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### Close Connections at Junctions

Fast limited train service and comfortable accommodations for passengers have done much toward promoting long-distance travel on the interurban roads of the Middle West. July time tables show through connections from Indianapolis to Detroit, Cleveland and Zanesville with one or two trains each way a day. The interurbans, with a commendable spirit of community of interest, are actively engaged in soliciting through business, both passenger and freight, but in one respect they fail to do all that they might do in catering to long-haul passengers. That is in

the matter of regular train connections at junction points. With frequent service at intervals of an hour, or at the most two hours, the need of close connections may not seem important enough to overbalance the supposed value of trains leaving "every hour on the hour." It frequently means the loss of half a business day, however, to the traveling man to miss a connection by five or ten minutes, as is shown by an inspection of the time tables of numerous connecting lines in Indiana and Ohio. The same community of interest between the operating departments of these roads as exists between the traffic departments could be turned to good advantage in rearranging schedules to make close connections at all junction points for local as well as limited trains. Any improvement of this kind is quickly appreciated by business men and should yield returns far outweighing the cost or temporary inconvenience of the readjustment.

### The Question of Increased Fares

The proposed plan of the steam railroads to increase their freight rates by 10 per cent is indicative of a condition which has been evident in electric railway business for some time, and has led to considerable agitation for higher passenger fares on the electric roads, especially in the East. The cost for labor in both steam and electric transportation is higher than formerly; the requirements of the Railroad and Public Service commissions are continually becoming more exacting; the public is demanding longer rides, more frequent service and better cars; finally, experience has shown that the profits in electric railroading are not as large as they were when many of the lines were projected and the present fares were established. Up to within a year or less ago, the tremendous traffic which all of the roads enjoyed aided to conceal the true condition of affairs, but the recession in business, coupled perhaps with a closer scrutiny of the methods of accounting, has brought out the weakness of the present state of affairs. The condition is not a local one. Examples are found in the metropolitan railways and in the village transportation systems. It is not caused, as many loose thinkers claim, by overcapitalization, because it is as evident in the New England States, where stringent laws on this subject prevail, as in any other part of the country. Mr. Townley in a communication elsewhere in this issue voices a sentiment which we are confident is felt by every manager and student of electric railway affairs throughout the country. No more important subject lies before the Public Service commissions than the investigation of this question of fares. Endowed as many of the commissions are with plenary powers, it is their duty to the public as well as to the companies to see that the latter are in a financial condition to give the service and make the extensions which the public interests demand.

### Freight Haulage on City Streets

The inaugural address of Hon. James Logan, Mayor of Worcester, which has been published in pamphlet form, devotes considerable attention to the possibilities of transporting freight through city streets in carload lots by means of the trolley tracks. According to the Mayor, such a plan, if the work was conducted at night when the streets and rails were clear of other traffic, would be of tremendous gain to the shipper, the consignee and the public at large. The reduction in cost and time over the present methods would certainly be considerable, and we believe that any city which should adopt this plan would be endowing its small manufacturers—those who cannot afford a direct siding from a steam railroad—with an economic advantage over their competitors in other cities. The public would also benefit by the proposed change. One freight car will carry as much merchandise as five or six two-horse vans and take up vastly less space in the streets. The wear on the pavements from this heavy trucking would be removed and this should result not only in a direct saving to the city, but would permit the use of some less noise-producing pavement than Belgian block. Altogether the removal of this traffic to the street railway tracks, where it properly belongs, would constitute a radical improvement over the present barbarous method. In importance it can very fairly be compared to the substitution of rail transportation for stages or private carriages in passenger service.

### Limited and Perpetual Franchises

Unfortunately, however, from these correct premises Mayor Logan draws erroneous conclusions. He assumes that all or most of the benefits which he has already enumerated as accruing to shipper and consignee would go to the transportation company. This, he postulates, would make the franchise of enormous value; indeed he believes that the citizens of Worcester, if they did but study the possibilities along these lines, would be "appalled to think that anyone would for a moment consider surrendering permanently one other single right in our public streets." To indicate the proper method of corporate control he then states that four principles constitute his creed. These are substantially:

1. The streets belong to the people and should not be bartered away.
2. No perpetual franchise should be granted to any public service corporation.
3. Limited franchises should be granted for the shortest term of years that would allow proper time for development and a fair return for such development.
4. The time to make conditions affecting a public service franchise is before the arrangement is concluded.

If the Mayor means by his third clause, as we presume in fairness to him he does, that the corporation should be permitted during the life of its franchise to recoup the money invested in its enterprise, pay the legal rate of interest on the capital while it is in use and secure such additional profit as is warranted by the risk involved, we do not believe that many street railway investors will disagree with him. The only trouble is that in many cases this plan would involve a contradiction of the second of Mr. Logan's principles. If street car passengers would pay taxicab fares and would also patronize the cars in as large numbers as they do now, a ten-year franchise, or even one for five years,

might be profitable. Every tax or other burden from which a company is relieved reduces the time during which it must earn enough profit to amortise its investment. But in the average city, where passengers expect to get a ride for five cents and the company is assessed for paving, the removal of ice and snow and other charges without number, the franchise life must be extended until it comes perilously near to being perpetual. The question is one of simple arithmetic and does not involve any complex theories of finance. Even the size of the city is not so large a factor as one might suppose. As the community in which a company operates grows larger, a more frequent service is required and while some economics can be effected other expenses of operation grow proportionately greater. It is certainly unreasonable to expect capitalists to install a public utility plant and receive interest on their capital for only, say, 20 to 25 years, and then abandon their entire principal because the term of franchise has expired.

Some companies, it is true, have undertaken large expenditures upon properties with a limited franchise life. Where this has been done it was usually with the expectation that the franchise would be renewed when it expired, and failure to secure this extension has occasioned great distress. With the growth of hostile sentiment in this country, conditions have reached a point where many municipalities choose to assume that all the rights of corporations expire with their franchises. The cities may be justified by law in this position; but limited franchises and destruction of the plant at the end of the stipulated period constitute a platform which would eventually paralyze all public service investment. The public cannot expect to enjoy all the privileges of good transportation, impose inadequate fares and then seize the plant when the franchise expires.

### The Successful Use of Concrete in Construction Work

Concrete construction is now an established feature of railway practice in all localities where the cost of other building materials is high. No arguments are to-day necessary to prove the flexibility of this form of construction in the heavier problems of roadbed, bridge and building design, but it is still important that all users of this cheap and convenient material should realize the need of taking proper precautions in its application. No matter how skillful or experienced the designer of a concrete structure may be, unless the work is handled with care in the field the result may be a disastrous failure. Whether the work in hand be built with solid, heavy walls, of solid light walls reinforced with rods, of machine-made building blocks, or of metal lath construction, great care in its execution is essential to the permanence and reliability of the completed job. Even in cases where the design is made by an outside engineer making a specialty of concrete work, it is important for the engineering staff of every road using this material to appreciate the practical points to be handled successfully in the preparation and placing of the forms and the concrete.

In roadbed construction the solid wall of concrete has undoubted usefulness, particularly in the construction of retaining walls, buttresses and bulkheads. When used for building purposes the solid wall shows a tendency to crack;

dampness passes through to some degree, and the expense of forms is usually much greater than when reinforcement is used. The cost of forms can be reduced considerably by using as far as possible standard sections over and over in the construction work, by handling the forms with care and bolting them together under favorable conditions. The cost of form assembly and placing may easily run up to a large percentage of the total expense of doing a given piece of concrete work, and nowhere is ingenuity more rewarded than in the design and use of this auxiliary equipment.

Concrete blocks have come into considerable favor in the past few years for use in the smaller structures of electric railway service, such as substations, oil houses, tool houses, store houses and even car houses and shops where the spans are short between sections of the building. For successful use, however, the concrete block requires rigid inspection. It is difficult to mold the blocks without some surface blemish that cannot well be remedied; sharp outlines are hard to secure, and most of these are porous on account of having been made with a dry mixture. Too little cement in a concrete block endangers it through brittleness, and in a discussion of this subject before the last meeting of the Association of Railway Bridge and Building Superintendents it was emphasized that several cases have occurred where buildings have fallen down of their own weight on account of the lean mixture used in the make-up of the blocks. Only those blocks should be used which can be made with a wet mixture and pressed with great power, hand tamping being objectionable. One of the most prominent advantages of the concrete block, aside from its ease in erection, is the resulting dryness of the structure on account of the hollow space in each block, but in no case is it advisable for the walls or webs of the block to be less than one-fourth the height in thickness. Dryness of the solid concrete structure can on the whole be effected by the use of a well tried waterproofing compound.

In the making of concrete in the field, the quality of stone, sand or gravel and cement used needs to be determined with care. Close inspection of the cheap labor commonly employed is the price of safe and lasting work. Hand-mixed concrete is desirable only on work of little importance. In mixing wet concrete a fault sometimes committed is to moisten the materials to excess, causing the separation of the cement from the mixture on the board or in the forms. Trouble also occurs through the placing of the concrete in too thick layers or in uneven courses. A common maximum layer thickness range is 8 in. to 12 in. The inspectors in charge of the work for the railway company should pay special attention to securing smooth and regular joints, and wherever fresh concrete joins that already set it has been found good practice to roughen the surface of the older work and remove the thin skin which forms on top of the latter while it stands.

Steel used in reinforcement cannot be expected to make a good bond if paint remains upon it, but should present only a clean or slightly rusted surface to the concrete. It will pay to clean the steel if it has more than a thin film of rust on its surface. Too much care cannot be used to place the concrete in the forms as soon as possible after mixing

and to see that the steel reinforcement occupies exactly the place on the work called for by the plans, and is not disturbed while the concrete is being placed and tamped. Forms should be substantial enough to preserve their shape accurately until after the concrete has set, and tight enough to prevent leakage of the concrete when it is in a plastic state. When such work is done on a cheap basis without proper inspection or care trouble often occurs on account of the failure of the men in the field to thoroughly clean the insides of the forms before applying the concrete, or avoid exposure to heat, cold, vibrations or loads before the work has set. Time is so valuable in most railway construction, steam or electric, that it is a temptation to remove the forms before the concrete has set enough, but there is no practice more liable to result in failure, and to give concrete work a bad name that under proper conditions of use would have been turned into praise.

Comparatively little is known as yet in regard to the expansion of concrete walls, either plain or reinforced, under temperature changes. A committee of the Railway Bridge and Building Superintendents' Association reported at the last meeting of that organization that in walls that are exposed to natural atmospheric changes in temperature on all sides provision should be made for wall movement more than as though a limited surface were exposed. It was recommended that retaining walls 200 ft. long or over, with walls 10 ft. to 20 ft. high, be provided with expansion joints 45 ft. to 50 ft. apart. Expansion in station platforms, sidewalks or similar work can be overcome by cutting through the concrete before the finished surface is applied, leaving a space either open or filled with dry sand. Reinforcing used in concrete will to some extent prevent concrete from separating, but will not prevent slight cracks from appearing on the surface. These cracks do not confine themselves to any particular direction, though usually running vertically and horizontally. By jointing walls in dovetailed fashion with layers of felt paper or alternately fitting sections a true alignment of the wall can be maintained on the surface exposed. Where artificial or natural temperatures are maintained uniformly at all times expansion joints can be dispensed with, as in subways, dams, concrete chimney installations and in pipe tunnels connected with power plant service.

It has been pretty well established that sea water has an injurious effect upon concrete construction between the high and the low water marks on the face of the work unless the latter is protected by granite. In the vicinity of New York most of the concrete deposited in sea water is made into blocks and sunk to the depth required and handled by divers. Considerable work has been done around Boston successfully by depositing the concrete in sea water, using a cement containing not over 2 per cent sulphuric trioxide and little magnesia, with crushed stone instead of pebbles and a mixture not leaner than 1, 2 and 4 deposited through a closed tube. Comparatively few electric roads have to face this problem but where this question arises it pays to investigate the matter with care, for the cost of such structures and their importance in territory that is valuable warrant the most thorough methods obtainable.

## NEW GAS-ENGINE POWER PLANT OF THE WESTERN NEW YORK & PENNSYLVANIA TRACTION COMPANY

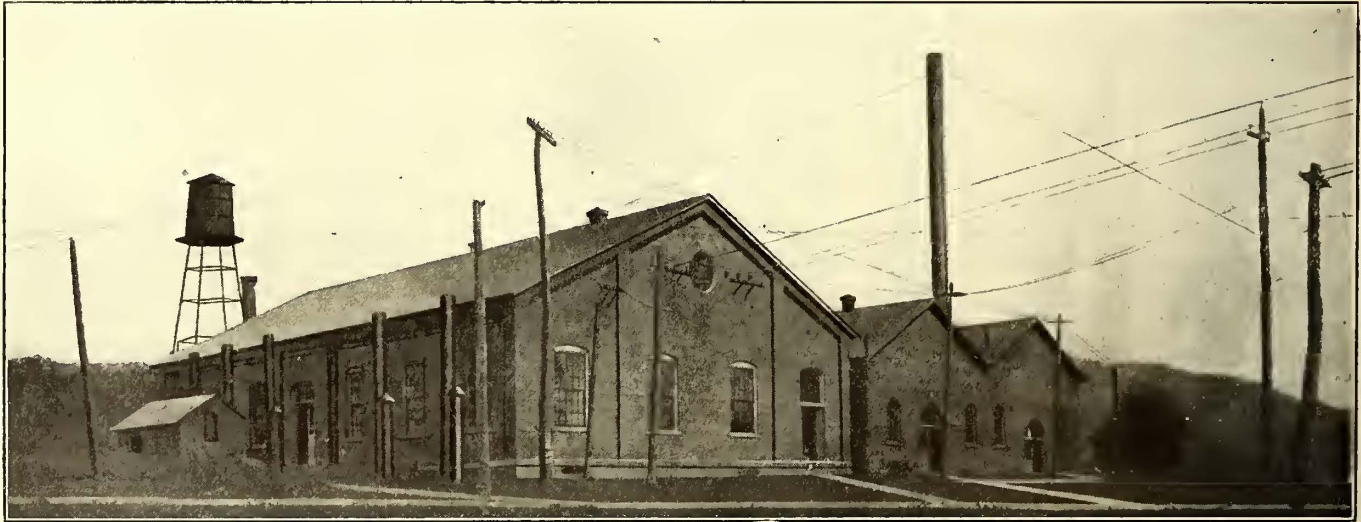
An interesting new power equipment, consisting of a gas engine driven plant of 1500-hp capacity with engines operating on natural gas, has recently been placed in service by the Western New York & Pennsylvania Traction Company, for the operation of its lines. The system of this company, which consists of approximately 85 miles of track, radiates in three divisions from Olean, N. Y., and penetrates the well-known gas and oil fields of the Allegheny River valley in Southwestern New York and Northwestern Pennsylvania. Natural gas has been the fuel used at its power station since the initial operation of the system. Up to within recently, however, the gas was used under boilers, and the power required was generated at a steam driven station at Ceres, N. Y., a village some 12 miles eastward from Olean, and smaller steam-driven stations located in the cities of Olean and Salamanca, N. Y., and at Derrick City, Pa. All of these stations were small and without adequate reserve capacity.

About two years ago, the traffic that had resulted from

engine and building foundations are of concrete. The roof, which is carried on steel trusses of 62½-ft. span, spaced on 16-ft. centers, is of slate on wooden sheathing. The three 500-hp units are placed crosswise of the building, with space reserved at the rear end for a fourth unit of similar size and the electrical control apparatus is contained in a space 15 ft. wide across the front end. This arrangement of engines in a building of this width is novel but affords no obstacle to the installation of a traveling crane; the latter is of 20 tons capacity, is hand operated, and runs on special crane rails supported on 15-in. I-beams that extend along either side of the building. The crane was installed by the Reading Crane & Hoist Works, Reading, Pa.

### ENGINES

All three engines are of the horizontal type with tandem double-acting cylinders. The two at the front end of the power house are single tandem engines with a nominal rating of 500 hp and were built by the Westinghouse Machine Company. The third unit is a twin-tandem engine of the same nominal rating and was built by the Snow Steam Pump Works, Buffalo, N. Y. The Westing-



Olean Gas Power Plant—Exterior of Station, Old Steam Station at Right

several extensions of the company's lines was such as to render this initial power equipment entirely inadequate and the company decided entirely to revise the power system by the installation of a single large generating station with high tension electrical transmission for distribution of power and employ internal combustion engines.

### POWER STATION LOCATION

The new station is located near the site of the former main generating station where the railroad company already owns gas fields of considerable magnitude, and not at the center of power distribution. Its site is also close to a large creek which provides ample drainage, and a number of wells have been driven. From these a water supply of remarkable purity is obtained. The former steam-driven plant is retained in its present form for emergency purposes and reserve capacity.

### POWER STATION BUILDING

The new power station is a one story undivided building of brick and measures 66 ft. x 110 ft. The roof trusses are located for a clear headroom of 19 ft. above the main floor to admit of a traveling crane, and there is an 8-ft. basement which provides amply for all piping to the engines, for pumps, oil filters and a portion of the electrical switching apparatus. The floors as well as the

house engines have cylinders 22 in. in diameter by 30-in. stroke, while the Snow engine has four 16-in. cylinders with 30-in. stroke. All three units operate at 150 r.p.m. The natural gas used has an average calorific value of 900 B.t.u. per cubic foot and the engines have maximum ratings 10 per cent to 15 per cent in excess of the normal. To cite an instance, the two Westinghouse engines a few months ago, with their generators operating in parallel, carried a load of 960 kw continuously for over an hour, which is a loading over 12 per cent in excess of their combined maximum ratings and nearly 14 per cent in excess of their combined normal ratings. It is stated this overload was carried without difficulty or injury and without effect upon the further continued operation of the two units in parallel.

