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CONTENTS.

Rail Wear in the New York Subway

The New York subway has been in operation only five and one-half years, but every one of the Bessemer steel rails originally laid has been worn out and replaced. On curves the rails last less than six months in spite of liberal superelevation. For the last three years open-hearth steel rails have been used for all replacements and it is interesting to note that a much longer life is being obtained with them than formerly was obtained with Bessemer rails. The open-hearth rails, however, are no more free from corrugation than the Bessemer rails, and many peculiar examples of this mysterious phenomenon have been noted on both straight and curved track. The longer life of the open-hearth rails no doubt is due to the greater hardness obtained with 70 to 75 points of carbon, but this hardness does not prevent corrugation. An order for 100 tons of rolled manganese steel rails for use on curves has recently been placed and it will be interesting to learn whether corrugations are found on the surface of these rails as quickly and as sharply defined as on the hard and soft carbon steel rails which they will replace.

Track Department Equipment

Because the track department handles only heavy, rough material its equipment of work cars and tools is often supplied from the odds and ends of the other departments and is allowed to deteriorate to a shocking degree of dilapidation. The result is invariably reflected in the labor costs and the intangible expense due to delays to regular cars. A powerful work car, well built and well maintained, is an invaluable tool. It saves time in transporting men and material and can be depended upon to get to a designated point and get back without holding up traffic. If equipped with a motor-driven crane it can be used for many operations which otherwise would require a large gang of men. A piece of special work, for example, can be set with a crane by four men in as many minutes, whereas 15 or 20 men might be required to lift and place it. Counting their time from the beginning to the end of the operation, not less than half or three-quarters of an hour would be taken. Only a few jobs of this kind are needed during a working season to save in cost the interest on the investment in the car. Economical maintenance of track requires efficient tools just as much as economical maintenance of cars requires adequate shop facilities.

Shortening Delays in Interurban Service

It is not easy to discover new aspects of the problem of delays in interurban service, but repeated observation of the handling of through cars over routes occupied by several companies forces attention upon the importance of making crew changes quickly at system boundaries. The cost of time lost in this way in the course of a few weeks on a busy system is by no means inconsiderable. Where the volume of traffic warrants the maintenance of a starter at the junction of roads

forming part of a through route much good can be accomplished in the way of minimizing the length of stops while crews are changed. With proper discipline every man will be on the alert to take his car at the required time; the starter or other designated employee will take register readings immediately after the stop is made, and there will be no discussion and perhaps telephoning to headquarters to determine who is to make specified runs. The establishment of rules stating precisely what each man is to do in changing cars will help to minimize delays, and in some cases the plan of requiring the crew which arrives early to meet the on-coming car at the first stop beyond the system terminus might work out advantageously, since the starter could watch the car which had arrived while the crew was losing no time in waiting for passengers to enter and leave the car which is due. The main point, however, is to get rid of the discussion and delays in getting upon the platforms when the moment for the crew change arrives. Better team work is possible in countless instances. Another possible source of speed improvement is in operating the car with full multiple controller service to a safe distance inside the urban system, instead of cutting in the half-speed commutating switch at the system boundary. Sharper work on branch lines is also desirable, not only for its own sake, but because it tends to reduce the waits of main line cars for connections. The car with the shorter run should be the one to do most of the waiting.

Exactitude in Legislation.

A lesson in the elementary principles of law making was recently read to Congress by the Court of Appeals of the District of Columbia. As the occasion of the lecture related to street railway service and as the legislation criticised was of that slovenly character which is passed not infrequently in State as well as in national capitals, it should be of interest to companies elsewhere. About two years ago Congress enacted a law requiring the street railway companies in the District of Columbia "to give expeditious passage to all persons desiring to use the cars, without crowding the cars." It authorized the Interstate Commerce Commission to make all needful rules, to compel obedience with this law, and imposed a fine of not more than $1,000 a day as a penalty to a violation of either the act itself or of the regulations of the commission based upon it. Although the Interstate Commerce Commission issued no regulations of the kind authorized, the United States Attorney for the District of Columbia brought suit under the law against both of the principal companies in Washington, alleging that the cars were being unlawfully overcrowded. But as the court clearly pointed out, a condition which one judge or jury might consider crowded, another might think should not come under that definition, so that the act was void on account of its vagueness and uncertainty. This principle of law was reiterated by the court in a large variety of ways, a fact which is refreshing in these days of general legislation and condemnation. Thus the court said: "In a criminal statute, the elements constituting the offense must be so clearly stated and defined as to reasonably admit of but one construction. Otherwise, there would be lack of uniformity in its enforcement. The dividing line between what is lawful and unlawful can not be left to conjecture. The citizen cannot be held to answer charges based upon penal statutes whose mandates are so uncertain that they will reasonably admit of different constructions. A criminal statute can not rest upon an uncertain foundation. The crime, and the elements constituting it, must be so clearly expressed that the ordinary person can intelligently choose, in advance, what course it is lawful for him to pursue. Penal statutes prohibiting the doing of certain things, and providing a punishment for their violation, should not admit of such a double meaning that the citizen may act upon one conception of its requirements and the courts upon another." Evidently the court thought that this axiom in penal legislation was not thoroughly understood and wished to drive the lesson home. As to the question as to whether the Interstate Commerce Commission had the power to supply what the statute lacked, the court declined to say. No such regulations had been passed and the question was not up for adjudication.

LOADING SPEED OF PREPAYMENT CARS

The widespread acceptance of the prepayment principle of fare collection has caused a complete re-equipment of many types of old cars. Practically all of the companies which have purchased new prepayment cars have added various fittings to their older equipments with a view of obtaining greater receipts and lessened accidents. In various instances these changes have brought about a reduction in car-hours, because the more orderly handling of passengers has shortened the time required for loading. In other instances local conditions have been thought to be of such moment as to warrant considerable variation from platform designs found to be satisfactory elsewhere, and the cars, while giving better results than before re-equipment, have not gained the success that was expected with them.

At first, long platforms were thought to be a necessary feature of successful prepayment operation. Figures now available show that within certain limits the length of the platform exercises only a slight influence on the speed of loading and is effective only during the rush-hour periods when the progress of the car is so delayed by other causes that fast schedules could not be attained in any event. On the other hand, short platform cars weigh less per seat and cost less to move than long-platform cars, so that their economy during the hours of light travel should be considered in connection with any slowness of schedule during rush hours.

Some interesting testimony upon the effect of width of entrance upon loading time with the prepayment type of car has recently been adduced from tests of several types of prepayment cars now operated in Chicago. The observations were made in the congested retail section of the city during the evening rush hours, and the loading time per passenger was obtained by noting the total time required for all passengers to board 100 succeeding cars at one street intersection, and dividing this total by the number of passengers.

The car with the widest passenger entrance in Chicago is the new type of pay-as-you-enter equipment of the Chicago Railways Company, having a clear space of 40 in. between the vestibule post and the dividing stanchion at the top of the rear step. The average time required for passengers to board this type of car was 1.05 seconds. The new pay-as-you-enter cars of the Chicago City Railway have a similar entrance, 34½ in. wide, and the count showed that the average loading time with this narrower entrance was 1.15 seconds per passenger. The latter company has rebuilt some older cars without lengthening the platforms and these cars have pay-as-you-enter en-

trances 22¼ in. wide. A count showed that 1.66 seconds were required for each passenger to board one of these cars. That is to say, the speed of loading is by no means proportional to the width of entrance. This condition is of course due to the fact that but one passenger can enter the car at a time with either the largest or the smallest entrance.

The Chicago Railways Company, before the completion of its rehabilitation, operated about 400 double-end, vestibuled closed cars of the St. Louis type with open platforms. The average time required for a passenger to board one of these cars was 0.92 seconds and this low figure was obtained because both ends of the car were thrown open at all stops. The difference in loading time per passenger, however, between the old go-as-you-please method and the prepayment method with the 40-in. entrance is only 0.13 seconds per passenger, so that the new cars are not at a great disadvantage, certainly not so great as to overweigh the advantages which the new type offers in the way of better fare collection and less platform accidents, to say nothing about comfort to passengers. These comparisons may be useful to those companies which are hesitating about adding prepayment features to old equipment.

THE COMMITTEE REPORT ON WAGES AND THE PRICES OF COMMODITIES

Part I, containing 138 pages, of the report of the select committee of the Senate on wages and the prices of commodities has just been made public. This committee was appointed last February with Senator Lodge of Massachusetts as chairman and statements relating to its hearings have occupied considerable space in the daily papers since that date. A summary of the findings of the committee was published about two weeks ago but the report now at hand contains some very interesting statements. The subject is of special interest to electric railway companies because an increase in wages and in the prices of commodities is synonymous with a decrease in the purchasing power of the fare received from each passenger.

It seems, from the report of the committee, that the advance in prices has been world-wide, although farm and food products have advanced more rapidly in price than have manufactured articles. The advance in prices for commodities has been more rapid since 1900, however, in the United States than in the other countries from which statistics were obtained by the committee, except possibly in Canada and Russia. This is explained partly on the theory that the prices in most European countries, especially in England, were at a higher level 10 years ago than in this country. A further analysis of the prices of materials in the United States shows that farm products have advanced in price twice as much in percentage as any other group of commodities.

Wages have not advanced as rapidly as the prices of commodities, but they have increased more rapidly in the United States than in European countries. In fact, in some European countries, practically no advance has been made in wages during the 10 years under consideration. Moreover, wages have not advanced in the United States as rapidly in proportion as food prices, with the exception of the wages of farm hands which the committee found had increased from 45 to 75 per cent during the period from 1900 to 1910. This increase, of course, has been an important factor in the increase of the price of food, but it is by no means the only one. The selling price of farm lands seems to have doubled on the average. Two or three decades ago the richest of land could be secured from the Federal Government for a merely nominal cost, but the supply of governmental land suitable for general farming is now largely exhausted. The richness of the virgin soil is also disappearing and the fertility of the land can be maintained only by the use of expensive fertilizers. Other causes which have tended to increase the cost of farm products are better financial facilities in the agricultural districts which enable the producers to market to better advantage than formerly, higher standards of living in agricultural districts, pure food laws, local sanitary and other regulations, etc. The increased costs of production of farm products, however, would not have been sufficient to create the conditions of sale prices found by the committee if the demand for farm products had not also increased rapidly, in fact more rapidly than the supply.

The committee did not consider that the tariff had any material effect on the situation, because the groups of articles which have shown the greatest advances are those for which there has been no change in tariff during the past ten years. The same cannot be said, however, of industrial combinations. While the prices of many of the trust-produced commodities have not advanced as rapidly as those of other commodities, the community in most cases has not enjoyed the benefit of the economies of production and distribution afforded by combination, and the conditions of purchase have been made more arduous. Undoubtedly the increased gold supply has been an element in the increased prices, but to what extent it is difficult, if not impossible, to determine. Immigration is also held to have been an important factor in increasing the cost of food. During the last ten years over 8,000,000 immigrants arrived in the United States, but of this enormous number only a very small per cent entered agricultural pursuits. Instead, practically all engaged in industrial work, so that instead of becoming producers of food they have become consumers.

A study of the report as thus far issued does not hold out any encouragement of a material reduction in prices. Each of the factors of importance mentioned by the committee, so far as present indications and prospects go, seems to be of a permanent character. Some improvement can be made probably in scientific farming, but reductions in costs thereby effected would undoubtedly be more than counterbalanced by other conditions which will have the effect of increasing prices. It is natural to expect that there will be fluctuations in the cost of commodities in the future just as there have been in the past, but the general trend is undoubtedly upward.

Those most severely affected by any increase in costs are those whose income remains upon a basis fixed by previous conditions of a higher purchasing power of the standard of value. This class is by no means confined to investors whose income is derived from bonds and mortgages, but includes many corporations, notably city transportation companies. The condition of these latter can be improved, indeed must be improved, if they are to serve properly the communities where they exist. In the latter sixties aand early seventies, when prices were on an inflated paper basis and gold was at a premium, the standard fare on most street railways was 6 cents. Revision should not always be downward, and with the much longer ride now given for a single fare and with prices for labor and materials higher than at any period in the last 20 years, it is time that some step should be taken either to revert to the old rate or in some other way to increase the receipts so as to compensate for the increased cost of operation.

THE 1200-VOLT D.C. INTERURBAN LINES OF THE MILWAUKEE ELECTRIC RAILWAY & LIGHT COMPANY

BY JOHN R. HEWETT

The Milwaukee Electric Railway & Light Company besides its extensive city service of street railways, lighting and other public utilities owns and operates the more important interurban roads radiating from Milwaukee. It also furnishes both light and power for most of the towns served by these interurban lines. The size and importance of the system will be appreciated by studying the accompanying map, Fig. 1.

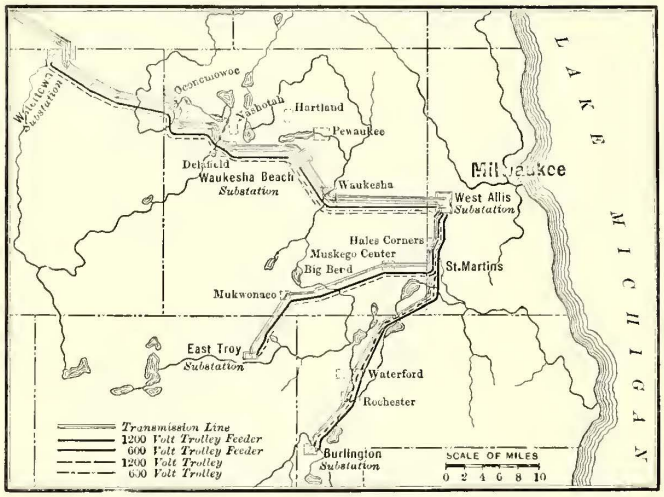


Fig. 1—Milwaukee 1200-Volt Line—Map

The interurban lines to be dealt with in the present article traverse remarkably beautiful sections of Wisconsin which are rich in lakes, rivers and other attractions which makes the summer schedule very severe at certain times, although generally speaking the country through which the roads pass is sparsely populated.

The three most important interurban roads are those running to Watertown, East Troy and Burlington. Of these lines those sections between Waukesha Beach and Watertown, between St. Martins and East Troy and between St. Martins and Burlington, were formerly operated with a 3300-volt single-phase trolley but they have now been changed over for 1200-volt d.c. operation. In addition the track between West Allis and St. Martins will be operated by 1200 volts in the near future and it is likely that the 1200-volt trolley will be adopted between Waukesha Beach and West Allis.

The following distances will show that at present there are 67.99 miles of road operating with the 1200-volt system: Waukesha Beach to Watertown 27.42 miles, St. Martins to East Troy 20.75 miles, St. Martins to Burlington 19.82 miles. It is also of interest to note that the distance between Milwaukee and Waukesha Beach is 23.86 miles, Milwaukee and Watertown 51.28 miles, Milwaukee and St. Martins 15.07 miles, West Allis and St. Martins 7.25 miles and West Allis and Milwaukee 7.82 miles.

GENERAL SCHEME OF ELECTRIFICATION

There are three main sources of power feeding into the transmission system. These are the two power houses in Milwaukee, one at Oneida Street and the other at Commerce Street; the third source is derived from the new hydraulic development of the Southern Wisconsin Power Company at Kilbourn which is about 70 miles from Watertown and over 120 miles from Milwaukee. Overhead transmission lines serve all of the interurban roads, while the energy is transmitted to and from Milwaukee and West Allis underground at 13,200 volts.

At present the tension of the system is 38,100 volts, but when some additions at present under way have been completed the transformer connections will be changed from delta to *Y* and the potential will be raised to 66,000 volts at three-phase, 25-cycles. The 1200-volt d.c. substations that affect the interurban divisions now under consideration are as follows: For the Watertown road, at Watertown and Waukesha Beach and for the East Troy and Burlington roads, at East Troy, Burlington and West Allis. Feeders are strung on the trolley poles for the entire length of the interurban lines and are tied to the trolley wire at suitable intervals.

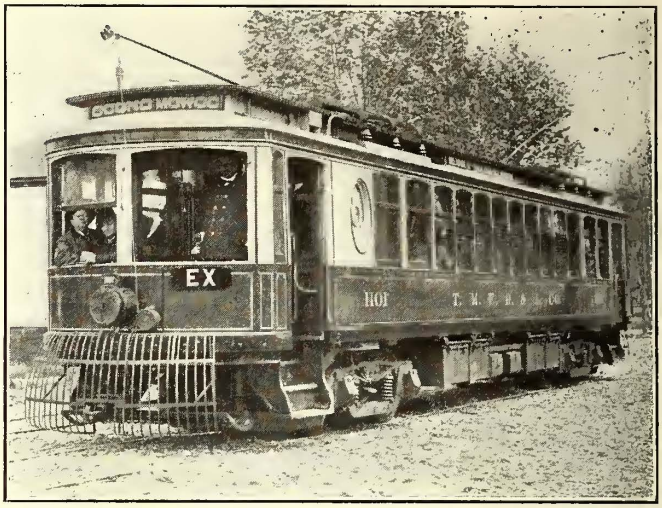


Fig. 3—Milwaukee 1200-Volt Line—Interurban Car

ROLLING STOCK

The initial rolling stock for service on these interurban roads consists of 30 cars, 25 passenger and five utility cars. Fifteen of these cars are new at the present date and were manufactured by the G. C. Kuhlman Car Company of Cleveland, Ohio, and are equipped with GE-207 motors. The 10 other passenger cars were constructed by the St. Louis Car Company and are now equipped with GE-205 motors, whereas they formerly had single-phase apparatus. The remaining five cars used as utility rolling stock have GE-205 motors.

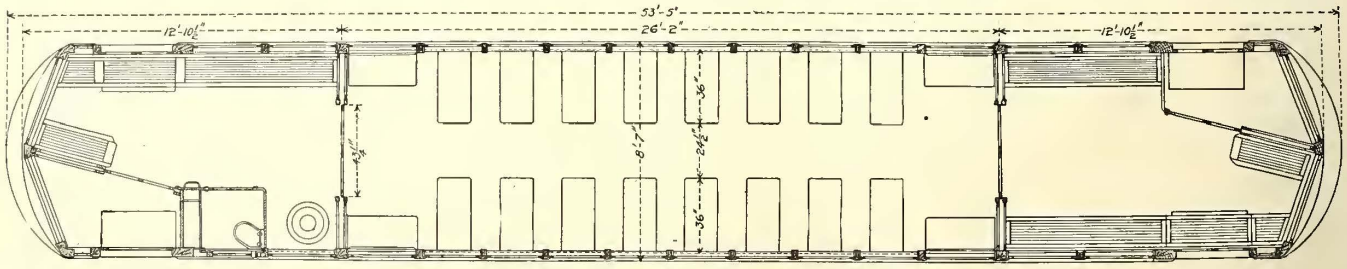


Fig. 2—Milwaukee 1200-Volt Line—Plan of Interurban Car

The electrical equipments of all these cars are so similar, being all four motor equipments, that they can be described collectively after the different ratings of the GE-205 and GE-207 motors have been stated. The former is a 75-hp unit, while the rated capacity of the latter is 125 hp. Both motors are of the General Electric commutating pole type and are designed for operation on both 600-volt and 1200-volt trolleys. The GE-207 equipments are furnished with 60-tooth split gears and 22-tooth steel pinions, while the GE-205 equipments have gears with 53 teeth and pinions with 21 teeth, giving gear

ratios of 3.05 and 2.525 respectively. The motors are connected two in series when running on 1200 volts.

The control is the type "M," non-automatic design. As is usual with this type of equipment a dynamotor is used to supply current at 600 volts for the control and lighting circuits during 1200-volt operation. In this instance the compressor

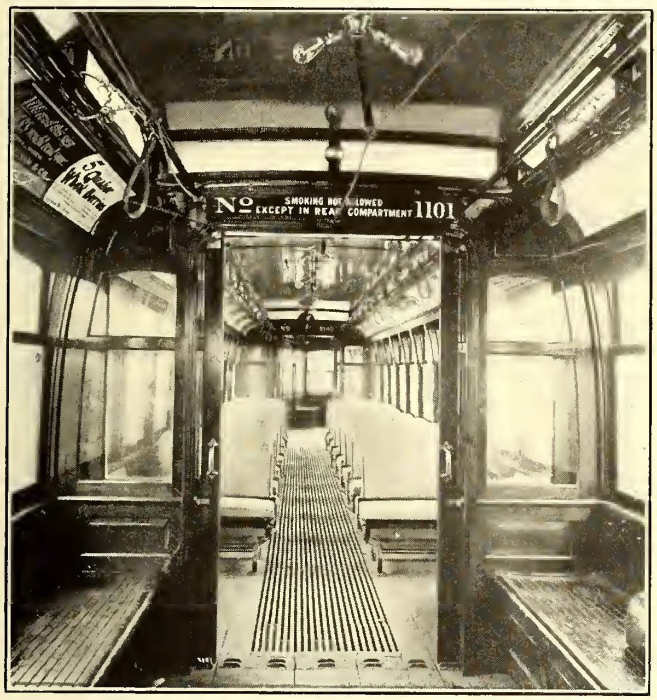


Fig. 4—Milwaukee 1200-Volt Line—Interior of Interurban Car

motor is insulated for 1200 volts and is run on both voltages with a decreased speed on 600 volts. The commutating switch is placed under the car and is operated from either end by a lever in the motorman's cab. This switch has a dual function; first, it changes the motor connections from series to series-parallel during 1200-volt operation and from series-parallel to parallel during 600-volt operation, thereby giving full speed at both voltages; second, it transfers the auxiliary circuits (excepting the compressor circuit) from the trolley to the 600-volt tap of the dynamotor during 1200-volt operation and vice-versa during 600-volt operation.

The balance of the electrical equipments is substantially 600-volt apparatus with additional insulation to withstand the greater electrical potential. The current is collected by a standard type of trolley pole and wheel and passes through a circuit breaker, contactors, reverser and commutating switch to the motors. This circuit breaker, the contactors and reversers are electrically operated and as stated are of standard 600-volt construction.

The car bodies of the 15 new cars have many features of special interest. Fig. 2 shows a plan from which it will be noticed that the arrangement is somewhat unusual. In general the two ends are symmetrical, the rear compartment always being used as a smoking compartment and the front serving for seating passengers and taking baggage when there is any to be handled. This front compartment is practically an observation end. These cars are of the semi-steel type. The deep plate side sills are girders and form the principal members of the underframing which extends from side door to side door on both sides of the car. There are no bulkheads in the car, the load of the car ends being carried by 4-in. channel center sills and two diagonal trusses constructed of 4-in. I-beams. All the other smaller members of the underframing are steel.

The floor is a composition laid on Keystone galvanized iron flooring. The surface of this composition is ⅝-in. above the iron flooring and covers the entire floor and platforms. It somewhat resembles cement in appearance. The covers of the motor trap doors are filled with the same composition.

The more important data concerning these cars are as follows:

Length over all	53 ft. 5 in.
Length over corner posts	40 ft.
Extreme width	8 ft. 7 in.
Height from rail over roof boards	11 ft. 6 in.
Distance between truck centers	28 ft. 4 in.
Weight of car body and trucks	48,000 lb.
Total weight	80,000 lb.
Seating capacity	64

TRUCKS

Type	Brill M. C. B.
Wheel base	6 ft. 1 in.
Diameter of wheel	36 in.
Weight, exclusive of motor	14,000 lb.

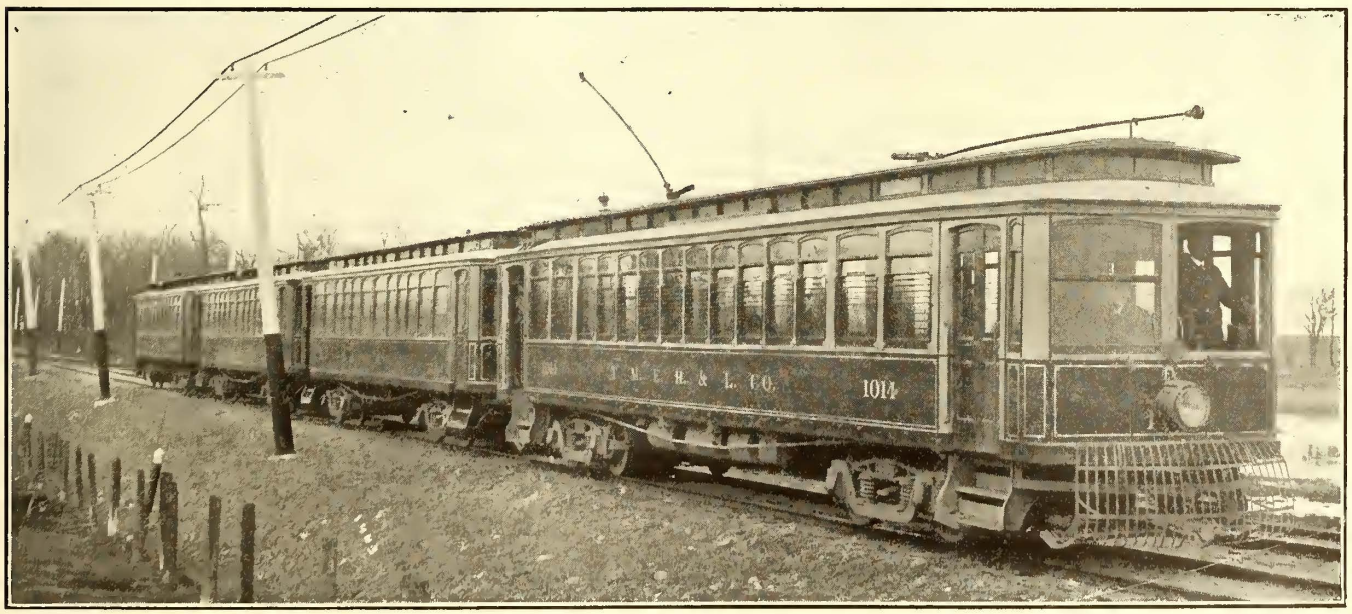


Fig. 5—Milwaukee 1200-Volt Line—Motor Car and Three Trailers

Figs. 3, 4, and 5 show respectively the exterior of one of these cars, an interior view and a car hauling three trailers.

SUBSTATIONS

The substation at Watertown is situated on the banks of the Rock River and besides housing the 1200-volt railway appar-

atus it contains two frequency changer sets for the lighting and power business of Watertown; in addition to these maclines there is one 300-kw generator driven by a hydraulic turbine to take care of the day lighting and power load of Watertown. Fig. 6 is an interior view of this substation, showing the railway apparatus in the foreground and the frequency changer sets and water wheel unit in the background.

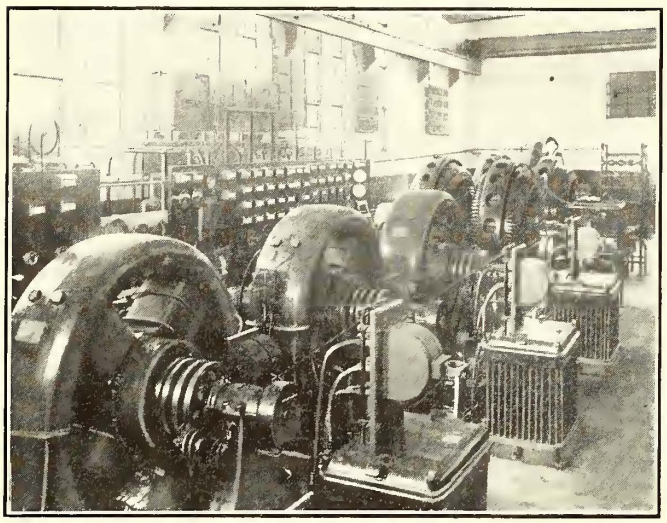


Fig. 6—Milwaukee 1200-Volt Line—Interior of Watertown Substation

The West Allis substation is very large. It takes care of both city lighting and 600-volt city railway apparatus, and also contains apparatus for generating current at 1200 volts for the system being described. The energy from Kilbourn is received over the transmission line and transformed by six 2000 kva 66,000-volt, 13,200-volt O-I-W-C transformers, Figs. 7 and 10 are two exterior views of the West Allis substation and in the latter it will be seen that car house and office facilities are provided under the same roof.

