "	"	'11....	178,907	*91,236	87,671	43,399	44,272
3 "	"	'10....	174,621	*92,610	82,011	39,415	42,596

MILWAUKEE ELECTRIC RAILWAY & LIGHT COMPANY.

1 m.,	Sept.,	'11....	$442,099	$229,850	$212,250	$135,091	$76,758
1 "	"	'10....	407,651	203,364	204,287	116,123	88,164
9 "	"	'11....	3,739,981	1,985,576	1,754,405	1,126,657	627,748
9 "	"	'10....	3,504,128	1,861,724	1,642,404	1,017,941	624,463

MILWAUKEE LIGHT, HEAT & TRACTION COMPANY.

1 m.,	Sept.,	'11....	$157,357	$46,094	$111,264	$75,214	$36,050
1 "	"	'10....	154,076	42,817	111,259	73,532	37,727
9 "	"	'11....	1,301,312	371,541	929,772	652,793	276,979
9 "	"	'10....	1,227,795	350,733	877,063	637,380	239,682

NORTHERN OHIO TRACTION & LIGHT COMPANY.

1 m.,	Aug.,	'11....	$272,624	*$143,666	$128,958	$4,321	$84,638
1 "	"	'10....	263,149	*135,833	127,316	43,496	83,821
8 "	"	'11....	1,773,731	*981,692	792,039	354,749	437,290
8 "	"	'10....	1,612,504	*892,000	720,504	346,769	373,734

PORTLAND RAILWAY, LIGHT & POWER COMPANY.

1 m.,	Sept.,	'11....	$517,830	*$261,841	$255,989	$127,604	$128,385
1 "	"	'10....	490,209	*253,424	236,785	119,784	117,001
9 "	"	'11....	4,697,608	*2,298,416	2,399,192	1,119,544	1,279,648
9 "	"	'10....	4,106,489	*1,979,753	2,126,736	1,034,480	1,092,256

ST. JOSEPH RAILWAY, LIGHT & POWER COMPANY.

1 m.,	Sept.,	'11....	$96,209	*$65,508	$30,701	$19,381	$11,320
1 "	"	'10....	92,034	*50,932	41,102	18,558	22,544
9 "	"	'11....	811,865	*510,294	301,571	173,475	128,096
9 "	"	'10....	766,750	*453,350	313,400	164,859	148,541

TWIN CITY RAPID TRANSIT COMPANY.

1 m.,	Sept.,	'11....	$689,096	$315,396	$373,699	$140,079	$233,621
1 "	"	'10....	694,853	323,061	371,792	140,286	231,505
9 "	"	'11....	5,852,439	2,898,788	2,953,651	1,260,713	1,692,939
9 "	"	'10....	5,620,369	2,688,107	2,932,262	1,261,653	1,670,609

UNION RAILWAY, GAS & ELECTRIC COMPANY, ROCKFORD, ILL.

1 m.,	Sept.,	'11....	$257,203	*$140,513	$116,690	$64,297	$52,393
1 "	"	'10....	241,764	*137,616	104,148	58,502	45,646
9 "	"	'11....	2,275,402	*1,322,692	952,710	552,772	399,938
9 "	"	'10....	2,137,596	*1,266,694	870,902	523,930	346,972

*Including taxes.

Traffic and Transportation

New Folder of Cleveland, Southwestern & Columbus Railway

The Cleveland, Southwestern & Columbus Railway, Cleveland, Ohio, of which E. F. Schneider is general manager, and J. O. Wilson general passenger agent, has issued a new twelve-page, two-color timetable folder which contains in addition to the train schedules a list of the officers and station agents, a double-page map of the interurban railways in Ohio with its own lines printed in red, an advertisement of the chartered-car service, general information and the following concise statement of the safety work which has been done by the officers of the company:

"The Southwestern has developed in its employees in all departments a high degree of efficiency and caution which has thereby reduced the accidents on its property to a very marked degree; likewise, with the hearty co-operation of superintendents, teachers and boards of education of all the schools along its property, has reduced the accidents to school children to the extent that not a single boy or girl has been injured or killed for over two years.

"This company now asks for the support and co-operation of the passengers and the public in order to make still further reductions. Therefore, any suggestions from our patrons upon any subject will be gratefully received and promptly acknowledged by the management.

"Thousands of people are injured or lose their lives each year on the railroads through their own acts of carelessness.

"Passengers are asked to be very careful when boarding or alighting from cars. Wait until the car stops. Better safe than sorry.

"The public, especially children, are warned to keep away from any and all wires.

"Drivers of automobiles and vehicles, as well as pedestrians, are asked and urged to keep a sharp lookout in each direction before crossing a car track.

"Stop, look and listen!"

Accident Prevention Campaign in Lexington, Ky.

The Kentucky Traction & Terminal Company, Lexington, has begun an aggressive campaign of education to prevent accidents on its lines. Several thousand placards which contain suggestions for getting on and off cars have been printed and posted in the cars and in conspicuous places, and a special campaign is being conducted among the school children of Lexington, 10,000 cards about the size of post cards caving been distributed among them. The advice on these cards follows:

"Don't play on the car tracks.
"Don't hang on behind the car.
"Don't stand on the car steps or platform.
"Don't touch a wire; it may be a live one.
"Don't put your head or arms out of a car window.
"Don't cross the track in front of an approaching car.
"Don't cross immediately behind a standing or moving car.
"Don't drive across the track without looking to the rear.
"Don't jump on or off a moving car.
"Don't take any chances.
"Stop! Look! Listen!"

The newspapers of Lexington are co-operating with the company, and have printed news stories describing the work of the company and urging the public to take heed.

Readjustment of Owl Service in Boston.—The Boston (Mass.) Elevated Railway has found it necessary to readjust to traffic needs the increased night service made effective in December, 1910, for experimental purposes, and to divert to the subway some of the night cars which leave Adams Square.