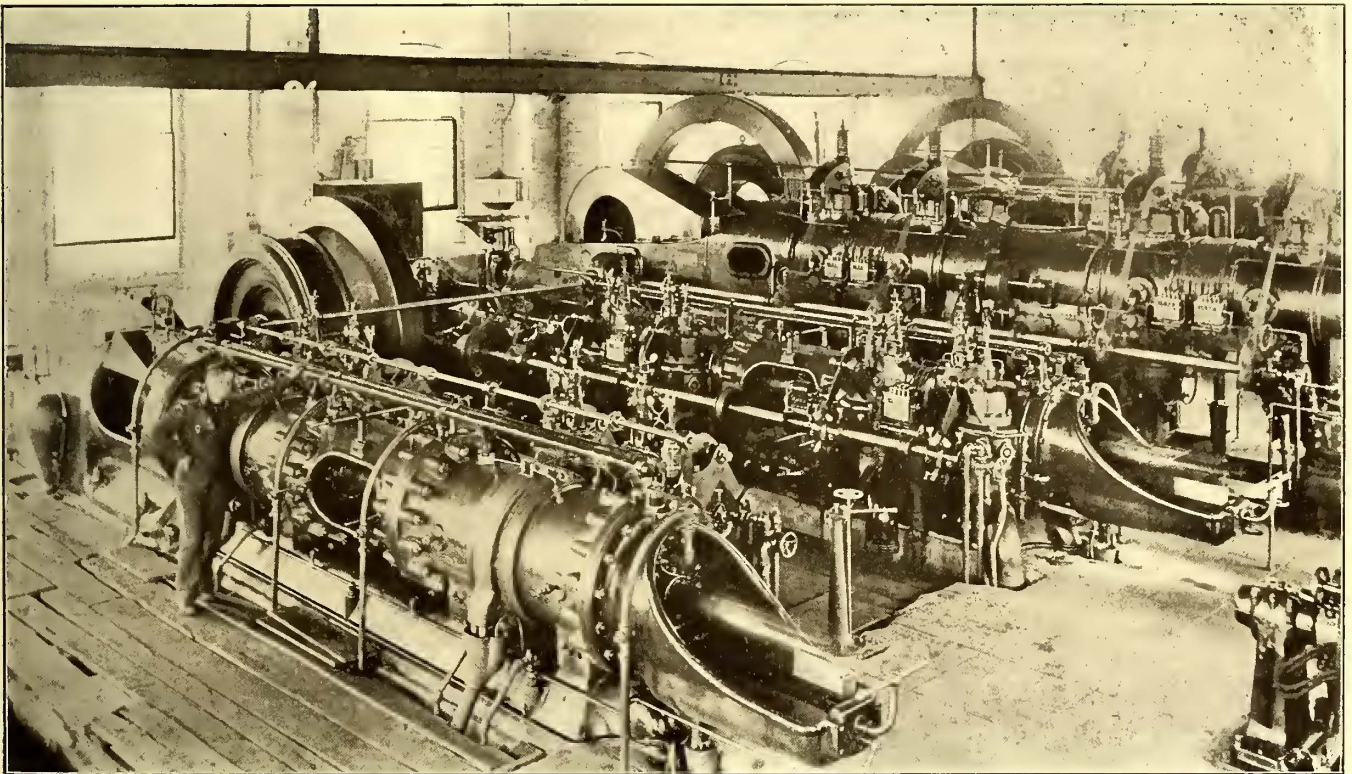
Each of the units is direct-connected to a 300-kw General Electric three-phase alternator, with a 20-pole revolving field mounted directly on the main engine shaft, no flexible couplings being provided for in any form between the engine and the generator. The alternators deliver three-phase current at 370 volts and 25 cycles. The Westinghouse engines, which have each two double-acting cylinders, and so have two impulses per revolution, are equipped with 20-ton fly-wheels, 12½ ft. in diameter,

mounted on the crank shaft between the engine and generator. The Snow engine has four double-acting cylinders, thus giving four impulses per revolution of the engine shaft, has only a 10-ton fly-wheel, 10½ ft. in diameter.

The Westinghouse engines are similar in their construction to the new horizontal type, described in the *STREET RAILWAY JOURNAL* for May 2, 1908 (page 749). The most notable features of this design are the inlet valves which are specially constructed to combine the functions of inlet, mixing and governor valves in a single mechanism, the use of one eccentric to operate both inlet and exhaust valves at either end of each cylinder, electromagnetic igniters, relay governing and automatic starting. The ignition current for these engines is supplied by 2 kw motor generator 110-volt units in duplicate and operated from the direct-current exciter circuits. This arrangement was preferred to the supply of current direct from the

in place with double-gaskets and owing to the location of the valve casings within the cylinder bodies, they can be removed without disturbing the cylinders or valves. The pistons are single-piece iron castings of water-cooled construction and each is fitted with six packing rings of the spring type. The piston rods, which are also water-jacketed, consist of single rods upon which are fitted the pistons of the two cylinders between which are located spacing sleeves, both pistons and sleeves being tied together by a nut on the main rod beyond the outboard cross-head on the extended end. Both rods and sleeves are of nickel steel. The rod packing consists in each case of four cast-iron packing rings of the Walker type and one scraper ring of the Garlock type, and provision is made for the alignment of the rod by shimming under the cross-heads.

All valves are mechanically operated from cams on a lay



Olean Gas Power Plant—Interior of Station. The Westinghouse Units Are Farthest from the Observer, the Snow Engine Is the One in the Foreground

exciters on account of the possibility of grounding the latter circuits.

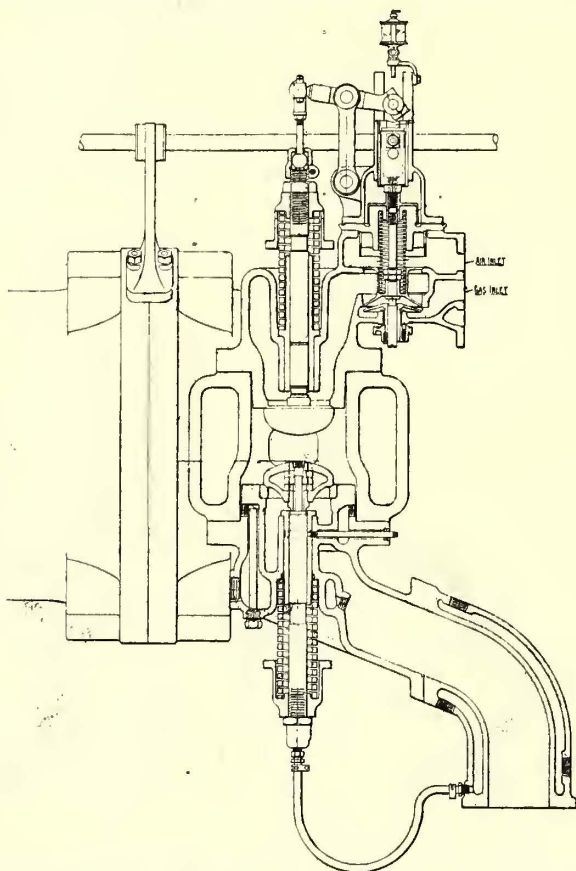
#### THE SNOW ENGINE

The Snow Steam Pump Works engine, the design of which has not previously been described in these columns, is of the double tandem construction with the alternator field and the fly-wheel mounted on the crank shaft between the crank housings. The engine frame design consists of cylindrical housings to connect the cylinders and crank housings and hold the cylinders rigidly in alignment, the frame being anchored permanently at the crank housings on main frame only, and longitudinal movement in expansion is provided for in the cylinder supports. The cylinders are in two parts, with circumferential joints midway between the two ends, the water jackets being cast integral on either end, but shorter, so that the joints in the cylinder shell are left exposed; this opening is later closed by water-tight jacket bands. The cylinder heads, which are water-jacketed, are of cast-iron fitted

shaft at the side of the cylinder and all are of the mushroom type, the exhaust valves being water-jacketed. They are located in top and bottom sides of chambers cast on the sides of the cylinders at one side of the combustion chambers. The inlet valves are of a special composite construction, involving in addition to the main valve of the mushroom type, a mixture cut-off double-seated poppet valve which is operated through linkage from the main valve and has one seat for admitting air and the other for the gas. The mixture cut-off valve has a hand adjustment by means of which the quality of the mixture may be controlled, while the quantity admitted to the cylinder is regulated by the length of time during which the valve is held open on each suction stroke. The speed regulation is under the control of a Massey governor which is driven from the lay shaft and automatically regulates the point of cut-off in all cylinders, through a latch in the cut-off valve mechanism that is released for closure of the valve at a time dependent on the position of the governor. On both engines

safety stops are provided which will open the ignition circuits if the speed exceeds a predetermined value.

A notable feature of the Snow engine is the use of a Bosch magneto for the ignition current supply; one of these magnetos is mounted above and geared to the lay shaft for either pair of cylinders and the current and the



Olean Gas Power Plant—Section of Governing Mechanism on Snow Engine

current from these magnetos is utilized to operate special automatic make and break igniter plugs, of which there are two in duplicate in each end of each cylinder. Adjustment of the timing is provided by means of a contactor device mounted upon the magneto so that the time of the spark may be advanced or retarded as required. In this engine the water for jacket cooling is led to each part of the engine through individual pipes with open overflows into funnels, so that the jacket flow and resulting temperature can be regulated as desired, such as holding the cylinder heads at a relatively high temperature, the cylinder bodies at medium temperature and the pistons and rods at low temperature.

#### EXCITER ENGINES

In addition to the main generator engines there are duplicate exciter units which consist each of three-cylinder vertical Westinghouse engines of 85-hp nominal rating direct-connected to 50-kw General Electric exciter generators. These engines have cylinders 11 in. in diameter by 12-in. stroke and operate normally at 280 r.p.m. The generators are wound for 125 volts and supply current for the excitation of the main alternator fields, for station lighting and also for the ignition of the Westinghouse engines. The latter are of the familiar vertical single-acting construction employed by the manufacturers, with throttling governing and make and break ignition mechanically operated. The ignition current supply for each engine is taken directly from a  $\frac{1}{2}$ -kw generator belted to its

main shaft, the circuits for each cylinder being taken to a separate induction coil in series with an incandescent lamp, the latter both limiting the current flow and also indicating the operation of the igniter. A small storage battery set is provided and kept constantly charged for use in starting one of the exciter units in case the entire plant has been shut down.

#### STARTING WITH COMPRESSED AIR

In addition to the generators driven from these exciter engines, there are two air compressors belted to them which are operated for the compressed air supply required for the starting of the main gas engine units. These compressors are Hall two-stage compressors with  $6\frac{1}{2}$ -in. and  $3\frac{1}{2}$ -in. x 7-in. cylinders and are belt driven and designed to compress air to a pressure of 200 lb. The starting of all of the five engine units is accomplished by compressed air, which serves to turn them over until the ignition catches. The Westinghouse engines are fitted with unbalanced poppet valves which connect into either end of each cylinder, and are located directly under knock-off cams on the main lay shaft; in starting the engines the air pressure is merely turned on. This causes the unbalanced poppet valves to move upward to their seat, but one or more of these valves will always be held down and open by the air cam, admitting pressure to one of the cylinders and turning the engine over. The Snow engine is started by compressed air directed to the alternate ends of two cylinders on either side by means of a distributing valve that is mounted on the extreme outer end of each of the lay shafts. In both the Snow and the Westinghouse engines the air is admitted only on the explosion stroke part of the cycle, so that the exhaust valves are open on the following stroke and permit of the escape of the air. The air supply is stored by the compressors in a group of four horizontal cylindrical steel tanks in the basement, each 16 in. in diameter by 14 ft. long and having a capacity of  $19\frac{1}{2}$  cu. ft.

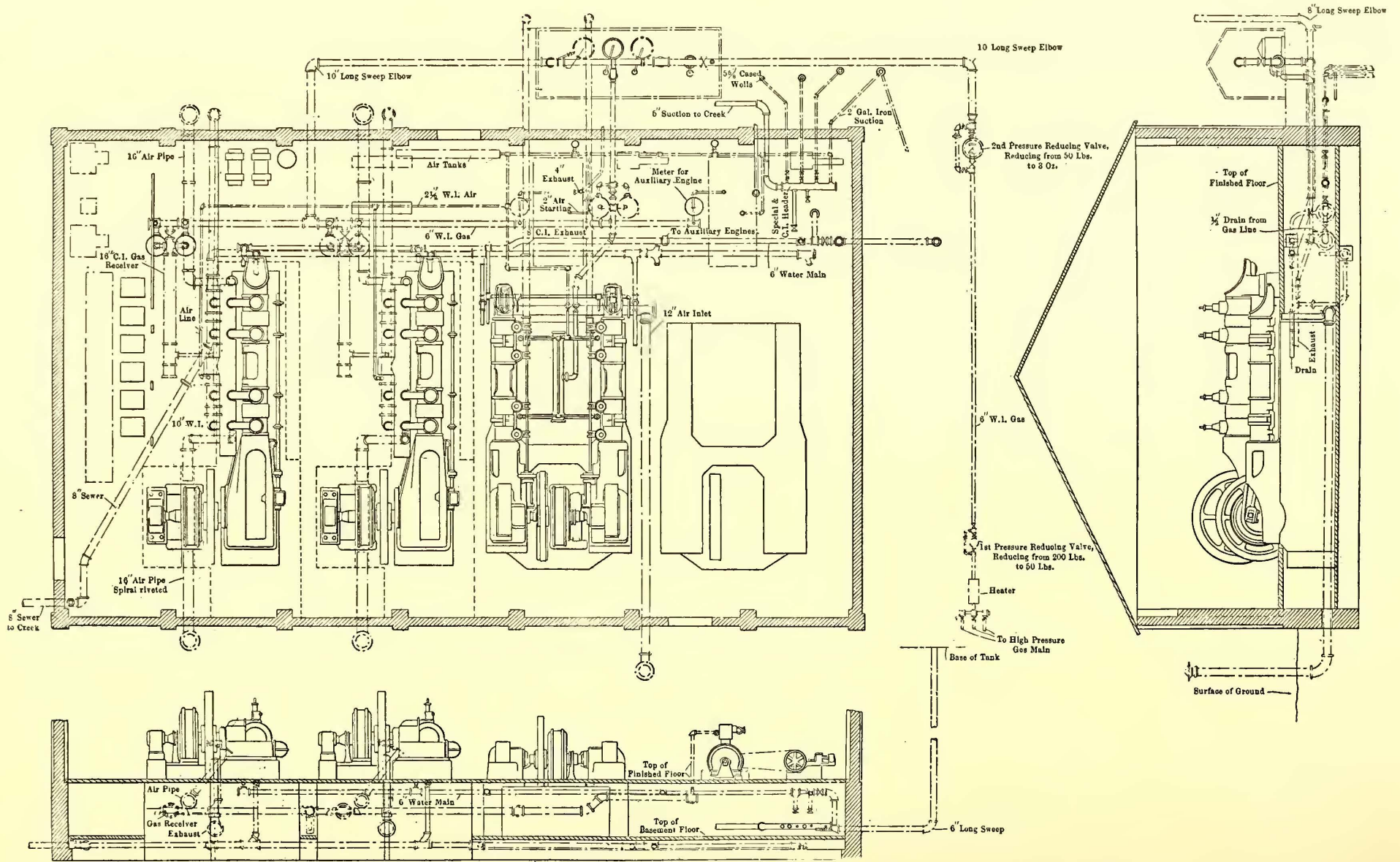
#### LUBRICATION

The three engines are lubricated by combinations of gravity and force feed, the former system being used for



Olean Gas Power Plant—Interior of Station

all important bearings, and the latter for the cylinders. In the gravity systems, each engine is supplied from an elevated supply tank, to which the oil is pumped and from which it runs to the bearings through sight-feeds. The waste oil flushed through the bearings is drained to settling tanks and filters in the basement and thence is pumped to



Olean Gas Power Plant—Plan and Sections of Power Station Showing Piping and Two Types of Engines

the supply tank for re-use. Richardson sight-feed mechanical boilers are employed for cylinder lubrication on both the Snow and Westinghouse engines. Each engine has four 5-feed oilers, oil being delivered to the cylinders at distributed points.

#### COOLING WATER SUPPLY

The cooling water supply is obtained from a number of wells which were driven to a depth of but 42 ft. alongside of the station and from which a water of remarkable purity is obtained. This water was found under test to exhibit neither alkaline nor acid characteristics and to contain neither animal nor vegetable matter. Eight wells were drilled at points from 7½ ft. to 38 ft. outside of the north station well, four with 5½-in. casings and four with 7½-in. casings. The four inner wells, which were the first to be driven, are connected independently through 2-in. horizontal lines to an 8-in. cast-iron suction header in the basement while the four larger wells that were driven later are connected by 2½-in. branches into a 4½-in. main that leads to the same suction header. All connections from the latter wells are made with Dresser sleeve couplings to allow for flexibility. The connections to the suction header are made through check and gate valves and from the header two 5-in. suction connections lead to turbine centrifugal pumps. These are of Worthington make, of 16,000 gal. capacity per hour and are driven at 1440 r.p.m. by 15-hp Westinghouse three-phase induction motors, direct-connected to their shafts. One of these pumps is connected through an emergency suction connection from the creek adjoining the power plant to a foot valve in a deep portion of the stream about 150 ft. distance from the header. The delivery main from the pumps is connected to an elevated tank of 5500 gal. capacity which serves primarily as the pressure regulator for the water supply system, but can also be used as a reserve supply to a limited extent, being capable of supplying cooling water to the main engines for a period of an hour or more in case the pumps are shut down. An additional advantage of the elevated tank is that it has sufficient capacity to supply one of the exciter engines with cooling water all night, in case station lighting should be required during the night when the main generating units are shut down and the pumps cannot be operated. The elevated tank is of wooden construction and is supported on a square structural steel tower with its base 48 ft. above the power house floor. This provides for a minimum water pressure in the cooling main of approximately 20 lb.