The Waukesha Beach substation and those at East Troy and Burlington, are typical 1200-volt substations. Their layout and functions are the same with the one exception that at Waukesha Beach 600-volt current is fed in the direction of West Allis and 1200-volt current towards Watertown. Both the 600-volt and 1200-volt feeders are fed from the same rotary converters, which are connected in series. As these three substations are practically identical in design and are used solely for railway work, one description will cover all of them. Fig. 8

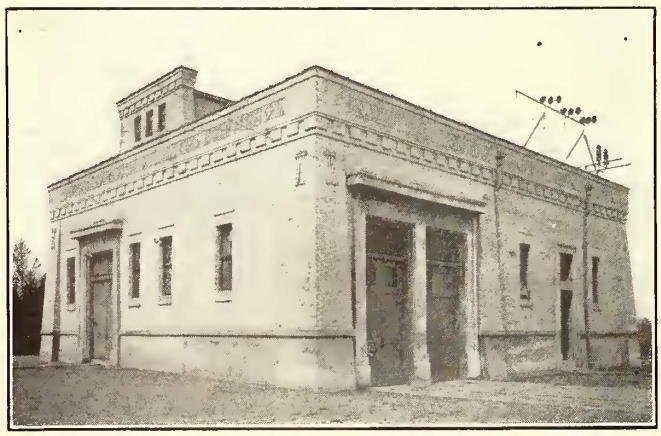


Fig. 8—Milwaukee 1200-Volt Line—Exterior of Burlington and Waukesha Substations

shows the exterior of the Burlington and Waukesha Beach substation. The building is of very neat design and is constructed of cream-colored brick with concrete floors. Fig 9 shows a plan of the East Troy and Burlington substation, while Fig. 11 gives sectional views which apply to all three substations. This latter illustration with but slight modification would also apply to the Waukesha Beach substation. Figs. 12 to 15 are interior views of the Waukesha Beach substation. The buildings are each divided into a high tension compartment and a machine compartment. The former contain the lightning arresters and oil switches, etc., is very roomy and provides ample spacing between all high tension leads.

The leads from the high tension transmission line are brought into the substation through vertical roof bushings in the high tension compartment roof and pass through double-throw, triple-pole switches, then through choke coils, K-10 automatic oil switches and disconnecting switches to the primaries of the transformers. The secondaries of these transformers are double. The leads from the secondaries go to the reactances and thence to the collector rings of the rotary converters. The rotaries are 600-volt machines connected in series to give 1200 volts for the trolley. The lightning arresters are tapped from the high tension leads immediately after they have passed the double-throw triple-pole switches. They are of the G. E. aluminum cell type and have horn gaps.

The number of rotary converters and transformers installed in each substation is shown in the accompanying table, which also gives their capacity. There are three rotaries in the Waukesha Beach substation, two of which are connected in series to form a pair giving 1200 volts while the third serves as a spare.

SUBSTATION APPARATUS

	—Rotary-Converters—		—Transformers—	
	Number	Capacity each	Number	Capacity each
Watertown	4	300 kw	6	200 kw
West Allis	2	500 kw	6	185 kw
East Troy	4	300 kw	6	200 kw
Burlington	4	300 kw	6	200 kw
Waukesha Beach	3	500 kw	9	185 kw

Note: There are also two 500-kw rotary converters and six 185 kw transformers installed in the existing substation at West Allis.

ROTARY CONVERTERS

The twelve 300-kw rotary converters are General Electric

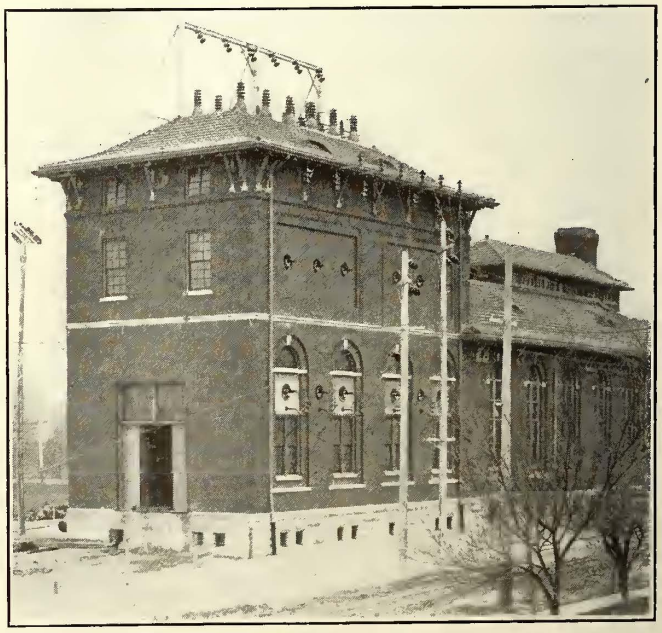


Fig. 7—Milwaukee 1200-Volt Line—Exterior of West Allis Substation

four-pole machines. They run at 750 r.p.m. and have a full load direct current of 500 amp. The five 500-kw rotary converters are six-pole units with a speed of 500 r.p.m. and have a full load direct current of 834 amp. A number of short circuit tests were made in the factory which showed that the ef-

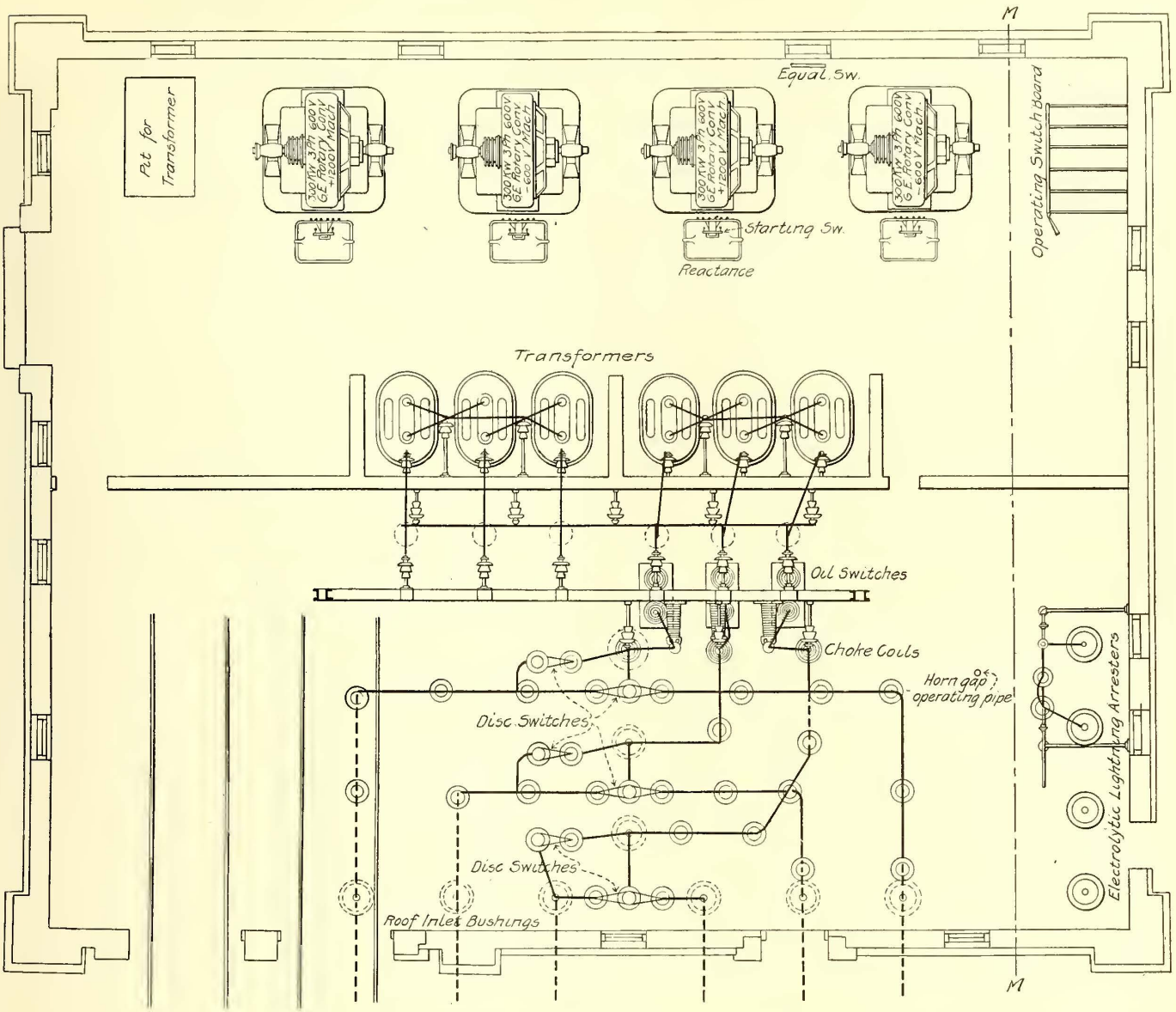


Fig. 9—Milwaukee 1200-Volt Line—Plan of East Troy and Burlington Substations. (For Section, See Fig. 11)

Fig. 10—Milwaukee 1200-Volt Line—Exterior of West Allis Substation

fects of flashovers on the brush rigging and commutators was no more serious than in the case of 600-volt machines. There is no tendency to hunt and the factory tests also showed that these rotaries can stand very severe overloads.

The potential of each machine is 600 volts and two units are connected in series to give the desired 1200 volts. In all essentials the machines are standard 600-volt units with addi-

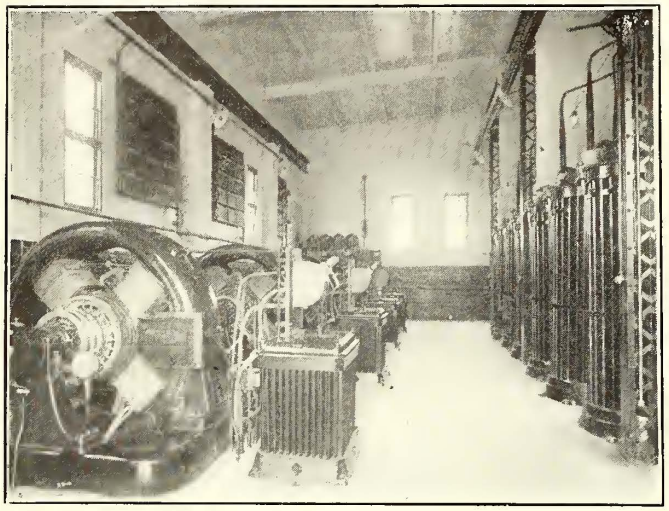


Fig. 12—Milwaukee 1200-Volt Line—Interior of Waukesha Station

tional insulation. They are compound wound with the shunt fields excited from the individual machine, and the series fields of each pair connected in series on the grounded side. Each machine is provided with a speed limiting device and a magnetic oscillator, while metallic graphite brushes are used on the a.c. side, making lubrication unnecessary and decreasing the amount of dust from brush and ring wear. The d.c. brush riggings are all supported from the magnetic frame so that there will be no metal around the commutator on which an arc could hold should a flash-over occur from a short circuit. The projecting ends of the commutator clamping rings are entirely insulated and the metal shell and bolts of the collector rings which are usually exposed are covered with insulation.

The reactive coils used with the 300-kw rotary converters have a capacity of 45 kva and those used with the 500-kw machines are 75 kva. They are all oil-cooled and have standard starting switches with protecting covers, mounted on the top.

TRANSFORMERS

The 18-200-kw transformers are General Electric single-phase units of the oil-cooled core type with primaries multiple wound for 38,100 volts when delta-connected and 66,000 volts when Y-connected. The secondaries are wound with two distinct windings for supplying the rotaries in series, each winding giving 370 volts; 50 per cent starting taps are provided in the secondary windings. Those transformers are used in conjunction with the 300-kw rotary converters, there being three single-phase transformers to each pair of rotary converters.

The nine 185 kw transformers used in conjunction with the 500-kw rotaries at Waukesha Beach, have the same arrangement of primaries as above, but the secondaries are wound for 430 volts and have 1/3 and 2/3 starting taps. The six transformers installed in the West Allis substation are also single-phase, 185-kw units, but the primaries are wound for 13,200 volts and the secondaries for 430 volts. These secondaries also have 1/3 and 2/3 starting taps.

OIL SWITCHES

The high-tension oil switches (see Fig. 13) in all of the substations described are of the K-10 type, which is a top-connected switch designed for open wiring. It is made up of single pole elements and may be operated either by hand or by solenoid. This switch requires no masonry cells, each single pole element incorporating the advantages of a brick compartment in itself. The oil receptacles which constitute the body of the switch are made of steel boiler plates and support the switch leads and operating parts. The insulators are of the built-up type, having porcelain ends, and intermediate sections of a special insulating material with projecting washers to give a very large creepage surface. After these insulators have been assembled they are filled with compound and are clamped and supported separately on iron plates which are in turn bolted to the top of the oil tank. This construction permits the removal of parts without dismantling the switch. The stationary contacts are supported at the bottom of the insulator and consist of a double set of flared fingers which prevent pitting at the contact surfaces. A horizontal contact bar with wedge-shaped blades closes the circuit. This bar is connected to the operating mechanism by a series of treated wooden rods and in a set of three switches, forming a three-phase group; these bars are in parallel and are operated in a vertical direction to open or throw the switch. The drop of these contact bars interrupts the circuit, producing a double break or two breaks in series in each of the single pole elements.

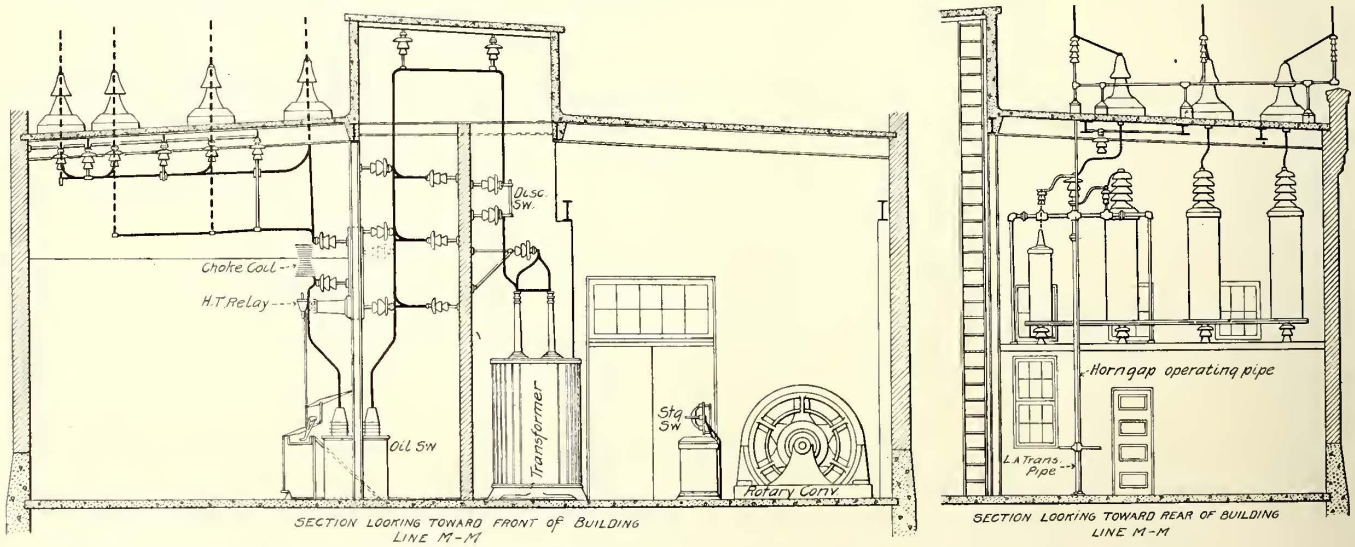


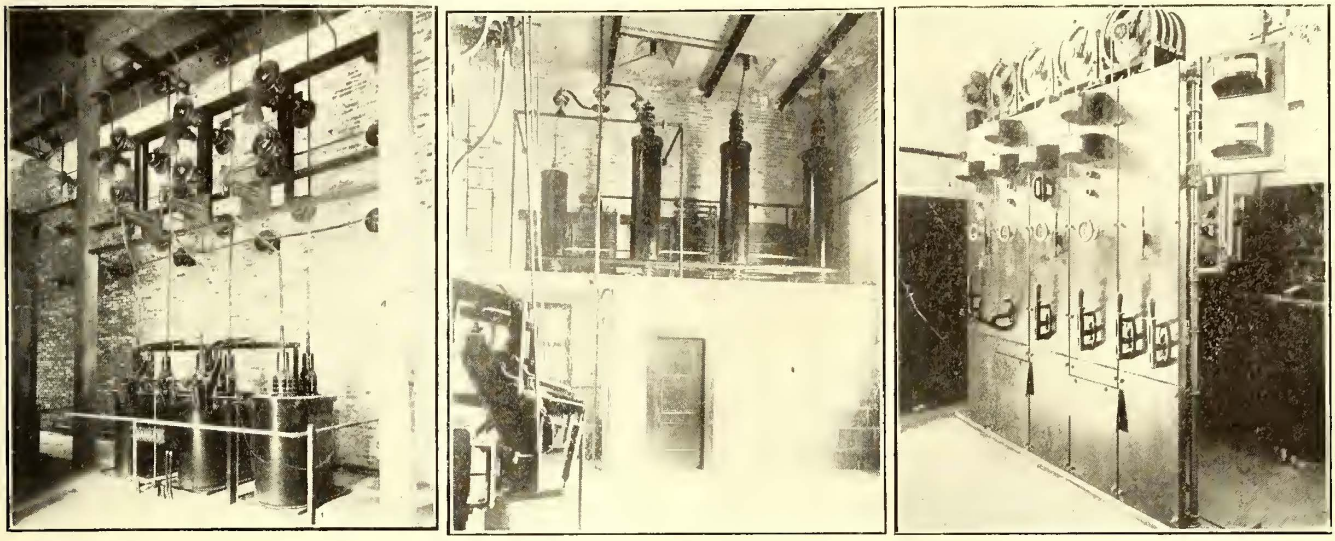
Fig. 11—Milwaukee 1200-Volt Line—Sectional View of Typical Substation. (For Plan, See Fig. 9)

LIGHTNING ARRESTERS AND SWITCHBOARD

The lightning arresters are of the electrolytic type, being aluminum cone-shaped plates housed in steel tanks. The tanks are of such a capacity as to hold an ample quantity of electrolyte and oil. Fig. 14 gives an illustration of these lightning arresters as installed in the Waukesha Beach substation. The three-phase legs are shown with the latest type of high tension

out-door bushings. The horn gaps are placed on the roof of the substation just above the ceiling bushings and are operated by a rod brought down into the substation.

The switchboards each consist of five panels, two low machine panels, two high machine panels and one 1200-volt feeder panel. There is also a swinging bracket. The most important items of equipment on the high machine panels are the circuit



Figs. 13 to 15—Milwaukee 1200-Volt Line—Waukesha Beach Oil Switches, Lightning Arresters and Switchboard

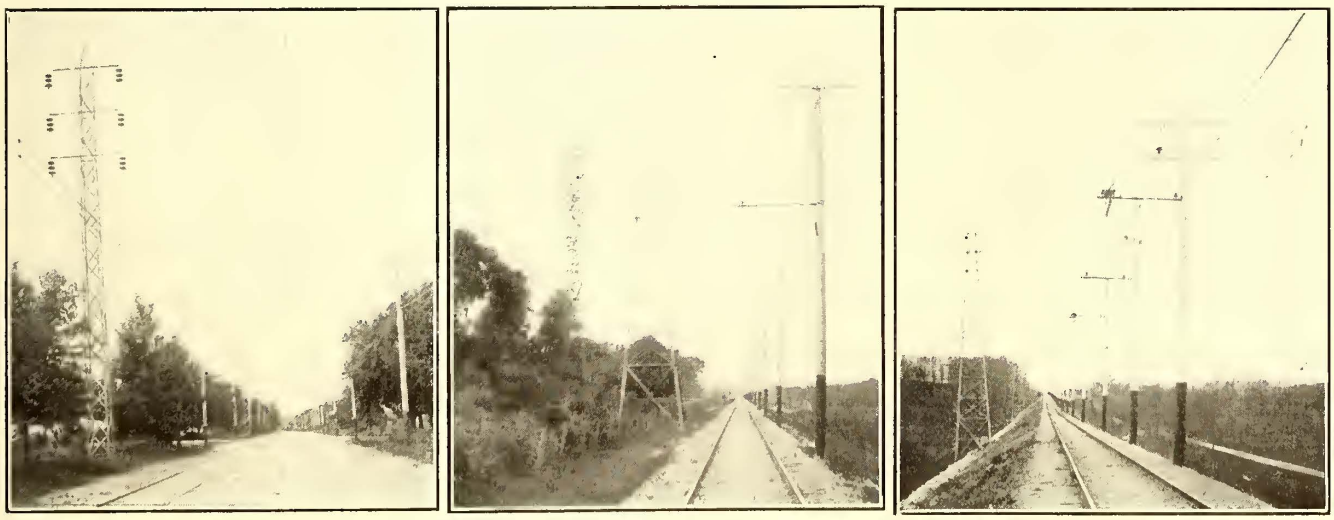
breakers, rheostat hand-wheel and power-factor meter. The circuit breakers are mounted on the back of the board and barriers are provided to eliminate all danger of flashovers; they are operated by handles mounted on the point. The equipment of the low machine panels is similar to that of the high machine panels, with the exception that a switch is substituted for the circuit breaker and an ammeter is provided.

The 1200-volt feeder panel is equipped with both a circuit breaker and a switch with the circuit breaker tripping device brought to the front of the board. The swinging bracket is furnished with two volt-meters and the sub-bases are provided with the wattmeters. Fig. 15 shows a view of one of these switchboards and it will be noted that in this instance the rheostats are mounted above the board. This is because there was no room on the ground at the back of this particular board for their reception, where there is sufficient room they are installed on the ground. All of the switchboard equipment, including instruments, was manufactured and supplied by the General Electric Company, but the panels were made and equipped in the shops of the Milwaukee Electric Railway & Light Company.

TRANSMISSION LINE

The transmission line from Kilbourn to Watertown is owned by the Southern Wisconsin Power Company and was constructed to feed the railway system of the Milwaukee Electric Railway & Light Company from the hydroelectric development on the Wisconsin River.

The distance between Kilbourn and Watertown is approximately 70 miles. At present the potential is 38,100 volts with the transformers connected in delta, but eventually connections at 66,000 volts will be used. The transmission line is in duplicate for the entire 113 miles from Kilbourn to West Allis and is carried on steel towers between Kilbourn and Waukesha Beach, the remainder being carried on wooden poles. The steel tower line will extend to West Allis in the near future and then the voltage will be raised as explained. Stranded copper wire of No. 0 gage is employed between Kilbourn and Watertown, while stranded aluminum is used between Watertown and West Allis, the aluminum conductors having a current carrying capacity equivalent to No. 0 copper wire. Between West Allis and St. Martins the transmission line is also in duplicate and consists of No. 2 copper wires carried on wooden poles. From St. Martins to East Troy and from St. Martins to Burlington the transmission line is single (three wires); it is carried on wooden poles and consists of No. 2 copper wires. A ground wire if desirable will eventually be strung throughout from West Allis to Watertown, and between Watertown and Kilbourn it is possible that two ground wires will be employed.



Figs. 16 to 18—Milwaukee 1200 Volt Line—Examples of High-Tension Towers and Combined Trolley and Feeder Line

The transmission line throughout is a most excellent piece of construction work consisting of galvanized steel towers bolted together on the ground. Figs. 16 and 17 are representative of the transmission line. The insulators are of the suspension type and each consists of three units. Fig. 19 gives a close view of the high-tension roof bushings. Fig. 20 shows very clearly the way the transmission line is carried on the

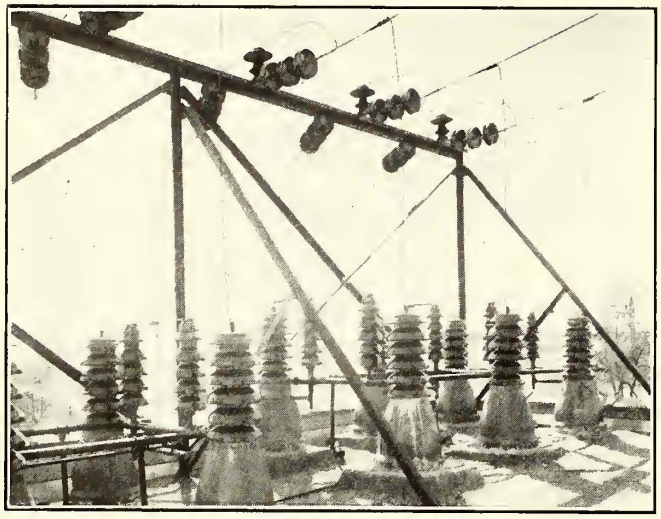


Fig. 19—Milwaukee 1200-Volt Line—High-Tension Roof Bushings

roof of substations and the manner of tapping. The horn gaps for the lightning arresters are in the background.

OVERHEAD CONSTRUCTION AND TRACK

The overhead construction on the interurban roads is the same as when single-phase equipments were in use. It is of the catenary suspended type on all 1200-volt sections. The accompanying table will give the more important detail covering the trolley, track and feeders. For convenience the distances between the substations is also given in this table:

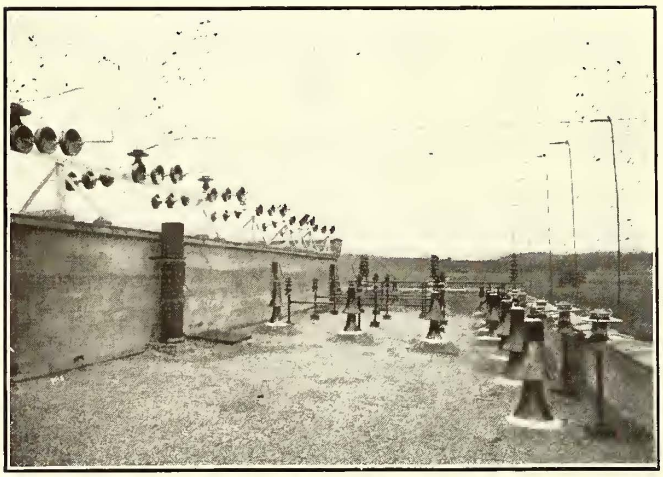


Fig. 20—Milwaukee 1200-Volt Line—Tapping Transmission Line on Substation Roof

	Watertown to Waukesha Beach	Waukesha Beach to West Allis	West Allis to East Troy	West Allis to Burlington
Feeder material	Aluminum	Copper	Aluminum	Aluminum
Feeder size	795,000 circ. mil.	500,000 circ. mil.	795,000 circ. mil.	795,000 circ. mil.
Trolley type	Single bracket catenary	Double span	Single bracket catenary	Single bracket catenary
Trolley size	No. 00	No. 000	No. 00	No. 0000
Track	Single	Double	Single	Single
Distance	27.42 miles	16.04 miles	28 miles	27.07 miles

The feeders are carried on the same poles as the trolley. Fig. 18 gives a good general idea of the construction. The pole lines are a splendid example of interurban railroading; the poles are all painted, are perfectly straight and are kept in perfect alignment. The track is well ballasted throughout the entire system; 80-lb. rails are used for the major portion of the distance.

SERVICE

The density of traffic varies with the season of the year. During the winter months the trains running on two hourly headway in each direction take care of the business, but in summer trains are run on one hour headway regularly and often several sections of two, three and four car trains are necessary to take care of the traffic. The holiday traffic is abnormally heavy. On holidays it is a common practice to haul as many as three trailers with one car and during the busy hours every day one or two trailers are usually hauled. The weight of each trailer is about 35,000 lb. The 1200-volt cars run right into the city of Milwaukee to the terminal station in the Public Service Building.