Petition to Discontinue Line During Winter.—The Exeter, Hampton & Amesbury Street Railway Company, Exeter, N. H., has petitioned the Public Service Commission of New Hampshire for permission to discontinue the operation of the Seabrook & Hampton Beach Street Railway until April 1, 1912.

Fare Inquiry Ordinance Introduced in Los Angeles.—The ordinance has been introduced into the Council of Los Angeles, Cal., which provides for an investigation by the Public Utility Commission of Los Angeles of the reasonableness of the present fare of 5 cents charged by the street railways which operate in that city.

Automatic Bell Ringers Constitutional.—The Indiana Supreme Court has declared constitutional the law passed by the last Legislature which requires locomotives to be equipped with automatic bell ringing devices. The railroads contended that the law was unconstitutional because it undertook to control the construction of engines to be used in other states.

Reasonableness of Freight Charge Questioned.—The Philadelphia *Record* has requested the Railroad Commission of Pennsylvania to inquire into the reasonableness of the charge made by the Bangor & Portland Traction Company, Bangor, Pa., for transporting newspapers. The *Record* alleges that it is being charged for this service at the rate of 84 cents per 100 lb.

Fenders in Terre Haute.—T. F. Grover, general manager of the Terre Haute, Indianapolis & Eastern Traction Company, Terre Haute, Ind., has announced that the company feels that the fenders in use on its cars which operate in Terre Haute comply with the provisions of the fender ordinance passed by the Council recently giving the company three months in which to comply with the new ordinance.

Wheel Guards in Philadelphia.—The Philadelphia (Pa.) Rapid Transit Company has sent to the Councils of Philadelphia a letter stating that the promise which was made on June 5, 1911, by the company to equip all of its cars with fenders or wheel guards by Nov. 1, 1911, has been fulfilled. Of the 2000 cars which the company has in operation, 1800 are equipped with H-B wheel guards and the remaining 200 are equipped with Parmenter wheel guards.

Village Opposes Detroit United Railway.—The village of Hamtramck has placed a guard on duty to prevent the Detroit (Mich.) United Railway from building across the Michigan Central Railroad tracks on Joseph Campau Avenue into the town. The company collects an extra fare from people who board the cars in Hamtramck and only every fourth car is run through. The village desires the Detroit United Railway Company to carry passengers between Hamtranck and Detroit for one fare and establish through service.

New Destination Signs in Reading.—The Reading (Pa.) Transit Company is equipping its cars with new destination signs similar to those in use in Harrisburg and Lancaster. The new signs indicate the routes by a large initial which stands for the terminal town to which the car operates. The three terminal towns Annville, Meyerstown and Palmyra are designated by A, M and P, respectively. The names of the towns reached by the cars were printed on the signs previously in use, but the letters were not large enough to permit the names to be distinguished at a distance.

Traffic on Subway and Elevated Lines During Fleet Days.—Traffic was very heavy on the subway and elevated lines of the Interborough Rapid Transit Company, New York, N. Y., during the time that the warships were anchored in the Hudson River off New York City for review, the riverfront being especially accessible to patrons of the subway. In commenting on the work of the company in handling the extra traffic so suddenly imposed upon it, Frank Hedley, vice-president and general manager, said: "On Oct. 27, 1911, we carried more than 1,000,000 people in the subway and more than 1,000,000 people on the elevated, and on Nov. 1, covering a twenty-four hour period, the entire equipment on the elevated and subway ran without a single failure, the subway carrying 1,030,832 passengers with a car mileage of 180,000 miles. The elevated carried 930,415 passengers with a car mileage of 195,000 miles, making the total car mileage for the day 375,000 car miles. The record was made possible by the concerted action and efficient performance of the employees of the company, and the management appreciates the care and attention which it is apparent were exercised by every man in its employ."

Personal Mention

Mr. G. E. Bernsmeyer has been appointed storekeeper of the Wichita Railroad & Light Company, Wichita, Kan., a newly created position with the company.

Mr. Charles H. Smith, general superintendent of the United Traction Company, Albany, N. Y., has been appointed assistant general manager of the company, a newly created position.

Mr. A. C. Kingman, Battle Creek, Mich., has been elected president and general manager of the Battle Creek, Coldwater & Southern Railway, Coldwater, Mich., to succeed Mr. E. F. Pangborn.

Mr. John T. Straub, acting treasurer of the United Railways & Electric Company, Baltimore, Md., is the subject of a brief biographical sketch which appeared in the Baltimore *Star* of Nov. 2, 1911.

Mr. Edgar M. Graham, Muskogee, Okla., has accepted the position of chief engineer of the Rapid Transit Interurban Company, Tecumseh, Okla., in charge of the work of locating and constructing the lines of the company.

Mr. Arnold von Schrenk, who has been general manager of the Plattsburgh (N. Y.) Traction Company, has been appointed general superintendent in charge of the Troy division of the United Traction Company, Albany, N. Y.

Mr. C. H. Lewis has been appointed superintendent of transportation of the Wichita Railroad & Light Company, Wichita, Kan. Mr. Lewis was formerly superintendent of the Troost Avenue division of the Metropolitan Street Railway, Kansas City, Mo.

Mr. H. L. Barber has been appointed general manager of the Plattsburgh (N. Y.) Traction Company, to succeed Mr. Arnold von Schrenk, whose appointment to the Troy division of the United Traction Company, Albany, N. Y., is noted elsewhere in this column.

Mr. J. H. Butterfield, formerly city clerk of Hot Springs, Ark., and son of a former general manager of the Hot Springs Street Railway, has been appointed superintendent of the company to succeed Mr. Edward Hardin, whose resignation was noted in the Electric Railway Journal of Oct. 28, 1911.

Mr. Addison L. Gardner, of the law firm of Gardner, Foote & Burns, Chicago, Ill., has been appointed general counsel of the Chicago elevated railways. Mr. Gardner has been the general attorney for the Metropolitan West Side Elevated Railway and counsel for the South Side Elevated Railroad, Chicago.