#### GAS SUPPLY

The gas supply, as stated, is derived from fields owned or controlled by the railway company. At present the gas is taken from 21 wells which vary in distance from 2 to 10 miles from the station, the greater part of them being across the State line in Pennsylvania. Gas is delivered from the wells through two 4¼-in. pipes and one 2½-in. pipe which are brought to a 3-in. header outside of the station building at the rear. From this header the gas is passed to the engines through pressure reducing valves, the supply coming from the wells at a pressure of about 150 lb. Between the header and the first reducing valve there is a heater box consisting of a sheet iron enclosure about 3½ ft. long around the pipe. A gas flame is burned in this heater during cold winter weather, partly to heat the gas supply and partly to prevent the condensation of certain of the constituents of the gas that would otherwise leave a sticky and troublesome residue in the gas mains. The pressure reducing and regulating valves are of Chapman

make; the one next to the heater is 3 in. x 6 in., and reduces the pressure from 150 lb. to 50 lb.; the second is 6 in. x 10 in. and reduces the pressure from 50 lb. to 8 oz. Both of the valves are by-passed and have cut-out valves enabling them to be removed from the line without shutting down the plant.

#### GAS PIPING STATION

The 10-in. low pressure supply line leads first to a Westinghouse 8-in. gas motor for measurement of the supply to the engines, and thence to a reservoir tank 5 ft. in diameter by 16 ft. in length which is buried under the surface on the north side of the station. From the reservoir the main continues to the gasometer house, a 10 ft. x 25 ft. brick building to the north of the station in which are located the small gasometers and cut-off valves by which the supply to the engines is regulated. Two gasometers are provided for the engines. One is arranged to control the supply to the two Westinghouse engines and the other to the Snow engine; both are gasometer tanks about 3 ft. in diameter with a vertical travel of approximately 2 ft. The gasometer governing the supply to the Westinghouse engine cuts down the flow by means of a butterfly valve in the main as the gasometer rises, while that for the Snow engine actuates a cut-off valve in the branch main to that engine which is of a design similar to the well-known Corliss cut-off valve.

#### ELECTRICAL EQUIPMENT

In addition to the main generating units and exciters, the electrical equipment of the station embraces a rotary converter for the supply of direct current at 600 volts to the two branches of the eastern division of the system that center at Ceres, and step-up transformers with the necessary switching apparatus for the high tension transmission lines that distribute power to the four substations of the system. The rotary is a 300-kw six-pole General Electric machine with speed-limit and end-play devices. It receives current from the main generators at 370 volts and operates in connection with a 45-kilovolt-ampere reactance coil of the air-cooled type. For the high-tension system there are two 660-kw banks of transformers, consisting each of three 220-kw single-phase units of the air-cooled type. The transformers are provided with double coils for separate operation of two rotaries from each bank and with half-voltage taps for starting. The three units in either bank are connected in delta and step-up from the generator voltage to a line voltage of 19,100 volts, although they are so wound as to be capable of delivery at 33,000 volts, to which potential the line voltage may be raised in the future. The air blast for these transformers is supplied by two sets in duplicate of 55-in. centrifugal fans which were built by the Buffalo Forge Company, and are each operated by a 3-hp 370-volt direct-connected induction motor. The fans deliver to the transformers and to the reactance coil through an air-tight vault in the front-end of the basement.

#### SWITCHBOARD

The control of the electrical equipment is handled from a 15-panel switchboard which is located at the westerly end of the engine room. It consists of four generator panels, one blank, two exciter panels, four rotary converter panels with two blanks for a possible future unit, three direct-current feeder panels, an outgoing line panel and a half-voltage panel. In addition to the main switchboard there are two single-panel boards located opposite the transformer banks for their control which have levers for mechanically operating the oil switches. The main board



carries the usual equipment of indicating instruments and switches, an astatic ammeter and a single-pole positive switch. The three direct-current feeder panels contain each a circuit breaker and ammeter, a single-pole switch and lightning arrester on the back. A feature of the d.c. feeder panels is that all circuit breakers have plunger switches for the operation of an indicating alarm bell in case any one opens.

HIGH TENSION WIRING

The high tension oil switches are mounted in brick cells that are located on the main floor level at the rear of the switchboard, and are so located as to facilitate direct mechanical connection from the operating levers on the switch-board panels in front of them. All of the high tension wiring from the transformers to the outgoing line connections above are arranged on pipe work brackets immediately above the oil switches, and the lightning arresters and choke coils are arranged on the wall under the openings for the high-tension wires. Double-pole disconnecting switches are provided for both lightning arresters and line wires. The high tension entrance openings in the building wall are of the standard Locke 25,000 volt construction and consist of slate panels with double concentric porcelain tubes for the line wires.

ENGINEERING

The equipment of the station was for the greater part designed by Mortimer Silverman, electrical engineer of the company who is in charge of the power supply to the system. W. R. Page, of Olean, is president of the company, and I. W. Miller is general manager. The power station is in charge of E. C. Hollis.

**DESTRUCTION OF THE CAZADERO STATION OF THE PORTLAND RAILWAY, LIGHT & POWER COMPANY**

The Cazadero power plant of the Portland Railway, Light & Power Company, Portland, Ore., was completely wrecked early on the morning of June 21 by a mishap to the machinery. The governor on one of the water-wheels struck and allowed a full head of water to rush through the turbine driving the generator, which straightway proceeded to speed up. The attendant who endeavored to shut the emergency gate found it jammed and inoperative. The speed of the generator dislodged some of the pole pieces and threw the revolving field structure out of balance, so that the generator in a very short time was wrecked by the centrifugal force.

The governor of the adjacent machine was struck by a piece of flying metal and rendered useless. As a consequence, the gate flew wide open and the generator "ran away," meeting the fate of the first machine. Pieces of this second generator were hurled through the building and the remaining generator was also destroyed. The complete demolition of the generating apparatus was brought about in three minutes. The water wheels, from all reports, were undamaged save for the breaking of the shafts, and shortly after the accident were stopped from the head gates. One end of the station contained a temporary wooden floor and wooden roof for convenience in installing additional machinery. This was set on fire by the wreckage which flew in that direction. The switchboard end of the station was undamaged. All of the 18-in. shafts were broken off and twisted.

The Cazadero plant, which was described in the STREET RAILWAY JOURNAL for May 18, 1907, was considered to be one of the finest water-power stations on the Pacific Coast.

It was placed in operation in February, 1907. The water-wheels ran under a head of 112 ft. and the three wrecked generators were rated at 2500 kw each. The high-tension transformer equipment connecting the Cazadero station with the other stations of the Portland system is located on the opposite bank of the Clackmas River, and the high-tension lines are controlled by closed circuit switches energized from the excited busbars. As soon as the accident occurred the 33,000-volt lines were automatically disconnected from the system so that no damage resulted to the substation. Repair work has already been started and an attempt made to obtain generators already built and not required immediately by those for whom they were intended. Prior to the destruction of the station the question of installing 60-cycle apparatus in preference to 33-cycle apparatus for extensions was seriously considered, and 60-cycle apparatus may be installed to replace the wrecked generators; but this has not as yet been decided.

There was no interruption to the service resulting from the destruction of the Cazadero station, for at the time of the accident, about 6 o'clock in the morning, very few lamps were in use and few cars were running. The auxiliary steam stations were immediately brought into service and are taking care of the load. The company has six steam stations which are used chiefly as auxiliaries to the water power plants. They have been thoroughly overhauled recently and are in good condition.

**COST OF THE YOUNGSTOWN & OHIO RIVER RAILWAY POWER STATION**

During the discussion of the paper by J. R. Bibbins on "Double Deck Plants," at the meeting of the American Institute of Electrical Engineers at Atlantic City, C. W. Ricker, electrical engineer of the Cleveland Construction Company, presented figures on the cost of the power station of the Youngstown & Ohio River Railway Company. This station was described by Mr. Ricker in the issue of the ELECTRIC RAILWAY JOURNAL for June 13, so that the information contributed by him is especially interesting. He stated that the figures were prepared very carefully by analysis and classification of the vouchers of all accounts. The costs are figured on the kilowatt basis. The station is designed for an ultimate capacity of 3000 kw in three 1000 kw units, of which two are now installed. Mr. Ricker's figures are based upon the completed plant and follow:

Building and fixtures.....	\$21.40	per kw
Boiler plant.....	14.24	"
Condenser .....	6.41	"
Generating plant.....	37.59	"
General expense.....	2.43	"

Total, including real estate.....\$82.06 per kw

A bureau of publicity has been organized by the Seattle (Wash.) Electric Company to encourage friendly feeling between the press, the public and the company. An effort will be made by means of pamphlets, bulletins and special articles in the newspapers to stimulate pleasure travel during the time of day of lightest load. Under the caption of "What to See and How to See It," a folder descriptive of various points of interest reached by the lines of the company has been published and distributed gratis at the hotels, news-stands, etc., for the use of visitors in the city. Other folders and pamphlets will be published from time to time. The bureau is in charge of J. W. McCloy, formerly of the transportation department.

## CHICAGO CITY RAILWAY SCHOOL OF INSTRUCTION

In January of the present year the Chicago City Railway Company established a school of instruction for trainmen. This school is at the second division headquarters, Thirty-ninth Street and Wabash Avenue, very near to the geographical center of the City Railway system. Ample space has been used so that the equipment contained in the schoolroom is not crowded. The room is 60 ft. x 65 ft. in floor dimensions. It has been carefully equipped and furnished with a view to instructing students how to operate cars and properly serve passengers. The schoolroom is so furnished and kept that employees will have a good example of cleanliness and order before them.

The equipment of this school of instruction includes a desk, a large counter and rostrum surrounded by a railing for the convenience of the instructor, a blackboard and seats with wide arm rests similar to those found in public schools. The instructor keeps in neat frames covered with glass complete wiring diagrams of the large pay-as-you-enter cars recently adopted as standard by the Chicago City Railway Company. About the walls of the room are exhibits of blank forms, tickets, etc., all of which can readily be referred to in lectures or inspected at will by the students.

### SCHOOLROOM EXHIBITS

These exhibits are mounted in frames behind glass and are arranged in an orderly manner. Some of the exhibits are as follows: A large, complete map of the Chicago City Railway system with the various routes plainly inked in so that if questions arise about an operating situation at any point, the map may be used as a basis for reference and argument; a large blueprint permanently mounted in a frame showing the complete car circuits for lighting, heating, push bells and air-compressor motor, together with a diagrammatical sketch of the general car wiring of the so-called "1907 type" car. A print also is exhibited of the wiring for the two-motor equipments which are yet used on some of the lesser traveled crosstown lines. Little instruction is given a new man with regard to the wiring details of the equipments. However, all questions are answered and the prints are available for explanation to the older men and those especially interested, such as the men on trouble wagons and in similar service.

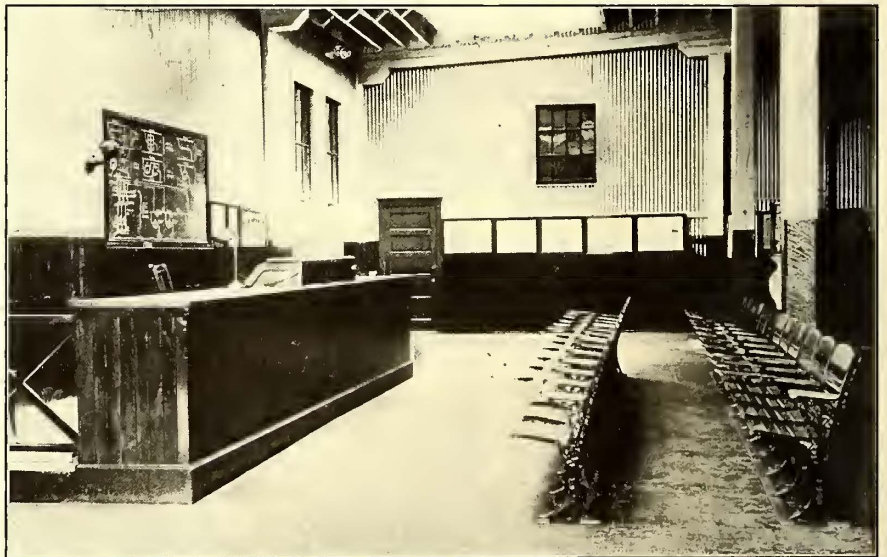
The wall equipment also includes an exact reproduction of a "directory of runs" showing the proper arrangement of the names of the conductors and motormen for daily runs and trip runs. There is also shown close by a sample extra list for working and emergency crews. Next in order along the wall is a frame containing a complete timetable for one of the divisions.

A full set of the several kinds of accident reports is exhibited. These include the abbreviated report for use on the cars and the more complete blank which the trainmen are required to fill out when reaching a carhouse after an accident. In the frame with the accident report blanks is a copy of the telephone report used for immediate notification of an accident with a witness card and a time slip. The Chicago City Railway Company pays its employees for making out accident reports and after such reports

have been turned in the crews make out these time slips which are requests for the extra pay. All of the blank forms which have to do with the reporting of accidents have been filled in at the head office of the claim department so that the students are shown samples satisfactory to the department most interested in damage claims.

The auditing department also has filled out a set of signing-in sheets, trip sheets, over and under-time cards, special switchback reports, etc., just as it desires to receive them from the men. These blanks are mounted in frames placed on the wall in the row with those earlier enumerated. There are also found similarly framed "lost article" tags, samples of all the tickets and transfers that should be accepted and copies of all recent orders and bulletins which in any way affect the department of the trainmen. The instructor also keeps a complete set of all orders and bulletins posted in a scrap book. The contents of the book is card indexed by subjects.

A record similar to that exhibited in the accompanying engraving is kept of each student instructed in this school. These cards are filed alphabetically. They are 5 in. x 3 in. in size and are made as needed by printing with a rubber



Chicago City Railway—Lecture Section of School of Instruction

stamp. It will be noted that this record exhibits other than the student's name, his badge number, dates of studentship, rating, rule book number, permanent address and the division on which he was instructed. Space at the bottom is available for noting any remarks with regard to the student's previous experience.

The most interesting exhibits in the schoolroom are the skeleton cars. These include a complete framework and running gear with motors, electrical and brake equipment for a single-truck two-motor car, and a complete underframing with electrical and air-brake equipment for a double-truck 1907 type motor car.

Because of the completeness of these two demonstrating equipments this school is especially interesting when compared with others that have only so-called "dummy" cars. In the cars shown here are found every electrical and mechanical detail from trucks and motors to register, trolley-pole retrievers, air brakes, etc., that either the motorman or the conductor is interested in in actual service. The motor and brake equipments are complete in every detail and are so supported free of the rails that a student may be instructed in their actual operation by placing him on

the platform of the car and showing him how best to actually start the motors, feed them and apply the brakes. The brake rigging is so arranged that there is a positive drag on the wheels at all times and thus the motors accelerate as though they were under a car carrying a load of passengers on the street. The complete wiring and all parts of the skeleton cars and their equipment are exposed to view in their true locations on the cars.

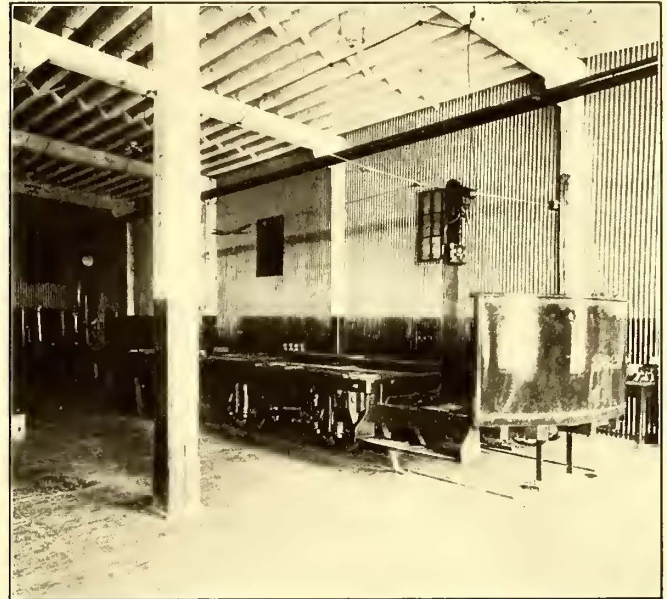
COURSE OF INSTRUCTION

When trainmen have been accepted for studentship they are given a preliminary schooling in the general operation of the car. By means of the exhibits on the wall as earlier enumerated they are shown how to read the timetables, learn their runs and fill in the various operating blanks required for service. This preliminary instruction requires about two hours' time. After the preliminary schooling the men are at liberty to study the exhibit equipments and ask any questions of the instructor, who is on duty each day from 8 a. m. to 6 p. m. While breaking in on the cars, which usually requires about two weeks' time, the students are frequent visitors to the schoolroom. After having been approved by the line instructors the motormen and conductors are given very thorough examinations on their duties.