INTERLINE BAGGAGE

At the meeting of the Central Electric Accounting Conference on the steamer Greyhound on June 25 Water Shroyer, auditor Indiana Union Traction Company, led a discussion on the subject of "Interline Baggage." Supplementing the reference to the discussion on this subject in the report published in the issue of the Electric Railway Journal for July 2, 1910, Mr. Shroyer has furnished the following statement of his remarks:

"The subject of interline baggage is one that has not been discussed heretofore by the members of this conference, presumably for the reason that it has not been considered important from a revenue point of view.

"While to my knowledge there has been no serious objection to the present system of handling this class of business, it appears that some improvement might be made that would assist materially in the auditing work. I would suggest, therefore, that an interline excess baggage check be adopted, providing a coupon for each road over which such baggage is handled, thus conforming with the present method of handling interline tickets and freight way bills. As additional coupons are necessary only in case of a movement over more than two lines, the check may be printed separate from the regular form and on light weight paper. These forms may be made up and forwarded by the auditor's office of the forwarding line to the auditor of the intermediate line, thereby giving the latter a record of the movement, which he does not have under the present system.

"The form of the interline excess check proper need not differ materially from the present form, but in order that such checks may be readily identified they should be printed on a different color tag board and be given an entirely different serial number, using the prefix 'I,' indicating 'Interline.' This will not only save time in assorting in the accounting office, but it will also enable the agents at junction points to identify the checks readily, thereby insuring a prompt transfer to connecting line. A different serial number will assist to some extent in verifying the foreign line's report, enabling a check to be made from the conductor's train record of baggage handled.

"Another matter that might be given consideration at this time is the proper method of accounting in connection with the checking of interline baggage on Central Electric Traffic Association mileage. The Traffic Association has this matter under consideration at this time, and as it will probably recommend the use of a mileage ticket, it would seem advisable for the accountants to be ready to make such recommendations as are necessary to avoid any complications in the accounting work and establish uniform practice relative to reports and manner of settlement between lines."

The Bluegrass Traction Company, Lexington, Ky., has tendered Gov. A. E. Willson, of Kentucky, the use of a special train of cars to tour the Bluegrass country when the Governors' conference is in session in Kentucky in November, 1910.

ANOTHER VOLUME OF THIRD AVENUE RAILROAD CORRESPONDENCE

Frederick W. Whitridge, receiver of the Third Avenue Railroad Company and of the Union Railway Company, of New York, has published Volume III of his correspondence with the Public Service Commission of the First District of New York. Vols. I and II were reviewed in the ELECTRIC RAILWAY JOURNAL of Feb. 20 and Aug. 7, 1909. Volume III contains 464 pages exclusive of index, and is prefaced by the following statement:

"This third volume of correspondence with the Public Service Commission, like the preceding volumes, requires little comment.

"The flood of communications from the commission has somewhat abated, and it has a new transportation engineer, who is a man of sense and some experience, but generally speaking, time, experience and even the breath of adversity which touches us all, have passed over the commission and left it unchanged and scathless. Its work in regulating me is here recorded, but I am informed (I hope correctly) that in other directions it has done marvelous things, and that having secured from the Long Island Railroad Company copies of its schedules for the last five years—amounting to some tons of printed matter—it has been able, after a study of those data, to find a method by which all the trains on the Long Island Railway will hereafter be on time.

"I had intended to print in this volume the report of a speech of the chairman of the commission made on May 25. That report contains, however, such gross misstatements of fact and is in such shocking taste, that the chairman probably is, and his colleagues much more probably are, by this time, ashamed of it. 'Keep your temper' and 'Tell the truth' are sound rules of controversy, and it is also true, and the chairman ought to be able to find comfort in the thought of it, that honest laughter is incompatible with malice and far removed from spite.

"I assume that some plan for the reorganization of the Third Avenue Railroad Company will shortly be approved by the commission, or otherwise be carried into effect, and this receivership will end. This, therefore, will probably be the last volume I shall have occasion to publish, and I hope that students of State regulation may, hereafter, find this record of what the commission has actually accomplished in one branch of its business, and of the manner in which the commissioners went about that business, of interest and possibly of value.

"From it all, I think it appears that, while the Public Service Commission in the First District might have been useful and even valuable, it is almost incredible that it should in this instance have caused the needless expenditure of so much time and money to so little purpose.

One of the early letters in the volume gives Mr. Whitridge's views on appraisals in answer to the request by the commission for certain data. Mr. Whitridge's reply to Mr. Eustis was as follows:

"I have yours of the 17th inst., in which you request me to furnish you with certain data which you say is most urgently needed in connection with your 'Appraisal Work.'

"In reply thereto I have to say that in view of my correspondence with your commission on the subject of appraisals and of the apparent unwillingness of the commission to define its position in respect thereto, I have come to the conclusion after the examination of the statutes that your 'Appraisal Work' is one that you have no business to undertake at the public expense. It is extra legal, if not illegal, and may prove very mischievous. I shall, therefore, be unable to furnish you with any information whatever for use in your 'Appraisal Work' except upon an order of the Court, the request of the Third Avenue Bondholders' Committee or such legal order as the commission may itself make. I am sure you will understand that I very much regret to come to this decision, for I am particularly anxious to work in harmony with the commission, and I dislike any disagreement with them, but I think you will recognize that my views being what they are, I cannot do otherwise."

A few other letters addressed by Mr. Whitridge to the secretary of the commission, giving his views on various subjects, follow:

"NEW YORK, Oct. 22, 1909.

"I have your letter of the 21st, informing me that all of my reports require correction in respect to certain matters mentioned therein. I do not quite understand what is referred to. All of the interest paid by me and all of the taxes are shown in full properly proportioned in each monthly report. Of course, I do not keep any depreciation account, because I have no capital account, and it is obvious that there is no sense in keeping a depreciation account when all the money we can get from any source is being expended upon the property.

It occurs to me that you may possibly refer to the unpaid franchise tax, but the courts and the railroads have been endeavoring for nine years to find out what that tax is, and I am not in position to apportion it or take any cognizance of it until I do so ascertain. I may mention, however, for your information, that some months ago I made a proposition for the settlement of these taxes for all prior years and for the fixing of an amount for future years. On reference to the Attorney General, the Honorable William N. Cohen was appointed by him to consider the matter, and he thought it necessary to obtain an opinion from the Court of Appeals upon one point, which has now been rendered, and I hope within thirty days to carry that compromise through to pay all the back taxes through the issue of receiver's certificates, and thereafter, of course, we will have a definite amount which can be charged pro rata each month."

"NEW YORK, Nov. 27, 1909.

"I have your letter of the 23d instant, enclosing final order in case No. 1170, by which I am directed to see that all my cars are equipped with suitable apparatus for heating, and that the temperature in all of them shall be maintained at not less than 40 nor more than 65 degrees Fahrenheit, and that a copy of these regulations be placed in the cars; and finally, you ask whether this order of the commission is accepted and will be obeyed.

"In reply, I would say that all the cars controlled by me are equipped with the best heating apparatus known, and I sent to you, months ago, a copy of my regulations in respect to the same, all of which I assume you approved, as I have heard nothing to the contrary. I consider that I have thus done everything in my power to effect the result you have seen fit to order.

"I accept your order No. 1170, and so far as it is applicable to me personally I shall obey it cheerfully. But whether the temperature will be maintained as you have ordered that it shall be maintained, the Lord only knows."

"NEW YORK, Jan. 31, 1910.

"I have yours of the 29th, in which you ask me to report defects in my cars classified under forty-five different heads, and also request that in case any defects occur to the cars which are not included in any of these forty-five heads they should be reported under some other head.

"I have no doubt that these statistics will be enormously interesting, and I shall take great pleasure in supplying them. I think it is possible that you may be able to employ somebody, if you will pay sufficient salary, who will agree to read them."

The three following letters relate to a complaint filed by a passenger against the condition of the Fort George cars:

"NEW YORK, Jan. 28, 1910.

"SECRETARY PUBLIC SERVICE COMMISSION, New York City.

"Dear Sir: The undersigned desires to complain about the filthy condition of the cars leaving Fort George about 7.30 a. m.

"As they are a serious menace to the health of the people who are compelled to use them, a complaint will also be made

to the Department of Health and to the receiver of the Third Avenue Railroad Company.

(Signed) Irving C. Lavendol."

"New York, Feb. 2, 1910.

"Secretary, Public Service Commission, New York City.

"My Dear Sir: I have yours of the 1st instant, referring to the complaint of Mr. Irving C. Lavendol. I have investigated Mr. Lavendol's complaint in consequence of a letter received from him a few days ago, and I really do not know what he is talking about, except that the cars at the time he speaks of are as they are left by the persons who use them between 6 and 7 in the morning. The cars are clean when they go out. I enclose a copy of my previous letter to Mr. Lavendol.

"Receiver."

"New York, Jan. 29, 1910.

"Mr. Irving C. Lavendol, New York City.

"My Dear Sir: I have yours of the 28th, in which you speak of the filthy condition of the cars leaving Fort George about 7.30 a. m., and say that, as they are a serious menace to the health of the people who use them, you propose to inform the Board of Health and the Public Service Commission: inferentially I suppose of my misconduct in allowing them to remain in that condition.

"In reply thereto I beg to inform you that between the hours of 6 and 7 a very large number of your fellow citizens, who are engaged in rough manual labor, use the cars going in the direction of Fort George to reach the scene of their labors. They are much less particular than you in their habits, and after they have used the cars, which were clean when they got into them, I find that they are apt to be in the condition which is so offensive to you and to all right-minded people. This, I believe, is a temporary condition, as the labors in which they are now engaged will, within a few months, be completed, and this travel will cease.

"In the meantime I do not feel justified in building a barn at Fort George for the purpose of washing the cars after these particular fellow citizens of yours and mine have got through using them, and I suggest that you should invite the Board of Health, and above all the Public Service Commission, to examine these gentlemen or what other cause there may be for the condition of the cars to which you refer, and get them to provide, suggest, or order some immediate remedy for these conditions; perhaps they or some of them will be able to prevent these particular fellow citizens of ours from chewing tobacco or gum, from expectorating, from drinking absinthe, from abstaining from soap and water and from exuding offensive effluvia from their bodies. Receiver."

The following letters refer to the operation of pay-as-you-enter cars by the Third Avenue Railroad Company:

"New York, April 13, 1910.

Receiver, Third Avenue Railroad Co., New York City.

"Dear Sir: By resolution of the Board of Aldermen, the Public Service Commission has been requested to take such steps as might be necessary to eliminate the inconvenience which passengers are subjected to on pay-as-you-enter cars at the various terminals, from which such cars are operated. As you well know, due to the fact that the majority of passengers do not have the proper change, passengers are compelled to wait in line while the conductors make change and collect the necessary fares before they can enter the cars. These conditions could be eliminated if cashiers, whose duty it would be to make change, were installed in a small booth at such points. All passengers could then be required to obtain the necessary change before boarding the car. Please take this matter under consideration and reply by the 25th inst. Secretary, Public Service Commission."

"New York, April 14, 1910.

"Secretary, Public Service Commission, New York City.

"Dear Sir: I have yours of the 13th, referring to the resolution of the Board of Aldermen requesting me to take steps to eliminate the inconvenience to which passengers are subjected on pay-as-you-enter cars, adding that, as I well know, 'the majority of passengers do not have proper change.'

"As a matter of fact, I do not know anything of the kind. My personal observations have given me the impression that at least three-quarters of the passengers who get on the pay-as-you-enter cars have their nickels ready. If, however, I am mistaken about this, I am not at all sure that the conditions could be eliminated by installing cashiers in small booths at terminal points and endeavoring to compel passengers to obtain the necessary change at those booths. I do not know how they could be 'required' to do it. They could be requested to do it, but I doubt whether it is possible for railroads to eliminate inconveniences caused by the stupidity of the people themselves, any more than it is possible to keep cars invariably clean and sweet smelling which are used by people with filthy habits, which seemed to be the notion underlying the last resolution the Board of Aldermen levelled at me.

"I am disposed, as you know, to do anything I can to gratify the Honorable Board of Aldermen and the Public Service Commission, and if you can get me a permit to put a small booth in front of the Post Office, at which a cashier can be stationed to make change for the patrons of the road, and will tell me how either you or I or the Aldermen can compel people to go there to get change, I am prepared to go to the expense of paying for the cashier and building the booth. My notion is that the experiment would disappoint the Aldermen and yourselves, and therefore I should only be willing, in the first instance, to install one booth at the most crowded terminal as a matter of experiment. Receiver."

"New York, May 5, 1910.

"Receiver, Union Railway Co., New York City.

"Dear Sir: Following a resolution from the Board of Aldermen, we made investigations as to conditions at the 155th Street terminal of your lines. Our observations show that in this special case the delays to passengers boarding pay-as-you-enter cars are not caused by the necessity of conductors making change, but by the passengers leaving the car at the forward end when the car is entering the terminal. This delays opening the entrance doors, making it impossible for passengers to enter until all those wishing to alight have left the car.

"It is believed that if the man who is stationed at this point would assist in this, by opening the doors corresponding to the front exit on the return trip, and by announcing that the passengers should leave by this door, considerable time in some cases could be saved, and the conductor could then start collections as soon as the station was entered. Please reply.

"Secretary, Pub. Serv. Commission."

"New York, May 7, 1910.

"Secretary, Public Service Commission, New York City.

"My Dear Sir: I have yours of the 5th instant in respect to a recent resolution of the Board of Aldermen about pay-as-you-enter cars. In your letter of April 13 you informed me that 'the inconvenience to passengers was, as I well knew, due to the fact that the majority of passengers do not have the proper change,' and you suggested a remedy which, in my opinion, would not be a remedy, and which is impracticable, although I offered to try it experimentally.

"In your present letter you inform me that you have been making certain investigations and observations, the result of which shows that the inconvenience to passengers in the case which you observed and investigated, was not due to the cause to which you attributed it, in your letter of the 13th. The remedy which you propose in your letter of May 5th for the inconvenience which your observations and investigations had detected in the case therein referred to, would involve either the employment of an additional conductor, which I cannot afford, or the practical abolition of the pay-as-you-enter feature, to which I am unwilling to assent.

"I submit to you and to the Board of Aldermen that the real objection to the pay-as-you-enter cars is that people are obliged to pay their fares before they can enter the cars.

"Receiver."

The volume concludes with a letter which Mr. Whitridge sent to the commission enclosing reports on inspectors of the

commission, published on page 953 of the ELECTRIC RAILWAY JOURNAL for May 12, and a letter from Mr. Whitridge to James N. Wallace that he would be glad to retire as receiver of the Third Avenue R. R. if any considerable number of bondholders should consider that his services were imperiling the property. This letter was published on page 1112 of the ELECTRIC RAILWAY JOURNAL for June 25.

REPORT OF THE COMMITTEE OF FIFTY

The Committee of Fifty, appointed in Detroit to investigate the street railway situation, has embodied the results of its consideration of the problems involved in a full report, which has been published in book form. The book covers the conclusions reached on every subject but that of the value of the property. No decision in which the full committee joined was reached on that matter. The sub-committee on appraisal presented a report concerning the valuation of the property made by Frederick T. Barcroft, but the values as determined were not accepted by the full Committee of Fifty.

The introduction to the report states that expert engineers and other experts were employed to assist the committee and its sub-committees wherever the services of trained men and minds were deemed essential in gathering the facts and figures necessary to a complete investigation. The labors of the committees extended throughout practically a year.

The action of the various sub-committees on the many questions concerned is shown by the following abstracts of the reports:

STATISTICS AND REGULATION

The committee on this subject secured information from railway companies in Buffalo, Cincinnati, Chicago, Detroit, Denver, Minneapolis and St. Paul, New Orleans, Pittsburgh and Philadelphia, and compiled the data in tabular form. Table I, published herewith, is a summary of the figures relating to earnings, expenses, population, traffic, etc. Table II shows comparative fares and various costs as compiled by the committee. Other costs are shown in Table III.

The committee also submitted diagrams to show that the peak load in Detroit from 5 to 6 p. m. is greatly in excess of that in the other cities, due to the fact that the workingmen's tickets, which are sold at eight for 25 cents, may be used during that hour. The committee recommended the adoption of the point of destination transfer used in Buffalo. The members of this committee were Frank H. Conant, William C. Noack, Frank Danzer, A. J. Dunneback, Russell A. Alger, John H. Brown and Joseph E. Schiappacasse.

APPRAISALS

The report on this subject, independent of the detailed report on the appraisal, contains brief references to several of the points brought out in the investigation, including the following:

"No more buildings should be erected by this corporation without approval by the new civic plan and improvement commission.

"Power plants, including buildings, have been appraised like the entire property, as a going concern, and the values reached upon them have been arrived at by considering them from their output standpoint absolutely.

"The track has been classified to various types of construction, and investigation discloses that there are 21 types of rail used in this city, 91 types of track formations, and 204 classes of track construction, including pavement.

"Two of each type of cars were examined very carefully and checked with the original specifications in every detail, and then every car in the city was inspected for its present condition and classified to the proper type to which it belongs. The electrical equipment was gone into equally thoroughly, and also the equipments as they came into the shop for repairs were checked in order to reach a fair idea as to the general condition of the equipment as a whole.

"It was impossible to ascertain what proportion of the shops should be charged off to the outside lines.

"Overhead charges are based on the necessary charges required in register, interest charges, interest items during construction, engineering and administration charges and such other charges as are incident to any similar construction. This item has not been depreciated due to the lack of any defined purpose to which this appraisal is to be applied. Expiring franchises naturally destroy this amount to a large degree, and it becomes non-existent.

"The engineers and others who have been associated as assistants, collaborators and advisors of the director of appraisal, Frederick T. Barcroft, on the various parts of this work, have done their work thoroughly, conscientiously and well, and it is a pleasure to give publicity to their names. They are: Frank E. Johnson, Walter H. Evans, Fred H. Froehlich, John C. McCabe, William D. Ray, Albert H. Sisson, Harry Knowlton, William E. Richards, H. D. Sanderson, Edward C. Dunbar, Fred G. Simmons, Herbert L. Russell, Henry D. Miles, Frank W. Hall, Daniel M. Deininger, Fred S. Quackenbush, George D. Mason, Charles Kotting, Edward I. Stimson, John H. Tigchon, Claude M. Harmon, James B. McKay and Homer Warren.

"The report of Prof. Henry C. Adams on franchise values is based on the physical valuation of the property as found by Mr. Barcroft, applied to car-mileage under operating conditions as they now exist. The present value of the unexpired franchises as determined under above conditions is $2,810,613.

"The net earnings for the year 1908 from the lines upon which the franchises have expired was $799,319. Deducting 6 per cent allowance on physical values as determined by appraisal, $234,376, would leave an earning power of $564,942.77 per annum, or the rental value to the city of the expired franchises conditioned upon operating conditions continuing as at present."

The members of this committee were Edwin A. Burch, acting chairman; Louis R. Geist, William M. McMahon, W. W Hannan, Fred C. Hees and D. W. Simons.

The report of Professor Adams on the valuation of franchises said in part:

"The significant fact in a municipal railway franchise consists is the right conferred by the common council to invest capital on the city streets. The right conferred is the right of limited and conditioned occupancy, and the value of such a right is measured by the unusual profit that may be gained from its exercise. Commercially speaking, the basis of franchise value is the revenue which accrues from operation in excess of operating expenses and of a reasonable return upon the investment in the physical plant. This remainder is, in fact, a surplus revenue which, in the case of a street railway operating on a franchise, is protected against competition by the terms of the ordinances concerned, and, provided the amount of this permanent excess profit can be determined for a year, the value of the underlying franchise is obtained by computing its present worth for the number of years which the franchise has to run.

"In this report I have not undertaken to express an opinion upon any of the strictly legal questions that arise in the interpretation of the ordinances and resolutions which confer operating rights upon the Detroit United Railway. The report of Mr. Webster, chairman of the legal committee, is accepted as final in regard to all such points.

"With regard to minor points concerning which differences of opinion may exist, this report assumes that the use made by the company of the rights conferred is the interpretation which must be placed upon the ordinance, or the ordinances, granting those rights.

"The assumption that the franchise should be valued according to the actual use made of the rights which they confer, rather than the possible use that might be made of them, enables the problem before the appraisal committee to be stated as follows: What were the several rights to operate an electric railway over the streets of the City of Detroit worth on March 1, 1909, under the conditions of actual operation.

"The financial arrangements of the corporations included in

the system are somewhat interdependent, but that fact has no bearing on the problem in hand. It is not necessary to consider the mortgages or the manner in which they are placed, or to inquire whether the securities issued on one property are in any way bound up with the securities issued on the other properties. The question of the present worth of an operating right must be determined from the point of view of operation exclusively.

"It is evident that any feasible method of computing the value of the unexpired rights of operation must conform to the accounts as kept by the operating companies.

"Each of the main companies, namely, the Detroit United Railway, the Rapid Railway, the Detroit, Jackson & Chicago Railway, and the Detroit, Monroe & Toledo Railway maintains an independent set of operating books from which may be taken the operating revenues and operating expenses of the respective companies. With one minor exception, each of the above-named companies has its own power plant, and furnishes its own power, so that no embarrassing questions touching the rental of power are involved.

"The treatment in the accounts of the three independent interurban companies operating within the city of Detroit is as follows: The revenue collected up to the city limits is credited to the revenue accounts of the interurban companies, but the revenue collected within the city limits is credited to the Detroit United Railway and is separately stated in the accounts of that company. As against this revenue the Detroit United Railway pays each of the interurban companies named two cents per car mile within the city limits, this payment being regarded as an operating rental charge and is assumed to cover repairs, maintenance, depreciation and rental proper for interurban cars not the property of the Detroit United Railway, operating within the city limits.

"The Griswold street passenger station, which is used jointly by the three independent interurban companies above named, and by the interurban cars of the Detroit United Railway (as, for example, the Pontiac cars) is maintained and operated by the Detroit United Railway, but the three independent interurban companies pay a flat rental of $60 per month as their portion of the expense of maintenance and operation. The difference between these amounts and the actual expense, chargeable to the maintenance and operation of the station is regarded as an expense incident to the several divisions of the Detroit United Railway assigned to interurban service.

"No accounting record is made of the fact that motormen and conductors on the pay roll of the independent interurban lines operate cars within the city limits, for the reason that a sufficient number of crews on the pay roll of the Detroit United Railway is assigned to the operation of interurban cars outside of the city limits, to balance the interurban crews running cars within the city limits. I see no reason to question the propriety of the above-named adjustments so far as they have any bearing upon the franchise values within the city. The accounts of the Detroit United Railway Company permit, with one or two exceptions, an exact separation of revenue as between the city lines and the divisions of the Detroit United Railway operating outside the city.

"The usual rule for separating operating expenses in cases of this kind is to accept car-mileage as a basis of separation. When, however, one considers the many differences which exist between the operation of an interurban and of a city line, the propriety of accepting car-mileage as the basis for the localization of expenses at once arises. The rule adopted by this report in place of the straight car-mileage pro rate is as follows: The expense per car-mile on the interurban roads which maintain independent operating expense accounts is first computed and the rate of expense thus determined is applied to the car-miles made on the interurban divisions of the Detroit United Railway; the sum thus arrived at is then subtracted from the total operating expense of the Detroit United Rail-

TABLE I.—EARNINGS, EXPENSES, PASSENGERS CARRIED, POPULATION, ETC., IN 10 CITIES. COMPILED BY COMMITTEE ON STATISTICS AND REGULATION, DETROIT.

Cities.	Population per mile of track.	Miles of track.	Annual interest charges.	Gross earnings per car-mile.	Operat. expenses—Per cent of gross earnings.	Operat. expenses—Per car-mile.	Cars in daily use.	Passenger car-miles.	Passenger car-hours.	Revenue passengers.	Transfer passengers.	Employee and passes.
Buffalo	1,074	372.59	$700,633	$0.2632	61.92	$0.1629	503	19,555,087	2,217,464	93,922,696	44,452,165	1,336,884
Cincinnati	1,933	219.88	.....	.225	....	...	600	.....	.....	88,334,477	30,057,624	721,330
Chicago Railways Company	4,340	306.445	1,462,057	.248	66.83	.161	879	43,857,066	5,757,994	217,400,335	153,295,766	2,947,287
Chicago City Railway	4,340	252.29	815,693	.252	64.81	.176	809	33,646,585	3,887,087	167,508,745	104,468,226	10,814,229
Detroit	1,171	399.22	966,390	.2305	59.93	.1452	481	23,496,579	2,287,242	115,044,608	35,958,059	5,008,743
Denver	733	212.75	668,269	.273	48.22	.131	231	11,024,181	1,146,883	59,760,693	17,749,726	1,126,057
Minneapolis and St. Paul	1,455	368.39	951,122	.295	49.47	.146	570	21,683,889	2,367,510	123,508,388	39,830,225	.....
New Orleans	1,909	196.49	.....	.216	60.88	.131	378	18,660,238	2,080,890	77,459,499	15,492,363	1,479,657
Pittsburgh	1,114	491.44	1,883,300	.278	58.4	.175	877	36,463,500	4,206,628	201,622,863	28,787,509	4,279,933
Philadelphia	1,455	626.32	897,220	.228	52.7	.120	1,558	81,161,348	10,263,800	426,606,891	83,448,725	2,733,407

TABLE II.—FARES AND COSTS OF DIFFERENT ITEMS. COMPILED BY COMMITTEE ON STATISTICS AND REGULATIONS, DETROIT.

Cities.	Average fare, total passengers.	Average fare, revenue passengers.	Costs per passenger, exclusive of fixed charges.	Cost of power per kw-hour.	Coal per ton.	Cost of track construction per mile—Single track, 90-lb. rail, concrete foundation.	Second track, 90-lb. rail, concrete foundation.	Single track, 140-lb. rail, concrete foundation.	Second track, 140-lb. rail, concrete foundation.	Paving per mile, single track—Brick on concrete foundation.	Asphalt on concrete foundation.	Granite block on concrete foundation.
Buffalo	.03607	.05365	.037	$0.00622	$2.25	$18,835	$37,670	$24,711	$49,422	$9,240	$14,492	$14,492
Cincinnati	.0366	.0493	...	.006	2.50	21,000	40,000	....	....	....	....	....
Chicago Railways Co.	.02883	.02055	.033	.010	2.13	32,000	64,000	....	....	....	....	11,000
Chicago City Railway	.0295	.0498	.03297	.009	1.80	32,000	64,000	....	....	....	....	11,000
Detroit	...	.0461	...	.005125	1.65	28,566	59,378	....	....	6,101	6,748	10,267
Denver	.0374	.0492	.040	.006	1.69	14,000	25,000	....	....	....	....	14,000
Minneapolis and St. Paul.	...	.0513	.033½	.005	2.259	....	....	25,978	51,955	....	....	13,860
New Orleans	.0412	.0502	.031	.006	2.81	18,500	37,000	....	....	....	12,145	14,000
Pittsburgh	.0429	.05	.03	.006	1.037	26,500	53,000	....	....	5,000	9,000	12,500
Philadelphia	.03564	.042	.03564	.007	2.58	17,160	35,000	29,040	58,080	7,392	8,290	9,240

TABLE III.—COSTS OF DIFFERENT ITEMS, COMPILED BY COMMITTEE ON STATISTICS AND REGULATION, DETROIT.

Cities:	Cost of track and paving per mile with 2 track 90-lb. rail. Brick 90-lb. rail complete.	Asphalt 90-lb. rail complete.	Granite Block 90-lb. rail complete.	Cost of double truck cars and life average. Cars.	Years.
Buffalo	$56,150	$66,654	$66,654	.....	.....
Cincinnati	.....	.....	.....	$2 750 to $9,000	15 to 20
Chicago Railways Co.	.....	.....	86 000	6.000	.....
Chicago City Railway	.....	.....	86.000	6,500	.....
Detroit	77,682	79.618	90,178	5.300	.....
Denver	.....	.....	56,000	6,500	15
Minneapolis and St. Paul	.....	.....	.....	5,760	10
New Orleans	.....	68,000	72,000	4,000	12
Pittsburgh	6?,000	71 000	78,000	7,500	10 to 12
Philadelphia	56,172	58,760	61,506	5,500	15

way and the remainder is accepted as the amount of expenses properly assignable to the operation of city lines.