Mr. Albert Sherman, who for twenty years has been in the employ of the street railway companies operating in Toledo, Ohio, and for the last six years division superintendent of the Toledo Railways & Light Company, Toledo, Ohio, has been appointed superintendent of transportation of the Saginaw-Bay City Railway, Saginaw, Mich.

Mr. S. E. Dillon, general manager of the Hot Springs Western Railroad, Hot Springs, Ark., before that line was taken over by the Iron Mountain system, has been appointed general manager of the Hot Springs Water Company, Hot Springs, Ark., which controls the local central-station, gas, water and street-railway utilities. Mr. Dillon succeeds Mr. H. E. Martin, whose duties have been divided between Mr. W. C. Fordyce and Mr. H. J. Lehman.

Mr. Walter H. Evans, formerly superintendent of motive power of the Indiana Union Traction Company, Anderson, Ind., has accepted the position of manager of the motor gear department of the Edgar Allen American Manganese Steel Company. The headquarters of Mr. Evans will be at the general offices of the company in the McCormick Building, Chicago. A biography of Mr. Evans was published in the Electric Railway Journal for Sept. 10, 1910.

Mr. A. B. Coryell, who has been general manager of the Dayton Construction Company, the Greenville Railway & Light Company and the Greenville Amusement Company, Greenville, Tex., and built an 8-mile street railway and a park at Greenville this year, has resigned, effective on Dec. 1, 1911. Mr. Coryell has been connected with the railway and lighting business for more than twenty years. He has not yet decided on his plans for the future.

Mr. J. R. Ong, superintendent of substations of the Ft. Dodge, Des Moines & Southern Railroad, Boone, Ia., has been appointed assistant electrical engineer of the company. Mr. Ong is a graduate of Purdue University. Previous to his present connection he filled various positions with the Indianapolis & Cincinnati Traction Company, Indianapolis, Columbus & Southern Traction Company, Chicago, Lake Shore & South Bend Railway and the Westinghouse Electric & Manufacturing Company.

Mr. James F. Hamilton, who has been superintendent of transportation of the Schenectady (N. Y.) Railway since November, 1908, has been appointed general superintendent of the United Traction Company, Albany, N. Y., to succeed Mr. Charles H. Smith, whose appointment as assistant general manager of the company is noted elsewhere in this column. Mr. Hamilton entered the employ of the Schenectady Railway in May, 1902, as assistant superintendent. He had previously been connected with the operating department of the International Traction Company, Buffalo, N. Y., for six years.

Mr. W. R. Morrison, whose appointment as the representative of Mr. William B. McKinley and his associates, in the Barbados Islands, was referred to in the Electric Railway Journal of Oct. 14, 1911, page 886, has relinquished his duties as general superintendent of the Wichita Railroad & Light Company to leave for Bridgetown, where it is proposed to establish an electric railway. Mr. Morrison has been connected with the Wichita Railroad & Light Company for eleven years. His duties with the company will hereafter be performed by Mr. A. M. Patten, general superintendent of the Topeka (Kan.) Railway, who will divide his time between Wichita and Topeka.

Mr. Milan V. Ayres has just accepted an offer to become connected with the Mobile Light & Railroad Company, Mobile, Ala. Mr. Ayres will have charge of the power station, track and other engineering work of the company. Mr. Ayres was electrical and mechanical engineer of the Boston & Worcester Street Railway for many years, but resigned that position last July to undertake the creation of a department of scientific management for the Rockland Light & Power Company, Nyack, N. Y. He is a graduate of the Massachusetts Institute of Technology and is chairman of the equipment committee of the American Electric Railway Engineering Association. He has been a frequent contributor to the proceedings of that association and to the technical press. His title with the Mobile Light & Railroad Company will be that of chief engineer.

Mr. L. D. Mathes, who has been manager and purchasing agent of the Union Electric Company, Dubuque, Ia., since 1903, has been appointed general manager of the Montgomery (Ala.) Traction Company and the Citizens' Light, Heat & Power Company, Montgomery, Ala., effective Dec. 1, 1911. Before becoming connected with the Union Electric Company Mr. Mathes was general superintendent of the Trenton & New Brunswick Railroad. He was graduated from the University of Tennessee and gained his first experience with the Memphis & Charleston Railroad at Memphis, Tenn. He became connected with the Edison General Electric Company and also served the General Electric Company and the Westinghouse Electric & Manufacturing Company, engaging for five years in the construction, equipment and operation of electric railways in various parts of the country. He accepted an important position with the construction department of the Buffalo & Niagara Falls Electric Railway at the time of the construction of that road. Later he was appointed superintendent of the Norfolk & Ocean View Railway. After a short connection as general superintendent with the Charleston & Sea Shore Railroad, Charleston, S. C., Mr. Mathes accepted the position of general superintendent of the Norfolk & Atlantic Terminal Company. During his connection with the Union Electric Company at Dubuque, Mr. Mathes has been very active in the work of the Iowa Street & Interurban Railway Association. He was secretary and treasurer of the association for several years and at the meeting of the association in Sioux City, Ia., in April, 1910, he was elected president of the association.

Construction News

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

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

RECENT INCORPORATIONS

***Cement, Tolenas & Tidewater Railroad, Cement, Cal.**—Incorporated in California to build a 6-mile electric railway from Cement to Tidewater. Capital stock, $500,000. R. B. Henderson, A. D. Plaw, W. T. Barnett, Paul C. McCarthy and F. D. Madison, all of San Francisco.

Modesto & Empire Traction Company, Modesto, Cal.—Incorporated in California to build an electric railway between Modesto and Empire. Capital stock, $20,000. Incorporators: T. K. Beard, W. H. Frazine, J. M. Waithall and L. L. Dennett. [E. R. J., Oct. 28, '11.]