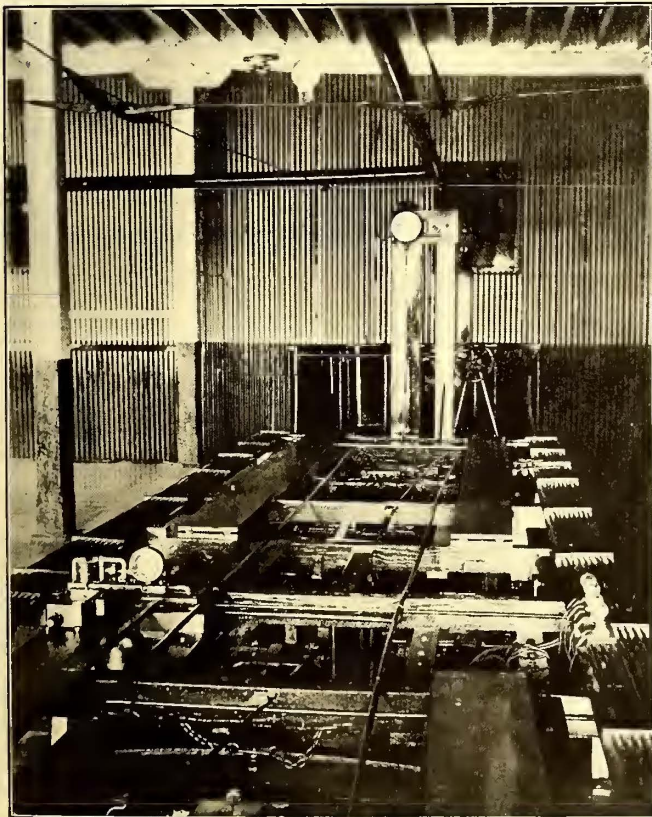
The motorman's examination requires about five hours' time and the conductor's about two and one-half hours. The motorman, among other things, is given a test on finding out why the motors on an exhibit car will not start if the various switches, fuses, circuit breakers, etc., are not

handling it on the road and placing it in the barn ready for storage.

The conductor's examination has little to do with the running gear of the car. He is, however, examined with regard to the care of the heating and lighting circuits, the



Chicago City Railway—Top View of Double-Track Car for Exhibition Purposes



Chicago City Railway—Skeleton Exhibit of Double-Track Pay-as-You-Enter Car

properly regulated. He is examined on how to cut out motors, how to generate an emergency stop and how to feed his controller in ordinary service. In fact, the examination follows out very closely the acts which a motorman must perform in taking a car out of a storage barn,

operation of the bells and register and the manipulation of the trolley retriever.

Both motormen and conductors are given careful examinations in the rules of the Chicago City Railway's transportation department. As a preliminary for this examination the student is given a booklet comprising 16 pages of closely printed questions without answers and these questions are subdivided into three parts, those for motormen and conductors, those for conductors only and those for motormen only. These questions have been so chosen that they require a student to devote close attention to their answering and this study brings out the points which it is desired to impress upon students. Here are some sample questions picked at random from one of these booklets:

3. In reporting for duty, to whom do you report?
4. What does the clerk give you in assigning a run?
5. What should you notice regarding the trip sheet and transfers?
6. Will a telephone message be accepted as a report for duty.
28. What is the "come ahead" signal by day? What is it by night?
29. After receiving the "come ahead" signal, what is the duty of the motorman before starting his car?
35. Are cars on east and west lines required to come to a full stop before crossing north and south lines?
36. Have cars of north and south lines the right of way over cars of east and west lines?
37. Have cars entering curves the right of way over cars on straight track?
40. Who is in charge of the train, the conductor or the motorman?
42. Should the car stop for all passengers who wish to ride? Are there any exceptions to this rule? If so, what are the exceptions?
67. In all cases of accidents, may trainmen delay other cars until they are satisfied that they have full information regarding the case?
70. In case of a car collision, whether or not passengers are injured or cars damaged, is a telephone report as well as a written report required?

71. What is the telephone number of the company's office?

19. What lines issue transfer slips at time fare is paid?

20. Should transfer slips be honored when presented by person boarding car at other than transfer points?

24. In case the register fails to record, how should you tally the fares collected?

25. What persons ride free? Are they entitled to transfer slips?

6. What would you do if the trolley wheel should come out of the harp?

7. In case you were on a railroad crossing, your conductor having gone ahead to run the crossing, if your trolley pole should leave the wire causing the car to stop in the path of an approaching train, what would you do?

10. Name five causes of the lamps in the car not lighting.

23. Explain how the fuse or circuit breaker protects the electrical apparatus on the car.

24. How many fuses would you blow before cutting out a motor?

72. If you should lock your wheels in trying to stop the car on a slippery rail, what should you do?

73. In using the air brake, what pressure should be carried in the receiver?

74. In case the pressure rises above the maximum allowed, what should you do?

97. How high an obstruction between the rails, such as timber, raised paving stones, bricks, etc., are your motors able to clear?

98. Should the car be allowed to coast as much as possible?

99. If you were descending a grade and the power on the line gave out or the trolley wheel left the wire, and the brakes also gave out, what would you do?

The general course of instruction includes some brief cautions on car operation that are worthy of repetition here:

Don't follow your leader too closely, especially when running at a high rate of speed. Remain a good safe stopping distance under all circumstances. Take into consideration the condition of the rail and of the brake, if on the level, and if not, the percentage of grade to be traversed, for when going down grades stopping conditions are against you.

Don't have straight track collisions, and always approach regular stopping points, such as railroad crossings, bridges, boulevards and street railway intersecting lines with car under full control, as the regular stop must be made.

Never start your car without "go ahead" bells. After receiving the "go ahead" bells, glance to the right and also in front of the car before turning on controller. This is done to prevent falling of passengers when in the act of boarding car.

Use extra precaution in passing vehicles driving along the side of the track in the same direction as car, for the other fellow very often does the unexpected thing by cutting you off suddenly.

The final advice to trainmen is usually that they should become thoroughly conversant with the rules in general and familiar with the car equipment, so as to meet the desired standard of efficiency and to assist in giving the service necessary to the proper operation of an up-to-date system.

In this school the principle is laid down that no student asking even the most simple questions shall be humiliated and his interest thereby arrested. No hard and fast line of questioning is followed in the examinations and the procedure is such that it is a true test of the ability and make-up of the man. The course of instruction is not confined to new men and in compliment to the school it may be said that a considerable number of the older employees are regular attendants. The visits of the older men are encouraged so that there may be available suitable tutors for work on the cars. The instructor keeps an accurate record of the dates of the visits made by the men older in service. For this purpose the names of conductors and

motormen with their badge numbers are alphabetically listed in two large registers.

As a result of the well-planned methods used in this

SMITH, WM. H.		No. 2514	
<i>Stu. Ship Prel.</i>	1-10-08	<i>Finals</i>	1-25-08
<i>Days</i> 14	<i>Trips</i>	<i>Rating</i> 98	<i>Rule Book No.</i> 1643
<i>Address</i>		143 39th Street	<i>Div.</i> 3
<i>Had four years' experience as Conductor this Company.</i>			
<i>Off sick 1-15-08 while on as student.</i>			
Moorman			

Chicago City Railway—Sample Card from Index of Students

thoroughly equipped school of instruction, the men have not only been given a thorough course of instruction, but their morale has been increased as a result of the confidence which they have in their work.

LARGE AND SMALL MOTORS ON ONE CAR

A correspondent of the *Electric Journal* asks in the June issue if it would be feasible to operate motors of different horse power on the two trucks of a car with a greater load on one truck than the other. The first apparent advantage in such an arrangement would be that a greater drawbar pull could be obtained because the motors would not slip as soon as they would if they were of the same horse power. Assuming that the motors would be geared so that for any speed of the car the tractive power developed by the motors would be proportional to their horse-power ratings, the question is answered in the affirmative. A four-motor equipment, of course, with like speed-torque characteristics would be required. Each large motor should be connected permanently in parallel with a small one and then for control purposes the two pairs be connected either in series or multiple as the speed requirements of the running schedule demanded. As earlier stated, the application of the scheme would only be in special instances. Its use might prove profitable, however, for work cars with the cab at one end and where special loading for increasing the pulling capacity was desired. Thus the ballast could advantageously be placed out of the way at the cab end and the larger part of the platform be left free for a working load.

In *Mines and Minerals* Edward W. Parker, of the United States Geological Survey, doubts if the production of anthracite will ever greatly exceed the production of 1907, which was about 76,000,000 long tons. He says: "When the period of decline does set in, the decrease in production will be gradual, and some anthracite will be used well into the next century; but it is slowly and surely becoming more and more of a luxury, and we may look for gradually increasing prices, as the workings become deeper and thinner beds are drawn upon."

**THE CAR DEFECT RECORD SYSTEM OF THE ELEVATED DIVISION, BOSTON ELEVATED RAILWAY COMPANY**

In the STREET RAILWAY JOURNAL of April 4, 1908, the car defect records of the Boston Elevated Railway Company's surface lines were described. By the use of this system the company has cut down the failures of cars on the streets about 50 per cent in the past two or three years, and the keeping of an accurate record of the service troubles has also thrown considerable light upon the performance of new equipment. Since 1902 there has been in use on the company's elevated division a system of defect records resembling the surface system in some particulars, but more closely adapted to the analysis and interpretation of the operating conditions and results attending the handling of heavy traffic by multiple-unit trains. This method is described in the following paragraphs:

On the company's surface lines a trouble is considered a defect if a car has to be pulled in before the end of its run, or when it has to be held for repairs over the time when it would normally go out on its next regular trip. On the elevated division a somewhat wider interpretation is given to the term "defect," which may be discovered in the car house during inspection and remedied without interfering with the regular use of the train, or which may be reported on the road without preventing the completion of the regular schedule, or, again, which may necessitate the immediate withdrawal of the train from service. From the opening of its elevated train service in 1901 the company has paid special consideration to the problems arising in connection with its rolling stock, which has had to meet unusually severe operating conditions. In the single instance of wheel maintenance the grinding or turning of every wheel in active service is required at least once in two weeks. During the past year the number of elevated cars owned has increased from 174 to 219, with a revenue movement of nearly 800,000 car-miles per month. The first 150 cars used in elevated service were equipped with Westinghouse No. 50-C motors, and the next 69 with GE-69 motors. The No. 50-C motors are now being replaced by the new Westinghouse No. 301 interpole motor. In all

placing a check mark opposite the defect observed and turning in the slip either to the starter of the elevated division at the terminal of his run or to the foreman of elevated shops when the train is run into the yard for adjustment, layoff or repairs. This defect slip, Fig. 1, gives the essential facts about the train and car number, the time, date and crew concerned, and classifies the defect under car body, motor, truck, control or air brake troubles, a line being given to each important piece of apparatus liable to be affected in service. Track and signal defects are also

**BOSTON ELEVATED RAILWAY COMPANY.**  
Report of Defects in Car No. \_\_\_\_\_ Train \_\_\_\_\_

Date: \_\_\_\_\_ 1908 Time: \_\_\_\_\_ A. M. P. M.

Motorman: \_\_\_\_\_ No. \_\_\_\_\_  
Gund: \_\_\_\_\_ No. \_\_\_\_\_  
Brickman: \_\_\_\_\_ No. \_\_\_\_\_

<b>Car Body Troubles</b>	<b>Control Troubles</b>
Auto signals	Circuit breaker
Bell or bell cord	Circuit breaker switch
Brake chain	Conductors
Brake glides	Cranks
Car floor dirty	Head switches
Center door	Jumper
Coasting link	Jump in series
Draw bar	Multiple
End door	Master control
Hog chain	Releaser
Lights or light switches	Slide in arrester
Platform gate	Slide in arrester multiple
Platform chain	Stops
Seat	Stops in arrester
Ventilation	Stops in arrester multiple
<b>Motor Troubles</b>	<b>Air Brake Troubles</b>
Motors backed	Air brakes
Motors dead	Air brake magnets
Motors leads	Air brake magnets not release quickly enough
Motor leads	Air brake magnets not release quickly enough at times
<b>Truck Troubles</b>	<b>Truck and Signal Defects</b>
Star wheeler Motor or	Brakes do not release quickly enough
Trailer Truck	Brakes do not release quickly enough at times
Brakes not stopping	Brake pipe
Brakes starting	Brake pipe hose
Contact shoe trouble	Control hose
Flat wheel	Control hose not working
Hot	Low brake pipe pressure
Truck axle	M. M. cable sing
Dead car	Pump fuse blown
Track and signal defects	Trips

Place check mark opposite defect reported. If the defect cannot be traced, locate give, in addition to check mark, particulars which will assist in locating trouble.  
This report MUST be sent to Shop with defective car or given to Starter in case of track or signal defect.

Repairs made: \_\_\_\_\_ 1908  
By: \_\_\_\_\_

Fig. 1.—Defect Slip

**Boston Elevated Railway Co.**  
ELEVATED DIVISION.

Inspect the following cars for \_\_\_\_\_ 1908  
*Confession*

and put in good condition.

1	2	3	4	5	6	7	8	9	10	11
12	13	14	15	16	17	18	19	20	21	22
23	24	25	26	27	28	29	30	31	32	33
34	35	36	37	38	39	40	41	42	43	44
45	46	47	48	49	50	51	52	53	54	55
56	57	58	59	60	61	62	63	64	65	66
67	68	69	70	71	72	73	74	75	76	77
78	79	80	81	82	83	84	85	86	87	88
89	90	91	92	93	94	95	96	97	98	99
100	101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120	121
122	123	124	125	126	127	128	129	130	131	132
133	134	135	136	137	138	139	140	141	142	143
144	145	146	147	148	149	150	151	152	153	154
155	156	157	158	159	160	161	162	163	164	165
166	167	168	169	170	171	172	173	174	175	176
177	178	179	180	181	182	183	184	185	186	187
188	189	190	191	192	193	194	195	196	197	198
199	200	201	202	203	204	205	206	207	208	209
210	211	212	213	214	215	216	217	218	219	220

I have inspected and put above in good condition except the following, which must have special attention.

(Sign) \_\_\_\_\_

Fig. 3.—Inspector's Report

**BOSTON ELEVATED RAILWAY, Sullivan Square Shops, Elevated Division**

Trailer Truck No. 089 Taken from Car No. 39 Date June 26 1908

REPAIRS NEEDED: *Change Wheels*

REPAIRS MADE: *Wheels changed Finished 6:25 by John Smith*

<b>REMOVED</b>	<b>CAUSE</b>	<b>PUT IN</b> 6:30
No. 1 Motor No. _____ Arm No. _____	<i>Track worn</i>	Motor No. _____ Arm No. _____
No. 2 Motor No. _____ Arm No. _____		Motor No. _____ Arm No. _____
Wheel No. 1141 1143 771 773		Wheel Nos. 41 43 651 653
Put Under Car No. _____ Date _____	1908	Inspected by <i>John Jones, Foreman</i>

Fig. 2.—Boston Defect Record—Truck Card

these equipments two motors per car have been used, both mounted on the same truck. One truck of each car carries no motors and is designated as a trailer truck by the company. The gradual expiration of the useful life of the old No. 50-C motors has tended to increase the motor defects in the past two or three months, but taking the division as a whole there is clearly a decrease in all defects recorded.

Each motorman is provided with 3 5/8 in. x 7 1/2 in. slips upon which he reports any trouble occurring with a car by

reported by the motorman on this slip, which goes to the shop with any defective car.

Twice each day a 13 in. x 19 3/4 in. sheet is made out by the shop foreman on duty at the Sullivan Square shops and sent to the office of the general foreman of elevated shops. This shows the numbers of all cars brought into the shop on account of real or suspected trouble, with the time, trouble reported, trouble actually found by the inspector or repair man, the name of the man making the repairs, time the train was ready for service, inspections made and any special notes for the shop file. In case any defects are found by the shop force that have been overlooked or not manifested on the road, they are also included in this sheet.

When a car enters the shop for truck repairs a 6 1/8 in. x 10 3/4 in. form, Fig. 2, is filled out by the sub-foreman in charge of the dismantling of trucks at the top of an elevator well on the elevated level, and sent with the truck to the machine shop on the ground floor. The repairs or changes needed are indicated on this form, and when they are completed, the machine shop foreman lists the work done on the same slip and sends it to the office of the general foreman. These daily slips serve as a valuable check upon the quality of work done upon the equipment, for if any trouble develops immediately after the car goes back to service, due to inadequate truck repairs, it can be at once traced to the portion of the shop force responsible for the work. Wheels, motors and armatures that are changed are recorded upon this sheet, with the cause of the change and the date.

Each inspector sends a daily report of his work to the general foreman's office on a 4 1/8 in. x 8 3/4 in. form, Fig. 3, numbered for every car on the division, and the inspection and adjustment made are checked for each corresponding car number. This work is classified under compress-

sors, reverser and control, motors, side door bells, brake shoes and foundation levers, motormen's valve, grids, trucks, circuit breakers, car bodies, lights and windows. The slips are carefully filed, and serve as excellent records for use in court cases, showing that any particular section of a car was in perfect condition at a specified date.