"In order to understand the operation of cars within the city limits, and of the statistics and accounts pertaining thereto, it will be necessary to hold in mind a technical definition of a 'line' and of a 'route.' By a 'line' is meant the unit of operation used in the compilation of revenue; that is to say, the revenue collected upon any particular operating line may be taken directly from the books of the company.

"The difficulty so far as computing the value of unexpired operating rights is concerned, arises from the fact that the ordinances of the council give the company the right to operate over streets; whereas two or more lines, as above defined, may operate over the same street, which results in the fact that certain streets are covered by lines operated under grants that expire at varying dates. Moreover, certain streets belonging to a line are used more frequently than other streets belonging to the same line. It becomes necessary, therefore, to divide the line into routes; and a 'route' in this connection is defined as the trip scheduled for cars and crews. For this reason it is necessary in order to work out the problem in hand, to localize density of traffic on certain streets, and also to separate the traffic thus located according as it pertains to lines which operate under grants which expire at different dates. To meet this necessity streets over which franchise rights are conferred are divided into 'accounting units.'

"The revenues which accrue to the several lines may be taken directly from the books of the company (excepting $7,081.96 out of a total, which is distributed to lines on the basis of the revenue earned by each) but the revenue and routes of which the lines are composed are not a matter of record. Car-mileage by routes, however, may be computed from the statements rendered daily to the car accountant showing the number of trips made over each route each day. It is assumed that the revenue of an operative line localizes itself to any portion of the line in proportion to car mileage. Not only is this assumption in harmony with the generally accepted unit theory as applied to street railway operation, but it is inferentially recognized by the common council of the City of Detroit in the requirement that a car started over an advertised route must run to the end of the route. It is not necessary for the localization of revenue to take into consideration the varying weights or types of cars used, for the reason that, as a rule, the same type of car is used on all routes of a given line. The important point to be held in mind is that the revenue is assumed to vary on different parts of the same line according to car mileage.

"The allocation of expenses presents a more difficult problem; for, in the first place, the books of the company do not show the expenses separately by lines, and, in the second place, car-mileage cannot be accepted as a satisfactory basis of assignment for the reason that a light car used on one line should not carry with it the same ratio of expense as a heavy car used on another line. In strict theory, it would be necessary to standardize car-mileage. I endeavored to secure from the company data as to the weight and type of the cars used on the various lines and other pertinent data by which a standardization of cars in service might be made, but was informed that this could not be given without considerable trouble and expense. Moreover, the frequency of stops made is quite as important as the weight and type of cars, in determining the normal unit of expense incident to the operation of electric cars. Information of this sort could not be obtained from the company. The rule adopted by this report localizing expenses is not claimed to be a perfect rule, but it is believed that it leads to more trustworthy results than would be the case should expenses be localized on the straight car-mileage basis. The following statement expresses the rule.

"First: The operating expense accounts kept by the company permit the separation of expenses incurred for the 'operation of cars' from other expenses. This class of expense covers wages paid conductors and motormen, expense of sanding track, removal of snow and ice, cleaning cars, and other similar expenditures, all of which are independent of the weight or type of the cars. The expense for 'operation of cars,' which amounts to between 43 and 44 per cent of the total operating expenses is, therefore, properly distributed on a straight car-mileage basis.

"Second: The remainder of operating expenses, amounting to between 56 per cent and 57 per cent of the total, is assigned on the basis of passengers carried, rather than on the basis of car mileage. The justification of this portion of the rule rests upon the fact that different kinds and types of cars are assigned according to the demands of the service, and in such a manner that the average loading of a car in proportion to the weight or size of the car is about the same for all lines. Whether this part of the rule for the localization of expense be entirely satisfactory or not, it is certain that it will lead to more nearly correct results than the distribution of expenses on a straight car-mileage basis.

"In one particular it was found necessary to modify the above rule to meet a peculiar condition in the franchises upon which street railways are operated in the City of Detroit. According to the ordinances passed, the so-called '3-cent' lines are excused from any expenditure for 'paving, repaving, or repairing' on the streets, whether within or without the rails, while the 5-cent lines are obliged to provide for such expenditures. It was not possible to obtain the amount expended for this purpose in the case of the 3-cent lines. From an examination of the accounts it is believed that this expense would amount to about 5 per cent of the total operating expense. In order to give the 3-cent lines the benefit of this provision of the ordinance, it was necessary to make a corresponding allowance in the assignment of expenses. The important point in explaining the plant is that expense incurred in the 'operation of cars' is localized on the basis of car-mileage, the remaining expenses being assigned on the basis of passengers carried.

"The Detroit United Railway adopts the rule of a single transfer. This being the case, it is assumed that each of the two lines which unite in carrying a passenger will receive an equal amount of revenue; that is to say, as many transfers will be used in one direction as in the other. It is not claimed that revenue allocates itself equitably as between the 14 operating lines. The deficit on the Depot line, for example, is explained in large measure by the fact that this line carries an unduly large number of non-paying passengers. This, however, is a condition of operation which is reflected in the revenue of the properties operated.

"It has been urged that the 3-cent lines will suffer a loss on account of the expiration of the franchises of the 5-cent lines and that this prospective loss should be reflected in the present value of their franchise rights. The loss referred to will arise, if I properly understand the contention, from the fact that at present the 3-cent lines now collect five cents from a passenger who asks for a transfer, whereas after the expiration of the 5-cent lines' franchises the 3-cent lines will be benefited to the extent of 1½ cents only from the passengers who use transfers. This assumes that the new franchises to be granted will demand a 3-cent service over the streets now occupied by the 5-cent lines. I find nothing in the ordinances which warrant such a conclusion.

"It is clear from the description under which the railways of the City of Detroit are operated that the value of franchises can not be computed without determining the net revenue of operation for selected portions of the streets over which the railway operates. These selected portions are called computing units, and are determined by two considerations:

"First, the fact that traffic on one portion of an operating line is more dense than on another portion of the same line; and, second, the fact that two or more lines operating under different grants may operate over the same street sections.

"It is necessary in order to properly localize net revenue for the purpose of the problem in hand to treat a street as though it were made of a series of sections, each section possessing the same density of traffic and affected by the same franchise conditions.

"The basis of the computation to determine franchise value is the net revenue from operation, and it is evident that this unit may be arrived at by lines, by streets, or by combinations of streets. Assuming the valuation of the physical property to be classified in the same manner, or that by combination of computing units, this net revenue from operation can be determined for whatever classification of physical values is reported to the committee, the next step in the determination of a franchise value is to subtract from the net revenues from operation a reasonable charge for the support of the capital invested as stated in the report on physical values. What remains will be the surplus revenue accruing to the company from the exercise of its rights to occupy the streets for a definite period, and to charge for the service rendered, for that period, the price named in the ordinances. The final step in the determination of the value of unexpired franchise, so far as computation is concerned, consists in computing the present worth of the surplus revenue considered as an annuity continued up to the date when the franchise shall expire.

"A complication arises on account of the fact that lines resting on grants expiring at different dates have operating rights over the same streets. This means that the physical value located on such streets must pertain to the operation of both lines until the expiration of the shortest franchise, but after the shortest franchise has expired, the entire value of the track and overhead constructions must be used for the operation of the line or lines operating on more extended franchises. To meet this difficulty it is proposed to use the net revenue accruing from the operation of both lines, as also the entire physical value pertaining to the streets in question, until the date of the expiration of the shortest franchise. At that date, so far as the franchise problem is concerned, it is assumed that that portion of the surplus revenue which accrues to the line operating on the expiring franchise will have ceased to exist, and that the surplus revenue accruing to the other line or lines is alone concerned; the physical value of the computing unit in question should, however, be reduced by the rolling stock and other elements of physical value which pertain exclusively to the operation of the line whose franchise expired.

"There are not many cases of this sort, but the rule is necessary for working out the problem in hand. It should further be added that it is proposed to apply this rule in the case of those streets over which the lines resting on extended franchises operate by contract as well as over those streets on which the ordinance compels no construction.

"It should be further noted that, quite apart from franchise values, the data supplies the basis of an estimate of the commercial value of the right to occupy certain streets for transportation purposes. The accompanying statement, Table IV, is instructive in this connection. It gives the net revenue for each of the 14 operating lines separately for the calendar year 1908.

"The above rule does not consider the increased value of the unexpired franchises due to the probable increase in the population of the City of Detroit. There is, of course, no way of computing this value. It is purely speculative. In case the committee deems it wise to allow a present value on account of the probable increase in the density of traffic during the years to come, it would seem to me that the amount of such an allowance could best be determined by the committee itself."

Table V shows the franchise valuations as computed by Professor Adams.

TABLE IV.—STATEMENT SHOWING CERTAIN RESULTS OF OPERATION OF LINES OPERATED WITHIN THE CITY LIMITS OF DETROIT, YEAR ENDED DEC. 31, 1908. COMPILED BY PROF. HENRY C. ADAMS.

Line.	Car-miles.	Passengers carried.	Expenses for operating cars.	Expenses other than operating cars.	Total expenses.	Gross revenue.	Net revenue or deficit.	Net revenue or deficit per car-mile (cents).
Jefferson	2,628,121	18,988,855	$160,806	$213,317	$374,123	$642,639	$268,516	10.217019
Woodward	2,827,059	21,022,732	173,590	236,166	409,756	792,219	382,463	13.480965
Michigan	2,703,939	19,949,297	165 445	224,107	389,552	714,085	324,533	12.0022437
South Chene	203,529	1,199,990	12,453	13,481	25,934	27,583	1,649	0.8102727
Third	658,127	5,564,828	40,269	62,514	102,783	197,132	94,349	14.336053
Baker	1,272,866	9,213,990	77,882	103,509	181,391	310,524	129,133	10.145057
Brush	518,067	3,827,819	31,699	43,001	74,700	125,512	50,812	9.808005
Trumbull	915,465	6,411,932	56,014	72,030	128,044	225,049	97,005	10.596286
Depot	110,621	363,480	6,769	4,083	10,852	9,131	*1,721	*1.555256
Fort	2,214,417	13,693.981	135,493	153,836	289.329	457,915	168,586	7.613137
Sherman	2,318,989	16,572,714	141,891	182,940	324,831	456,663	131,832	5.684878
Springwells	252,654	503.168	15,459	5,653	21,112	14,197	*6,915	*2.736873
Crosstown	1.966,697	11,876,230	120.336	131,097	251,433	261,145	9,712	0.4938137
Fourteenth	2,378,603	19,651,849	145,539	216.929	362,468	521,524	159,056	6.686944

*Deficit.

TABLE V.—FRANCHISE VALUATIONS IN DETROIT AS COMPUTED BY PROF. HENRY C. ADAMS.

Franchises classified according to date of expiration.	Net revenue earned under franchise for 1908.	Six per cent on value of physical properties.	Earning power of franchises for 1908.	Franchise life from Nov. 14, 1909.	Present value of franchise.	Present value assuming an annual increase of 6 per cent in future net revenue.
Expired ..... Nov. 14, 1909	$799,320	$234,377				
Fort Street ..... June 30, 1910	113,398	49,741	$564,943			
Woodward Avenue ..... Oct. 17, 1915	88,572	21,941	63,627	7 mos. 16 days.	$39,785	$39,785
Grand River ..... Jan. 1, 1916	225,978	69,978	66,632	5 yrs. 11 mos. 3 days	324,127	394,793
Fort Street ..... Mar. 29, 1917	14,701	4,111	155,980	6 yrs. 1 mo. 17 days	780,549	956,245
Fort Street ..... June 24, 1919	4.989	2,195	10,590	7 yrs. 4 mos. 15 days	61,606	78,097
Chene Street ..... Jan. 28, 1921	3,171	1,090	2,794	9 yrs. 7 mos. 10 days	19,958	26,855
Jefferson Avenue ..... Apr. 14, 1921	37.792	13,260	2,681	11 yrs. 2 mos. 15 days	16,625	23,320
Gratiot Avenue ..... May 7, 1921	42,334	12,260	24,532	11 yrs. 5 mos.	198,559	280,072
Fort Street West ..... Dec. 14, 1921	44,439	19,493	30,074	11 yrs. 5 mos. 23 days	244,372	345,267
Detroit Railway ..... Dec. 4, 1924	298,451	225,724	24,946	12 yrs. 1 mo.	210,129	301,432
Michigan Avenue ..... July 1, 1927	13.764	3,551	72,728	15 yrs. 20 days	707,938	1,094,953
Dix-Toledo ..... May 14, 1928	6,595	8,534	9,213	17 yrs. 7 mos. 17 days	98,557	162,422
Jefferson Avenue East ... May 3, 1935	32,119	10,801	15,129	18 yrs. 6 mos.	166,310	.....
			21,318	25 yrs. 5 mos. 19 days.	274,720	542,967
	$1,711,433	$677,076				
			$1,034,357		$2,810,615	$4,246,208

BALANCE OF REPORT

The rest of the report, which will be abstracted in next week's issue, relates to cost of service, municipal ownership, etc.

ACCIDENT CLAIMANT RECORD

The American Street & Interurban Claim Agents' Association has made an arrangement with the Hooper-Holmes Information Bureau of New York by which members of the association will have the use of the files of that association in checking accident claims. All reports will go through the main office of the American Street & Interurban Railway Association. Under the plan adopted members of the association will file with Secretary Donecker the names of claimants with whose history they may not be familiar or about whom they may have doubts. These reports will be turned over to the bureau and if no previous record is found of the individual no reply will be sent. If, however, another claim record is found the road will be notified promptly. The Hooper-Holmes Bureau has about 1,700,000 claim records increasing at the rate of 225,000 a year, so that the service should be of great value to the member companies. The association has mailed to member companies instructions as to the proper method of preparing reports.

BOSTON & EASTERN HEARINGS RESUMED

On July 6, 1910, the Massachusetts Railroad Commission resumed public hearings upon the petition of the Boston & Eastern Electric Railroad for a certificate of exigency. The petitioners were represented by Charles S. Baxter, counsel, and in opposition the following counsel appeared on behalf of the transportation companies in the territory through which the Boston & Eastern Electric Railroad desires to operate: Melvin O. Adams, Frederic E. Snow, Bentley W. Warren, William H. Coolidge and Woodward Hudson. The petitioners referred to the finding of the board in 1908 that public necessity and convenience have been shown, and stated that the Legislature of 1910 has passed a law enabling the company to build a tunnel under Boston Harbor to complete its enterprise. The petitioner then rested his case, and counsel in opposition were heard.

Frederic E. Snow, for the Boston Elevated Railway, pointed out that at the time the board found that additional facilities were necessary in the densely populated territory north of Boston no certificate of exigency was issued because there was no authority then to build a tunnel under Boston Harbor, as shown by the petitioner's plans. The whole matter was referred to a joint board consisting of the Railroad Commission and the Boston Transit Commission, and that joint board unanimously reported to the Legislature that no tunnel ought to be located under Boston Harbor except in connection with other questions which were then under consideration by the board. Mr. Snow said that the law of 1910 was merely an enabling act giving the necessary authority to adopt whatever plan might finally be determined to be the wise one. The Legislature expressly stated that it did not in any way pass upon the question of exigency. Mr. Snow said that what may have been a public exigency in 1908 may be an entirely different question now. Since 1908 the Boston Elevated Railway had completed its location for its elevated structure to Malden Square; it had changed its facilities at Sullivan Square, and the possibility of using that terminal as an entrance into Boston was very different now than it was at the time the matter originally come before the board.

Bentley W. Warren, for the Boston & Northern Street Railway, pointed out the necessity of suspending judgment upon the enterprise pending further deliberations of the joint commission with respect to metropolitan improvements. He contended that it would be highly prejudicial to the respondents and other public interests to issue a certificate at the present time, in view of the questions before the various boards studying the transportation situation at Boston. He considered that an informal expression of the board's opinion on behalf of the project, although representing its best judgment at the time it was rendered, was not binding on the board, the public or any other interest. Conditions have changed since the board indicated its favor regarding the necessity of the road, and if the road was built the East Boston tunnel could handle the traffic into and out of the city proper.

Mr. Warren contended that if the Boston & Eastern Railroad should be built, the electrification of the railroads would be retarded at Boston, and the construction of an interstation tunnel might be prejudiced.

William H. Coolidge, for the Boston & Maine Railroad, said that if the new line should be built, and the Boston & Maine Railroad electrified, there would be two electric railroads in one territory, with a duplication of facilities. This would be disastrous. The interstation tunnel, to cost $15,000,000, could not be justified unless it could be used to handle suburban business. The Boston Elevated Railroad was attending to the business of the metropolitan district, but beyond that area was a great territory to be served by electric motive power and the interstation tunnel in Boston.

The hearing was continued on July 11, when F. E. Snow, for the Boston Elevated Railway, emphasized the importance of maintaining a single system of transportation in Boston. He stated that the Boston Elevated Railroad would never have considered making its present huge investments and leases in subways and tunnels, elevated extensions, etc., unless it had felt assured that it would be protected in its right to handle the traffic entering and leaving the business center. If the board grants the Boston & Eastern Railroad a certificate, Mr. Snow said that the whole attitude of the company toward future rapid transit extensions would be altered, as it would not feel safe in its investments in the face of competing lines allowed to enter the city. He desired an extension of time in which to present evidence that the East Boston tunnel could be utilized by the company to bring in the Boston & Eastern Railroad passengers, the work being done by the Boston Elevated Railway. C. S. Sergeant, vice-president of the Boston Elevated Railway, stated that it would be possible to operate the trains of the Boston & Eastern Railroad with proper car clearances in the tunnel together with a single car service, since the latter cars are already equipped for multiple unit operation when necessary. The Boston Elevated Railway desires to handle all incoming and outgoing traffic. The hearing was continued to permit the preparation of further evidence for the Boston Elevated Railway.

HEARING BY MASSACHUSETTS COMMISSION ON SOUTH FRAMINGHAM FARES

The Massachusetts Railroad Commission gave a hearing on June 16, 1910, upon the petition of the Selectmen of Framingham and Holliston for a reduction in fares between South Framingham and Holliston on the Milford & Uxbridge Street Railway. The petitioners were represented by Walter Adams, Joseph P. Dexter, and Maxham E. Nash, and the company's case was conducted by Wendell Williams, counsel, and Walter L. Adams, superintendent. The principal issue was the increase in the fare from 5 cents to 10 cents between South Framingham and Holliston, which went into effect on June 1, 1910. During the presentation of the petitioners' case the company showed that only 65 employees out of 2600 in the plant of the Dennison Manufacturing Company, South Framingham, had signed the petition for a reduction in the fare and that only three employees had left on account of the raise in rates. The officials of the Dennison Manufacturing Company were unable to say what proportion of their employees traveled between South Framingham and Hopkinton by the Boston & Albany Railroad and what proportion traveled by the Milford & Uxbridge Street Railway.

Arguments on the case were heard by the Board on June 24. For the company Wendell Williams stated that on June 1, 1910, in accordance with a vote of the board of directors, the Milford & Uxbridge Street Railway increased its fare between South Framingham and Holliston from 5 cents to 10 cents, as a reasonable means of increasing the revenue. The company had been compelled to make large expenditures in building and maintaining its road, and had been obliged for several years to carry a large floating indebtedness through the credit of individual stockholders, who have received no return. In the same manner only was it possible to fund a portion of this floating indebtedness by means of issues of preferred stock and bonds. Only two officers of the company outside the superintendent and attorney receive any salary, and those are nominal. For years the public alone has received substantial benefit from the operation of the road.

Mr. Williams stated that the stock of the company was divided among 134 holders more than 60 of whom are women. They purchased the stock about 10 years ago when 8 per cent in dividends was paid and was believed to be a good investment at about $140 per share. For years there have been no sales of the stock, and its appraised investment value would be not more than $25 per share. Soon after the operation of the road was begun it was found that the dividend could not be continued and the road maintained. During the last six years the company's earnings have not averaged 2⅓ per cent per year on its stock, and irregular dividends have been paid, in no year in excess of 3 per cent, with an average of less than 1½ per cent per year. The cost of maintenance was constantly increasing and wages have been raised 10 per cent.

The fare from Holliston to South Framingham, 5.7 miles, has been 5 cents, and from Holliston to Milford, 6.5 miles, 10 cents. The fare limit in Holliston extends as far as Highland Street. There was no reason why the fare from Holliston to South Framingham should be practically one-half as much as for the same distance on other portions of the road. The earnings from the portion of the road in question do not warrant it. The cost of operation per car mile on the system for the year ending Sept. 20, 1909, was 21.61 cents, making the cost between Holliston and South Framingham for the year $29,461. The receipts between the same points were $23,757, showing a loss of $5,704. The cost will undoubtedly be greater this year and with no probability of increased earnings. The following table of fares on the roads running out of Worcester, South Framingham and Milford shows that for 10 years Holliston and South Framingham have had the benefit of a fare much below that in force in other towns similarly situated.

TABLE OF FARES AND DISTANCES.

	Miles.	Fare.
Worcester to		
Milbury	6	$0.10
Wilkinsonville	8	.15
Saundersville	9	.15
Fisherville	10	.20
Farnumsville	11.5	.20
Rockdale	13	.25
Riverdale	15	.30
Whitinsville	17	.35
Linwood	19	.35
Uxbridge	21	.40
South Framingham to		
Natick	3.75	.06
Wellesley	5.75	.12
North Natick	3.75	.06
Wellesley Hills	8.5	.12
Newton Highlands	11	.18
Chestnut Hill	14	.25
Ashland	3.75	.06
Hopkinton	7	.12
Woodville	9.5	.18
Westhoro	13.5	.24
Holliston	6.7	.10
Last-named fare was 10 cents prior to June 1, 1905		
Milford to		
Franklin	9	.15
Woonsocket	11	.20
Medway	7.25	.10
Hopkinton	6.5	.10
North Grafton	17	.30
Hopedale	2	.05
Uxbridge	9	.15
South Framingham	12.2	.20
Last-named fare was 15 cents prior to June 1, 1910.		

Mr. Williams pointed out that South Framingham was not being discriminated against, but that for years every other community on the company's lines had been unjustly discriminated against by the low fares formerly in force to South Framingham. Milford had for years complained that its merchants and business were unjustly and injuriously affected by the fact that Holliston patrons were permitted to ride to South Framingham for 5 cents and charged 10 cents to Milford, practically the same distance. The effect of the increase on the workers was counteracted by the issue of so-called workingmen's tickets at the same rate and in the same manner as is done in the case of men working in Milford.

It had been suggested that in 1900, when a turnout was built at Holliston, it was agreed that the fare should be 5 cents between Holliston and South Framingham. Mr. Williams said that if the present management of street railways took the burden of living up to all agreements that the original promoters of the roads made, no country street railway in Massachusetts could be successfully operated. The fare had been charged for 10 years, but it was not within reason that under all possible changed conditions the fare should never under any circumstances be changed. Five cents does not purchase the same quantity of labor, materials and supplies that it did five years ago, and there was no reason why it should purchase as much for the passenger in the way of transportation. Mr. Williams said that the charge of the petitioners that the company had lost money in a park maintained on its line was incorrect, since the operation of a pleasure resort had always been profitable to the management. There had been very little increase in traffic on the Milford & Uxbridge Street Railway in the last 10 years. The total number of passengers handled between South Framingham and Holliston last year was 475,140. Mr. Williams urged that it was impossible to carry passengers on the rural lines at 1 cent per mile. The hearing was closed.

PREPARATION OF PLANS FOR CHICAGO SUBWAY

Under date of July 8 Bion J. Arnold, chief subway engineer of Chicago, has made a brief outline to the local transportation committee of the City Council relating to the work accomplished so far in the preparation of plans. Mr. Arnold was appointed by the mayor on Feb. 7, 1910, and he has perfected an organization which has devoted nearly half its time to the compilation of data relating to congestion on the Union Elevated Loop. The subway work consists of various surveys and records and the tentative development of the following designs, applicable to various streets of various widths:

TWO TRACKS

Two tracks for upper or lower level; side-station platforms; utilities below or on the side.

For medium level: island-station platforms; vestibule station entrance above; utilities below.

THREE TRACKS

Three tracks for upper or lower level; side station platforms; express track in center; utilities below or on side.

FOUR TRACKS

Two tracks on upper level for surface cars; two tracks on lower level for elevated trains; balance of space on upper level for pedestrians; utilities on lower level.

Alternate tracks on same level, alternately upper and lower; vestibule station entrance over depression; island station platforms.

Center pair of tracks on lower level; outer tracks on upper level at stations, depressed for entrance station vestibule; island station platforms.

Island station platforms for each pair of tracks at alternate stations; tracks swing between stations; vestibule station entrance above and utilities below; all tracks on same level.

Pair of tracks on one side on upper level with side and center station platforms; pair of tracks on other side depressed for vestibule station entrance; stations for each pair alternate; utilties below.

Center pair of tracks on lower level with side station platforms; outer tracks on upper level with island station platforms; stations for all trains at same point; utilities below.

Two outer tracks on upper level with side station platforms; inner pair of tracks on either upper or lower level, with island station platforms; station vestibule entrance above; utilities below.

Two tracks on upper level and two tracks on lower level; all side station platforms; stations for upper pair and lower pair of tracks alternate; moving sidewalks and escalators.

SIX TRACKS

Center pair of tracks on lower level with island station platforms; two tracks on one side on upper level with side station platforms, while the two tracks on other side are depressed for station entrance vestibule.

EIGHT TRACKS

Center pair of tracks on upper level over center pair of tracks on lower level; tracks on side rise and fall to give station entrance vestibules over depression; inner side track is on upper level when outer side track is at lower level; island station platforms.

Center pair of tracks on upper level over center pair of tracks on lower level; inner tracks on lower level; outer tracks depressed to give station entrance vestibule above; island station platforms.

Sufficient detail plans of these various designs are being made to demonstrate their efficiency and to estimate their cost.

Abutting buildings have been divided into three classes, as follows: Class "A," with continuous basement walls; Class "B," with steel frame and columns on spread foundations; Class "C," with steel frame and columns on caissons. Different methods for caring for the three different classes of buildings have been developed.

A method of construction for subways in streets 100 ft. in width, the structure occupying the full width of 100 ft., has

also been developed. This construction provides for all street traffic being continued during construction with free entrance to all business places. A thorough investigation has also been made of the cost of all material and labor that would enter into the construction and equipment of a subway located in any street in the city. This includes the labor and material involved in the different methods of construction, signals, lighting, power installation, stations, track, waterproofing, etc.

The location of initial subways has been given consideration. The report says that State Street is a desirable street in which to locate a north-and-south subway, by reason of its extensive width, the fact that there are fewer utilities under its surface than any other street in the downtown or subway district, except Michigan Avenue, and that there are no elevated lines, except where the loop crosses at Lake and Van Buren Streets.

Studies for the location of initial east-and-west subways are being made in the streets between the Chicago River and Twelfth Street, as well as east-and-west connections to the north and south subways on Division Street and Twenty-second Street, to accommodate the elevated trains.

In addition, studies and investigations are being made of all matters that concern subway traffic, including the traffic of both surface cars and elevated lines in and out of the downtown district during rush hours, with sufficient data to estimate the future traffic to be cared for. Unit cost figures have also been prepared to apply to any design of subway that may be found desirable and construction methods have been determined to care for abutting buildings, and to avoid disturbance of street traffic.

Mr. Arnold and his assistants are now engaged in a process of elimination with the intent of developing a final plan for recommendation, but are prepared to develop any design of subway that may be determined upon from those enumerated, giving cost and capacity in any street or streets that may be chosen.

MEETING OF JOINT COMMITTEE ON SHOP ACCOUNTING

The joint committee on shop accounting of the American Street & Interurban Railway Accountants' and Engineering Associations met on Tuesday, July 12, at the association headquarters in New York to prepare a report to submit to the two associations. There were present: P. S. Young, co-chairman; John Lindall, Charles Hewitt and N. E. Stubbs, of the committee; also H. H. Adams and M. R. Boylen, who have been assisting the committee in its work. Mr. Adams and Mr. Boylan presented a report on the cost system of shop accounting which after some discussion and a few changes was accepted by the committee. The committee will cover in its final report recommendations as to analytical sub-divisions of the standard accounts which are desirable for the use of the larger companies, and will outline a practical cost system for car repair shops, suggestions as to the handling of the sale of scrap material and a report on the method of procedure in obtaining mileage of car wheels, brake shoes, etc.