Florence & Interurban Electric Railway, Florence, Col.—Application for a charter has been made by this company in Colorado to build an electric railway to connect Florence, Rockvale, Williamsburg, Coal Creek, Lincoln Park, Portland and Concrete. Capital stock, $125,000. Incorporators: D. F. Floor, J. V. McCandless, H. A. Hicks, Charles Roach and W. K. Hurd. [E. R. J., Aug. 5, '11.]

***Scenic Incline Railway, Manitou, Col.**—Incorporated in Colorado to build a cable railway to the top of Pike's Peak. Incorporators: J. Frank Campbell, Oliver D. Dick and D. H. Rupp.

***Alton & Southern Railway, Springfield, Ill.**—Incorporated in Illinois to build an electric or steam tramway from a point on the easterly banks of the Mississippi River in St. Clair County, opposite St. Louis, Mo., and extending in an easterly and northerly direction to a point in St. Clair County, near the northeasterly limits of East St. Louis. Headquarters, East St. Louis. Capital stock, $10,000. Incorporators and first board of directors are: Arthur V. Davis and R. Mellon, Pittsburgh; Charles M. Hall, Niagara Falls, N. Y.; C. B. Fox, Gilbert McCulloch, C. B. Hodgson, and Charles W. Souder, all of East St. Louis, Ill.

Eugene Belt Line & Interurban Railway, Eugene, Ore.—Incorporated in Oregon to build an electric railway to connect Eugene, Springfield, Coburg and Junction City. Capital stock, $250,000. Incorporators: P. C. Lavey, J. H. Tingle and C. H. Lavey, all of Portland. [E. R. J., April 16, '10.)

Washington Trunk Railway, Olympia, Wash.—Application for a charter will be made in Washington by this company to build an electric railway from Vancouver, Wash., to North Yakima and Ellensburg, also an extension to Portland. Capital stock, $5,000,000. Incorporators: Lawrence Harmon and E. R. Ernsberger. [E. R. J., Oct. 28, '11.]

FRANCHISES

Los Angeles, Cal.—The City Council has been asked to grant a franchise for new cross-town lines on Jefferson Street, Vernon Avenue and Vermont Avenue.

Oakland, Cal.—The Oakland Traction Company has asked the Board of Supervisors for a fifty-year franchise for an extension of its line.

Boulder, Col.—The Boulder Electric Light & Power Company has received a franchise from the City Council to extend its lines into the northern section of Boulder.

East Pueblo, Col.—The East Pueblo Tramway has asked the City Council for a railway franchise in East Pueblo.

Centerbrook, Conn.—The Shore Line Electric Railway, Saybrook, has asked the Selectmen for a franchise in Centerbrook and to cross the highway in Ivoryton with its Chester extension.

Norwich, Conn.—The Connecticut Company has asked the Common Council for a franchise to extend its tracks down Shetucket Street in Norwich.

Tallahassee, Fla.—The Palm Beach, Okeechobee & Western Railway, Palm Beach, has asked the Council for a franchise in Tallahassee. This is part of a plan to build a 140-mile electric railway from West Palm Beach across the peninsula with terminus at Fort Myers on the west coast. R. J. Martin is interested. [E. R. J., Oct. 28, '11.]

Huntington, Ind.—A. B. Terrill & Company, purchasers of the Marion, Bluffton & Celina Traction Company lines, have petitioned the Commissioners of Huntington County for an amended franchise permitting the electrification of the Chicago, Bluffton & Cincinnati steam road through the county. The plan is to purchase the road and convert it into an electric road.

Valparaiso, Ind.—The Indianapolis, Chicago & Meridian Railway, Indianapolis, has received a fifty-year franchise from the City Council in Valparaiso. This line will connect Indianapolis, Sheridan, Gary, Valparaiso, Hammond, Monticello and Warsaw. M. J. Mooreland, secretary. [E. R. J., Oct. 21, '11.]

Northampton, Mass.—The Northampton Street Railway has asked the Board of Aldermen for a franchise to extend its lines in Northampton.

Orange, Mass.—The Miller's River Street Railway, Miller's Falls, has asked the Railroad Commission for a location of its tracks in Orange. This line will connect Miller's Falls, Montague, Irving and Orange. D. P. Abercrombie is interested. [E. R. J., Oct. 7, '11.]

Romeo, Mich.—L. A. Clark, Detroit, has received an extension of his franchise to Sept. 1, 1914, in Romeo. This is part of a plan to build a gasoline-motor railway between Romeo, Imlay City and Almont. [E. R. J. Oct. 28, '11.]

Nashua, N. H.—The Nashua Street Railway has asked the Public Service Commission for authority to extend its Lake Street line in Nashua.

Orange, N. J.—The Orange Mountain Traction Company, South Orange, has asked the Common Council for a franchise over several streets in Orange.

Monongahela, Pa.—The Pittsburg, Monongahela & Washington Street Railway has asked the Common Council for a franchise to extend its lines up Pigeon Creek, via Ellsworth and Marianna to the county seat.

Pittsburgh, Pa.—The Monongahela Street Railway has received a franchise from the City Council over certain streets in Pittsburgh.

Williamsport, Pa.—The Williamsport (Pa.) Passenger Railway has applied for a franchise through the borough of South Williamsport and through Du Boistown. The company already has a franchise through South Williamsport as far as Maynard Street.

Dallas, Tex.—John T. Witt, Dallas, has asked the County Commissioners for a thirty-year franchise over the right-of-way of the West Dallas-Commerce Street pike from the Trinity River westward to the west line of Beckley Avenue. [E. R. J., Sept. 16, '11.]

Keyser, W. Va.—The Ridgeley & Miller Avenue Railway, Ridgeley, has received a franchise from the Commissioners of Mineral County to build a 3-mile electric railway from the bridge crossing the Potomac River at Cumberland, Md., to Knobmont, W. Va. It is expected that the line will connect with the Cumberland Electric Railway. John L. Miller is interested. [E. R. J., Nov. 4, '11.]