When new equipment is inspected and equipment changed a triplicate report, Fig. 4, is made out on an 8 1/4 in. x 10 7/8 in. form by each foreman or inspector of the different shop departments and the general foreman of elevated shops, showing that the equipment is in proper condition. This form is signed by the superintendent of the elevated division when he receives the equipment, and the original is sent to the chief engineer of motive power and rolling stock. The other two copies go to the superintendent of rolling stock and shops and to the file of the general foreman's office at Sullivan Square. This form enables responsibility for the condition of new or altered equipment to be definitely fixed, and has proved to be a valuable record.

Each day a 12 in. x 14 1/4 in. form is made out in the office of the general foreman of elevated shops, and sent to the superintendent of the elevated division, who records upon it the time and number of drawbridge openings, with

cars were out of service between 3 p. m. and 7 p. m. Both the Sullivan Square and the Guild Street car houses are included in this record.

The results of the daily reports of defects are recorded in the office of the general foreman on cards about 5 in. x 8 in. in size, similar to those used on the surface system and described in the ELECTRIC RAILWAY JOURNAL for April 4, 1908. The data kept, however, are somewhat different. Each card is ruled off with a space for each day of the

**BOSTON ELEVATED RAILWAY COMPANY**  
Dept. of Rolling Stock and Shops

**REPORT OF INSPECTION OF NEW EQUIPMENT AND CHANGES IN EQUIPMENT**

CAR NO. \_\_\_\_\_ TURNED OUT OF \_\_\_\_\_ SHOPS

**AIR BRAKES**  
The above car is equipped with compressor governor and brakes. These are properly lubricated, adjusted, thoroughly tested out and in all respects are in good condition for service.  
Foreman, Air Brakes

**HEATERS AND CAR WIRING**  
The above car is equipped with heater and headlights. Wiring for lights, heaters, air brakes, control and motors is installed in accordance with rules of the National Board of Fire Underwriters. Has been thoroughly tested out and is in all respects in good condition for service.  
Foreman, Wiring

**CONTROL**  
The above car has also had controllers, type \_\_\_\_\_ installed upon it, with resistance properly adjusted for \_\_\_\_\_ motors, type \_\_\_\_\_. This electrical controlling mechanism together with the motors and their connections have been thoroughly tested out and in all respects are in good condition for service.  
Foreman Wireman or Electrical Inspector.  
Inspector for Manufacturers Supply Equipment

**TRUCKS AND MOTORS**  
The above car is equipped motor truck -- trailer truck.  
Trucks and motor have been carefully assembled, special attention being given to the fitting of wheels on axles, tire gauge and wheel gauge, as well as fit of bearings. All bearings are properly lubricated. Brakes on trucks have sufficient clearance between trucks and motors and in all respects trucks are in good condition for service.  
Foreman of Truck Equipment.

**CAR BODY**  
The above car body has had doors, windows, steps, seats, sand boxes, gates, hand brakes, signs and fittings examined, adjusted and tested. The same is in every respect in good condition for service.  
Foreman.

**BRAKE ADJUSTMENTS**  
I have connected, adjusted, tested and inspected brakes on the above car. They are in all respects in good condition for service.  
Brake Inspector.

Car No. \_\_\_\_\_ equipped as above turned over to the Operating Department at \_\_\_\_\_ on \_\_\_\_\_ 190\_\_\_\_, in good condition for service.  
{ General Foreman.  
Supt. of Shops.

The above car received by me in good condition for service, as stated above, except \_\_\_\_\_  
Foreman,  
Dlv. Supt.

ORIGINAL: To be sent to Chief Eng'g'r, M. P. & R. S.

Fig. 4.—Boston Defect Record—Inspection Report

the signal failures recorded by the inspector of signals. It is then forwarded to the office of the vice-president. From the elevated shops the sheet shows the motor, controller, air brake and all other defects occurring during the 24 hours covered by its date, the number of the car on which each trouble happened being also shown. Another daily report, 4 5/8 in. x 12 in. in size, is made out by the elevated shops and sent to the superintendent of the elevated division to show the number of cars out of and ready for service at 5:30 a. m. If out of service, the cause must be given. Another part of this form shows how many

**BOSTON ELEVATED RAILWAY COMPANY**  
Repairmen's Report of Motor Flash Over

CAR <u>150</u>	DATE <u>6 24 08</u>	SHOP <u>Sull. Sq.</u>
No. 1. No. 2 Motor _____	No. of Arm. <u>159643</u>	No. of Motor <u>132731</u>
Position of Motor Truck _____	Leading _____	Condition of _____
<b>CONDITION OF</b>		
Commutator <u>only</u>	_____	
Brush Holder <u>5518 OK.</u>	_____	
Brushes <u>Good</u>	_____	
Armature <u>wire band off</u>	_____	
Fields <u>OK</u>	_____	
Leads <u>OK</u>	_____	
<u>Reverser and Supt. OK</u>		
Remarks _____		
Repairman _____		

Fig. 5.—Boston Defect Record—Flashover Report

month, and a separate line is given to each class of trouble. On the card used for recording motor troubles, for example, there is space to show the number of flashes occurring each day on No. 1 and No. 2 motors of car equipments, field troubles, lead, armature, shell, bearings, brush holder, gear and pinion defects. A vertical mark is placed opposite each trouble on the day it occurred, a red mark being used for cars housed at Sullivan Square and a black one for those housed at Guild Street. At the bottom of the card are the totals of all motor troubles occurring in any day of the month, and at the side the total of each kind of defect in the month. Cards also are provided for electric brake troubles, car body defects, air brakes, trucks, automatic bells, broken glass, control, car cleaning, troubles reported and nothing found. The originals of these cards are filed at Sullivan Square, and copies are sent to the superintendent of rolling stock and shops monthly.

To permit studying the problem of motor flashes at length, the inspectors in the shop make out a report of each flash on a 3 7/8 in. x 6 in. form, Fig. 5, which is sent to the shop foreman on duty, and after being noted by him for use in his daily report, is sent to the shop office for filing under the motor number concerned. These slips show the car, armature and motor number, the truck position, condition of the commutator, brushes and holders, armature, fields and leads, with any notes that may occur.

A separate 5-in. x 8-in. card is kept for each motor, showing the cars upon which it is placed from time to time, the date at which the motor is taken off and put on the car, with the cause of defects. The card is filed according to the motor number and is made up from the shop record. The frequent recurrence of any trouble with any given motor becomes evident at an early date by the records on these cards. A similar card is also kept for the armatures. A cross reference card is kept by the general foreman for the new Westinghouse motors, with the object of following up the performance of these more closely. The numbers of the motors, armatures and cars are kept on these cards, with any other notations that are of interest in regard to the service performance of the motors. Another card keeps track of the trucks assigned to different

cars. A total card is also kept, showing the number of each kind of motor defect by months throughout the year. There is also a card record for each car, filed according to the car number, while a separate card is used for each

**MARKING STOPS, CROSSINGS, WHISTLING POSTS, ETC.**

In view of the articles published from time to time on marking stops, crossings, whistling posts, etc., the following

TABULATION OF DEFECTS ON BOSTON ELEVATED DIVISION OCT., 1906-MAY, 1908

	1906					1907					1908									
	Oct.	Nov.	Dec.	Jan.	Feb.	Mch.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mch.	Apr.	May
Air brakes.....	187	218	292	233	127	152	116	120	91	145	151	146	122	150	142	111	88	67	51	67
Automatic bells.....	64	57	43	48	19	19	26	14	3	5	7	13	4	14	15	22	27	31	22	8
Car body.....	100	135	134	128	78	90	105	86	103	103	118	150	170	193	210	208	175	184	168	109
Control.....	99	136	138	147	116	75	85	119	107	128	142	129	141	121	91	55	46	43	41	41
Motors.....	489	421	610	442	386	894	589	681	720	854	989	1,050	834	738	541	341	285	357	462	529
Trucks.....	105	90	83	127	79	83	72	87	82	96	115	96	103	76	108	91	99	96	79	79
Electric brakes.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	36	25	34	19
Total.....	1,044	1,057	1,300	1,125	805	1,313	993	1,107	1,106	1,331	1,522	1,584	1,374	1,292	1,107	828	756	803	857	852

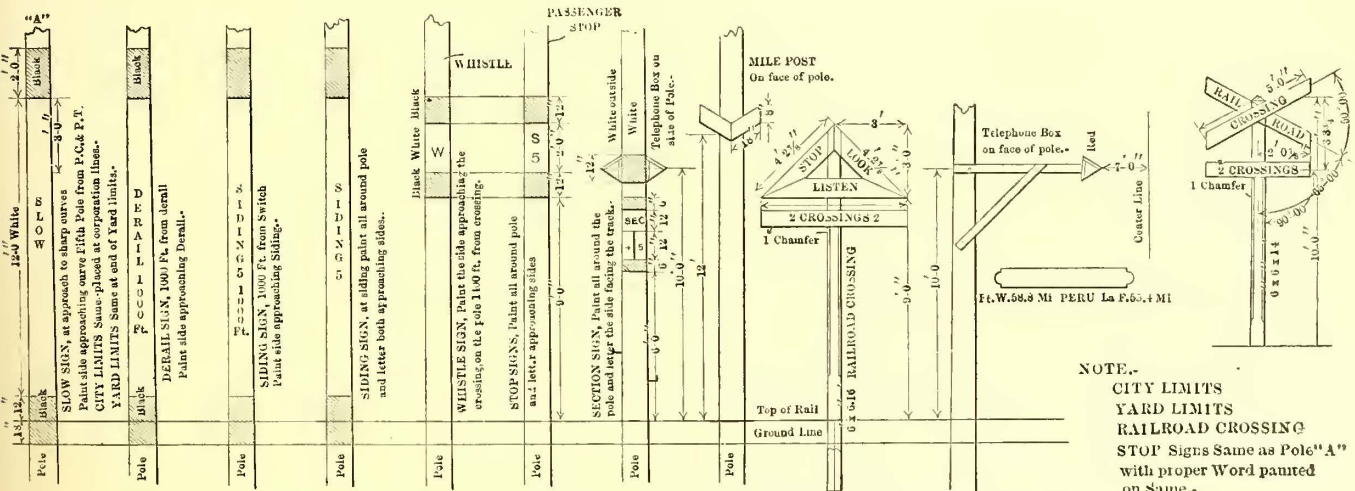
type of equipment on the car that is changed at any time. Thus, for car 0200, the following cards are kept:

1. Car body—adjustments, in and out of service, defects.
2. Motor truck—wheels in and out, hot boxes, truck changes.
3. Trailer truck—wheels in and out, hot boxes, truck changes.
4. Motors and armatures—in and out of car, cleaned.
5. Air piping and hose—defects, bursting, etc.
6. Air compressors and governors—defects, breaks.
7. Electric valves and magnets.
8. Motorman's valves, triples, brake cylinders, leaks, dirt, defects.
9. Master switches and master controller switches—fuse blowing, defects.
10. Grids and cable—grounds, short circuits, breaks.
11. Interlocks and relays.
12. Contactors and reversers.
13. Contact shoes and beams.

There is also a pinion card filed separately, showing the car number, date put in, date the pinion was taken out, armature number, make of pinion and mileage obtained. The accompanying tabulation of defects shows the number of each kind of trouble encountered on the elevated division

details of the practice of the Fort Wayne & Wabash Valley Traction Company, as illustrated by the accompanying drawing, may be of interest.

All curves which are not high-speed curves are marked on the fifth pole approaching the curve "Slow"; 1000 ft. from the derail, the pole is marked "Derail 1000 ft."; 1000 ft. on each side of all sidings the pole on the approach is marked "Siding No. .... 1000 ft." At the siding the pole is marked on both sides "Siding No. ...." Telephone boxes are installed as follows: At points 500 ft. on each side of the switch point, at the siding, and also at distances of about ¼ mile along the line, for calling up the dispatcher. A whistling post marked by a large W is placed 400 ft. from each crossing, and at all danger crossings there is a second pole marked in the same manner. All stops are indicated by a pole marked with a large S in addition to the number of the stop. Thus, stop No. 5 has the figure 5 painted under the S. The section divisions are also indicated by marking the boundary poles "Sec. No. ...." The mile posts which indicate the distances to the terminals of the line carry boards forming a triangle, with lettering to indicate the distance to the main terminals. Where a



Standard Track Signs of the Fort Wayne & Wabash Valley Traction Company

since September, 1906. The total number of defects per month is much less on the whole than in the past. It should be borne in mind that many of the defects do not mean any interruption of service, and that their recording is solely for the purpose of replacing indefinite information regarding equipment troubles by positive and accurate reports kept in sufficient detail to enable the causes of trouble to be determined. Services equivalent to two clerks working all the time maintain the record system.

steam railroad is paralleled, another board reading "Two Crossings" is added to the usual "Railroad Crossing" sign. All stations have a sign placed over the door or some other conspicuous place, on which the mileage to each terminal is given.

H. L. Weber, chief engineer of the company, believes an advantage of this plan is that it reduces the number of panels or boards placed on the poles, and makes them less conspicuous targets for marksmen.

## COMMUNICATIONS

### DISCUSSION ON THE NEW YORK CLASSIFICATION OF ACCOUNTS

STATE OF NEW YORK, PUBLIC SERVICE COMMISSION, SECOND DISTRICT

ALBANY, July 13, 1908.

To the Editors:

Regarding the question of publishing letters to this commission relative to the proposed schemes of accounts to be put in force by the commission, I am authorized by the chairman to say that this commission is heartily in favor of having as broad a discussion of the proposed scheme of accounts as is practicable, in order that any defects contained in it may be foreseen and provided for before the system is put in operation. It is recognized that the discussion of these matters through your publication will do much to facilitate the detection of defects, and for that reason we heartily approve of your proposition to discuss the matter through the columns of your periodical and to publish letters from your contributors relative to the proposed accounts.

WILLIAM J. MEYERS.  
Statistician.

### THE QUESTION OF FARES

NEW HAVEN, Conn., July 13, 1908.

To the Editors:

I have but recently found opportunity to read your abstract of B. J. Arnold's report on the capacity of the New York Subway, published in your issue of May 30, and I have been much interested in his data and conclusions. I am particularly impressed with the statement that the investment required to build and equip the present subway has amounted to \$75,000,000, on which sum, when operating at the extremely low rate of 45 per cent of gross, it has not been possible to earn more than 7.33 per cent, this amount being required to pay interest, depreciation, taxes, sinking fund and profit. Mr. Arnold very naturally and properly endeavors to find a means of increasing this obviously inadequate amount by increasing the carrying capacity of the subway, under the assumption, of course, that if the capacity is increased, such increase would be availed of, and would result in a corresponding increase in revenue without a proportionate increase in operating expense. Without venturing an opinion as to whether or not this assumption would be correct in the case of the present subway, it is pertinent to consider that even with the great density of traffic in New York there are likely to be for years to come demands for additional subways, in some, if not all of which, an unlimited traffic sufficient to absorb all the facilities provided cannot be safely expected. Unless, therefore, the proportionate cost of construction can be materially reduced (which reduction seems unlikely), investment in their construction may, to say the least, not prove attractive to capital. In this case the alternative of providing other means to make such investment attractive, or of going without the subways, will have to be faced. This consideration brings us face to face with the question of increased fares.

Those responsible for the legislation which has been enacted regarding fares in New York City for many years past have clung tenaciously and, apparently, with great satisfaction, to the idea that five cents must carry a pas-

senger from any point in the city to any other point, and seem to have felt that in so doing they were insisting upon a condition which was of great benefit to the traveling public. Opposition to this view has generally come from some one connected with the transportation interests. As such, its expert character has been discredited and its line of reasoning discounted on the score that it emanated from a partisan source, and that if the traction companies were required to establish and maintain the five-cent rate, and had the alternative of so doing or not doing business at all they would be able to do so and show handsome profits.

The public at large is little by little beginning to realize the error of this conclusion. There are those who believe that the best interests of any community are served when it has the best facilities for transportation, paid for at a fair rate of compensation, and that unreasonable burdens imposed on a transportation corporation react upon the public, which cannot escape the consequences or the payment of the direct or indirect penalty by the familiar but delightful process of damning a corporation in and out of the press when the service is not what is desired. Some are realizing, for example, that the policy of New York City in declining to permit any overhead trolley construction, persisted in with great pride for many years, has been, in effect, one of the most serious drawbacks that could have been devised to the progress of certain sections of the city. It has unquestionably so greatly hampered the construction of additional surface trolley lines in the less congested parts of the city as to prevent the provision of much needed facilities, and which, if they had been available, would have contributed enormously to the progress and prosperity of the city. It is no answer to point out faults in the administration of the company which has operated the lines in existence. The absence of such faults as have existed would, possibly, have mitigated, but would not have remedied the conditions described. In the territory adjacent to the Bronx the trolley lines operating through Mamaroneck, White Plains, Tarrytown, etc., while not required to use the underground trolley system, have been forced from one cause or another to stretch the five-cent fare over such long distances that they have gone into the hands of receivers. In Massachusetts the State Board of Railroad Commissioners has gone on record officially in its annual report to the effect that insistence upon the five-cent unit has made it impossible for many interurban lines to give adequate service, maintain the property in suitable condition and meet expenses. Frank R. Ford's investigation of the cost of carrying passengers to Coney Island, a synopsis of which is given in your issue of May 30, adds additional evidence along the same general lines. Other cumulative and corroborative evidence is readily available from a study of the statistics of many trolley companies in other localities for any one desiring to get at the actual facts.