MEETING OF THE COMMITTEE ON BUILDINGS AND STRUCTURES

The committee on buildings and structures of the Engineering Association held a meeting at the office of the association, 29 West Thirty-ninth Street, New York City, on July 6. Those present were Martin Schreiber, engineer maintenance of way, Public Service Railway, Newark, N. J., chairman; F. F. Low, architect, Boston Elevated Railway, Boston, Mass.; George H. Pegram, chief engineer, Interborough Rapid Transit Company, New York City, and Charles H. Clark, engineer maintenance of way, Cleveland Railway. This committee was not appointed until last April and this was its first meeting. On account of the short time remaining for the preparation of a report, Mr. Schreiber suggested that the subject of economical maintenance of buildings and structures which was assigned to the committee should be passed over this year and taken up next year by the new committee. The report which will be presented at the Atlantic City convention will deal with the general principles involved in the design of terminals for urban and interurban railways. Some of the points which will be taken up include general arrangement of tracks; type of building and train sheds; spacing of tracks; toilet facilities; entrance and exit gates and ticket offices. The chairman will make a rough draft of the report and send it to each member of the committee with the request that the members enlarge upon the points brought out in the discussion of each of these features.

CHANGE IN EXHIBIT SPACE AT ATLANTIC CITY

The exhibit committee of the American Street & Interurban Railway Manufacturers' Association announces that a radical change will be made in the exhibit space arrangement on the Million Dollar Pier for the 1910 convention of the American Street & Interurban Railway Association. This has been found necessary by the contractor because the G. A. R. convention will be held in Atlantic City the latter part of September and the pier will have to be used for entertainment purposes at that time. The Manufacturers' Association is now preparing a new diagram of the exhibit space at the pier. This diagram will be mailed as soon as possible to all exhibitors in case the changes necessary in the diagram alter the exhibitor's space, as indicated in his application blank.

There will be no change in Machinery Hall and in Building No. 3, but there will probably be a change in the general arrangement of Buildings No. 1 and No. 2, especially in the front spaces of Building No. 1. This change necessitates a postponement of the final assignment of exhibit space by the committee, but it is hoped that all space can be assigned by Aug. 1. The exhibit committee also says that the change mentioned makes it more necessary than ever that every exhibitor should give the weights and dimensions of the apparatus he expects to exhibit. The members of the exhibit committee held a conference in Atlantic City, last week, in regard to the situation.

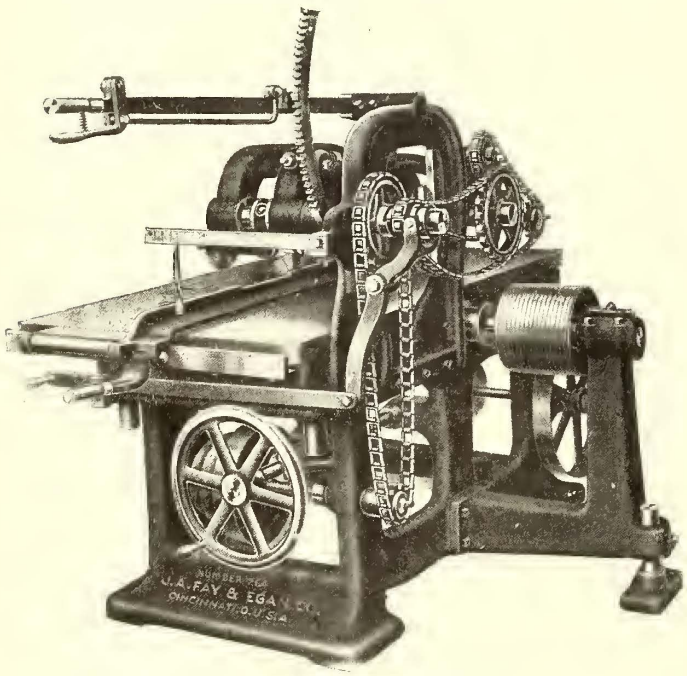
CONSTRUCTION PROGRESS OF THE ROCK ISLAND SOUTHERN

The Rock Island Southern Railroad Company is fast completing a high-speed freight and passenger road, the initial division of which will have 50 miles of track fed with 11,000-volt trolley. From Rock Island the road extends southward 21 miles over a steam railroad grade and thence 29 miles over a new grade to Monmouth, Ill. Later the road will extend from Monmouth to Burlington, on the Mississippi River, and a branch 7 miles long will be built from Gilchrist to Aledo. The new electric line has traffic arrangements with the Rock Island system and will undertake to handle heavy trains of coal with a.c. locomotives as well as a high-speed passenger business. In the north half of the line the maximum grade is 1.1 per cent and in the southern half 0.7 per cent. The maximum rate of curvature on any part of the line is 2 deg. The trolley wire will be carried on a line of heavy poles set 9 ft. from the track center, supporting Ohio Brass Company's brackets 10 ft. 6 in. long and using catenary material of the same manufacture. The trolley wire will be No. 0000 supported by a 7/16-in. Siemens-Martin high-strength steel cable. The pole line has been erected and work has just commenced on stringing the catenary.

The power plant is located at about the midpoint of the line and will include, at first, an installation of 12,000-kw capacity in Westinghouse turbines. Current will be generated at 2300 volts and stepped up to 11,000 volts for feeding directly to the trolley wire. No auxiliary feeders or transmission system will be required for the operation of the railway, but a 44,000-volt high-tension line will be constructed to carry current for commercial uses in Burlington, Iowa. No. 2 copper will be used for the transmission system.

A NEW SELF-FEED RIP SAW

J. A. Fay & Egan Company, Cincinnati, O., the well-known manufacturer of woodworking machinery, has just put on the market a new self-feed rip saw known as No. 264 and designed for general ripping in the car shop for both light and heavy work. The frame is a heavy structure, cast in one piece so as to be free from vibration. The machine is designed to rip a



Self-Feeding Rip Saw

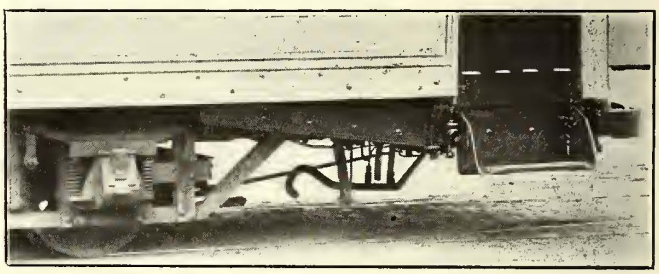
plank 4 in. thick with a 16-in. saw or 8 in. thick with a 24-in. blade. It takes 19 in. between the saw and the fence. By lowering the table and raising the feed out of the way, a timber as large as 12 in. can be ripped. The table is raised and lowered by worm segments and is 37¼ in. wide and 5 ft. 6 in. long. The fence is 2¼ in. high and 40 in. long and is instantly moved and clamped at any position.

The mandrel pulley has an outside bearing supported by a heavy arm bolted on the side of the frame. The feed consists of two large rolls above and one spur assisted by idler roller in the table. The driving mechanism consists of a train of sprocket gears and chain regulated by a three-step cone pulley. The machine is also made as a hand-feed rip saw, up to 14 in. thickness and with the fence beveling 45 deg.

NEW MECHANICAL SWITCH THROW AT DECATUR

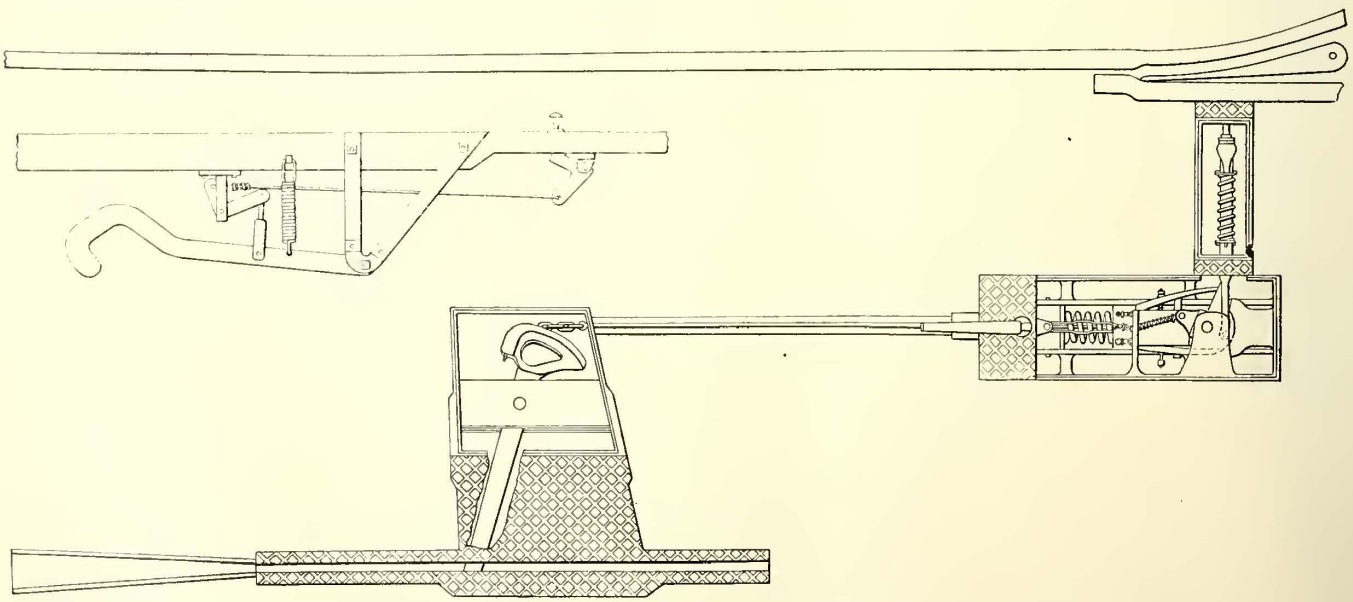
The Decatur (Ill.) Railway & Light Company has obtained good service from a mechanically-operated switch throw which has been installed on its city lines for 18 months and has operated at 10-minute intervals 18 hours per day during that time. The switch-throwing device consists essentially of three parts, all of which are mechanically operated and thus easily maintained without expert assistance. These are: a hook attachment supported from the car platform and normally held clear of the street by a spring, but which may be depressed by a foot pedal; a slot box with switch-throw lever located between the rails and provided with an opening into which the car hook may be depressed; and the switch-locking mechanism. The third part of the device is enclosed in another box also placed between the rails and below the street surface. In this box there is a spring connected at one end with the throwing lever which is tripped by the car hook and a system of dogs and eccentrics to transfer the proper motion to the switch tongue. An accompanying drawing shows the general arrangement of the parts of the mechanism.

To operate a switch with this switch-throwing device the motorman has only to depress the foot pedal as the throw box



Switch Hook Installed

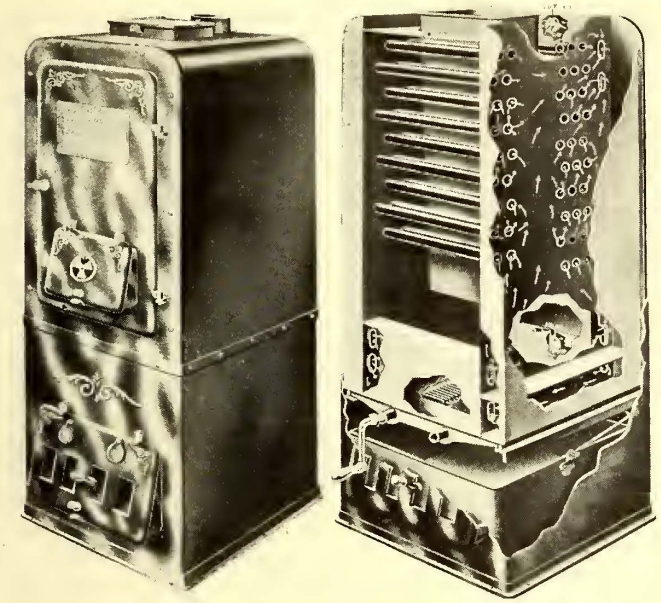
is approached; the hook beneath the car platform will then engage with the sunken lever and throw the tongue. The switch-throwing rod is operated by a mechanism so constructed as to keep the switch point held tightly against the rails by spring pressure, no matter which way it may be thrown. The device also is provided with a switch-throwing handle which normally lies in a depression in the paving. By using this handle the switch may be thrown into either position without interfering with the continued use of the car throw. Also, by means of an unlocking device, the quick-throw mechanism may be entirely disconnected except for the spring in the throw rod, and the switch then may be operated as an effective spring point using the old-style switch rod. This device is made by the Johnson-Bone Switch Throw Company, Decatur, Ill.



Plan of Mechanical Switch Throw Installation and Details of Hooking Device

A PRESSED STEEL HEATER

The Cooper Heater Company, Carlisle, Pa., has placed on the market a pressed steel car heater which is of remarkably light weight and small size. Thus the largest size required for a 65-ft. interurban car weighs only 220 lb., including the expansion tank. The height of any type heater is only 36 in., so that it does not interfere with the passengers' view whether it is in the



Outside and Inside Views of Pressed Steel Heater

vestibule or inside the car. This heater has four perpendicular water-legs pressed from ⅛-in. cold rolled steel and united by a series of nipples which are drawn outward from the front and back water-legs. These nipples are telescoped to corresponding nipples drawn inward from the two outer water-legs or tube sheets. A series of circulating tubes ⅞ in. in diameter connects the two side water-legs. The back and the two side water-legs are provided with a partition which obliges the water entering the back at the inlet to pass through the two lower series of nipples into the lower half of the side water-leg to the front; then out through the upper series of nipples in the front water-leg to the two side water-legs, then back and forth through the circulating tubes and out through the upper series of nipples to the discharge at the top of the heater. All tubes and joints are welded by the oxygen-acetylene welding process to make the heater absolutely seamless. After welding and testing, the heater is galvanized both inside and outside to prevent rusting.

The heater also has a removable coal magazine which furnishes and feeds the fire automatically for a period of 12 hours with one filling. This magazine is made absolutely gasproof, as the door to the same has a special catch which draws the lid down to a joint. All other doors on the heater are hinged from the top and have a spring catch at the bottom to prevent the doors from ever being left open. With this heater the maker also furnishes a pressed steel expansion tank which also is welded by the oxy-acetylene process employed for the heater.

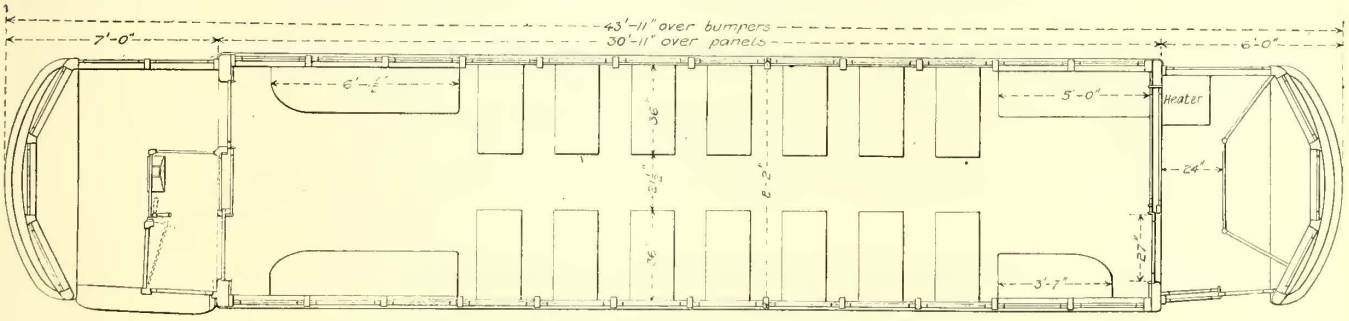
This heater is the invention of W. L. Blackwell, the general manager of the company.

PAY-AS-YOU-ENTER CARS FOR SYRACUSE

The Syracuse (N. Y.) Rapid Transit Railway Company has placed an order with the G. C. Kuhlman Car Company for 23 cars of the single-end, pay-as-you-enter type made under license of the Pay-as-You-Enter Car Corporation, New York. As shown in the accompanying plan these cars will be 43 ft. 11 in. over the vestibules and bumpers and 30 ft. 11 in. over the panels. The width over the belt rail will be 8 ft. 3 in. and the height from floor to underside of ceiling 8 ft. The front or exit platform will be 6 ft. long, with a railed section for the motorman and room for a heater in one corner as indicated. This end of the car will have a single sliding door controlled in unison with the step by the motorman. The rear platform will be divided into exit and entrance ways by a railing, but there will be a single swing door covering the exit, closed through the manipulation of a lever by the conductor. The object of this swing door principally will be to protect the conductor in inclement weather while he is standing at the cash box. The end body doors will all be of the sliding type, comprising a 27-in. front exit, and 25-in rear entrance and exit. The installation of curved longitudinal seats opposite all the body doors will insure freedom of passenger movement both in entering and leaving the car.

The bottom framing of the cars will consist of 4-in. x 7¾-in. long-leaf, yellow-pine side sills reinforced with ⅜-in. x 15-in. steel plate with the further reinforcement of a ⅜-in. x 8-in. plate riveted to the bottom edge of the steel plate, extending from the inside of the end sill at each corner of the car to 3 ft. past the bolsters toward the car center; 3½-in. x 5 1/16-in. center sills extending from end sill to end sills; 3½-in. x 4¼-in. white oak crossings; 4¾-in. x 6 13-16-in. white oak end sills. The flooring will be 13/16-in. yellow pine, with a double thickness under the seats. The aisle will have maple strips.

The body framing will embody white ash for all posts, sash rails, ribbing and deck plate. The side posts will be 3¼ in. thick. The side panels will be covered with sheet steel. The roof framing will be of monitor pattern with the upper and lower deck boards supported on ash rafters. The interior finish



Single-End Pay-as-You-Enter Car for the Syracuse Rapid Transit Company

will be cherry. The windows will be Brill semi-convertible.

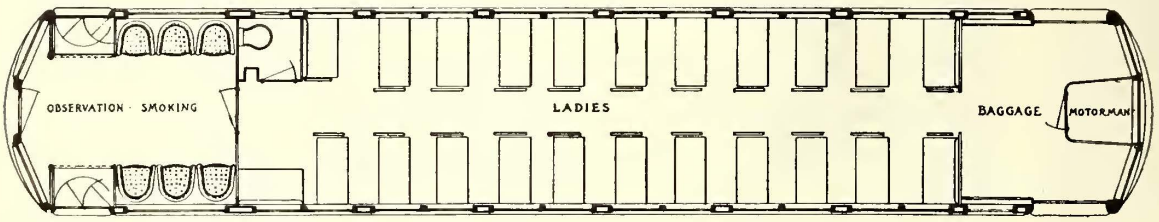
The platforms will be supported by outside knees made up of ¾-in. x 8-in. steel plates reinforced with 2½-in. x 8-in. oak timbers. The plates will be riveted to the sill plate and ⅜-in. x 8-in. reinforcing plates. The inside platform knees will be of white oak.

The bodies will be mounted on Brill No. 27-F-E-1 trucks of 4-ft. 6-in. wheel base having 35-in. diameter wheels. There will be four GE-216 motors per car. The air-brakes will be of the Westinghouse Traction Brake Company's type F.M.-3. Among the specialties to be installed are Curtain Supply Company's No. 89 protected groove fixtures with Pantasote curtains; Dedenda gong; Crouse-Hinds headlight; Ohio Brass Company's air sander; Peacock hand brake; Peter Smith forced air heaters; dry battery push-button system; Ohmer registers; Hovey draw-bars, and Brill track scrapers.

OKLAHOMA COMBINATION INTERURBAN CAR

The Niles Car & Manufacturing Company, Cleveland, Ohio, has recently built for the Oklahoma Railway Company the combination interurban car shown in the accompanying illustrations. It is called the "Oklahoma plan" car by the builder. The plan of this car provides a large main passenger compartment with a toilet room in the center of the car, baggage room with folding seats for smokers, separate motorman's cab at front end and an observation-smoking compartment with large windows at rear end. It includes practically all the accommodations of a steam railroad train of baggage, coach and observation cars, and is recommended for long runs and limited service.The general specifications and dimensions are as follows:

Length over buffers	54 ft.	7 in.
Length over vestibules	53 ft.	11 in.
Length of main compartment	34 ft.	5 in.
Length of observation compartment	10 ft	2 in.
Length of baggage room	8 ft.	3 in.
Width over sheathing at sills	9 ft.	6 in.
Width over all	9 ft.	8½ in.
Height, under sills to top of roof	9 ft.	6¾ in.
Height from track to top of roof	12 ft.	11½ in.
Distance between bolster centers	32 ft.	11 in.
Wheel base of trucks	6 ft.	4 in.
Seating capacity	52	
Length of seats		41 in.
Width of aisle		22 in.
Weight of trucks		19,000 lbs.



Seating Plan of Oklahoma Combination Interurban Car

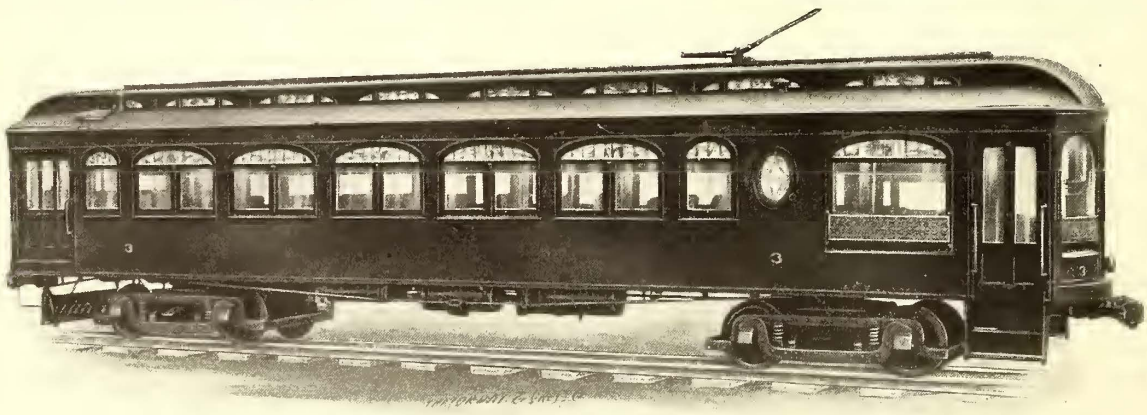
The bottom framing consists of two outside sills of 4½-in. x 7¾-in. and 1¾-in. x 6-in. yellow pine with ⅝-in. x 7¾-in. steel plate bolted between; four center and intermediate sills of 6-in. steel I-beams between yellow pine fillers extending from buffer to buffer, supported on and bolted to 10-in. plate bolsters; 6-in. needle I-beams and ¾-in. tie rods having turnbuckles in the center at each cross sill. There are also two 1⅝-in. under truss rods with 1¾-in. turnbuckles and two ⅜-in. x 2½-in. inside truss bars on pedestals over the bolsters for supporting overhanging ends. The floor consists of a double thickness of ⅞-in. x 3¼-in. yellow pine with waterproof building felt between and covered with corrugated rubber mat in rear vestibule.

The car body is designed according to the Pullman style, having twin Gothic windows with alternate single posts and panel piers, thoroughly braced, sheathed with ¾-in. x 2-in. poplar continuous from the sills to the letter panels and with a ½-in. vertical tie rod at each post. The roof is of the monitor deck style with steam coach hoods, concealed steel carline at each panel post. It is covered with No. 8 duck, painted and fitted with a trolley platform for the full length.

The motorman's cab is in the center at the front end and has a swinging door in the rear. It is glazed on all sides and fitted with curtains to exclude light. Heavy iron pipe railing, from floor to roof to protect motorman from baggage, may be used on this car instead of an enclosed cab. The baggage room at the front end has a 42-in. sliding door on each side. Smoking is permitted in this room when it is not filled with baggage. The observation vestibule is at the rear end. It has a 30-in. double folding door, triple steps with safety treads and Edward's self-raising steel trap door at each side. There is a 26-in. swing door in the center of the rear end and front bulkhead. In warm weather the large windows surrounding this vestibule are removed, making it practically open, but protected by bronze grills and drop guard rails at steps. In cold weather the observation feature is retained, but large plate glass windows are used. Smoking is permitted at the discretion of the management. The toilet room is in the near left-hand corner of the passenger compartment with dry hopper, white enamel finish, cement floor, roof ventilator. The water cooler is in an alcove outside.

The interior finish in the main compartment is of selected mahogany with large smooth panels having marquetry line borders. The window heads are of same curvature as on outside. Solid bronze trimmings, sectional rod bottom parcel racks and Empire ceiling are also installed. In the observation room the finish is dull and of dark Flemish oak. In the baggage room the finish is of glossy golden oak.

The seating consists of 19 Hale & Kilburn seats with stationary 25-in. backs, with bronze grab handle, spring edge cushions and upholstered with dark green leather; three cross bulkhead seats; one longitudinal corner seat in the main compartment and folding wooden seats in the baggage room. The loose parlor chairs and folding camp chairs for the observation vestibule were selected and furnished by the purchaser. The windows have the single lower sash fitted with Edward's locks with concealed racks to raise between double Gothic sashes. The deck sashes are in three sections, the center one hung on Hart's ratchet fixtures. Pantasote curtains are installed on spring rollers below the Gothic sashes.

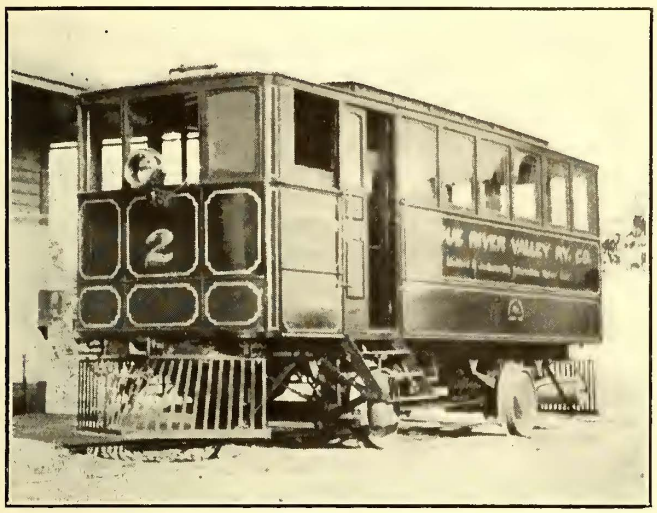


Oklahoma Combination Baggage, Passenger and Observation Car

Among the miscellaneous fittings are automatic M. C. B. radial type draw bars and couplers; two Nichols-Lintern compressed air sanders on front end; one locomotive style pilot; one Knutson retriever, and a hot-water heater located in baggage room with pipes extending through main compartment and observation vestibule.

GASOLINE CAR FOR ROGUE RIVER VALLEY RAILWAY

The Rogue River Valley Railway, Jacksonville, Ore., now has in operation making regular trips the gasoline motor car illustrated. The body is of wood built on a steel channel underframe. It is divided into a smoking compartment seating six passengers and a general compartment seating 22 passengers. Leaf springs 5 ft. long reinforced with coil springs under the



Gasoline Motor Car

journal boxes support the underframe on the axles and make the car ride very easily. The wheel base is 10 ft.