TRACK AND ROADWAY

Mobile (Ala.) West Shore Traction Company.—Surveys have been begun by this company on its proposed route from a point a few miles south of the city limits of Mobile to Pascagoula. George H. Clark, engineer. [E. R. J., Oct. 28, '11.]

Alberta Electric Railway, Calgary, Alta.—Surveys are being made by this company for a line between Carbon and the Red River. [E. R. J., May 27, '11.]

Jonesboro-Nettleton Electric Railway, Jonesboro, Ark.—Work has been begun by this company on its 3-mile line between Jonesboro and Nettleton. Preston Hatcher, Jonesboro, is interested. [E. R. J., Sept. 30, '11.]

British Columbia Electric Railway, Vancouver, B. C.—Plans are being made by this company for an extension of its Main Street line in South Vancouver at Sixty-third Street to meet the New Westminster-Eburne line.

Pacific Electric Railway, Los Angeles, Cal.—Plans are being made by this company to build an extension from its present terminus on Colorado Street at Lamanda Park, Pasadena, to the west city limits of Monrovia.

Redlands University Railroad, Redlands, Cal.—This company advises that it will award a contract about Dec. 1 for overhead equipment and the construction of its 3-mile electric railway between Redlands and Crafton. Rails and ties have been ordered. The company's repair shop will be located at Redlands and it will purchase power from the Edison Company. Capital stock authorized, $150,000. Officers: Gardner S. Turrill, Redlands, president and general manager; J. W. Curtis, San Bernardino, secretary, and E. A. Moore, Redlands, treasurer. [E. R. J., Oct. 28, '11.]

Point Loma Railroad, San Diego, Cal.—A 3-mile extension is being planned by this company from Roseville Junction, where the present line starts, through Carlson Canyon to Ocean Beach, southwesterly around through Roseville and La Playa to Fort Rosecrans at Ballast Point.

Vallejo & Northern Railway, Vallejo, Cal.—Hard Brothers have been awarded the contract for 5 miles of the Woodland-Sacramento branch of this railway. The contract covers that section of the line between Russell Flint farm, north of Washington, and a point 1 mile south of Elkhorn. The company is receiving bids for the construction of 10,000 ft. of trestle.

***Colorado Springs, Col.**—It is reported that Eastern capitalists, through F. H. Dunnington, are considering plans to construct an electric railway between Manitou and Cripple Creek.

St. Petersburg Railway & Electric Company, St. Petersburg, Fla.—This company has awarded a contract to Messrs. Snell and Hamlett to build a 1½ mile extension from Second Street and Seventh Avenue in St. Petersburgh north to Coffee Pot Bayou

Ft. Wayne & Northern Indiana Traction Company, Ft. Wayne, Ind.—Work has been begun by this company to improve its lines in Lafayette.

Capital Circuit Traction Company, Indianapolis, Ind.—U. Z. Wiley has been appointed receiver for this company, organized to build an electric line around Indianapolis at an average distance of 25 miles to connect eight county seat towns. The petitioners for a receiver are employes and the secretary, who allege that the company is insolvent. The assets of the company consist of franchises and the right-of-way. [E. R. J., Aug. 26, '11.]

Indianapolis & Cincinnati Traction Company, Indianapolis, Ind.—It is stated that the route for an extension of this company's line to Cincinnati has been decided upon and contracts will be awarded this year.

Louisville (Ky.) Railway.—This company and the city officials of Louisville have agreed upon a route for the proposed cross-town line, which will be about 6 miles long.

Bangor Railway & Electric Company, Bangor, Maine.—The Railroad Commissioners of Maine have ordered the construction of a new highway and electric railway bridge at Stillwater to cost $30,000, the cost to be shared by this company and the town in the ratios of 60 per cent and 40 per cent.

Detroit (Mich.) United Railway.—Plans are being made by this company for the construction of a crosstown line dividing Woodward Avenue, between Bagg and High Street, and connecting the Mack Avenue and Myrtle Street lines. Another crosstown line is being planned north of Forest Avenue in Detroit.

***Manistee, Mich.**—Plans are being considered for the construction of an electric railway to connect Muskegon, Ludington, Manistee, Arcadia, Onekama, Frankfort and Traverse City. J. C. McLaughlin is said to be interested.

St. Louis, St. Charles & Northern Traction Company, Mexico, Mo.—Preliminary arrangements are being made by this company for the construction of its 77-mile electric railway to connect St. Louis, St. Charles, Old Monroe, Middletown, Laddonia and Mexico. C. B. Duncan, Corso, president. [E. R. J., Sept. 2, '11.]

Reno (Nev.) Traction Company.—The immediate construction of an extension from Sparks to the Arkell mine in the Wedekind district is being planned by this company.

Atlantic Coast Electric Railroad, Asbury Park, N. J.—Plans are being made by this company for an extension through the western part of the State encampment grounds at Sea Girt for the purpose of connecting Manasquan and Sea Girt.

Jersey Central Traction Company, Keyport, N. J.—Negotiations are being made by this company to build a new Long Branch-Red Bank route through Little Silver and Elkwood Park. It is proposed to enter Long Branch at Myrtle Avenue and to continue down Broadway to the new pier, which is now nearing completion.

Oneida (N. Y.) Railway.—This company placed in operation on Nov. 1 its new Madison Street extension in Oneida.

Durham (N. C.) Traction Company.—Construction has been begun by this company on a 2-mile extension from Durham to Watts Hospital.

Devils Lake & Chautauqua Transfer Company, Devils Lake, N. D.—The Stotlar Investment Company, which has recently purchased the property of this company, advises that the 5-mile railway between Devils Lake, Greenwood, Chautauqua grounds and the state military grounds, which has been operated by steam, will be electrified probably about May 1, 1912. [E. R. J., Oct. 14, '11.]