I am well aware that a proposition to limit the length of ride in New York City which a passenger may take for one five-cent fare would be extremely unpopular, and not at all likely to receive any consideration from those in power at the present time, but facts are stubborn things, and no commission or other duly constituted authority can hope ultimately to prevail against them. If I were called upon to venture an opinion on the subject it would be that one of the greatest contributions which the Public Service Commission of the First District could make to the prosperity and comfort of the citizens of New York would be an exhaustive study of the question of traction fares within



the city limits, having in view a very great increase in the facilities of getting about and the establishment of fare zones by which a sufficient return on capital could be assured to make the enterprise commercial.

CALVERT TOWNLEY.

**THE DRAG FIT METHOD OF ASSEMBLING WHEELS, AXLES AND GEARS**

NEW YORK, July 10, 1908.

To the Editors:

The article on "The Drag-Fit Method of Assembling Wheels, Axles and Gears," which appears in your issue of July 4, is very interesting but it is a question whether the methods described are desirable and also whether better results cannot be attained more directly, simply and far more economically.

In the first place, the suggested practices embrace the fittings of the axle to the wheel. Is that the best and most economical course to pursue? Why not bore the wheel to fit the axle? The wheel must be bored anyhow—so why is it not a far more direct and economical method to bore it to a fit? By so doing, one not only saves the extra cost of fitting the axle to the already-bored wheel, but also the ultimate loss of the axle, which fast becomes an item of mere scrap if its wheel seats are reduced below allowable limits by repeated turnings.

In the second place, is it correct to assume that "the sense of feeling with calipers cannot be depended upon to make fits accurate enough for mounting car wheels?" I can point to numerous wheel-shops where undeniably perfect fits are regularly made by the use of calipers and micrometer gages. And I must go further, and state that I have seen many instances of young and unskilled laborers (men who had never before even seen micrometer gages and who had never before even handled calipers), broken-in as positive experts in this class of work in one or two days' time.

Boring tools are now in the market which will bore a hole to within 1-1000 inch. With these tools it is only necessary for the operator to caliper the wheel seat of the axle, note the necessary allowance for expansion or contraction in thousandths of an inch, adjust the tool accordingly, and then bore the wheel to the proper size. While one wheel is being bored the operator is caliper for his next fit, and as the adjustment of the tool itself from one size to another requires only five or ten seconds it is plain to be seen that no time is lost. This method is so simple, and the handling of the tool itself is so simple that, as I have said, raw hands frequently become experts in one or two days' time.

As to the results of this method:

The wheel is bored in one cut, to fit the axle exactly—thus saving the time and cost of putting an axle in a lathe in order to make a fit after the wheel is bored and the ultimate scrapping of an axle on account of reduced wheel seats.

The wheel is bored smooth and true and in a thoroughly mechanical fashion.

The diameter of the wheel seat, and the diameter of the hole, are positively known quantities, therefore perfect fits result and no chances or guess work enter in.

Wheels can be bored just as easily and quickly to fit second-hand axles, where wheel seats may vary 1/8 in, 1/4 or 3/8 in. from one fit to the next, as they can be bored to any one standard size.

From 8 to 15 cast-iron wheels per hour (depending upon

the depth of the hubs, of course), can be bored and fitted by this method, or from 6 to 9 steel wheels per hour.

It is my opinion that this is the most direct, most satisfactory, and most economical method for the boring and mounting of car wheels (and also solid gears), and it is certainly a method which is widely approved at present, and which has been adopted extensively by leading and up-to-date railroad mechanical officials.

C. G. BACON, JR. \*

**PERMITS FOR MUSICAL INSTRUMENTS**

One of the subjects discussed at the Niagara Falls Convention of the Street Railway Association of the State of New York was whether musicians should be allowed to carry musical instruments on cars. This topic was suggested by Charles R. Barnes, of the Public Service Commission, Second District, because complaint had been received by the commission that companies would not allow musicians with bulky instruments to board cars. During the discussion, Edgar S. Fassett, general manager of the United Traction Company of Albany, stated that his company issued permits for musical instruments, provided the owner would agree not to hold the company liable for any damage which should happen to the instrument during the trip. These permits are printed in book form, each containing 50 coupons, one of which must be detached and given to the conductor with each trip. The permits are not transferable and a printed clause to this effect is on the back of each coupon.

Through the courtesy of Mr. Fassett, a facsimile of the face of one of these coupons is presented herewith as well as a copy of the agreement which the musician has to sign at the company's office before the permit is granted.

**This Coupon No. .... is a Permit from the UNITED TRACTION CO.**

to the bearer whose signature is on cover hereof, to carry on the cars of the said Company a Musical Instrument described on cover hereof, under terms of a release executed by him.

It must be detached by the conductor and attached to a report giving date, trip, and by whom it is used.

Fac-simile of Permit.

A copy of the release follows:

**KNOW ALL MEN BY THESE PRESENTS:**

That, whereas, I have made application to the United Traction Company, whose principal office is in the city of Albany, State of New York, for a permit to carry a ..... on its passenger cars; and

Whereas, said company will not permit me to carry said musical instrument on its said cars unless I execute and deliver this release to it;

Now, therefore, in consideration of a permit or permits which may be issued to me at any time hereafter by the superintendent of said company to carry said musical instrument on the said cars of said company on the terms and conditions to be expressed in such permit or permits, I do hereby covenant and agree with the said company and its successors that I shall never make any claim against the said company or its successors for any damages by reason of or arising out of any damage which may be done to any musical instrument which I may be permitted to carry on said cars, whether such damage shall be caused by the act or omission of any of the servants or agents of the said company or by act or omission of any other person or persons or caused in any other manner whatever; and I do hereby release and forever discharge the said United Traction Company and its successors of and from any and all claim or claims, demand or demands, damages, actions, cause or causes of action by reason of or arising out of any damage which may be done to any musical instrument which I may be permitted to carry on said cars or on any car of the said company, whether such damage shall be caused by the act or omission of any of the servants or agents of the said company or by the act or omission of any other person or persons or caused in any other manner whatever.

## CONDITION OF PHILADELPHIA RAPID TRANSIT COMPANY

A pamphlet published by Chandler Bros. & Company, of Philadelphia, discusses the subject of "Traction Investments" with especial reference to the Philadelphia Rapid Transit Company. The pamphlet is a timely review of present conditions. It begins with the statement that "the unsettled conditions of the past three years have given ample evidence of the strong intrinsic values underlying American tractions as a form of safe investment." After a reference to the conflicts in Chicago, New York, Detroit, Cleveland and San Francisco and the statement that out of these antagonisms evidences are coming slowly "of a better understanding which we believe will serve to make American tractions a most stable form of investment," the pamphlet continues:

The struggle was inevitable, and came as a natural sequence to the improper promotions of many such public service corporations, accompanied as they were by flagrant disregard of public duties.

The municipalities dealing with the new problems in a ruthless fashion have learned that the ill-considered attempts at confiscation of property rights of innocent investors have only served to destroy credit and retard the development of urban transportation so urgently needed in the rapidly growing American cities. Efforts are still being made to push the campaign against public utility corporations by attempting to still further reduce fares, and at the same time demanding increased facilities to a point which yields not even the stipulated 6 per cent return to newly invested capital. The campaign has had its bitter lessons to municipalities and capital alike, but we venture to state that definite results are now being attained and conclusions reached, some of which may be summarized as follows:

First—Municipal operation in the present state of political administration in our cities is both inexpedient and uneconomical.

Second—Private operation of public utilities with due regard to public service requirements, and subject to reasonable regulations, affords the most immediate solution of urban transportation problems.

Third—Restrictive measures to limit a 6 per cent return on capital on such investments have only the effect of diverting such capital to more profitable fields and retarding the wonderful extension of municipal transportation enterprises, which has previously taken place under the stimulus of possible large profits.

Fourth—A general recognition that, whatever the errors of original promotion of American tractions, the inviolability of contracts entered into with municipalities must be observed, and large investments made by the investing classes should be recognized rather than destroyed if further substantial sums necessary for transportation development are to be obtained.

Fifth—Public acknowledgment that, with advancing wages, increased cost of materials and most expensive construction in populous centers, the rates charged by public service corporations must, following the general tendency of all prices for commodities furnished and services performed, advance rather than further decline.

Sixth—Appreciation of the fact that new capital costs in the large American municipalities can be very much reduced in the future by the use of municipal credit under properly guarded restrictions; this procedure to supersede the old method of heavy security issues in order to attract private capital on a semi-speculative basis.

Taking up the affairs of the Philadelphia Rapid Transit Company the pamphlet shows that the company reached the maximum interest requirements under its lease of the Union Traction Company on July 1, 1908, and that no further additions to the underlying charges can be made except on new investment of capital for extensions, with the consent of the city. The booklet then takes up various sub-

jects connected with the operation of the road. On the subject of accident claims it says:

### ACCIDENT CLAIMS

Another evil of the past has been the abnormal and unjustifiable mulcting of the company on accident account, which for the year ended June 30, 1907, reached the enormous sum of \$1,217,586, or over 6.75 per cent of the \$18,000,000 gross earnings of the company for that year. This form of corporation baiting, we are glad to note, has already received its check by a more rigid scrutiny of claims by the company's management, and one of the beneficent effects of the present contract with the city has been the generous assent of the city, the public and the courts, as interested parties, to fair play in this department of the company's operations.

We are informed that the company's payments on accident account for the eight months ending March 1, 1908, have come within 6 per cent of gross earnings, and it is hoped that a still further reduction can be made. The importance of this feature cannot be magnified, as it is the honest belief that payments should not exceed 5 per cent of the gross earnings in any one year, which, compared with the year 1907, would alone mean a saving of 1.75 per cent of gross, or \$315,000, a sum almost sufficient to wipe out the deficit for that year.

### FARES

In discussing the subject of fares the booklet says:

The extent to which American railway managers have met and partially reconciled two divergent economic problems in the past 15 years is hardly appreciable by the public.

1. Expenditures of enormous sums for substitution of cable for horse-power, only to be succeeded by the substitution of electric power; 16-ft. and 18-ft. cars, then 25-ft. cars, only to be succeeded by 40-ft. cars; 40-lb. rails, then 60-lb., then 80-lb., only to be succeeded by 140-lb. rails; all topped off by construction of surface, and now subway lines, at an immense cost; and the end of progress is not yet. To state that these immense substitutions and resubstitutions of improved facilities at the urgent demand of the public have, in numerous cases, been grossly over-capitalized, is to admit a patent truth, but to state that rates of fare should continue to decrease, that facilities should expand and that a fair proportion of such improvements should be charged to operating expenses is to demand of American railway managers a task that responds to neither reason nor justice.

2. Our 8-cent fares in this city have been succeeded by 6-cent fares, later reduced to 5 cents straight, curtailed by exchange tickets, which, as abused, meant an average of 4 cents per ride. Still later there were issued six tickets for 25 cents, with free transfer to many points, netting the company 2.08 cents per ride. It is not surprising that the point of diminishing returns has not only been reached, but long ago passed.

With the permission of the local management, we have been enabled in our investigation to study the return by months of the period from July 1, 1907, to March 1, 1908. The figures follow:

	—Passengers carried—		—Gross earnings—		Receipts per passenger (average)	
	1907.	1906.	1907.	1906.	1907.	1906.
July .....	48,708,168	40,496,750	\$1,724,991	\$1,544,812	3.54	3.83
August .....	45,871,631	40,258,927	1,607,341	1,476,389	3.50	3.66
September .....	43,369,429	40,464,052	1,523,814	1,512,276	3.51	3.74
October .....	45,620,703	40,993,680	1,608,099	1,540,493	3.52	3.76
November .....	43,145,388	40,347,492	1,528,105	1,495,635	3.54	3.71
December .....	43,072,937	41,748,659	1,532,357	1,553,126	3.56	3.72
	1908.	1907.	1908.	1907.		
January .....	40,159,274	39,498,791	\$1,420,673	\$1,454,170	3.54	3.68
February .....	37,068,655	34,175,970	1,313,223	1,263,072	3.54	3.70
Totals eight months.....	374,016,185	317,984,320	\$12,258,603	\$11,839,973	3.53	3.72

We think the time is not far distant when the zone principle of many European countries will have to be established in order to correct the unfair rate privileges of long-distance riders in the cities of this country.

Another feature which should be given due consideration at an early date as to a basis for rates is the large item of income that must be appropriated for maintenance. It is the general impression that in order to attract capital and make a "new deal" every five years or so, a large part of ordinary renewals has been taken care of out of such capi-

tal account, in such periods of recapitalization. In fact the substitution of an improved class of facilities for those obsolete at the end of a 5-year period has rendered such a specious method of accounting necessary to gain the capital.

Power house, track and equipment requirements will need much larger sums in the future than in the past, now that we have reached a point in corporate promotion where both investing and public interests require an absolutely honest method of accounting. When it is considered that, in addition to trying to reconcile these two irreconcilable features of tremendously increasing capital demands and decreasing capital returns, the American railway manager has been called upon to meet demands for wage increase, and increased cost in all departments of operation as well as the adjustment of public demands for increased car service, is it to be wondered if his task has reached an end unsuccessful and unsatisfactory alike to investor and the public?

When public interest demands extremely large investments, such as the Philadelphia Subway and Elevated (costing \$20,000,000), which investments are entirely for the benefit of the public, and the returns upon which are not remunerative to private capital except under tribute for large speculative profits, the city may well consider lending its public credit to insure the raising of such large sums of money at cheap rates of interest, thereby saving a capital cost which inevitably must be placed upon the shoulders of those who ride upon the traction lines.

### REPLY OF INDIANA COMMISSION TO ACCOUNTING SERIES CIRCULAR NO. 20

After Accounting Series Circular No. 20 had been issued by the Interstate Commerce Commission, replies regarding the tentative scheme of accounts were made by various railways and by State commissions. Among the replies was one from the Railroad Commission of Indiana sent under date of May 7. While Circular No. 20 is no longer representative of the proposed interstate classification of accounts for electric railways, the points made by the Indiana Commission are an interesting contribution to the subject of electric railway accounting. The letter is therefore reprinted below:

#### LETTER OF INDIANA RAILROAD COMMISSION

Referring to your Accounting Series Circular No. 20, dated Jan. 10, 1908, we desire to submit:

1. That our law provides that the carriers subject to the State enactment shall file annual reports with us, "and such reports shall embrace such (other) information and facts as shall be prescribed by the Interstate Commerce Commission for reports of interstate carriers thereto, and such reports shall be in the form so prescribed in so far as the same is applicable." On account of this provision we are largely dependent upon the result of your action as to what we may require in accounting to this commission.

2. We have been disposed largely to accede to your more mature judgment and larger experience in matters of accounting in the hope that in the end there will be greater uniformity throughout the country so that more intelligent and accurate comparisons may be made of the results obtained from the reports, and we continue to be of this opinion. However,

3. We have been furnished with a copy of criticisms, etc., dated May 1, 1908, signed by Messrs. Forse, Glover and McGowan, representing certain Indiana electric lines, [Published in the STREET RAILWAY JOURNAL of May 2, 1908, Eds.] and directed against the Accounting Series Circular No. 20, and with reference thereto submit:

A. Damages.—We are of the opinion that in the present state of development in Indiana three accounts for damages, namely: (1) Loss and damage to property in transit; (2) Damages to property; (3) Injuries to persons, will meet all present need. The movement of property on electric lines in Indiana produces less than 10 per cent of the revenues of the company. In all the criticisms embraced in this communication the item of expense in accounting has had large influence in determining the judgment of the commission.

On account of the fact that many of the electric lines in this State are just being constructed, none of them is so fully developed and complete that it is able to stand any unnecessary expense.

B. Stationery and printing.—We think that items 91 and 113 will be sufficient to preserve the accounts as to stationery and printing. If there was a division of the expenses of handling passengers and handling freight we should be of a different opinion on this and other items in these criticisms.

C. Insurance.—We think insurance, if separated into two accounts, namely: (1) The transportation covering persons and property carried; (2) General expenses covering the property of the company, will be sufficient.

D. Maintenance of electric line.—Many of the items under this classification have no application to Indiana lines. The four classes suggested by the response seem to meet the local needs, but we apprehend the entire classification will need to be preserved to meet all the conditions in all the States.

E. Maintenance of electric equipment or revenue equipment.—The suggestions made by the responses as to these items seem to be worthy of grave consideration. Our technical knowledge is not sufficient to justify an opinion concerning the subject. Unless there is a complete answer to this criticism the same should prevail.

F. Available maintenance expenses.—Until a later period in the development in Indiana, we do not deem these accounts profitable, and they may well be carried in other items, as suggested.

G. Joint facilities.—We see no objections to these accounts where the situation demands their application, and no doubt there are many throughout the country. However, they can have no possible application to the situation in Indianapolis, which is one of the largest electric terminals in the world. The facts with reference to the use of Indianapolis terminals are correctly stated in the criticisms, as we are now informed. The traction lines using the city lines to enter the city could not give the information required by these joint facilities accounts for the reason that they do not keep the books, pay the bills or have anything to say about the accounts. No system of accounting is valid which requires the company to furnish data from some other company's books which it does not keep, and which is not controlled by the same law. In Indianapolis the expense of maintenance of tracks used by the electric lines is sustained entirely by the Traction & Terminal Company, which is a local company and not subject to the Federal or the State law as to accounting. The charge paid per passenger by the interurban companies to the city company can properly be entered only under item No. 99, page 13 of the circular, "Other transportation expenses," and we suggest that another item should be added there to carry these charges, namely, "Trackage rights," or "Lease of line."