The car is driven by a vertical, four-cylinder Brennan gasoline engine of 70 hp. The engine is mounted on a steel subframe below the floor line of the car body and is connected with a cone clutch on a longitudinal shaft to heavy reversible transmission gears, giving three speeds forward and three speeds reversed. Two sprocket chains are used to connect the transmission gears to the front axle. Control apparatus is mounted in each end of the car body, so that the car can be run in either direction. The car has a maximum speed of 35 m.p.h. and on regular trips has carried 48 passengers up a 1 per cent grade with ease. Acetylene gas is used for lighting. The car was designed by W. H. Barnum, vice-president and treasurer of the railway, and was built by the Ferry Garage Company, of San Francisco, Cal. It cost about $5,000.

ELECTRIC SWITCHING LOCOMOTIVE PERFORMANCE

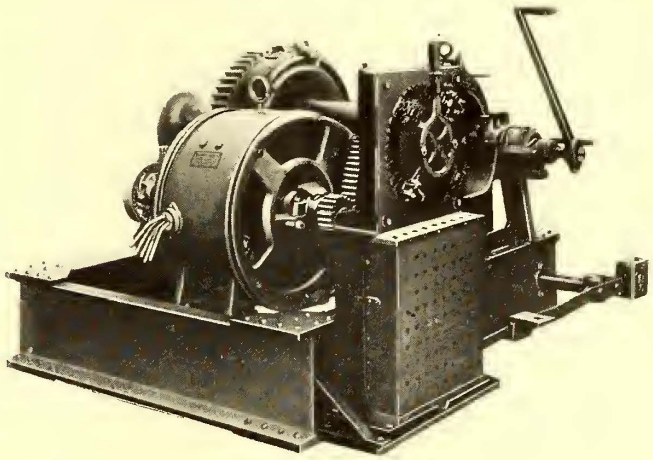
The Hoboken (N. J.) Railroad, Warehouse & Steamship Company has had in operation since May, 1906, a 60-ton electric switching locomotive which has shown a remarkably continuous performance under varying and severe load conditions. Since this locomotive was placed in operation four years ago there has not been replaced a single contact on the switch group or a contact on the master switches or reverser. On the control apparatus only two tips on the live switch have been replaced. The brushes that are in the motors at the present time have been operating 14 months, and the master mechanic believes they will operate at least six months longer without replacement. No trouble has been experienced with broken brushes. Only one pinion had to be replaced.

The cost of inspection and cleaning has been practically nothing. Every Saturday morning the man operating the locomotive makes an inspection of the equipment. The motor and the control apparatus are blown out with compressed air and any part that may need it is cleaned with a piece of cloth.

The locomotive has a running and a starting draw-bar pull of 14,500 lb. and 30,000 lb. respectively, and has a normal speed of 12 m.p.h. It has four 100-hp slow speed Westinghouse motors; a hand operated unit switch control, and air brakes with 4-D compressor. It averages 12 hours a day switching service.

PORTABLE ELECTRIC HOISTS FOR RENTAL

The accompanying cut shows a portable hoisting outfit designed by the Rochester (N. Y.) Railway & Light Company and equipped with a Westinghouse motor. In addition to those already sold, the company has retained two completely equipped hoists in stock for rental to contractors at a nominal charge of $2.00 to cover costs of delivering and installing the hoist. For local service d. c. motors are used. Several a. c. motors, which can be mounted interchangeably with the d. c. motors, are also held in stock and substituted when the hoists are to be used in outlying districts of the city. No extra charge is made for changing the motors. When equipped with an electric brake the hoist is absolutely automatic, a single lever giving both power and brake control. In case of interruption to service the electric brake is automatically set, while a mechanical brake actuated by a foot lever affords additional protection. A suitably arranged friction clutch allows the drum to rotate independently of the motor when lowering the load. The cost of a hoist complete as shown is $800 and without electric brake $700.



Portable Electric Hoist

Its capacity is 2000 lb. at 200 ft. per minute. The actual average cost of continuous operation at rated capacity on recent construction was 60 cents a day. The motor equipment consists of either of the following: 15-hp, d. c., type S, 1000 r.p.m., back-geared to a countershaft speed of approximately 230 r.p.m., R-28 controller and resistance; 15-hp, a. c., type MF, 1120 r.p.m., back-geared to give a countershaft speed of approximately 230 r.p.m. with type FA reversing controller.

ONE-PIECE STEEL END FOR BOX CAR

The W. T. Van Dorn Company, Chicago, had recently on exhibition in that city a standard steel underframe box car of the Southern Pacific Company, to which the one-piece steel end which the W. T. Van Dorn Company has developed has been applied. Subsequently, the car was exhibited at the Atlantic City convention of the Master Car Builders' Association, where it attracted considerable attention. The upper structure of the car originally was entirely of wood. One of the ends is fitted with two doors, arranged for wedge locking, the wedges being forced into place by toggle-joint handles. The ends are single pieces of sheet steel which has been formed under pressure so that it has a series of annular corrugations with the largest covering the full width of the car end. The edges of the corrugated end plates are formed for riveting to the steel underframe and for fitting over the wood siding so that tight joints are obtained. With this form of one-piece steel end construction the maximum interior length of the car is increased 18 in. The two ends not only are securely riveted to the underframing, but are tied together by through rods extending from end to end and are connected with the underframing by truss rods.

News of Electric Railways

The Detroit Situation

On July 5, 1910, Mayor Breitmeyer sent to the Council the final report of the committee of 50, acknowledging the failure of the board of arbitration plan and asking $20,000 to make an entirely new appraisal if further services from the committee are desired. The Mayor also sent in the bills of the two sessions of the board of arbitration held two months ago, aggregating $158.34. The Mayor made no recommendation beyond suggesting that the report and bills be referred to the committee on franchises. The bills transmitted to the Council are $43.74, expense of Judge Murfin; $25, expense of Judge Grant; $64.40, bills from the Pontchartrain Hotel incurred by the judges; $25.20, stenographer's fees. The Mayor says:

"I herewith transmit to your honorable body a report made by the executive committee of the committee of 50 appointed by me for the purpose of making investigations into the street railway question. I am also transmitting certain bills incurred in the attempt to arbitrate the differences between the valuation of Detroit United Railway properties as arrived at by the committee of 50, and as claimed by the company. I am transmitting these bills to your honorable body in pursuance of a resolution adopted at your session of April 19, 1910, touching on the question of the expense of such arbitration. I might say that more than $4,000 of expense incurred in preparing for the arbitration and in endeavoring to remove the obstacles placed in its way have been paid by members of the committee of 50 and myself. I would suggest that both the report and those bills be referred to your committee on franchises."

Despite the fact that Mayor Breitmeyer induced Frederick T. Barcroft, who appraised the property of the Detroit United Railway for the city, to outline the conditions under which he would explain the figures in his appraisal, there is a decided sentiment against the city retaining Mr. Barcroft further among the members of the franchise committee of the Council, before which the street railway matter is now up for consideration. It will be recalled that Mr. Barcroft has estimated that a further expenditure of $10,500 will be required by the city to carry out the work based on the suggestions made by him to the Mayor. Alderman Harpfer, in particular, has publicly expressed his disapproval of the attitude which Mr. Barcroft has assumed toward the negotiations.

The Detroit United Railway has brought suit to compel the city of Detroit to repair the foundations under the tracks of its 3-cent lines, and the court has issued an order to the Common Council to show cause why a writ of mandamus should not be issued. It is estimated that an expenditure of about $1,000,000 will be necessary to restore the foundations to good condition. The petition is made under a section of the company's franchise in which it is stated that the city shall be responsible for the upkeep of the pavement, both within and without the rails of the track. It is believed that this move by the company was made primarily to discount the erroneous impression that the company alone is responsible for the disrepair in which the 3-cent lines are at present.

New Subway Proposal in New York

Theodore P. Shonts, president of the Interborough Rapid Transit Company, has submitted an offer to the city of New York for the operation and equipment of new subways, and extensions to existing lines to be constructed on the city's credit at an aggregate cost of $70,000,000. The proposal involves:

The construction of a four-track line from Times Square through Seventh Avenue and West Broadway to Liberty Street, with a two-track extension to the Battery and a two-track branch from the intersection of Liberty Street and West Broadway under Liberty Street and the East River to Pineapple Street in Brooklyn; from Pineapple Street in Brooklyn to a junction with the existing Brooklyn subway on Fulton Street, and a four-track extension from the terminus of the Brooklyn subway at Atlantic and Flatbush Avenues, under the latter thoroughfare and Eastern Parkway as far as Nostrand Avenue.

An east side four-track line from about Thirty-fifth Street under Park Avenue and private property to Lexington Avenue, through Lexington Avenue across the Harlem River to some point below East 149th Street. A two-track extension from that point connecting with the existing West Farms branch of the subway. Another two-track extension running up Mott Avenue and 153d Street to River Avenue, with an elevated two-track line structure through that thoroughfare and Jerome Avenue as far as 194th Street.

The following basis is submitted for the equal division of profits between the company and the city after the fixed charges, the interest, and 1 per cent for the sinking fund have been provided for:

"1. The gross operating revenue of the new extensions to be ascertained from the number of tickets sold at stations along the new extensions, or, if deemed advisable by either the city or the company, from the number of tickets deposited in the chopping boxes on the new extensions, or by such other methods as upon full consideration may be agreed upon between the parties.

"2. The net profits of the company, to be arrived at as hereinafter provided, and to be disposed of as follows:

"(a) The city to take all net profits for the first five years from the time of beginning operations on any portion of the new subway extensions.

"(b) The net profits after five years to be equally divided between the city and the Interborough Rapid Transit Company.

"3. The net profits to be determined by making the following deductions from the gross revenues in the order named:

"(a) Maintenance of equipment. (It is proper to point out in this connection, however, that the maintenance of the equipment will be less if the new extensions are operated by the Interborough Rapid Transit Company, by reason of the fact that certain economies can be effected by extending over the new system the benefits of our present organization and our existing facilities, such as power stations, shops and terminals, which, with some enlargement, should be sufficient to take care of the old and new equipment.)

"(b) Maintenance of way and structure. (To be ascertained upon the basis of actual cost, plus a reasonable allowance for depreciation.)

"(c) Cost of conducting transportation. (To be ascertained on a car-mileage basis.)

"(d) General and administration expenses. (Likewise to be ascertained on a car-mileage basis.)

"(e) Taxes, if any.

"(f) The actual annual charges of the company for carrying the cost of equipment and providing a partial sinking fund of three-fourths of 1 per centum per annum to meet obsolescence. (This provision is intended to provide for the contingency that when at the expiration of the lease and equipment is taken over by the city its then market value, notwithstanding its full maintenance, may be less than its present cost.)

"(g) Interest on bonds issued by the city to defray cost of construction, plus 1 per centum per annum as a sinking fund.

"4. If the gross revenue should at any time be insufficient to meet the gross expenses, as provided for in Section 3 above, the annual deficit to be made good by the city."

The communication containing the latest proposal of the Interborough Rapid Transit Company for the construction of subways was also addressed to Mayor Gaynor. On this account Chairman Willcox of the Public Service Corporation has addressed a letter to the Mayor in which the proposal of the commission is discussed from the viewpoint of the commission. According to Mr. Willcox, the latest terms are less favorable than the terms virtually agreed upon be-

tween the company and the commission. In speaking of the routes proposed, Chairman Willcox says that the latest plan of the company would interfere with a broad comprehensive and logical scheme of rapid transit by attempting to secure permission to utilize Lexington Avenue from Fortieth Street to the Harlem River.

On July 12, 1910, the Public Service Commission unanimously voted to advertise for bids for the construction of the triborough subway on the route proposed by the commission itself. The commission gave out correspondence between Chairman Willcox and Mayor Gaynor regarding the recent offer of the Interborough Rapid Transit Company. The Mayor, in his letter, stated that he had not been aware that the Interborough Rapid Transit Company had previously offered to build the extensions with its own capital, adding that he should be disposed to take up that offer instantly. Mr. Willcox's reply included copies of the correspondence that passed between the commission and the Interborough Rapid Transit Company during the period the company's previous offer to build new lines was under discussion, Mr. Willcox calling particular attention to the advertisements of the company that appeared in the papers, in which it was stated that the extensions were to be built with the company's own money. The bids will be opened either on Sept. 13 or Sept. 20, on the former date if the invitations to bidders are advertised seven weeks, and on the latter date if they are published for eight weeks. Two forms of contract will be advertised, one calling for private construction and equipment, and the second for municipal construction, and private equipment and operation. The estimated cost of the entire system is about $125,000,000. The triborough system includes construction of a subway along Broadway and Lexington Avenue, with an elevated extension along Jerome Avenue in the Bronx; another Bronx line along Whitlock Avenue, Westchester Avenue and the Southern Boulevard; the Canal Street crosstown tunnel, the Broadway-Lafayette loop, Brooklyn, and extensions of the Fourth Avenue (Brooklyn) subway to Fort Hamilton and Coney Island. Chairman Willcox was to sail on July 13 for Europe. He will be back, however, a month before bids are opened.

On July 12, 1910, the Public Service Commission granted the application of the Manhattan Bridge Three-Cent Line for a certificate of "public convenience and a necessity" for an electric railway from a point near Atlantic Avenue and Flatbush Avenue, Brooklyn, to a point at or near Desbrosses Street ferry in Manhattan, by way of the Manhattan Bridge. It is specified, however, that the company must arrange in some way to cross Manhattan to the Hudson River front. The opinion of the commission granting the application was written by Commissioner Bassett. A summary of the testimony presented before the commission during the hearings on the application of the company, with particular reference to the cost of electric railway construction and operation, was published in the ELECTRIC RAILWAY JOURNAL of April 16, 1910, page 705.

Question Box of the Engineering Association

John W. Corning, secretary of the American Street & Interurban Railway Engineering Association, has sent to all member companies and associate members a list of the questions for the 1910 Question Box of the association. He says:

"The Question Box is a medium afforded the members of the association through which they may get replies to questions on subjects which are giving them more or less concern. The answers that are received are of more value to the questioner the wider apart are the points of view from which they come.

"You are, therefore, earnestly requested to give these questions your prompt and serious consideration, so that your answers may be received not later than July 20th. Considerable work is necessary on these answers before they can be collected in proper shape for printing."

ENGINEERING QUESTION BOX FOR THE 1910 CONVENTION

POWER STATIONS

1. What increase in fuel economy have you been able to accomplish under regular operating conditions? Upon what bonus or premium, if any, has this been based?
2. Is the use of boiler compound to be avoided if possible? Why?
3. What is the nature of tests commonly applied at the boiler rooms of member companies by insurance inspectors as a basis for certificates guaranteeing safe working pressure on boilers?
4. Have you ever used Lignite coal? If so, what is your opinion of it as a fuel?
5. How can the air space between the bridge wall and grate bars of a chain grate stoker be automatically stopped or reduced in area?
6. Can forced draft be used on a chain grate stoker? If so, how?
7. Is it good practice to operate large fly-wheel engines of a reputable make without fly-wheel insurance?
8. What should be the cost per 100 k.w. hours for lubricating the high and low pressure cylinders of a 1,650 k.w. vertical cross-compound condensing engine operating at full load, 75 r.p.m., saturated steam, 150 lb. pressure and 25 in. vacuum?
9. Do you use a damper regulator? If so, is there any way to prevent smoke when damper is closed?

TRACK

10. What kind of pavement has proved most satisfactory?
11. What is the most satisfactory practice in the construction of the foundation and sub-structure of a street railway track and loop?
12. Has any standard been decided upon as to what distance the third rail should be from running rail?
13. Is it necessary to use tie plates on yellow pine ties in street railway tracks?
14. Does it pay to use screw spikes? If so, why?
15. Taking maintenance of paving into consideration, is not the grooved rail as recommended by the association more economical than T-rail laid in paved streets?
16. Would it be economy to install solid manganese special work in paved streets where 20-ton cars are run on 2½ minute headway?
17. Would it be economy at the present price of manganese rails to install same on curves of 80 feet radius or less?
18. Does your experience prove that solid manganese steam railroad crossings are more economical than three-rail built-up crossings of latest designs? Give data.
19. Does greater economy and stability result from filling joints of stone paving with Portland cement grout, pitch, or hot quartz sand?
20. Are you obtaining more economical results from manganese center or solid manganese frogs under heavy urban traffic?
21. What type of bolted or keyed-in hard center gives best results?
22. What is recommended as standard rail to be used in permanent paving—brick, asphalt, bitulithic?
23. Has satisfactory service been obtained from patent joints designed for use on old rail, where the rail is considerably worn?

CAR HOUSES

24. What is the best system of fire protection for open railway yards?
25. Is there any automatic system for open yards?

LINES—OVERHEAD AND UNDERGROUND.

26. What should be the transmission loss on a d.c. 600-volt line, provided proper amount of copper is put up?
27. Have you used gasoline wagons for either emergency or regular city trolley repair work? If so, how long, how many, weight and horse-power of engines?
28. Do you recommend the use of gasoline trolley repair wagons in preference to animal wagons? What is the difference in cost of maintenance?

CAR BODIES

29. Has anyone had any experience with the use of wood preservatives on car bodies?
30. What is the most economical color for use on cars in a hot, sunny climate?
31. If a car body is down hard on the side bearing plates on one side, would this not interfere with the free movement of the trucks on sharp curves, and be liable to cause derailment?

CAR EQUIPMENT

32. What is your experience with, and your estimation of the value of, grooving commutators, to date?
33. How does the maintenance cost of interpole motors compare with that of the straight series motor?
34. What kind of oil has given most satisfaction in lubricating engineer's valve?
35. In elevated or subway service, what is the maximum difference allowable in the standing brake-cylinder piston travel and running brake-cylinder piston travel, before the wear in the pedestal boxes or other parts of truck should be taken care of?
36. What are the causes of broken brushes on 101-B motor, and remedy?
37. What variation from the correct distance may be allowed between axle and armature shaft and still obtain good results in gears, pinions and bearings?

WHEELS, AXLES AND TRUCKS

38. What is proper pressure for pressing cast-iron and rolled steel wheels and cast-steel gear wheels on the following sizes of axles: 4-in., 4½-in. and 5-in.? (Knees not to be used.)
39. Owing to the bad riding of cars, excessive wear of brake hangers and waste of power due to lost end motion of journal boxes on axles having M. C. B. journals, should this type of journal be modified by some device to check the end motion, and what would be the best device to use?
40. What are the causes of thick and thin wheel flanges, and remedy?
41. What wear should be obtained from cast-iron wheels under 11-ton cars, expressed in terms of (*a*) Car miles; (*b*) Reduction of diameter; (*c*) Percentage of weight?
42. What is the relative efficiency and maintenance cost of solid steel wheels as compared with steel-tired wheels?
43. What success has been attained towards correcting sharp flange wear of car wheels by reducing, by turning or grinding, the excessive diameter of the thick flange wheel on the same axle?
44. Is not the present 1-8 inch side clearance between standard journal-boxes and the brass and wedge more than is desirable? Would not a better condition be obtained by reducing this clearance to 1-16 inch, the journal-box being machined to a dimension of 1-16 inch in excess of width of standard brass and wedge?

MISCELLANEOUS

45. What is the most feasible and economical means of transmitting 400 amperes 8½ miles over a mountain interurban line, operating conditions being as follows:
    Headway, 20 minutes.
    Average speed first mile, 10 miles per hour.
    Average speed next four miles, 35 miles per hour.
    Average speed last three and one-half miles, 10 miles per hour.
    Average stops per mile for the above sections, 2.0, .29 and .86 respectively.
    Grades:
    First three miles, straight and level.
    Next two miles, straight, average grade 2½ per cent.
    Last three and one-half miles, 80 ft. radius curves every 200 feet, average grade 4 per cent.
    Equipment: Eight 25-ton cars, with four 160 h. p. motors per car.
46. Should not all city and interurban electric railroads adopt standardization as fast as possible?

Cleveland Traction Situation

The Cleveland Railway may have to face a deficit by the refusal of the City Council on July 5, 1910, to increase the operating expenses to an amount above that specified in the Tayler ordinance. This action had been recommended by Street Railway Commissioner Dahl, although he has so far indicated no other course to relieve the company from the increase in operating expenses resulting from the advance in wages made by the board of arbitration. Mr. Dahl states that the matter of wages is between the city, as the representative of the car riders, and the employees, and suggests that the company seek to have its demand for increased operating expenses arbitrated. It is difficult to understand the source of revenue to cover the increased wages. Mr. Dahl says that the $70,000 surplus accumulated under the Tayler ordinance must go to the interest fund.

It has been stated that Mr. Dahl favors a conference between officials of the company, representatives of the men and himself, with a view to reducing the advance granted the men. About 1¾ cents an hour could be added to the old scale under the present allowance. Mr. Stanley agrees with Mr. Dahl that the advance is excessive, but under the agreement between the company and its employees made in 1906, differences regarding wages on the expiration of the schedule adopted at that time were to be submitted to arbitration.

The debt claimed by the city is still unpaid by the Cleveland Railway, although July 7, 1910, was fixed as the date when an answer was to have been made to the claim that $117,000 is due the city.

New Indiana Road Opened.—The Valparaiso & Northern Railway has been opened for service between Valparaiso and Flint Lake.

New Road Opened in Maine.—The Aroostook Valley Railroad, which connects Washburn and Presque Isle, Maine, 12 miles distant, has been placed in operation.

Omaha Strike Declared Off.—The representatives of the employees of the Omaha & Council Bluffs Street Railway, Omaha, Neb., who went on strike in September, 1910, formally declared the strike off on July 8, 1910. As stated in the ELECTRIC RAILWAY JOURNAL at the time, the strike petered out within a week after it had been declared.

New Jersey Utility Commission.—The New Jersey Board of Railroad Commissioners was succeeded on July 4, 1910, by the Board of Public Utility Commissioners with the same personnel as the Board of Railroad Commissioners, but with increased powers. The full text of the New Jersey Public Utility Bill was published in the ELECTRIC RAILWAY JOURNAL of April 2, 1910.

Outing of New England Street Railway Club.—The summer outing of the New England Street Railway Club was held on July 1, 1910, on Narragansett Bay. About 170 persons were in attendance, one-third of whom were ladies. A special train carried the party from Boston to Providence in the morning, and the rest of the day was spent aboard the steamer *Warwick*, of the Providence & Fall River Steamboat Company. A clambake was enjoyed at noon. The itinerary included a visit to Newport waters. The party returned to Boston from Providence by train in the early evening.

Boston & Western Electric Railroad Receives Certificate.—The Massachusetts Railroad Commission has issued a certificate of exigency to the Boston & Western Electric Railroad, which has been before the commission under three separate petitions for about four years. The certificate authorizes the company to build a high-speed electric interurban railway between Waltham and Marlboro, with a branch to Maynard. Other municipalities to be traversed are Weston, Wayland and Sudbury. The cost of the proposed line will be about $1,552,000, and it is intended to utilize it as a part of a through route for cars running between Worcester and Boston via Marlboro and Waltham. At the Boston end of the line the company will probably turn its passengers over to the Boston Elevated Railway and utilize the new Cambridge subway in securing a fast route into the heart of the city.

Financial and Corporate

New York Stock and Money Market

July 12, 1910.

The temporary check to the decline and the partial recovery of prices in the stock market were due to the fact that the market was sold out. The heavy liquidation that caused the decline cleaned up the available supplies of stock and the covering by shorts, together with some investment buying, resulted in slight advances. The longs are having a hard time, however, holding prices. At every appearance of activity they slide downward and the close today was near the low point for the year.

Money conditions are favorable, and liberal gold imports are probable. Quotations today were: Call 2@3 per cent, 90 days 4@4¼ per cent.

Other Markets

While the Philadelphia market has been irregular and ragged during the entire week, there have not been any very definite price changes. Traction shares have held their ground fairly well and prices at the finish were about as good as at the beginning.

There has been very limited trading in tractions on the Chicago market during the past week. Metropolitan Elevated, which declined so sharply when the merger plans were checked two weeks ago, has recovered to some extent.

In the Boston market traction issues have been very dull during the week. Even Massachusetts Electric, which has recently been active, came into the market very slowly.

In the Baltimore market there were 2,270 shares of United Railways stock sold today. This is the most active trading that has yet occurred. The price was from 14⅜ to 14⅝, which is fully one point advance over last week. The air is still full of rumors that New York interests are endeavoring to acquire control.

Quotations of various traction securities as compared with last week follow:

	July 5.	July 12.
American Railway Company	a42½	a42½
Aurora, Elgin & Chicago Railroad (common)	a*60	52
Aurora, Elgin & Chicago Railroad (preferred)	*91	86
Boston Elevated Railway	a126	a126
Boston & Suburban Electric Companies	*14	a15
Boston & Suburban Electric Companies (preferred)	*74	a74
Boston & Worcester Electric Companies (common)	a10½	a10½
Boston & Worcester Electric Companies (preferred)	a40	37
Brooklyn Rapid Transit Company	73⅜	76⅝
Brooklyn Rap. Transit Company, 1st pref. conv. 4s	82	82
Capital Traction Company, Washington	a130	a130
Chicago City Railway	a195	a195
Chicago & Oak Park Elevated Railroad (common)	*3¼	*3¼
Chicago & Oak Park Elevated Railroad (preferred)	*7¼	*7¼
Chicago Railways, ptcptg., ctf. 1	a75	a75
Chicago Railways, ptcptg., ctf. 2	a17	a17
Chicago Railways, ptcptg., ctf. 3	a11	a11
Chicago Railways, ptcptg., ctf. 4s	a6½	a6½
Cleveland Railways	*91½	*91½
Consolidated Traction of New Jersey	a75	a74
Consolidated Traction of N. J. 5 per cent bonds	a103	a103
Detroit United Railway	*50½	45
General Electric Company	140	141
Georgia Railway & Electric Company (common)	a108	a107½
Georgia Railway & Electric Company (preferred)	a87	a87
Interborough-Metropolitan Company (common)	17	17⅝
Interborough-Metropolitan Company (preferred)	49	50½
Interborough-Metropolitan Company (4½s)	79½	79⅞
Kansas City Railway & Light Company (common)	a25½	a25½
Kansas City Railway & Light Company (preferred)	a73	a75
Manhattan Railway	125	128
Massachusetts Electric Companies (common)	*15⅞	14¾
Massachusetts Electric Companies (preferred)	*80	a78
Metropolitan West Side, Chicago (common)	a23½	*23½
Metropolitan West Side, Chicago (preferred)	a58½	*58½
Metropolitan Street Railway	*15	*15
Milwaukee Electric Railway & Light (preferred)	*110	*110
North American Company	65	66⅛
Northwestern Elevated Railroad (common)	a25	*25
Northwestern Elevated Railroad (preferred)	a63	a65
Philadelphia Company, Pittsburg (common)	a42½	a42½
Philadelphia Company, Pittsburg (preferred)	a43	a43
Philadelphia Rapid Transit Company	a18⅛	a18¾
Philadelphia Traction Company	84½	a84½
Public Service Corporation, 5 per cent col. notes	a96	a96
Public Service Corporation, ctfs.	a100	a99
Seattle Electric Company (common)	*110	a109
Seattle Electric Company (preferred)	*100	a99½
South Side Elevated Railroad (Chicago)	*72¾	*72¾
Third Avenue Railroad, New York	7½	9¾
Toledo Railways & Light Company	6¾	7⅜
Twin City Rapid Transit, Minneapolis (common)	106¾	107
Union Traction Company, Philadelphia	a44¾	a44¾
United Rys. & Electric Company, Baltimore	a14½	a14½
United Rys. Inv. Co. (common)	*30	*30
United Rys. Inv. Co (preferred)	50	*50
Washington Ry. & Electric Company (common)	a33½	a33½
Washington Ry. & Electric Company (preferred)	a87½	a88
West End Street Railway, Boston (common)	a88	a88
West End Street Railway, Boston (preferred)	a100	a100
Westinghouse Elec. & Mfg. Company	60	59
Westinghouse Elec. & Mfg. Company (1st pref.)	*125	*125

a Asked. * Last Sale.