North Randall Railway, Cleveland, Ohio.—Plans are being made by this company to begin soon on the construction of its 3-mile electric railway from Windfall Avenue, Cleveland, to the Randall race track. [E. R. J., May 20, 1911.]

Oregon Electric Railway, Portland, Ore.—This company has ordered 284 tons of structural steel from the American Bridge Company for the bridge over Rock Creek.

Petersburg, Pa.—A company with a capital of about $400,000 is being formed for the construction of a 15-mile electric railway to connect Petersburg and McAlevy's Fort, via Shavers Creek Valley. Samuel Longnecker, Petersburg, and Albert Myton, Huntingdon, are interested. [E. R. J., Oct. 28, '11.]

Pittsburgh (Pa.) Railways.—Plans are being considered by this company to construct a belt line to Pittsburgh between downtown sections and the North Side.

Westmoreland County Railway, Pittsburgh, Pa.—It is reported that this company is considering plans to construct an extension from Latrobe to Perry and Blairsville.

Sioux Falls & Southern Minnesota Traction Company, Pierre, S. D.—Surveys have been completed by this company from Worthington, Minn., to Albert Lea, Minn., and engineers are now engaged in looking over the territory west and northwest of Albert Lea for the most advantageous routes for entering the city limits of Albert Lea. This line will connect Sioux City, S. D., and Albert Lea, Minn., via Worthington, Sheppard, Spring Valley, Dresden, Loon Lake, Petersburg, Dwinnell, Ceylon, Silver Lake and Pilot Grove, Minn. G. P. Peterson, Pierre S. D., is interested. [E. R. J., Oct. 21, '11.]

Chattanooga (Tenn.) Traction Company.—This company has announced that its line up Lookout Mountain will be built over a circuitous route to enable its regular service cars to make the ascent. It is stated that work will be begun as soon as the city commissioners issue the necessary permits.

Clarksville, Tex.—A company is being formed to build a 100-mile electric railway to connect Clarksville, Paris, Greenville, Rockwell and Dallas. Preliminary arrangements are well advanced. Joseph F. Nichols, Greenville, is interested. [E. R. J., Oct. 21, '11.]

Houston (Tex.) Electric Railway.—This company plans to expend about $750,000 for the betterment of its lines in Houston before 1912.

Gray's Harbor Railway & Light Company, Aberdeen, Wash.—The Federal Light & Traction Company, New York, N. Y., which controls the Gray's Harbor Railway & Light Company, has announced that it will build an interurban railway from Aberdeen to South Bend and Raymond, on Willapa harbor; also an interurban line from Aberdeen to Puget Sound. In addition, the company is considering, besides its B Street extension now in course of construction, an extension on West Sixth Street to cross the gulch, and an extension in Hoquiam, and will within a year replace its rails on Heron Street west from K Street with new rails.

*Lancaster, Wis.—Thomas McDonald, Lancaster, is promoting an electric railway proposition in Grant County. It is proposed to build a belt line from Lancaster through South Lancaster, Beetown, Glen Haven, Bloomington, Patch Grove, Mt. Hope, Mt. Ida, Fennimore, North Lancaster and returning to Lancaster. The main line will extend through La Fayette County, connecting with the Chicago & Great Western Railway at Warren, Ill. The power is to be supplied from two dams on lower Grant River, one on Platte and one on Apple River, with a large auxiliary steam plant at Lancaster.

SHOPS AND BUILDINGS

Vallejo & Northern Railway, Vallejo, Cal.—Bids will soon be asked by this company for the construction of a new station in Woodland. The structure will be 150 ft. x 80 ft., and will be located on the block bounded by Main Street, Second Street and Lincoln Avenue. The cost is estimated to be about $15,000.

Philadelphia & Wilmington Traction Company, Wilmington, Del.—This company has completed the addition to the machine shop at the rear of its carhouse on Delaware Avenue and Du Pont Street in Wilmington.

Ft. Wayne & Northern Indiana Traction Company, Ft. Wayne, Ind.—Bids are asked by this company for the construction of a new carhouse in Peru.

Union Street Railway, New Bedford, Mass.—This company has completed its new carhouse at Weld Square, which will house 85 cars.

Ohio Electric Railway, Cincinnati, Ohio.—This company has begun the construction of its new carhouse and repair shop at Berkeley Heights, south of Dayton.

Niagara, St. Catharines & Toronto Railway, St. Catharines, Ont.—This company plans to replace its present depot in Welland with new passenger and freight depot. E. F. Seixas, St. Catharines, general manager.

Pittsburgh, McKeesport, & Greensburg Railway, Pittsburgh, Pa.—Work has been begun by this company on its new carhouse and repair shop in Irwin.

Pittsburgh (Pa.) Railways.—The West Park carhouses of this company in McKees Rocks were damaged by fire on Oct. 26. The loss is estimated to be about $32,500.

Everett Railway, Light & Water Company, Everett, Wash.—This company is now occupying the new two-story brick building erected by Stone & Webster on Colby Avenue and Pacific Avenue in Everett. In this building are located the operating department of the Seattle-Everett Traction Company, the waiting room and ticket office of the interurban lines and the general offices of the Everett Railway, Light & Water Company.

Ridgeley & Miller Avenue Railway, Ridgeley, W. Va.—It is expected that this company will build its carhouse near Knobmont. John L. Miller is interested. [E. R. J., Nov. 4, '11.]

Milwaukee Electric Railway & Light Company, Milwaukee, Wis.—Among the improvements planned by this company in the near future will be the construction of a new carhouse at Fond du Lac Avenue and Thirty-fifth Street in Milwaukee.

POWER HOUSES AND SUBSTATIONS

People's Railway, Wilmington, Del.—This company will build a 150-ft. brick smokestack in the rear of its power house at Sixth Street and Hawley Street in Wilmington.