H. Other items.—The responses on pages 12 to 14 are worthy of careful consideration. If the respondents are correct it seems that some of the requirements as applied to them are impracticable, if not impossible.

4. If any improvement can be made in the proposed accounts to separate more completely the expenses of the passenger business from the freight and express business, it will be of great advantage to this commission. If the accounts are not further developed along that line we suggest that much data can be required in the form of traffic statistics, such as car mileage, car hours, etc., etc., from which deductions may be made. The same may be said also with reference to a definite separation of operating expenses and revenues between city and interurban lines controlled by the same company, as many are in this State. As to city lines, we have no control, hence the wish that accounts may co-ordinate with our jurisdiction. We do not expect perfection in the beginning, but hope experience will add to our knowledge and bring fairly acceptable results in the end.

### MEETING OF THE EXECUTIVE COMMITTEE OF THE MANUFACTURERS' ASSOCIATION

A meeting of the executive committee of the American Street & Interurban Railway Manufacturers' Association was held at the offices of the American Street & Interurban Railway Association, 29 West Thirty-ninth Street, New York, on July 10. There were present Messrs. Ellicott, Hequembourg, Martin, McGraw, McFarland, Peirce and Sisson. President Ellicott presided. Mr. Hequembourg,

vice-president in charge of exhibits, reported that matters in connection with the exhibit at the coming convention were progressing favorably and that he had appointed an exhibit committee, consisting of 15 members. Upon motion, a committee of three from the executive committee consisting of Messrs. Randall, Sisson and Knickerbocker, was appointed to work with this exhibit committee on the allotment of space. The date of space allotment will be determined later. The appointment of H. G. Connoaghy, of the Dearborn Drug & Chemical Company, as director of exhibits, was confirmed.

Mr. Peirce, vice-president in charge of entertainments, announced the appointment of Bertram Berry, of Heyward Brothers & Wakefield Company, as chairman of the entertainment committee. This appointment was approved by the executive committee. The entertainment features to be provided at the convention were discussed in an informal way but no definite decision was reached. The subject of rolling chair privileges was also considered and authority was granted for the purchase of a suitable badge. The contracts made by the officers of the association with the Atlantic City Hotel Men's Association, Young's Million-Dollar Pier and P. E. Lane for the use of the pier and the erection of the booths were approved.

After thoroughly considering the matter and after consultation with a number of prominent manufacturers it was decided that as some of the expenses that properly should be borne by the exhibitors were not included in the rate of \$0.23½ per square foot mentioned in Circular No. 1 the rate should be increased, and on motion it was unanimously voted to increase the rate from \$0.23½ to \$0.28 per square foot, the latter rate covering a number of necessary expense items that have never heretofore been included in the rates of previous years.

The president was authorized to appoint a printing committee, after which the meeting adjourned.

### SALES OF COMMUTATING POLE MOTORS

The General Electric Company announced recently that the total of its sales of commutating-pole motors amounts to 5538, aggregating 338,450 hp capacity. Of the 50-hp 600-volt size 4014 have been sold. Of these, 774 had split frames and 3240 had solid frames. The largest users of these motors and the number employed by each are: Boston Elevated Railroad, 400; Twin City Rapid Transit Company, of Minneapolis, 640; Metropolitan Street Railway, of Kansas City, 80; Des Moines City Railway, 106; Chicago Railways Company, 2600.

Of the 65-hp 600-volt type 550 motors have been sold, all with solid box frames. The purchasers were the New York City Railway Company, 160, and the Third Avenue Railroad and allied lines, 390. Of the 75-hp 600-volt size, 80 motors have been sold, all of the split frame type, and of the 100-hp 600-volt motors 400 have been sold.

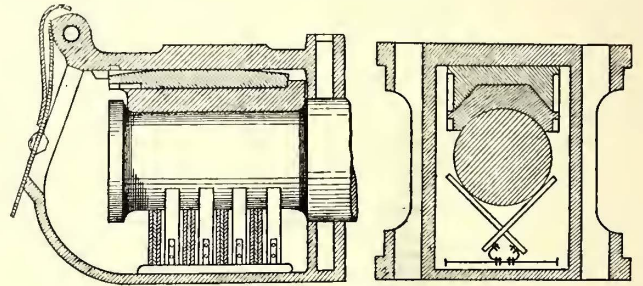
Of the 150-hp 600-volt type of commutating-pole motors 238 have been sold, all of the solid frame type. The Interborough Rapid Transit Company, of New York, has 182 and the Northwestern Elevated Railroad, of Chicago, 40. The Interborough Rapid Transit Company, of New York, also has in use 80 200-hp 600-volt motors. Of the 275-hp 600-volt type 24 solid frame motors have been sold, all for the Detroit River Tunnel.

One hundred 75-hp motors with 600-volt winding but with 1200 insulation have been sold. Of these, the Indianapolis & Southern Railway has 12, the Indianapolis & Louisville Railway, 40, and the Pittsburg, Harmony, Butler &

New Castle Railway, 48. The company has sold 175 125-hp motors with 600-volt winding, but with 1200-volt insulation, to the Southern Pacific Company, of Oakland. It has also sold 56 75-hp motors with 1200-volt winding and insulation. Of these the San José & Santa Clara Railroad Company has 32 and the Central California Traction Company 24.

### CAR JOURNAL LUBRICATOR

The Car Lubricating Company, Utica, N. Y., is introducing for electric railway service its flexible steel car journal lubricator. The device consists of wicking held firmly in place by clamps on eight fingers, four on each side of the journal, as shown in the accompanying illustration, the



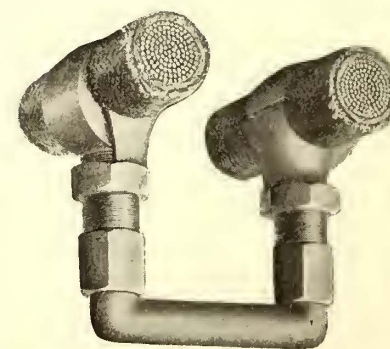
Car Journal Lubricator

wicks being arranged to be easily reversed or renewed. Before being placed in the journal box, the lubricator should be dipped in the same kind of oil or grease that is to be used in the box, after which it is self-feeding as long as there is sufficient oil in the box to touch the base of the wicking. Copper wires are encased in the wicking to retard the flow of the oil to the bearing or back into the well. The wires also tend to conduct the heat to the well and in this way facilitate lubrication by making the lubricant more susceptible to attraction.

As the conductors are flat and alternately arranged on springs the entire surface of the axle is supplied with oil.

### SOLDERLESS TAP FOR HEAVY CABLES

The cars crossing the Williamsburg Bridge between New York and Brooklyn are operated by the Brooklyn Rapid Transit Company and power is supplied through four 2,000,000-circ. mil cables. These cables are about 2½ in.



Solderless Tap

in diameter and are supported in a series of insulated cradles suspended from the structure. To equalize the electrical load on the feeders it was recently decided desirable to install a series of cross-connections between them, but their proximity to each other, ¾ in. or ¾ in. center to center,

precluded the use of an ordinary splice. A substitute was found, therefore, in the solderless tap made by Dossert & Company, of New York City, illustrated in the accompanying engraving. By this device cables 1 and 3 and cables 2 and 4 were joined. The tap grips the cable and a copper conductor connects the clamps. By this arrangement the cables were not cut, just enough insulation being removed to accommodate the tap. After their insertion the taps were taped and then covered with an insulation compound.

# News of Electric Railways

## Side Door Subway Cars Ordered

The Public Service Commission of the First District of New York has ordered the Interborough Rapid Transit Company to have 16 of its subway cars equipped with side doors, as recommended by Bion J. Arnold, the expert from Chicago, who has been employed by the commission. A description of the cars suggested by Mr. Arnold was published in the *STREET RAILWAY JOURNAL* for Feb. 29, 1908.

The terms of the order are as follows: "That the Interborough Rapid Transit Company, by alteration and reconstruction of cars now in use on its subway, provide, for use in the subway, not less than 16 cars of the type described in the report of Bion J. Arnold, dated Feb. 16, 1908, and entitled 'The Subway Car,' being the commission's Exhibit 1, of March 4, 1908. The cars to be provided shall have four doors on each side, two of the doors on each side being in the position of the doors on cars now in use in the subway, and two additional doors on each side to be of the same size as and to be placed not less than one nor more than two doors' width from the doors now in use. The Interborough Rapid Transit Company shall equip these cars with pneumatic or other mechanical or electrical devices so arranged as to open and close the doors quickly and automatically to signal to the motorman when the doors are closed. That the 16 cars to be reconstructed be so arranged that two trains of eight cars may be made up. Not less than one-half of the 16 cars so reconstructed shall be equipped with motors.

"Before reconstruction of the cars above described a full set of plans showing in detail the method of reconstruction shall be submitted to the Public Service Commission for the First District for approval. The cars as ordered above shall be completed and ready for operation not later than Oct. 15, 1908, and notice shall be given to the Public Service Commission for the First District when the cars are ready for operation. The cars as reconstructed shall have adequate and conspicuous signs informing passengers that the doors nearer the end of each car are entrance doors and the doors nearer the middle are exit doors.

"The said cars as reconstructed shall be operated daily on the express service in the subway during the morning and evening rush hours on and after Oct. 15, 1908, and notice shall be given to the Public Service Commission for the First District at least three days before said cars are to be operated. The provisions of this order shall take effect at once and shall continue in force until fully complied with. Further ordered, that before July 15, 1908, the Interborough Rapid Transit Company notify the Public Service Commission for the First District whether the terms of this order are accepted and will be obeyed."

The Commission has not yet considered the question of the account to which the cost of making these changes is to be charged.

## The Plans of the New Haven Railroad with Regard to the Use of Electricity

T. E. Byrnes, vice-president of the New York, New Haven & Hartford Railroad, in an interview printed in the *Boston Herald* on July 3, said in regard to the electrification of that system:

"We shall electrify our roads, every one of them, just as soon as we are satisfied that our system of electrification is what it should be. Of course, this is a big undertaking and will take a great deal of time. In the first place, all grade crossings will have to be abolished, a work, by the way, which has already been in progress some time.

"The suburban lines, especially points where the communities are large, will be first equipped and the electrification will be carried out from section to section until we have substituted electricity for steam throughout our entire system from Boston to New York.

"We feel that the experimental stage of the electric railroad has practically passed and that our system has been demonstrated to be successful.

"New York already has accomplished the task after a great expenditure of money and time. It took years to perfect the system in the metropolis. Boston can have the same thing and one railroad terminal also instead of two at opposite ends of the city, if it wants such improved conditions.

"We have long been agitating that it would be more convenient all round to have one central terminal in Boston instead of two. That is part of our proposed plan which has been mentioned many times."

## Public Service Commission, First District, Not to Alter Brooklyn Subway Plan

The Public Service Commission of the First District of New York announced on July 2 that it had decided against the proposal of the United Boroughs Transit Association for the modification of the plans of the Fourth Avenue, Brooklyn, subway, so that the Ashland Place loop should be abandoned in place of four additional tracks on Flatbush Avenue.

The commission says:

"Probably no point could be selected either in Brooklyn or New York City where the physical difficulties in the way of a deep subway are more pronounced. To begin with, the existing subway extends from 37 ft. to 40 ft. below the surface and the introduction of another road underneath would carry it down 15 ft. or 16 ft. further, which would bring it below the water level. On the surface of the street, resting on the roof of the existing subway, are double-track lines of surface cars in almost constant use, while above them in turn are two lines of elevated roads, the Fulton Street elevated crossing the Fifth Avenue elevated at this point. All this enormous weight would have to be underpinned and supported without danger to property, or interruption of traffic or either elevated, surface or subway, and in addition, many heavy buildings on both sides of the street would have to be supported by underpinning to prevent damages. When to all these difficulties is added the necessity of doing the work for another subway below the existing one in compressed air, probably no greater or more formidable obstacles to the work of the engineer could be presented. The engineers of the Public Service Commission believe that it is wise to avoid this complication by making the detour through Ashland Place."

## Chicago Elevated Loop Situation

H. G. Hetzler, president of the Metropolitan West Side Elevated Railroad, holds the construction of a subway for street and elevated railway cars, as proposed by Mayor Busse, to be the solution of the traffic-congestion problem of the elevated railways in the business district of Chicago. Mr. Hetzler says:

"I think nearly all the men interested in the transportation problem in Chicago are pretty well agreed that a subway will have to be built to accommodate the growing traffic. As I view the situation now the elevated loop, the surface lines and the subway lines will be needed to handle the rush-hour crowds. The continued use of the loop probably will be desirable. My company is a tenant on the Union Loop. It pays rental for the opportunity to get into the downtown district. If the city will show me a way by which my road can increase its service on a business basis by getting downtown some other way, through a subway or otherwise, and will help me get away from my contract with the loop company, I shall be willing to listen to a plan to do away with the Union Loop."

The Metropolitan West Side Elevated Railway is opposed to through routing of elevated trains over separately owned and operated lines and universal transferring—the relief measures proposed by the transportation committee of the City Council. James Walker, consulting engineer for the Metropolitan West Side Elevated Railway, proposes other emergency measures to relieve the congestion and believes the loop can be made to serve its purposes for from five to seven years longer. Through routing, he says, would not relieve the loop congestion and universal transfers would result in financial loss. The scheme proposed by the city would require the roads to carry a passenger 12 miles for 5 cents, while now, counting a fair return on the investment, it costs the elevated roads about a cent a mile to handle each passenger. The suggested relief measures proposed by Mr. Walker include the following, the result of 18 months' study:

Operate only an economic road on the loop. By economic road is meant to run on the loop during rush hours only enough trains to fill its true capacity, which can easily be determined by engineers.

Construct outer, or stub end, terminals for the individual roads, similar to the Fifth Avenue terminal of the Metropolitan company, to take care of passengers unable to use the loop.

Lengthen loop platforms to assist movement of trains for the convenience of passengers. Lengthening of plat-

forms will not materially increase the capacity of the loop. Relocate stations on Van Buren Street and the station at Randolph Street and Fifth Avenue, in order to get them further from junction points.

"The scheme is a temporary one," says Mr. Walker, "and will take care of the increasing traffic on the elevated lines for possibly five to seven years. A subway will eventually come. But the present financial conditions of the roads make a subway scheme prohibitive just now. The same may be said of a consolidation. It cannot be shown that through routing as an engineering scheme or consolidation as a financial scheme are feasible. Through routing will doubtless prove a benefit to passengers on the Northwestern Elevated Railroad and the South Side Elevated Railroad, but a detriment to the Metropolitan West Side Elevated Railway, where 45 per cent of the traffic of the city originates."

#### Letter to Westinghouse Creditors

The 5 per cent of the merchandise creditors of the Westinghouse Electric & Manufacturing Company who have failed to respond to the merchandise creditors' plan for the rehabilitation of the company by accepting new stock at par for their claims have been appealed to by Chairman Joseph W. Marsh in a circular to join the majority and prevent the failure of the plan. The circular reviews all that has been accomplished and concludes as follows:

"We are unwilling to believe that the few remaining individuals and firms whose consent and assistance are still needed will wish to assume the responsibility for a failure of this effort, when, with their co-operation, the success of the merchandise creditors' plan and the discharge of the receivers are assured."

A similar appeal has been sent by the committee, of which Alvin W. Krech is chairman, to stockholders who have held back from subscribing their share of the \$6,000,000 of new stock which the stockholders must take up to carry through the plan.

#### Affairs in New York

Acting under instructions from Judge Lacombe, of the United States Circuit Court, the receivers of the New York City Railway refused on July 9 to allow any security holders' committee employing Marvin Scudder, accountant of the Public Service Commission, access to the books of the corporation under their control.

The protective committee of the stockholders of the Central Park, North & East River Railroad, who, by reason of the recent cancellation of the lease of that road to the Metropolitan Street Railway have had the property turned back to them, now represents 12,000 shares out of the road's 18,000 shares of stock. It has, in consultation with the stockholders, selected the following candidates for directorships in the road: Howard C. Brokaw, John T. Pratt, John W. Castles, Alexander J. Hemphill, Ellis Ames Ballard, George W. Elkins, Tracy Dows, George S. Coe, Edward C. Smith, E. H. K. Belcher, James A. Macdonald, Frank Curtis and George W. Linch. In its circular the protective committee says:

"After a lapse of more than 15 years the company is suddenly called upon to take possession of its road, to refit and re-equip and operate the same, and the necessity for the selection of a board of directors which will represent the stockholders and act solely in their interest is imperative."

The directors of the Central Park, North & East River Railroad organized on July 14. James A. MacDonald was elected president of the company, and Alexander J. Hemphill secretary and treasurer. An executive committee was appointed, composed of Ellis A. Ballard, of Philadelphia; John W. Castles, president of the Guaranty Trust Company; George S. Coe and George W. Linch. Henry Thompson, of Thompson, Vanderpoel & Freedman, was appointed counsel.

Judge Lacombe, of the United States Circuit Court, has granted a motion made by Bronson Winthrop, counsel for the Morton Trust Company, for the appointment of a separate receiver for the Metropolitan Street Railway.

Justice Blanchard, in the Supreme Court, has decided to appoint a referee to hear testimony and to report in the suit brought by Jefferson M. Levy, as a taxpayer, to enjoin the Board of Estimate and Apportionment from awarding any contracts for the construction of the Fourth Avenue subway in Brooklyn. Mr. Levy contended that the awarding of the contract would exceed the debt limit authorized for the city.