12624

Court Approves Settlement of Suit by New York City Railway Against Metropolitan Securities Company

On July 8, 1910, Judge Lacombe, of the United States Circuit Court, instructed William W. Ladd, receiver of the New York City Railway, to accept the settlement of $5,500,000 offered by the Interborough-Metropolitan Company, New York, and several former directors of the Metropolitan Securities Company, in settlement of all pending litigation in the Federal Courts between the New York City Railway and the Metropolitan Securities Company. As stated in the ELECTRIC RAILWAY JOURNAL of July 9, 1910, the $5,500,000 will be applied in the reorganization of the Metropolitan Street Railway toward the fund of $12,000,000 which it has been estimated will be required to meet the present needs of the company. Judge Lacombe, in his memorandum of July 8, 1910, said in part:

"Irrespective of other considerations, the cash offer of $5,500,000 is a large one. The total amount of receiver's claims, including interest, is $8,615,555.24, but to recover that sum it would be necessary for him to prevail on substantially every one of the questions in controversy between himself and the various defendants.

"Defeat on two or three points only might result in producing after some years a smaller sum of money than is now offered. What these controversies are may be seen by reference to the opinion of counsel. In the one case it is apparent that the question raised would have to be taken to the Supreme Court.

"Irrespective of the other serious questions referred to in the papers presented, it is to be remembered that the suit against the Metropolitan Securities Company impleaded with certain directors of the New York City Railway, is one for a diversion of capital of the last-named company to the treasury of the former. Whether or not under these circumstances interest could be recovered against any one other than the corporation defendant which received the diverted capital is problematical. That corporation is already bankrupt. The item of interest on this claim alone amounts to $1,200,000.

"In the other suit, called the stockholders' suit, the various defences are set forth in the opinion of counsel and it is manifest that there are difficulties in the way of recovery which indicate a protracted litigation with no certainty as to the ultimate result. Moreover, if such litigation were entirely successful in all respects, the result would be a large judgment against another corporation, and, as the experience of this receivership has indicated, it sometimes happens that when a particularly large judgment is obtained against such a corporation it turns out to be insolvent.

"In view of all these circumstances it seems wise for the receiver to accept the offer and he is instructed to do so. Even if the court entertained any doubt as to the wisdom of such a course the same instructions would be given in view of the substantially unanimous expression of approval by the representatives of the creditors and of all other interests who have appeared."

Wilmington Properties Absorbed by Wilmington & Philadelphia Traction Company.

O. T. Crosby, who has been elected president of the Wilmington & Philadelphia Traction Company, incorporated recently with a capital stock of $6,500,000, has issued a statement regarding the purpose of the company in part as follows:

"The Wilmington & Philadelphia Traction Company has assumed control of the Wilmington Street Railway and allied lines in Wilmington, Del.; of the Chester Traction Company and allied lines in and about Media, Darby and Lansdowne; of the Wilmington City Electric Company in Wilmington, Del.; of the Wilmington Light & Power Company, Wilmington, Del., and of the Wilmington Automatic Telephone Company. The last-named companies have heretofore been under one management, and all the others have been under another management.

"It will be impossible to accomplish immediately all that is prospected. The new management will be urgent for its own sake, as well as for the public good, to establish conditions approved by the majority as being fair to all. It would be past human power to obtain unanimous approval of any effort affecting many men.

"The properties in Pennsylvania will be operated by the Southern Pennsylvania Traction Company."

J. G. White & Company, Inc., New York, N. Y., are interested in the Wilmington & Philadelphia Traction Company, and at their office it was stated that an announcement would soon be issued giving the details of the merger. The statement by Mr. Crosby was addressed to the public of the territory in which the absorbed companies operate.

American Light & Traction Company, New York, N. Y.—The American Light & Traction Company has declared the usual quarterly dividend of 2½ per cent on its common stock, payable on Aug. 1, 1910, to holders of record on July 16, 1910, and an extra dividend of 2½ per cent, payable in common stock on Aug. 15, 1910, to holders of record on July 16, 1910.

Birmingham Railway, Light & Power Company, Birmingham, Ala.—The Birmingham Railway, Light & Power Company, which paid an annual dividend of 2 per cent on the $3,500,000 of common stock of the company on Jan. 1, 1910, paid a dividend of 2½ per cent on the common stock on July 1, 1910. The dividend paid on the common stock in January was the first dividend on this stock which had been paid since Dec. 31, 1906.

Boston Suburban Electric Companies, Boston, Mass.—The Boston Suburban Electric Companies paid off the $500,000 of 5 per cent coupon notes due on July 1, 1910, at maturity with the proceeds of $450,000 of new notes bearing a lower rate of interest and with $50,000 from the surplus.

Brooklyn (N. Y.) Rapid Transit Company.—The directors of the Brooklyn City Railroad have declared a quarterly dividend of 2 per cent on the $12,000,000 of stock of the company, payable on July 15, 1910, to holders of record on July 5, 1910, out of the rental paid by the Brooklyn Heights Railroad, amounting to $1,200,000 (10 per cent) annually. It is explained that pending the appeal from the decision handed down in February, 1910, by which the Brooklyn Heights Railroad was held to be entitled to recover $3,356,938 from the Brooklyn City Railroad, ½ of 1 per cent of the rental paid by the Brooklyn Heights Railroad to the Brooklyn City Railroad will be retained quarterly, and be set aside in a special fund and returned to the stockholders in case it is not needed to settle the claim of the Brooklyn Heights Railroad.

Chicago (Ill.) Railways.—Representatives of different interests involved in the reorganization of the Chicago Railways met during the week ended July 9, 1910, and agreed on the form of foreclosure decree. Two plans had been submitted, one for a separate decree for each of the nine foreclosure suits, the other allowing one decree for all. The joint decree was selected.

Connecticut Valley Street Railway, Northampton, Mass.—The Railroad Commission of Massachusetts has authorized the Connecticut Valley Street Railway to issue $100,000 of 6 per cent cumulative preferred stock, to retire an equal amount of the first and refunding bonds.

Eastern Ohio Traction Company, Cleveland, Ohio.—Robert D. Beatty, as general manager of the Cleveland & Eastern Traction Company, has issued the following notice regarding the Eastern Ohio Traction Company, the Eastern division of which was sold under foreclosure recently to a representative of the holders of the first mortgage bonds of the company: "Announcement is hereby made that pursuant to the reorganization of the Eastern Ohio Traction Company properties, the Gates Mill, Chardon and Middlefield Division will be operated under the name of the Cleveland & Eastern Traction Company, general offices, 701 Electric Building, Cleveland; payments for accounts due, also accounts against the above-named division, should be made and rendered accordingly."

Fonda, Johnstown & Gloversville Railroad, Gloversville, N. Y.—The Fonda, Johnstown & Gloversville Railroad has declared an initial dividend of 2 per cent on its $2,500,000 of common stock, payable on July 20, 1910, to holders of record of July 11, 1910.

Illinois Valley Gas & Electric Company, Streator, Ill.—The Illinois Valley Gas & Electric Company has filed for

record its mortgage to the Illinois Trust & Savings Bank, Chicago, Ill., given to secure an issue of $10.000,000 of 5 per cent gold bonds dated May 1, 1910, and due May 1, 1940. The Illinois Valley Gas & Electric Company controls the Illinois Light & Traction Company.

Jacksonville (Fla.) Electric Company.—The Jacksonville Electric Company has declared a semi-annual dividend of 3½ per cent on the common stock of the company, payable on Aug. 1, 1910, to holders of record on July 12, 1910. This increases the dividend from 6 per cent to 7 per cent a year.

Lewiston, Augusta & Waterville Street Railway, Lewiston, Me.—An initial quarterly dividend of 1½ per cent has been declared on the preferred stock of the Lewiston, Augusta & Waterville Street Railway, payable on Aug. 1, 1910, to holders of record on July 15, 1910.

Lima & Honeoye Electric Light & Railroad Company, Lima, N. Y.—The Public Service Commission of the Second District of New York has received a petition from the Lima-Honeoye Electric Light & Railroad Company and the Lima-Honeoye Light Company for consent to transfer and lease property and franchises of the Lima-Honeoye Electric Light & Railroad Company; and a petition from the Lima-Honeoye Light Company for an order authorizing the issue of $5,000 par value of its capital stock for the improvement and maintenance of the electrical plant, distributing system and railroad leased to it by the Lima-Honeoye Electric Light & Railroad Company.

Northampton Traction Company, Easton, Pa.—A meeting of the stockholders of the Northampton Traction Company has been called for Aug. 27, 1910, to authorize an issue of $5,000.000 of bonds, the proceeds to be expended in connection with the plan to consolidate the Northampton Traction Company and the Easton & Washington Traction Company.

Oakland & Antioch Railway, Oakland, Cal.—The Oakland & Antioch Railway, which has an electric railway under construction between Oakland and Antioch, has filed a mortgage in favor of the Anglo-California Trust Company, San Francisco, Cal., to secure an issue of $2,000,000 of 30-year 5 per cent bonds.

Sedalia Light & Traction Company, Sedalia, Mo.—Herbert R. Hallett, president of the Atlantic National Bank, Boston, Mass., has been elected a member of the committee which has been selected to represent the holders of the first mortgage bonds of the company.

Third Avenue Railroad, New York, N. Y.—The hearings before the Public Service Commission of the First District of New York on the plan for the reorganization of the Third Avenue Railroad, submitted by the committee representing the bondholders, were closed on July 11, 1910.

Tiffin, Fostoria & Eastern Electric Railway, Tiffin, Ohio.—Control of the Electric Railway & Power Company of Tiffin has passed to Samuel B. Sneath, president and general manager of the Tiffin, Fostoria & Eastern Electric Railway, and others who are interested in that company. It is expected that the Electric Railway & Power Company of Tiffin will be merged with the Tiffin, Fostoria & Eastern Electric Railway.

Washington, Berwyn & Laurel Electric Railway, Washington, D. C.—Charles F. Gladfeller has been appointed receiver of the Washington, Berwyn & Laurel Electric Railway on application of the Guardian Savings & Trust Company, Cleveland, Ohio, trustee of a mortgage given to secure $220,000 of 5 per cent bonds, payable in 1921, the interest on which is in default.

Western Ohio Railway, Lima, Ohio.—The stockholders of the Western Ohio Railway have voted to lease the property to the Western Ohio Railroad, which was organized recently for this purpose, as announced in the Electric Railway Journal of June 11, 1910, page 1041. The personnel of the Western Ohio Railroad is the same as that of the Western Ohio Railway.

Wisconsin Traction, Light, Heat & Power Company, Appleton, Wis.—The Wisconsin Traction, Light, Heat & Power Company has been authorized by the Wisconsin Railroad Commission to issue $500,000 of 5 per cent 30-year additional first mortgage gold bonds, maturing on July 1, 1931, for extensions and additions, the bonds to be sold for not less than 75 per cent of their par value.

Traffic and Transportation

Pennsylvania Railroad's New York Tunnels to Be Opened on Sept. 8

Ralph Peters, president of the Long Island Railroad, has stated, following an official inspection of all work in Manhattan and on Long Island that is being completed by the Pennsylvania Railroad and Long Island Railroad, that the East River tunnels will not be opened until Sept. 8, 1910, when the fall timetable goes into effect. The official announcement follows:

"Although the Pennsylvania Railroad's station, tunnels and yards were inspected by James McCrea, president of the Pennsylvania Railroad, and by Ralph Peters, president of the Long Island Railroad, in company with engineers and staff officers on July 6, 1910, to determine definitely upon a date for the Long Island Railroad to inaugurate its through service to New York, they found that the tracks and platforms will be ready for such service by Aug. 1, 1910, or even earlier, but the conditions of the station proper, on account of the large amount of cleaning up, installing fixtures and furnishings, breaking in and training station forces, and other proper operations of so large and important a terminal will not justify its being opened earlier than Sept. 8, 1910, when the fall timetable is put into effect.

"While it is true that traffic on the Long Island Railroad might be handled on certain platforms accessible without passing through the main station, it is thought best and wisest to wait until the entire station can be used. Therefore, this official notice is given by the Long Island Railroad that it will inaugurate service to the Pennsylvania Station on Sept. 8, 1910. Through electric service will be operated from Far Rockaway branch, from Long Beach, from the Hempstead branch and from Jamaica, connecting with all steam trains. A sufficient number of trains will stop at Winfield to make connections with all trains on the Port Washington and Whitestone branches. Ample equipment will be provided by Sept. 1, 1910, so that the business will be fully cared for."

Accidents in New York in May

The Public Service Commission of the First District of New York has issued the following comparative summary of accidents which occurred during May, 1908; May, 1909, and May, 1910, on the railways in the territory under its jurisdiction.

May.	1908.	1909.	1910.
Car collisions	195	144	84
Struck by cars	1,016	822	982
Boarding	627	647	683
Alighting	772	830	933
Contact electricity	43	21	35
Other accidents	2,499	2,048	2,082
Total	5,152	4,512	4,799
Injuries.			
Passengers	2,066	1,962	2,063
Not passengers	694	559	487
Employees	622	459	640
Total	3,382	2,980	3,190
Serious (Included in above).			
Killed	32	32	32
Fractured skulls	15	8	3
Amputated limbs	3	5	4
Broken limbs	41	26	32
Other serious	151	132	154
Total	242	203	225

New Route to Coney Island.—The Coney Island & Brooklyn Railroad is operating a new line to Coney Island from loop 3, Brooklyn Bridge, by way of De Kalb Avenue. Hitherto only the Smith Street cars started for Coney Island from this loop.

Toledo Trolley Trips.—The Toledo Railways & Light Company, Toledo, Ohio, has issued a publication entitled, "Toledo Trolley Trips," in which the attractive places within easy reach of Toledo by electric railway are described and illustrated.

Accident in Brooklyn.—One person was killed and more than a score of persons were injured on July 8, 1910, when

a car of the Brooklyn (N. Y.) Rapid Transit Company, bound for Canarsie, a pleasure resort, left the tracks and crashed into a trolley pole.

Change in Fare Between Portland and Vancouver.—The Portland Railway, Light & Power Company, Portland, Ore., has announced that the round-trip fare from Vancouver to Portland, or from Portland to Vancouver, will be reduced from 35 cents to 30 cents, to take effect on July 26, 1910.

Complaint Dismissed.—The Public Service Commission of the Second District of New York has closed upon its records the complaint of residents of Dunkirk and Fredonia against the Buffalo & Lake Erie Traction Company and the Chautauqua Traction Company as to the connection of these two lines at Westfield. The commission is advised by the attorney for the complainants that the matter has been adjusted to the satisfaction of the complainants.

Fares on Chautauqua Traction Company's Line.—On July 1, 1910, the Chautauqua Traction Company, Jamestown, N. Y., established 20-trip commutation ticket fares in either direction between Jamestown and Chautauqua, also intermediate points, at $4, and in either direction between Jamestown and Mayville, or intermediate points, at $5. This is a reduction from round-trip fare of 75 cents between Jamestown and Chautauqua, and 90 cents between Jamestown and Mayville.

Petition to Rescind Speed Ordinance.—Residents in Hollywood and the northwestern section of Los Angeles, Cal., have petitioned the Mayor to use his influence to have repealed the ordinance which went into effect recently limiting the speed of cars at crossings to 6 m.p.h., within the business district, to 12 m.p.h., and in the outlying sections to 20 m.p.h. The petitioners think that the motormen should be allowed to judge for themselves the speed at which it is safe to operate their cars.

Time-Table of Road Out of Philadelphia.—The Philadelphia & West Chester Traction Company, Philadelphia, Pa., has issued a very convenient time-table, effective on July 1, 1910, of trains over its line between Philadelphia and Newtown Square, West Chester, Llanerch and Ardmore, and Clifton and Collingdale. The publication contains a map of the Philadelphia & West Chester Traction Company's system, connecting lines and the electric railways in the vicinity of Philadelphia west to Harrisburg.

Central Electric Traffic Association Table.—The Central Electric Traffic Association has issued its new short-line distance table, compiled by the chairman of the association. It shows the absolute short-line distances between all the headline points shown in Joint Passenger Tariff No. 3, issued and compiled by the association. The table will be used to combat competition with the steam railroads. The table shows the distances between 34 important points in the Central Electric Traffic Association's territory.

Demands of New Orleans Employees Refused.—The directors of the New Orleans Railway & Light Company, on July 9, 1910, refused to grant the demand of motormen and conductors in its employ for a 3-year contract on a sliding scale that will reach 25 cents per hour the last year. The directors insist on a 6-year contract, with an increase of one-fourth of a cent per hour each year. A bonus is offered the 6th year, provided the Panama exposition is held in New Orleans. The men have declined the offer of the company, and have asked the company to arbitrate the differences.

Advertising an Electric Railway.—The Louisville & Northern Railway & Lighting Company, New Albany, Ind., is conducting an aggressive advertising campaign to encourage the use of the company's lines between Louisville and Indianapolis. Newspaper space and billboards have been used freely and the company has now erected an electric sign to overlook Lincoln Park, north of the postoffice in Louisville. "Go the Electric Way" is outlined in large letters on the sign, while the red car referred to in the company's advertisements in the newspapers is reproduced in outline in incandescent lamps in practically its full size.

Operation of Interurban Cars in Rochester.—The Public Service Commission of the Second District of New York has directed the New York State Railways to have the cars of the Rochester, Syracuse & Eastern Railroad operated over its tracks in Rochester as follows: All westbound cars to run through Franklin Street, Andrews Street, State Street, Allen Street and Plymouth Avenue, returning eastbound on Main Street from Plymouth Avenue to University Avenue, except train 76, due to leave Four Corners at 6 p. m. and train 42, due to leave Four Corners at 6:05 p. m., both of these trains to be operated as at present, crossing the Main Street tracks at State Street and running via Exchange Street, Court Street and Clinton Street to Main Street.

Employees' Magazine in Chicago.—There has just been published in Chicago the first issue of a magazine called *The Round Table*, which is to be distributed free among the employees of all the electric railways in Chicago, the revenue to the publishers to be derived exclusively from the advertising. *The Round Table* is designed along the lines of the Santa Fe employees' magazine, which has been very successful. The first issue contains 44 pages. Among the articles which appear are: "Public Utilities and the People," "Mr. Downs Accepts New Place," "Rehabilitation of Chicago's Traction Lines," "How the Speed of the Car is Controlled," "The Purchasing Power of a Nickel," and "New Cars for the Chicago & Oak Park Elevated Railroad."

Through Service in Indiana.—The proposed through interurban service between Indianapolis and South Bend will not be put into effect. Instead, service will be established between Indianapolis and Goshen, Ind., passengers between Indianapolis and South Bend being obliged to change cars at Goshen. The Indiana Union Traction Company and the Winona Interurban Railway have agreed to furnish service as far north as Goshen, the Indiana Union Traction Company's tracks to be used to Peru and the Winona Interurban Railway between Peru and Goshen. A number of new cars will be used in this service, and a limited schedule will be established. The original plans to establish through service between Indianapolis and South Bend were abandoned because an agreement could not be reached between the Indiana Union Traction Company, the Winona Interurban Railway and the Northern Indiana Railway in regard to continuing the service to Michigan City.

Complaint Against Service in Troy.—The Public Service Commission of the Second District of New York has received a complaint from Elias P. Mann, Mayor of Troy, N. Y., about the operation of the Oakwood Avenue Line of the United Traction Company in that city. A previous complaint was made to the commission asking that a 10-minute service from 6 A. M. to 9 A. M., and thereafter up to 12.30 at night a 15-minute service be required in accordance with an ordinance of the Common Council of Troy adopted Dec. 1, 1908. The commission made an order requiring a 15-minute service, but this was afterwards changed to the 20-minute service, which is now in effect at the request of the citizens. The complaint now made asks that the United Traction Company be compelled to run its cars every 10 minutes each way every day from 6 a. m. until 9 p. m. and thereafter every 15 minutes until 12.30 at night.

Experimental Night Service in Harrisburg.—Reference has been made previously in the ELECTRIC RAILWAY JOURNAL to the efforts of certain interests in Harrisburg to compel the Central Pennsylvania Traction Company to operate an owl car service and to the argument which the company advanced to prove that such service was not needed. An informal discussion of the matter was held recently at the offices of the State Railroad Commission between the members of the commission and representatives of the company with reference to a night service, and it was decided that an experimental service for a short time would show whether or not there was a public demand for such service. F. B. Musser, president of the company, stated that if there was a demand for night cars sufficient to pay for the cost of their operation, the company desired to meet it, and would continue the service. It is not practicable to run the power plant of the company for a single night car; but, as soon as arrangements can be made for procuring power elsewhere, a half hourly service will be instituted between the Square and the upper end of the city. The commission will retain the papers in the case and will not make any recommendation or order until the test has been concluded.

Personal Mention

Mr. Robert Hollis has been appointed chief electrician of the Indianapolis, New Castle & Toledo Electric Railway.

Mr. George Ale has been appointed master mechanic of the Indianapolis, New Castle & Toledo Electric Railway, New Castle, Ind.

Mr. H. B. McNulty has been appointed assistant manager of the Chambersburg, Greencastle & Waynesboro Street Railway, Waynesboro, Pa.

Mr. W. R. Reynolds, formerly superintendent of the Chicago, South Bend & Northern Indiana Railway, South Bend, Ind., has been appointed general manager of the American Light & Power Company, Kansas City, Mo.

Mr. A. G. Wishon, vice-president and general manager of the Fresno (Cal.) Traction Company, has resigned as general manager of the company to devote his entire attention to the interest of the San Joaquin Light & Power Company and the Fresno City Water Company.

Mr. L. C. Bradley, whose appointment as manager of the Galveston (Tex.) Electric Company was announced in the Electric Railway Journal of May 28, 1910, has also been appointed manager of the Galveston-Houston Interurban Railway, which is controlled by Stone & Webster, Boston, Mass.

Mr. A. H. Otis has been appointed general manager of the Ocean Shore Railway, San Francisco, Cal., to succeed Mr. J. Downey Harvey. Mr. Otis was formerly superintendent of the Boca & Loyalton Railroad, Loyalton, Cal., which operates a standard-gage steam railroad in California more than 50 miles long.

Mr. Robert D. Beatty, who was receiver of the Eastern Ohio Traction Company, Cleveland, Ohio, the eastern division of which was sold under foreclosure recently, has been appointed general manager of the Gates Mill, Chardon and Middlefield division of the company, which will hereafter be operated under the name of the Cleveland & Eastern Traction Company, Cleveland, Ohio.

Mr. Mortimer P. Reed has been appointed general superintendent of the Chicago, South Bend & Northern Indiana Railway, South Bend, Ind., to succeed Mr. R. W. Reynolds, resigned. Mr. Reed was formerly secretary and treasurer of the Southern Michigan Railway, South Bend. He has recently been assistant superintendent of the Chicago, South Bend & Northern Indiana Railway.

Mr. James J. Gill, Albany, N. Y., has been appointed an assistant supervisor of equipment by the Public Service Commission of the Second District of New York. Mr. Gill was born in Kingston, N. Y., and was educated in the public schools of Kingston, St. Joseph's Academy and St. Vincent's College in Pennsylvania. He has been in the employ of the New York Central & Hudson River Railroad since 1879.

Mr. O. T. Crosby has been elected president of the Wilmington & Philadelphia Traction Company, and the Southern Pennsylvania Traction Company, Wilmington, Del., which have recently been incorporated to take over the Wilmington & Chester Traction Company, the Wilmington City Electric Company, the Wilmington Light & Power Company and the Wilmington Automatic Telephone Company.

Mr. F. W. Webster, general manager and superintendent of the Stockton (Cal.) Electric Railroad, has also been appointed general manager of the Fresno (Cal.) Traction Company, to succeed Mr. A. G. Wishon, vice-president and general manager of the company, who retires as general manager to devote all his time to the interest of the San Joaquin Light & Power Company and the Fresno City Water Company.

Mr. A. W. McLimont, formerly general manager of the Chicago & Milwaukee Electric Railroad, Highwood, Ill., and now vice-president and general manager of the Michigan United Railway, Lansing, Mich., was tendered a banquet recently by the heads of the departments of the Chicago & Milwaukee Electric Railroad, including Mr. E. J. Bock, superintendent; Mr. C. E. Thompson, auditor and passenger agent; Mr. Walter Sylons, master mechanic; Mr. F. E. Low, division superintendent; Mr. C. R. Phenicie, electrical engineer; Mr. E. J. Morgan, purchasing agent; Mr. D. P. McCarthy, roadmaster, and Mr. E. H. Vivian, general traffic manager. Mr. McLimont was presented with a gold watch suitably inscribed and an engraved, copy of resolutions which were unanimously adopted by the Brotherhood of Interurban Trainmen at their meeting in June, 1910.

Mr. S. D. Wager has been appointed superintendent and traffic solicitor of the Toledo & Indiana Traction Company, Toledo, Ohio, which has succeeded to the property of the Toledo & Indiana Railway, which was sold recently under foreclosure. Mr. Wager was formerly general shop foreman of the Northern Ohio Traction & Light Company at Canton, Ohio. Mr. Wager began his railroad career in 1891, and since that time he has been connected with the Lake Shore & Michigan Southern Railroad; Chicago, Rock Island & Pacific Railroad; Missouri, Kansas & Texas Railroad; Toledo & Indiana Railway, and the Toledo, Port Clinton & Lake Side Railway, Genoa, Ohio. On June 15, 1906, Mr. Wager was appointed chief train dispatcher of the Toledo, Port Clinton & Lake Side Railway, and on Nov. 15, 1907, he was promoted to the position of general shop foreman of the company. In July, 1908, he was made master mechanic of the Toledo, Port Clinton & Lake Side Railway, and in April, 1909, he was appointed general shop foreman of the Northern Ohio Traction & Light Company. As superintendent and traffic solicitor of the Toledo & Indiana Traction Company, Mr. Wager will have his headquarters at Delta, Ohio. The Toledo & Indiana Traction Company operates more than 50 miles of line, over which about 35 cars are in regular service.

OBITUARY

W. A. Stadelman died on July 6 at his home in Rye, N. Y., at the age of 46 years. Mr. Stadelman was at one time a member of the firm of Chadbourne, Hazleton & Stadelman, of Philadelphia, which was quite active in the electric railway and electric motor field. For several years Mr. Stadelman was identified with the Brown Hoisting Machinery Company, of Cleveland, and the Wellman-Seaver-Morgan Company, of the same city, residing for a time in Cleveland, and later in New York. For the past two or three years Mr. Stadelman was at the head of the Darley Engineering Company, of New York. The funeral services were held in Rye on July 8, 1910, and the body was interred in Philadelphia.

Frederick H. Lincoln, vice-president and general manager of the Pay-Within Car Company, Philadelphia, Pa., was killed at West Philadelphia on the morning of July 11, 1910, while trying to board a moving train of the Pennsylvania Railroad. Mr. Lincoln had spent the week-end with his family at Atlantic City, and had made the trip from Atlantic City to West Philadelphia so as to change cars at that place for Washington, where he had a business engagement. Mr. Lincoln was formerly assistant general manager of the Philadelphia Rapid Transit Company, and was one of the co-inventors of the Pay-Within car. When he resigned from that company in December, 1909, to become connected with the Pay-Within Car Company, which is affiliated with the Electric Service Supplies Company, a biographical sketch was published in the Electric Railway Journal in which his work with the Philadelphia Rapid Transit Company in particular was reviewed. Mr. Lincoln was born in Boston, Mass., on May 28, 1867 After serving seven years with the Thompson-Houston Electric Company he entered street railway work in 1891 with the Toledo (Ohio) Consolidated Street Railway. In 1893 he entered the employ of the People's Traction Company, Philadelphia, Pa., and continued with that company and its successors in various capacities for 16 years. Mr. Lincoln was elected president of the American Street & Interurban Railway Engineering Association at the convention in Denver in 1909, but resigned that position when he retired from railway work to become connected with the Pay-Within Car Company. He was also a member of the American Institute of Electrical Engineers.

Construction News

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

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

RECENT INCORPORATIONS

American Falls, Rockland & Southeastern Railway, Boise, Idaho.—Application for a charter has been made in Idaho by this company to build electric and steam railways in Idaho. Capital stock, $1,500,000.

***Hampden Railway, Springfield, Mass.**—Chartered in Massachusetts to construct a railway to be operated by steam or electric power between Springfield and Bondville, with a spur to Holyoke. Capital stock, $1,000,000. Directors: Ralph D. Gillett, H. W. Ely, Archie D. Robinson, Westfield; Arthur W. Eaton, Pittsfield; Joseph A. Skinner, Holyoke; H. H. Bowman and E. T. Ley, Springfield.