Wilmington & Philadelphia Traction Company, Wilmington, Del.—The General Electric Company, Schenectady, N. Y., is delivering to this company the 4000-kw turbo-generator ordered in January, 1911, to be installed at the Brandywine plant in Wilmington. [E. R. J., Jan. 3, 1911.]

Portland & Brunswick Street Railway, Freeport, Maine.—This company has ordered a motor-generator to replace the steam-generating plant at Freeport so that the current to operate the line can be taken from Brunswick for use at Freeport.

Rochester, Syracuse & Eastern Railroad, Syracuse, N. Y.—Work has been begun by this company on a change of location of the pumping station of its power plant located in Lyons.

Manufactures & Supplies

ROLLING STOCK

Elgin & Belvidere Electric Company has ordered two single-truck cars from the St. Louis Car Company.

Oregon Electric Railway, Portland, Ore., has ordered sixteen large interurban cars from the American Car Company.

Bartlesville (Okla.) Interurban Railway has ordered one 28-ft. car body mounted on No. 47 St. Louis trucks from the St. Louis Car Company.

Bellingham & Skagit Interurban Railway, Bellingham, Wash., has issued specifications through Stone & Webster, Boston, Mass., for five 57-ft. cars.

Chicago (Ill.) City Railway has ordered four GE-210 motors with K-36 controllers and one straight-air-brake equipment from the General Electric Company.

Chillicothe Electric Railroad, Light & Power Company, Chillicothe, Ohio, has ordered two 25-ft. 4-in. pay-as-you-enter car bodies from the G. C. Kuhlman Car Company.

Honolulu Rapid Transit & Land Company, Honolulu, Hawaii, has ordered twenty-one straight-air brake equipments for double-end operation from the General Electric Company.

Fitchburg & Leominster Street Railway, Fitchburg, Mass., has ordered three 30-ft. 8-in. semi-convertible pay-as-you-enter motor car bodies mounted on Brill 27-GE-1 trucks from The J. G. Brill Company.

Fresno (Cal.) Traction Company has ordered, through Pierson, Roeding & Company, three 38-ft. 8-in. California type motor car bodies mounted on Brill 27-G-1 trucks from the American Car Company.

Pueblo & Suburban Traction & Lighting Company, Pueblo, Col., has ordered six 28-ft. 10-in. semi-convertible pay-as-you-enter car bodies mounted on Brill 27-GE-1 trucks from the American Car Company.

Walnut Ridge & Hoxie Light, Power & Transit Company, Walnut Ridge, Ark., has ordered one 29-ft. combination passenger and baggage car mounted on Brill 27-G-1 trucks from the American Car Company.

Poughkeepsie City & Wappingers Falls Electric Railway, Poughkeepsie, N. Y., has ordered one 18-ft. 3-in. semi-convertible motor car body mounted on a Brill 21-E truck without wheels and axles from The J. G. Brill Company.

Toledo, Bowling Green & Southern Traction Company, Findlay, Ohio, has ordered four quadruple equipments of No. 304 interpole railway motors with type HL control from the Westinghouse Electric & Manufacturing Company.

Norwich & Westerly Railway, Norwich, Conn., has ordered four 30-ft. 8-in. semi-convertible motor car bodies mounted on Brill 27-GE-1 trucks from The J. G. Brill Company and one 32-ft. express car body from the Wason Manufacturing Company.

Central Pennsylvania Traction Company, Harrisburg, Pa., reported in the ELECTRIC RAILWAY JOURNAL of Aug. 20, 1911, as having ordered six semi-convertible pay-within cars has specified the following details for these cars:

Weight (car body only) 16,000 lb.	Gears and pinions.....solid
Length of body.....25 ft.	Gongs .....Dedenda
Over vestibule....37 ft. 6 in.	Hand brakes.....Peacock
Width over sills.7 ft. 7¾ in.	Heaters .....Consol.
Over all.....8 ft. 2 in.	Headlights ....Crouse-Hinds
Sill to trolley base.11 ft. 9 in.	Journal boxes .....Sym.
Body .....wood	Motors.....2 West. 101-C
Interior trim.....mahogany	Motors .....outside
Headlining .....Agasote	Paint.....Ry. co's Std.
Roof .....Brill plain arch	Registers .....Internat.
Underframe .....wood	Sanders .....Ohio
Air brakes.....Nat.	Sash fixtures .....Edwards
Axles.....4½ in. and 3⅞ in.	Seating material.....rattan
Bumpers Hedley anti-climber	Springs .....Brill
	Step treads .....Mason
Cables .....Brill	Trolley base .....Union
Couplers .....Brill	Trucks .....Brill 39-E
Curtain fixtures.....Nat.	Ventilators .....Globe
Curtain material...Pantasote	Wheels 33-in. and 21-in. St. Louis

TRADE NOTES

H. W. Johns-Manville Company, New York, N. Y., has removed its branch office in Birmingham, Ala., from 1220 Empire Building to 606 Chamber of Commerce Building. This office will continue under the management of H. W. Fleming, who was connected with the New Orleans branch of the company for a long time.

St. Louis Car Company, St. Louis, Mo., has shipped one train of twelve cars and one train of thirteen motor cars on their own wheels for the San Francisco, Oakland & San Francisco Railroad, San Francisco, Cal. These cars are 70 ft. long, seat 86 passengers and each has spring buffer platforms, mounted on St. Louis 23-B MCB type trucks.

Ackley Brake & Supply Company, New York, N. Y., was awarded a gold medal for the exhibit of the Ackley adjustable brake made at the recent meeting of the International Congress for the Application of Electricity at Turin, Italy. The company received a silver medal for the same type of brake at the International Railway Congress at Brussels last year.

McGraw-Hill Book Company, New York, N. Y., has purchased the book department of the Engineering News Publishing Company, New York. This adds to the list of the McGraw-Hill Book Company a considerable number of important standard treatises, primarily in the field of civil engineering. The transfer of this business was made on Nov. 6, 1911.