***Western Indiana Construction Company, Madison, Wis.**—Incorporated in Wisconsin to build an interurban electric railway to connect Madison and Stevens Point. Capital stock, $100,000. Headquarters, Madison, Wis. Officers: Allen T. Russell, Indianapolis, president, and J. E. Jones, Portage, manager.

FRANCHISES

Point Grey, B. C.—The British Columbia Electric Railway, Ltd., Vancouver, has been granted a 99-year franchise to build an electric railway through the district south and west of Vancouver. It has a 40-year franchise to build a railway in Point Grey. The company agrees to build five initial lines of railway, two of which are to be in operation within one year and two more in two years.

***Sebastopol, Cal.**—John E. Bennet has been granted a franchise by the Council to build an electric railway from the power house in Sebastopol to the town limits.

Carbondale, Ill.—The Murphysboro Electric Railway, Heat & Power Company, Murphysboro, has been granted a 50-year franchise by the City Council to build a railway in Carbondale and extend it to Murphysboro.

St. Charles, Ill.—The Chicago, Wheaton & Western Railway, Chicago, has been granted a franchise by the City Council to operate a single or double-track railway in St. Charles.

New Albany, Ind.—The Louisville & Southern Indiana Traction Company, New Albany, has been granted a franchise by the City Council to extend its tracks to the proposed new fair grounds near New Albany. It is probable that a line will be built from New Albany to French Lick Springs.

Iowa City, Ia.—The Iowa City, Ottumwa & Southwestern Electric Railway, Iowa City, has been granted a franchise by the City Council to build a railway in Iowa City. This is part of a plan to build a 74-mile electric railway to connect Iowa City and Ottumwa via Sharon Center, Trytown, Amish, Wellman, Keota and Ollie. Frank Tanner, Iowa City, general manager. [E. R. J., May 7, '10.]

Wichita, Kan.—The Arkansas Valley Interurban Railway, Wichita, has asked the Council for a franchise to build an electric railway over certain streets in Wichita.

New Orleans, La.—The New Orleans Railway & Light Company has bought the franchise of the Spanish Fort extension of the West End Railroad, and the line will be built, including a bridge over Bayou St. John.

Marlboro, Mass.—The Boston & Western Electric Railway has been granted a certificate of exigency by the Railroad Commissioners for the construction of an electric railroad beginning in Waltham and extending through Weston, Wayland and Sudbury to Marlboro. There is a branch from South Sudbury to Maynard. [E. R. J., May 28, '10.]

Kansas City, Mo.—The Metropolitan Street Railway, Kansas City, has accepted the franchise requiring it to extend the present terminus of the Quindaro Boulevard line west to Twenty-second Street and thence north to Brown Avenue.

Fremont, Neb.—The Nebraska Traction & Power Company, Omaha, has been granted a franchise by the City Council to build an electric railway within the limits of Fremont. This railway is to connect Fremont and Omaha. Under the terms of the franchise it is to be completed by Jan. 1, 1912.

Wahoo, Neb.—The Omaha, Western & Lincoln Railway has asked the Council for a franchise to build a railway in Wahoo. This proposed 219-mile electric railway will connect Omaha, Hastings and Lincoln. Frank F. Schaaf, president. [E. R. J., June 25, '10.]

Amsterdam, N. Y.—The Fonda, Johnstown & Gloversville Railroad, Gloversville, has been granted a franchise by the Common Council to double track Main Street in Amsterdam and to construct a belt line.

New York, N. Y.—The Public Service Commission on July 12 granted the application of the Manhattan Bridge Three-Cent Line for a certificate of public convenience and necessity for an electric railway from a point near Atlantic Avenue and Flatbush Avenue, Brooklyn, to a point at or near Desbrosses Street ferry in Manhattan, by way of the Manhattan Bridge. [E. R. J., Mar. 12, '10.]

New York, N. Y.—Frederick W. Whitridge, receiver of the Union Railway and Third Avenue Railroad has been granted a certificate of public convenience and necessity by the Public Service Commission of the First District, which at the same time approved the terms of a franchise recently granted by the Board of Estimate for the construction of an extension through Fordham Road from Sedgwick Avenue to the 207th Street station of the Broadway subway.

Beaumont, Tex.—The Beaumont Traction Company has asked the City Council for a franchise which, when adopted, will repeal the three existing franchises under which the company is operating. Among the many improvements provided for in the new franchise will be the double tracking of several lines.

***Sweetwater, Tex.**—C. M. McLain, G. E. Romsey and W. E. Barrow, all of Sweetwater, have been granted a franchise by the Council to build a street railway in Sweetwater.

TRACK AND ROADWAY

Rogers-Bentonville-Decatur Interurban Railroad, Rogers, Ark.—This company has started surveys at Cave Springs for a route for the proposed railway which is to connect Rogers, Cave Springs, Bentonville and Decatur. Construction is expected to begin next month. J. D. Houseman and G. G. Southerland, St. Louis, are promoting this railway. [E. R. J., June 14, '10.]

British Columbia Electric Railway, Victoria, B. C.—It is stated that this company is surveying for a line to Saanich.

Hanford & Summit Lake Railway, Hanford, Cal.—This company, which was recently incorporated to build a 15-mile electric railway through Grangeville and Hardwick into the Summit Lake region and return through Lemoore and Armona, has effected its organization by the election of the following officers: Chas. King, Hardwick, president; Ralph W. Heins, vice-president; J. O. Hickman, Hanford, treasurer; John B. Rogers, San Francisco, general manager and chief engineer. The directors of the company have authorized an issue of $500,000 of 5 per cent, 30-year gold coupon bonds, interest payable semi-annually, of which $300,000 will be offered for general subscription to the public. The company will begin immediately the acquisition of the rights of way and will begin construction shortly. [E. R. J., July 9, '10.]

Denver (Col.) City Tramway.—It is officially stated that company has secured permits for a portion of Fourteenth Street, and has made another application for permit which will enable it to double the track on Fourteenth Street, from Moffat Road on the north to the junction of Colfax Avenue and Broadway.

Atlanta & Carolina Railway, Atlanta, Ga.—It is reported that within 60 days this company will resume construction of its proposed railway to connect Atlanta, Augusta and Athens with a branch line to College Park. J. W. English, Atlanta, president.

Decatur Southern Traction Railway, Decatur, Ill.—This company is said to have completed preliminary arrangements and contracts will be let about Aug. 1 to build the

proposed 30-mile railway from Decatur, Ill., south through Macon and Assumption to Pana. There will be a bridge over the Sangamon River. R. McCalman, 318 Citizens, T. & T. Building, Decatur, chief engineer. [E. R. J., Feb. 19, '10.]

*Mendota, Ill.—L. J. Kendall, La Moille, and A. R. Unholz, Princeton, are said to be interested in a plan to build an interurban railway to connect Princeton and Mendota, via Dover and La Moille.

*Connersville, Ind.—It is stated that all preliminaries have been completed for building an interurban railway to connect Connersville and Hamilton. C. L. Henry is interested.

Southern Indiana Traction Company, Hanover, Ind.—It is stated that this company will soon construct an interurban railway to connect Madison and Scottsburg.

Red Oak & Northeastern Railway, Red Oak, Ia.—This company is securing subscriptions for building its proposed 110-mile interurban railway to connect Red Oak, Winterset, Greenfield and Des Moines. W. L. Sonntag and D. M. Dowd, Des Moines, are interested. [E. R. J., Oct. 23, '09.]

Oklahoma-Kansas Railway, Baxter Springs, Kan.—This company has completed surveys and engineers are now preparing maps and estimates for its projected 23-mile electric railway to connect Columbus, Galena and Baxter Springs, Kan., and Sunny Side, Lincolnville, Hattanville and Miami, Okla. C. F. Lambert, Kansas City, Mo., chief engineer. [E. R. J., June 18, '10.]

Motor Grand Traction Company, Belleville, Kan.—This company has completed surveys on 65 miles and contracts will soon be awarded for building its proposed 165-mile railway to connect Chester, Neb., and Wichita, Kan., via Concordia, Salina, Canton and Newton, Kan. E. S. Alnutt, Canton, Kan., president. [E. R. J., April 30, '10.]

Conway Springs, Kan.—J. M. Frantz, who is interested in promoting a proposed interurban railway to connect Hutchinson, Haven, Mt. Hope, Andale, Goddard, Wichita, Viola, Conway Springs, Anson, Wellington, Caldwell, Kan., and Medford, Enid, Guthrie and Oklahoma City, Okla., reports that matters are in a preliminary stage and financial backing has not yet been secured. [E. R. J., June 25, '10.]

Horse Cave & Eastern Railway, Horse Cave, Ky.—This company advises that it will start construction on its projected railway as soon as engineering preliminaries have been completed. The line will be 25 miles in length and will connect Horse Cave, Hiseville, Knob Lick and Edmonton. It will also connect with the main line of the Louisville & Nashville Railroad, and will cross the Louisville, Lincoln Farm & Mammoth Cave Traction Company. Repair shops will be located at Horse Cave. Either gasoline or gasoline electric cars will be operated for passenger service, and steam for hauling freight. Capital stock, $25,000, to be increased before construction begins. Bonds will be issued to the amount of $300,000. Louis Edwards, 1463 Arlington Avenue, St. Louis, Mo., general manager. [E. R. J., June 18, '10.]

Louisville (Ky.) Railway.—This company is said to be making preliminary arrangements for building an extension in Louisville to give East and South Louisville a direct railway service with West Louisville and Parkland.

*Murray (Ky.) Traction Company.—Press reports state that this company will let contracts about Sept. 1 for building its proposed 16-mile railway to connect Murray and Calloway. Surveys are said to have been completed and most of the rights of way secured. Nath. Ryan, Murray, president.

Lansing, Mich.—W. H. Zimmerman Company, Chicago, Ill., have closed contracts for the engineering and construction work in connection with 12½ miles of third-rail interurban railway to be constructed from Lansing to Grand Ledge. Arrangements will be made to enter Lansing over the tracks of the Michigan United Railways. The new line will carry freight as well as passengers, and will ultimately be extended from Grand Ledge to Grand Rapids. The legal organization of the company has not yet been completed. Right of way has been purchased and arrangements have been made by the W. H. Zimmerman Company to turn over the grading, culverts, bridges and fencing to George H. Kneal, Lansing, Mich., who started construction a few weeks ago. [E. R. J., July 2, '10.]

Michigan United Railways, Lansing, Mich.—This company expects to make extensive improvements for the Jackson city lines. The improvements comprise the construction of several new switches to expedite service, an extension of a spur line at Michigan Center and the construction of about 3000 additional ft. of roadway to Grass Lakes.

Missoula (Mont.) Street Railway.—This company is said to be considering plans for extending its line to Fort Missoula.

North Jersey Rapid Transit Company, Paterson, N. J.—This company formally opened its new line between Hohokus and Suffern on June 22. Cars are now in regular operation.

Citizens' Traction & Power Company, Albuquerque, N. Mex.—This company has started construction on its new street railway in Albuquerque. A. W. Hayden, 412 West Copper Avenue, Albuquerque, president. [E. R. J., April 16, '10.]

Buffalo & Lake Erie Traction Company, Buffalo, N. Y.—This company, it is said, will build an extension of its railway in Fredonia.

Syracuse, Lake Shore & Northern Railroad, Syracuse, N. Y.—This company has started construction at Minetto on its 11-mile railway to connect Fulton and Oswego. Work is being done by the Ontario Construction Company.

Westchester Street Railway, White Plains, N. Y.—It is reported that this company is considering plans for building an extension of the Pelham Manor line down Pelhamdale Avenue from the present terminus of the line near the passenger station to Travers Island. Work will soon be started.

Oklahoma (Okla.) Railway.—This company is said to have completed a 7-mile extension to Moore and a 16-mile extension to Yukon.

Beaver Valley Traction Company, New Brighton, Pa.—This company states that during the next few weeks it will rebuild 4100 ft. of track.

New Castle, New Wilmington & Sharon Railway, New Castle, Pa.—This company is considering plans for starting work on its 15-mile railway to connect New Castle, New Wilmington and West Middlesex. James Campbell is interested. [E. R. J., March 26, '10.]

San Angelo (Tex.) Street Railway.—Press reports state that this company will soon build extensions to its lines in the southern and western sections of San Angelo.

Washington-Virginia Railway, Falls Church, Va.—This company advises that construction will soon start on its proposed railway to connect Washington, D. C., and Falls Church, Va. Capital stock authorized, $1,000,000; issued, $50,000. Officers: M. E. Church, president and general manager; G. B. Fadsley, vice-president; F. B. Parker, secretary, and L. L. Northrop, treasurer, all of Falls Church, Va. [E. R. J., July 2, '10.]

*Husum, Wash.—C. M. Wolford, R. Lauterbach, White Salmon, and associates are said to be interested in promoting a 60-mile electric railway to connect Binzen, White Salmon, Bristol, Pine Flat, Snowden, Gilmer, Camas Prairie, Fulda and Glenwood, thence west to the Trout Lake region. From Trout Lake the line will extend down the White Salmon River to Husum and around Bald Mountain to White Salmon, forming a complete loop.

Seattle-Everett Interurban Railway, Seattle, Wash.—The Stone-Webster Engineering Corporation, Boston, is now building 26 miles of railway in Washington. This company was organized to build a railway to connect Seattle, Ballard, Edmonds and Everett. There are about 17.5 miles now in operation.

Fairmont & Pittsburgh Railway, Fairmont, W. Va.—Press reports state that this company will soon let the contract for the construction of the section of its line between Waynesburg and Blacksville. This is part of a plan to connect Fairmont, Blacksville, Waynesburg and Pittsburgh. J. F. Seatty, general manager. [E. R. J., June 18, '10.]

Wheeling & Western Traction Company, Wheeling, W. Va.—Interest is said to have been again revived in this company, which proposes to build a railway to connect Wheeling, W. Va., and Uhrichsville, Cadiz and New Athens, Ohio. Subscriptions have been received from the citizens of Cadiz

and New Athens to build the eight-mile section between Cadiz and New Athens. It is stated that the construction of this section will be started at once by the J. J. Burns Construction Company, Chicago, Ill.; A. E. Townsend, Cadiz, Ohio, general manager. [E. R. J., June 27, '08.]

SHOPS AND BUILDINGS

Michigan United Railways, Lansing, Mich.—This company expects to improve its freight terminal facilities and build a new passenger station for the Jackson City lines.

Springfield (Ohio) Railway.—This company is said to be preparing plans for a new office and car house in Springfield. The estimated cost will be about $100,000.

Oregon Electric Railway, Portland, Ore.—This company is said to be engaged in securing a site in M'Minnville to be used for terminal yards and depot grounds.

Portland (Ore.) Railway, Light & Power Company.—This company has started work on the construction of its new car houses near Killingsworth Avenue, in Portland. The structure will be of brick and will cost about $20,000.

El Paso (Tex.) Electric Company.—The Stone & Webster Engineering Corporation, Boston, Mass., is building a car house for this company which will have a storage capacity of 25 cars.

Utah Light & Railway, Salt Lake City, Utah.—This company has begun the construction of its new machine shop and car house as an addition to its shops in Salt Lake City.

Richmond Railway & Power Company, Richmond, Va.—This company is planning to build two new car houses between Cary Street, Taylor Street, Elm Street and Strawberry Street. The structures will be built of brick, steel and concrete.

Washington Water Power Company, Spokane, Wash.—It is stated that this company will start work within the next month on the construction of its new car houses on the entire block bounded by Boone Street, Cedar Street, Walnut Street and Sharp Street, in Spokane. The structure will be 300 ft. by 300 ft., of brick and concrete construction. It will have a storage capacity for 180 cars.

POWER HOUSES AND SUBSTATIONS

Southern Indiana Traction Company, Hanover, Ind.—This company expects to build a power house at Madison. J. E. Greeley, vice-president.

Waterloo, Cedar Falls & Northern Railway, Waterloo, Ia.—This company has let the contract to James Maine & Sons for the erection of its new power house, 154 ft. x 132 ft., at Waterloo adjoining the present station. The structure will be built of concrete, steel and brick and will be absolutely fireproof. Estimated cost is $300,000.

Omaha & Council Bluffs Street Railway, Omaha, Neb.—This company has awarded the contract to McGowan & Jacobberger for building its new power house at Fifth Street and Jackson Street, Omaha. The Wisconsin Bridge & Iron Company, Milwaukee, has the contract for structural steel. The structure will be 140 ft. x 245 ft. The site, building and equipment will cost, it is estimated, $600,000. [E. R. J., June 11, '10.]

Northern Ohio Traction & Light Company, Akron, Ohio.—This company, it is said, will soon start the erection of a new power house at Akron. Plans are being prepared and bids will be asked in a few weeks. The cost is estimated to be about $2,000,000. [E. R. J., April 16, '10.]

Knoxville Railway & Light Company, Knoxville, Tenn.—This company states that during the next two weeks it will build an extension to its power house in Knoxville, to cost about $8,000. A 3000-kw turbine will be installed.

Wisconsin Traction, Light, Heat & Power Company, Appleton, Wis.—John I. Beggs, president, announces that this company will expend $1,000,000 within the next two or three years developing the water power of the Wolf River. The necessary land has been secured near Gardner's dam, about 70 miles from Appleton. The power that will be developed there will be used by the interurban system operated in the Fox River Valley by the Wisconsin Traction, Light, Heat & Power Company. The dam at Gardner's dam will be 35 ft. high. Water will be carried from there through two flumes 1½ miles to the site of the power plant. The river drops 60 ft. in that 1½ miles.

Manufactures & Supplies

ROLLING STOCK

Cedar Rapids & Iowa City Railway & Light Company, Cedar Rapids, Ia., is considering the purchase or construction of a heavy freight locomotive.

North Jersey Rapid Transit Company, Paterson, N. J., will probably place an order for some additional cars, including a work car, early in the fall.

Galveston-Houston Electric Interurban Railway, Houston, Tex., is said to be considering the purchase of 10 cars for high-speed service and an electric locomotive.

Michigan United Railways, Jackson, Mich., contemplates purchasing 30 cars, a snow sweeper and a sprinkler at this time. Mention of the fact that the company was in the market for part of this equipment was made in the ELECTRIC RAILWAY JOURNAL of March 5, 1910.

Third Avenue Railroad, New York, N. Y., has placed an order with the Gould Storage Battery Company for batteries for 30 cars. The motors, control, etc., for these cars will be furnished by the General Electric Company. The car bodies will be built at the company's own shops.

Illinois Traction System, Peoria, Ill., which was noted in the ELECTRIC RAILWAY JOURNAL of May 14, 1910, as preparing specifications for six heavy electric locomotives, is now building these locomotives at its shops in Decatur, Ill. They will be equipped with four G E, 600-hp motors with Sprague-General Electric, multiple unit type M control. The trucks will be furnished by the American Locomotive Company and the air-brakes will be Westinghouse E-1. The locomotives will resemble in general outline the steel turtle-back cars in use on this line, and will be 34 ft. long, 9 ft. 3 in. wide. They are to be equipped with M. C. B. couplers and steel pilots.

Syracuse (N. Y.) Rapid Transit Railway, which was noted in the ELECTRIC RAILWAY JOURNAL of June 25, 1910, to have ordered 25 cars from the G. C. Kuhlman Car Company, has ordered 23 cars from this company instead of 25 cars. They will be built for pay-as-you-enter operation and will be of the semi-convertible, single-end type. The following details have been specified for these cars:

Length of body...30 ft. 11 in.	Curtain fixtures..Cur. S. Co.
Over vestibule.....44 ft. 7 in.	Curtain material ...pantasote
Width over sills....8 ft. 1 in.	Gongs .....Dedenda
Over posts at belt..8 ft. 3 in.	Hand brakes.....Peacock
Body .....wood	Heaters.....Peter Smith
Interior trim.....cherry	Headlights ....Crouse-Hinds
Underframe,	Motors.....GE No. 216
wood with plated sills	Registers .....Ohmer
Air brakes.West. Trac. Brake	Sanders .....Ohio Brass
Bumpers,	Track scrapers.....Brill
Hedley Anti-Climber	Trucks .....Brill No. 27
Couplers .....Hovey	

TRADE NOTES

Detroit Seamless Steel Tubes Company, Detroit, Mich., has appointed H. L. White as sales manager.

Electric Equipment Company, Philadelphia, Pa., has sold three 11-bench single-truck cars to the Blue Hill Street Railway, Canton, Mass.

H. Thomas, Ferrocarril de Arica a la Paz., Arica, Chile, desires to receive catalogs and samples of material which can be adapted for railway shop work.

Whipple Supply Company, New York, N. Y., has moved its office from Room 1171 to Room 2066 in the Hudson Terminal Building, 50 Church Street.

Phœnix Bridge Company, Philadelphia, Pa., has appointed N. R. McLure, recently assistant engineer, to the position of resident engineer at St. Louis, Mo., in charge of the western interests of the company. Mr. McLure succeeds O. J. West, resigned.

Carver Tracklaying Machine Company, Urbana, Ill., has been incorporated to engage in general contracting work for steam and electric railroads. Capital stock, $30,000. Incorporators are: Taylor M. Carver, Oliver W. Lamb and Harvey M. Grant.

Peter Smith Heater Company, Detroit, Mich., has appointed H. S. Williams chief engineer with headquarters in

Detroit. Mr. Williams has been connected with the Utica & Mohawk Valley Railway, Utica, N. Y., for the last eight years, and at the time of his resignation from that company he was electrical engineer of the company.

C. W. Hunt Company, New York, N. Y., builders of coal-handling, conveying and hoisting machinery, has appointed the San Francisco Bridge Company selling agents for the Pacific Coast with offices at 865 Monadnock Building, San Francisco. The C. W. Hunt Company has just completed a naval coaling station in San Francisco Bay for the Government.

C. A. Tupper has resigned as manager of the publicity department of the Allis-Chalmers Company, Milwaukee, Wis., to become associated with the Reliance Engineering & Equipment Company, with headquarters for the present at Milwaukee. Mr. Tupper will be succeeded by W. M. S. Miller, who has been connected with the Allis-Chalmers for some time.

Hensley Trolley & Manufacturing Company, Detroit, Mich., has been formed by the consolidation of the Hensley Trolley Company, formerly of Huntington, Ind., and the Acme Brass Foundry Company, Detroit. The principal office and factory of the new company will be on Holden Avenue, Detroit. The company reports that its business for the first half of 1910 has far surpassed that of the same period in previous years.

Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa., has arranged with Kuhn, Loeb & Company to renew for three years from Aug. 1 at 6 per cent a year $4,000,000 of the company's outstanding $6,000,000 of secured notes. The remaining $2,000,000 will be paid off from the company's surplus treasury funds. The new issue of $4,000,000 will be secured by all the bonds and shares now pledged as security for the $6,000,000 issue.

Crawford Locomotive & Car Company, Streator, Ill., has recently elected George E. Pratt, formerly connected with the Star Brass Works, Kalamazoo, Mich., manufacturers of the Kalamazoo trolley wheel, vice-president of the company. Mr. Pratt has long been connected with electric railway work, both as a manufacturer of air-brake equipment and of cars. The Crawford Locomotive & Car Company as yet has devoted itself entirely to steam railroad work and is located at Streator, about 90 miles from Chicago.

Ohmer Fare Register Company, Dayton, Ohio, recently had an interesting experience, showing the durability of its registers. One of its No. 30 type indicating, recording and printing registers was recovered from a car house which had been destroyed by fire. The case of the register was melted off, the dials, tablets and other interior parts were burned and partly melted, and the register was further damaged by heavy timbers falling upon it. After being unlocked by an identification key, and fed with a small roll of paper, an impression was taken before any repairs were made, but the figures showed clearly on the record sheet. The register was practically destroyed, yet the mechanism in it was of such good material that it performed its functions and printed test registrations from the battered and partly melted wheels.

J. Frank Lanning & Company, Pittsburgh, Pa., manufacturers of journal brasses, etc., are meeting with success in the introduction of their products among railway companies. The Reading Transit Company was among the first to adopt these brasses after giving them a preliminary trial. J. Frank Lanning & Company report that this company has purchased all its brasses from them during the past eight months. The Utica & Mohawk Valley Railway Company has placed two duplicate orders for brasses with J. Frank Lanning & Company since the initial test of these bearings, as have also the Richmond Light & Railroad Company, the Allegheny Valley Street Railway Company, the Otsego & Herkimer Railroad Company, the Lehigh Valley Traction Company, the Dennison & Sherman Railway Company and the Chester Traction Company.

J. G. White & Company, Inc., New York, N. Y., have appointed L. R. Pomeroy chief engineer of the railway and industrial division of the company. Mr. Pomeroy has for a long time been considered an authority on railway shop equipment, operation and construction. From 1886 to 1890 he was a special representative of the Carnegie Steel Company, introducing basic boiler steel for locomotive and special forgings for railways. For nine years he was engaged in the same work with the Cambria Steel Company and the Latrobe Steel Company, jointly; this assignment involved metallurgical engineering and experimental research to adapt special steels for railway axles, crank pins and piston rods. From 1899 to 1902 he was assistant general manager of the Schenectady Locomotive Works. For six years following this he was a special representative in the railway field for the General Electric Company, this work covering the electrification of steam roads, railway shops, and the general application of electricity for all railway purposes. For the past two years he has been assistant to the president of the Safety Car Heating & Lighting Company. In these lines of work he has devoted a large portion of his time to consulting work in the special field of railway shops, machine tool operation and the adaption of tools to the work, with special reference to sequence of operation and general efficiency, and his special attainments and experience form a valuable addition to the J. G. White & Co. organization.

ADVERTISING LITERATURE

Handy Manufacturing Company, Bridgeport, Conn., has issued a folder in which the various sizes of Handy die stocks are listed and illustrated.

L. J. Wing Manufacturing Company, New York, N. Y., has issued Bulletin No. 7, in which the Typhoon turbine blower is described and illustrated.

Buda Company, Chicago, Ill., has issued Bulletin No. 143, which describes and illustrates exclusively its No. 100 car which it manufactures for inspection work. A set of specifications is also contained in the publication.

Bristol Company, Waterbury, Conn., is mailing a 64-page illustrated index of Bristol's recording instruments for pressure, temperature and electricity. It contains illustrations of the most important Bristol instruments, with partial explanation of the instruments and their applications.

Ransome Concrete Machinery Company, Dunellen, N. J., has printed a 96-page catalog descriptive of the Ransome concrete mixers for 1910. It contains an outline of the development of Ransome mixers, and illustrates in detail the various types of concrete mixers and other products which the company manufactures.

NEW PUBLICATIONS

The Polytechnic Engineer.—Published by the Polytechnic Institute, Brooklyn, N. Y., 1910. Cloth; 144 pages, illustrated. This is the annual publication of the Polytechnic Institute which contains the results of researches made by the professors and students. The principal features of electric railway interest in this number comprise a brief mathematical treatment of "Negative Track Feeders," by Samuel Sheldon, professor of physics and electrical engineering; and a study of "Train Resistance Formulas and Speed-Time Relations," by William D. Ennis, professor of mechanical engineering.

The 1910 Moody Manual.—This book is now ready for distribution. Every section of the Manual has been extended, but the most marked increase will be found in the public utilities section, which includes electric tractions, gas and electric properties of all descriptions. As a specimen of the enlargement effected in the statements of the larger public service corporations, it may be said that the resumé of the Public Service Corporation of New Jersey, and its subsidiaries, covers 18 pages in the 1910 issue, as compared with 10 pages in the 1909 issue. Much valuable information has been added to the descriptions of properties and bonded indebtedness of this and many other corporations, and the entire section has been gone over carefully, with the view to securing uniform phraseology treatment. The style and type used in this, as in the other sections, have been especially designed to facilitate quick reference and to show clearly the intercorporate relationship of the large systems. The industrial section, which has always been one of the striking features of the Manual, has received special attention, and is now most complete. This section includes nearly 150 industrials, with capitalization approximating $500,000,000, not to be found in any other publication.