American Ship Windlass Company, Providence, R. I., manufacturer of the Taylor stoker, announces that its plant at Providence is being abandoned and the entire business is being removed to Philadelphia, where the company has a large plant in operation. A foundry was recently erected in Philadelphia to accommodate the growing business of the company.

Union Switch & Signal Company, Swissvale, Pa., announces the following changes in the personnel of its engineering department: J. P. Coleman has resigned as chief engineer of the company and has been appointed consulting engineer. L. F. Howard has been appointed engineering manager, in charge of the engineering department. F. B. Corey, for some years with the General Electric Company, entered the service of the company on Nov. 1. His immediate duty will be the reorganization of the inspection department as engineer in charge of inspection.

The J. G. Brill Company, Philadelphia, Pa., has received the following foreign orders for equipment: E. G. Long Company, from Koya-Tozan Railway, Japan, twenty-four Brill 27-GE-1 trucks; Noyes Brothers, Australia, twenty Brill 30-E trucks; Societa Italiana Westinghouse, Italy, eight Brill 27-GE-1 trucks without wheels and axles; A. E. G. Thomson-Houston Iberica, Madrid, Spain, two 16-ft. semi-convertible motor car bodies mounted on Brill 21-E trucks; Lisbon (Portugal) Tramways, seven 17-ft. 6-in. closed motor car bodies mounted on Brill 21-E trucks.

Power Specialty Company, New York, N. Y., has recently received contracts for Foster superheaters from the following companies: New York, New Haven & Hartford Railroad at Cos Cob and Bridgeport plants, 10,620 hp in Bigelow-Hornsby and B. & W. boilers; Delaware, Lackawanna & Western Railroad, at Loomis Colliery, 900 hp in Erie City boilers; Indiana & Michigan Traction Company, 3200 hp Wickes boilers; Wilmington & Philadelphia Traction Company, 2400-hp Edge Moor boilers; Penn Central Light & Power Company, 2400-hp Edge Moor boilers; Citizens' Light & Power Company, Montgomery, Ala., 3200-hp Stirling boilers.

Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa., announces that it has either shipped or has on order 3000-kw rotary converters for the following companies: Brooklyn Rapid Transit Company, three; Chicago Railways Company, two; Philadelphia Rapid Transit Company, two; Metropolitan Street Railway, Kansas City, one. As noted on page 83 of the Electric Railway Journal for Jan. 14, 1911, two rotaries of this size were installed by the Interborough Rapid Transit Company, New York, N. Y., at the end of 1909. Since then the company has ordered seven more of the same type and two are in service in the Hudson substation of the Brooklyn Rapid Transit Company.

General Railway Signal Company, Rochester, N. Y., has appointed A. G. Moore advertising manager with headquarters at Rochester. Mr. Moore began his signaling experience in 1901 with the Pneumatic Signal Company, and for two and one-half years was engaged in construction work. He then became a draftsman with the Taylor Signal Company, and after three years of service in various lines of work for that company was appointed chief draftsman of the signal department of the Illinois Central Railroad at Chicago. In September, 1910, Mr. Moore became connected with the General Electric Company, where he was identified with the design and manufacture of that company's signal apparatus, from which position he has recently resigned.

ADVERTISING LITERATURE

Tool Steel Gear & Pinion Company, Cincinnati, Ohio, has issued a booklet which contains records of tool steel gears and pinions.

Ingersoll-Rand Company, New York, N. Y., has issued a bulletin which describes and illustrates its Imperial type X duplex steam-driven air compressors.

Stromberg-Carlson Telephone Manufacturing Company, Rochester, N. Y., has issued the second edition of its Bulletin No. 1002, describing local battery telephones. This bulletin has been revised to include one or two instruments of improved types which have been developed since the first edition was issued.

Hayes Track Appliance Company, Richmond, Ind., has issued Circular No. 66, which describes double-end Hayes derails. These are designated as models CX and EX. Model CX is for operation by switch stand or pipe line; model EX is for direct hand operation. These double-end derails are a combination of a right-hand and a left-hand derail and will derail in either direction.

National Metal Molding Company, Pittsburgh, Pa., has issued a catalog which lists and illustrates the various types of National metal molding. Attention is called to the many improved National metal molding fittings with particular reference to No. 363, which has been designed to permit extension work from existing fixture outlets in National metal molding without removal of the fixture. The company has also printed a folder which shows a complete line of its products.

Westinghouse Electric Manufacturing Company, Pittsburgh, Pa., has issued descriptive leaflet No. 2373, which describes the No. 303-A box frame interpole motor manufactured by that company. Complete specifications for the motor, brief descriptions of the important parts and performance curves are given on the sheet. Another descriptive leaflet, No. 2374, gives specifications and brief descriptions of the parts of the company's box frame interpole railway motor No. 310-C.

Jeffrey Manufacturing Company, Columbus, Ohio, has issued Catalog No. 50, which describes the complete line of Jeffrey power transmission machinery. Besides listing dimensions and sizes of every part in this line tables are presented giving the horse-power of steel shafting, belts, standard sizes of key seats for shafting, gears, pulleys, etc. Among the parts listed are couplings, hangers, pillow blocks, counter shafts, belt tighteners, clutches, quills. Jeffrey improved split iron pulleys, wood split pulleys and rope driving. The catalog also lists a complete line of Jeffrey gears, including spur, bevel miter, angle reduction and angle miter types.

Westinghouse, Church, Kerr & Company, New York, N. Y., has issued a 50-page catalog entitled "Central Power Stations," which describes and illustrates ten steam turbine power stations built by the company for railway, light and power service in various parts of the country. These stations have been selected as they represent a wide range of sizes and combinations of equipment. Comparisons of these stations bring out the following facts: Four types of building construction are used; six types of boilers; three methods of stoking; three kinds of draft for furnaces; ten methods of handling coal; two types of turbines and generators; seven types of condensers; exciters of four types and various characteristics appertaining to electrical equipment.