A final hearing was held July 13 before Commissioner Eustis, of the Public Service Commission, on the application of the Central Crosstown Railroad for approval of a modified lease of its line to the Metropolitan Street Railway on which both companies have agreed. There was no opposition, and the lease will probably be approved by the commission.

Commissioner Eustis is understood to have told William N. Dykman, counsel for the Coney Island & Brooklyn Railroad Company, that the decision in the Coney Island fare case might be rendered by Friday.

A hearing was held on July 13 by commissioners appointed by the Appellate Division to pass on certain modifications of the route of the proposed Lexington Avenue subway, which has been approved by the Board of Estimate and Apportionment. Two modifications of the route are in question, a proposal to have the line leave Broadway near Tenth Street and run practically under private property to Fourteenth Street and Irving Place, and so up Lexington Avenue to the Harlem River, instead of up Broadway to Twenty-third Street and under Thirty-fourth and Thirty-fifth Streets to Lexington Avenue, and alterations in the route north of the Harlem to Gerard Avenue, running under private property and Mott Avenue to 151st Street, and under that thoroughfare to Gerard Avenue.

#### The Cleveland Situation

Frank H. Smith, a stockholder in the Cleveland Electric Railway, filed a suit in Common Pleas Court on July 8 to annul the lease of the property of that corporation to the Municipal Traction Company. It is alleged that the transfer was made by the directors without the consent of two-thirds of the stockholders.

A 10-minute schedule has been established on Perkins and Hough Avenues to take the place of the Wade Park Avenue cars that are now routed by way of Superior Avenue.

E. W. Bemis, of the Municipal Traction Company, has published the receipts of the company for the week of June 19-25 and the supposed saving to the people over the old fare for the same time. He says that during the week 2,826,546 fares were paid at 3 cents, making a total of \$84,796; that 690,635 transfers were issued at a cost of \$6,906.35, and that 88,058 suburban fares were received at 5 cents each or a total of \$4,402, making the gross receipts \$96,105. At the same rate of travel the receipts would have been \$133,130 at 4.71 cents a ride, with nothing for transfers. Adding the suburban fares at the same rate the total would have been \$137,277, or \$41,172 more than the new company has charged. The rate of saving to the people, Mr. Bemis says, would result in \$2,140,951.28 in their favor and that there would have been a saving to the people of \$7,945 had the rate been seven tickets for a quarter.

#### Chicago Traction Expert Approves Oak Park Elevated Inspection Methods

On May 28, 1908, a broken axle caused a wreck on the Chicago & Oak Park Elevated Railroad. The Department of Public Works was instructed by the Chicago City Council to investigate the cause of the accident and the matter was referred to M. B. Hereley, expert of the Department of Local Transportation. An extract from Mr. Hereley's report just submitted follows:

"This axle broke about 6 in. inside of the car wheel at a point where the gearing is attached to the axle, and on investigation I find that the break shows defective material in the axle, and while this is exceptional and unusual, I believe that the company has no record of a similar break. The material, however, on the surface looked all right, and I believe the company is using the best material that it can purchase for axles.

"The method of inspecting car axles and keeping records is by putting cars through the repair shops for a systematic and general overhauling in every detail at the end of every 50,000 miles. This means that the motors, armatures, gears, gear cases and everything are dismantled and taken apart, thoroughly examined and repaired, axles tested and put in first-class shape.

"In addition to this when wheels require turning the trucks are brought into the shops and motors and every part dismantled and the axles go again upon the testing block and are carefully inspected. The wheels require turning on an average of about every 48,000 miles to 60,000 miles. A systematic car mileage record is kept as well as a wheel, axle and flange record. Every wheel is numbered and the record of inspection followed.

"I believe the company has adopted and is using the very best methods in this inspection work and in view of

the fact that the fracture in this axle was just inside of the gear and covered by it shows that it was not caused from crystallization or wear in the journal box, therefore I believe it is one of those unavoidable accidents that will sometimes occur under the strictest inspection."

**Maryland-Pennsylvania Line Opened.**—The Chambersburg, Greencastle & Waynesboro Electric Railway has been placed in operation between Chambersburg and Pen-Mar on South Mountain.

**New Line Opened in Shreveport.**—The Shreveport Suburban Railway, a 1½-mile electric railway, constructed by the Gladstone Realty Company, was placed in operation in Shreveport on July 1 and is being operated by the Shreveport Traction Company in connection with its Highland Park line.

**Wages Reduced on Indiana Line.**—The Fort Wayne & Wabash Valley Traction Company has announced a reduction in wages of 5 per cent of all employees earning from \$40 to \$60 a month and 7½ per cent above \$60. The salaries of the officials of the company are reduced 10 per cent. Motormen and conductors are not affected by the reduction.

**Increase in Wages in Missouri.**—The Southwest Missouri Electric Railway has increased the wages of motormen and conductors in its employ. Those who have worked one year or less receive 20 cents an hour. For each additional year of employment an increase of 1 cent an hour is given. The number of hours of work varies between 11 and 12 daily.

**Interurban Terminal at Dayton.**—W. Kcsley Schoepf, president of the Ohio Electric Railway, was in consultation last week with a committee of the Dayton Chamber of Commerce in regard to the interurban union station and the terminals that are proposed for that city. It is said that the expenditure of about \$500,000 is contemplated for ground and buildings.

**Track Elevation in Chicago.**—The Chicago & Oak Park Elevated Railroad must elevate its tracks to the city limits before Dec. 31, 1909, according to a decision made at a meeting of the committee on track elevation of the Chicago City Council. Two ordinances to this effect are to be prepared for presentation before the Council at an early session, when consent for their immediate passage will be asked.

**Progress of Tunnels Under the Hudson River.**—Work is progressing satisfactorily in the unfinished portions of the tunnels of the Hudson & Manhattan Railroad under the North River between New York and New Jersey. The Church Street tubes have been excavated from the Jersey side to the bulkhead line on the New York shore, and operations are now being directed at the 1000 ft. remaining. It is expected that the work will be finished in six months.

**New Terminal Line Opened in Washington.**—The double-track railway from Delaware Avenue and C Street, Washington, to the new union railroad depot has been placed in operation. Two cars are operated and connections are made with the lines of both the Capital Traction Company and the Washington Railway & Electric Company. The line is only a few blocks long and was built as a compromise to overcome the objection of the District Commissioners to the extension of the lines of the two companies to the station.

**The Southern Pacific Electrification.**—The Southern Pacific Railroad has announced that it will begin at once the work of equipping its Alameda local lines with electricity. This will be the first step toward diverting all of the suburban traffic from the Oakland to the Alameda mole, leaving the Oakland mole for the through traffic. In time all the traffic as far south as San José will be sent by way of the Alameda mole. The change involves an expenditure of about \$2,500,000. The cars have been selected and all the material ordered. The sites for the power houses have been purchased and the contracts let for the machinery.

**Illinois Central Railroad May Electrify.**—In arguing for the passage of an ordinance granting the Kensington & Eastern Railroad the right to cross 15 streets in the southeastern part of Chicago recently, John G. Drennan, chief counsel, Illinois Central Railroad, said that this new line which the Illinois Central intends to purchase might be made the nucleus of an electrified suburban service. The Kensington & Eastern proposes to operate a steam and electric railroad from Gary, Ind., to connect with the present Illinois Central suburban service at Burnside, Ill. The ordinance will not be acted on until the fall.

**Pennsylvania Railroad's New York Tunnels Ready for Track Laying Jan. 1.**—The compressed air in Tubes C and D of the tunnel system in course of construction under the East River by the Pennsylvania Railroad has been shut off,

making it possible to walk the entire distance from Long Island City to and through Manhattan to the railroad company's terminal station under atmospheric pressure. Within the next few months it is understood that the compressed air will be taken from the North River tubes, thus making it possible to walk from Long Island City to New Jersey underground. It is understood that the four East River tubes will be turned over to the Pennsylvania Railroad for track laying by Jan. 1.

**Oak Park Elevated to Use Stub Terminal.**—The Chicago & Oak Park Elevated Railroad has a stub-end terminal about three blocks long on Market Street two blocks west of and parallel with the Fifth Avenue side of the Union Elevated loop. This terminal structure has never been used for passenger service, but only for the storage of cars during the middle of the day. The original franchise of the road compelled it to operate every train around the loop. As the loop structure is now very crowded with trains and the patrons of the Oak Park Elevated earnestly request increased service, the transportation committee has recommended that the Oak Park Elevated be allowed to use the Market Street terminal for passenger traffic.

**Gratuities in Mobile.**—The conductors and motormen in the employ of the Mobile Light & Railroad Company, Mobile, Ala., receive 18 cents for the first two years of service and 20 cents thereafter. The company desired to increase this rate slightly, but did not feel that it could afford to increase the rate of all men and so it decided to give a bonus at the end of every six months to men working in that time and to men who had received an honorable discharge. No one is entitled to the bonus during the first two months of his employment. The bonus is ½ cent per hour for the first year of service, excepting the first two months: 1 cent per hour for the second year's service and ½ cent per hour after two years' service, the pay with the bonus amounting to 18½ cents the first year, 19 cents the second year and 20½ cents after the second year. By this method the company has not increased the rate of men who did not perform their duty and were discharged.

**Pilfered Fares Returned in Savannah.**—G. J. Baldwin, president of the Savannah Electric Company, Savannah, Ga., received through the Jacksonville Electric Company on July 4 from a former employee a letter in which were inclosed checks for \$445 as part of what the writer said he had "knocked down" while working for Stone & Webster in Jacksonville. Mr. Baldwin is district manager in the South for Stone & Webster, and the checks are said to be the first contribution of any consequence to a "conscience fund" in any of the companies in the South. Mr. Baldwin says that the man had worked for the Jacksonville company for many years and he must have kept some kind of account of what he took to judge by his seeming knowledge of what he owes the company. The letter follows: "Columbia, Ala.—Mr. Harley Croom, manager Jacksonville Electric Company—Dear Sir: You will find inclosed checks to the amount of \$445. This is money which I 'knocked down' while in the service of the company. It is not all that I took, but is all that I have. I was converted here and could not rest till I decided to send your company all the money I had. I am on the Lord's side and trust that you are. I know that you are a good man, but don't know whether you are a Christian or not. Show this to my friend, George Rogers. With best wishes for your success, I am, your friend, A. M. Skipper. Let me hear from you."

**Electrical Engineering at Massachusetts Institute of Technology.**—Thirty-eight students, ten of whom are already graduates of liberal arts courses and three are graduates of the mechanical engineering course of the institute, have been granted the degree of Bachelor of Science this year in the electrical engineering course at the Massachusetts Institute of Technology. Professor Laws and Professor Shaad of the electrical engineering department each spent several days during the spring intermission studying the methods of instruction in electrical engineering and related subjects at Cornell University. W. V. Lyon, instructor in the department, is completing the manuscript of a book on electrical engineering problems which will be published by the McGraw Publishing Company during the summer. In connection with the lectures on electric light and transmission of power during the last term, A. S. Michener, comptroller of the Stone & Webster organizations, gave a course on the theory of accounting and the relations of the engineering, operating and executive departments to the accounting department, and R. A. Phillip, of the Stone & Webster Engineering Corporation, lectured on modern switching practice with high tension circuits. Last term Walter Goodenough, of the Stone & Webster Engineering Corporation, lectured on boiler room practice in connection with the same course.

# Financial and Corporate

## Stock and Money Markets

NEW YORK, July 15, 1908.

The general tendency is toward higher levels. Trading during the week ended July 14 was much more active than during the week previous, but still far from normal. It displayed sufficient spirit, however, to encourage the regulars and the commission houses. Generally speaking, the whole tone of the stock and bond business is much improved.

The decreases in the earnings of industrials and railroads have been so vast that discouragement was widespread, unusual conservatism and wisdom in the managements of great enterprises have served to protect stockholders and prevented receiverships and bankruptcies. The excellent crop report and the return to work of many thousands of shopmen and textile operatives have helped the situation materially.

On July 14, the last day under review, the market touched the highest figures since the recovery set in. The industrials were especially good. The steel shares, Amalgamated, the Smelters and others allied with the metal industries were very active and strong. The railroads were somewhat less responsive to the upward tendency. This is not unnatural. Until mill wheels are turning and farm products moving there will still be many cars idle on the sidings. The net changes for the week were almost universally advances, and in some instances showed very substantial gains. Money remains easy with the figures at the close of the week fractionally higher, and the demand somewhat stronger. In the foreign markets the conditions were unchanged. The European feeling of distrust in American conditions seems rapidly to be disappearing.

### Other Markets

In the Boston market there was little activity among the tractions and electric securities. Boston Elevated was nominal at 133 $\frac{3}{4}$ , while Massachusetts Electric on a few sales showed a disposition to sag. The closing figure for the common was 9 $\frac{1}{4}$  and 46 was bid for the preferred.

The feature of the market in Baltimore was the Anacostia & Potomac Street Railway bonds which were in demand and registered considerable advance. All of the bond issues of United Railways were traded in; the 4s closing at 86 $\frac{3}{4}$ , the incomes at 52 $\frac{1}{2}$  and the funding 5s at 78.

The Philadelphia market for tractions was dull. Rapid Transit advanced fractionally on light transactions and closed at 15 $\frac{1}{8}$  while Union Traction was weak and closed at 50. Philadelphia Traction, American Railways and Electric Storage Battery were almost entirely out of the market.

In Chicago, traction securities have been almost entirely neglected. The few sales that have occurred have been made at about former quotations. Good monthly reports made by the Chicago City Railways has caused some inquiry for the stock, but quotations are unchanged at 160 bid and 190 asked. No record of actual transactions has been made.

The Cleveland market was weak. A few small lots of Cleveland Railway were sold at 93 $\frac{1}{2}$  and Northern Ohio Traction & Light changed hands in small blocks at 16 $\frac{1}{4}$ . Lake Shore Electric sold at 6. Washington, Baltimore & Annapolis pooling certificates remained about 9 $\frac{1}{2}$  or 10.

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

	July 7.	July 14.
American Railways Company, Philadelphia.....	444 $\frac{1}{4}$	444 $\frac{1}{4}$
Boston Elevated Railway.....	133 $\frac{1}{2}$	133 $\frac{3}{4}$
Brooklyn Rapid Transit Company.....	49 $\frac{1}{4}$	49 $\frac{3}{4}$
Chicago City Railway.....	a190	a185
Cleveland Railway.....	a94 $\frac{1}{2}$	a93
Consolidated Traction Company of New Jersey.....	a70	a70
Consolidated Traction Company of New Jersey, 5 per cent bonds.....	a103	a103
Detroit United Railway.....	40 $\frac{3}{4}$	38
Interborough-Metropolitan Company.....	11 $\frac{3}{4}$	11
Interborough-Metropolitan Company (preferred).....	31	30
Manhattan Railway.....	a137	a138
Massachusetts Electric Companies (common).....	9	9 $\frac{1}{8}$
Massachusetts Electric Companies (preferred).....	46 $\frac{1}{2}$	46
Metropolitan West Side Elevated Railway, Chicago (common).....	a17	a13 $\frac{1}{2}$
Metropolitan West Side Elevated Railway, Chicago (preferred).....	a50	a48
Metropolitan Street Railway.....	*25	*25
North American Company.....	61 $\frac{1}{2}$	63 $\frac{3}{4}$
Philadelphia Company, Pittsburg (common).....	38 $\frac{3}{4}$	39 $\frac{1}{2}$
Philadelphia Company, Pittsburg (preferred).....	40	40 $\frac{1}{2}$
Philadelphia Rapid Transit Company.....	16	15 $\frac{1}{2}$
Philadelphia Traction Company.....	88 $\frac{1}{4}$	89
Public Service Corporation, 5 per cent collateral notes.....	a97	a98
Public Service Corporation, certificates.....	a68 $\frac{1}{2}$	a70
Twin City Rapid Transit Company, Minneapolis (common).....	a90	90 $\frac{1}{2}$
Union Traction Company, Philadelphia.....	50	50

a Asked. \* Last sale.

## Earnings of Iowa Companies for Year

The interurban railway companies of Iowa have filed with the Executive Council their reports for the year ended Dec. 31, 1907. The totals for all the companies reporting are: Mileage, 220.2; gross earnings, \$898,933; average gross earnings per mile, \$4,382; operating expenses, \$604,035; average operating expenses per mile, \$3,063; net earnings, \$294,898; average net earnings per mile, \$1,319; taxes, \$22,628, and total actual valuation, \$4,325,665. After deducting taxes the companies showed an average earning capacity of more than 6 per cent on the reported valuation.

### Approval of \$50,000,000 Bond Issue by Delaware & Hudson Company

The Public Service Commission for the Second District of New York announced on Thursday, July 9, its decision on the recent application of the Delaware & Hudson Company to authorize \$50,000,000 of refunding mortgage bonds, of which it was proposed to issue at this time \$20,000,000, leaving the balance in its treasury. The commission ratifies the proposed \$50,000,000 mortgage, but disallows a portion of the bonds which it was proposed to issue now, limiting the amount to \$13,276,000. In addition an issue of \$6,500,000 more of the bonds is allowed for refunding existing bond issues. The commission refused to pass at this time upon the propriety of the Delaware & Hudson Company issuing bonds to take up notes, the proceeds of which were used in acquiring the United Traction Company of Albany as well as bonds of the Troy & New England Railway. The commission takes the same position in reference to an item of \$2,500,000, representing advances to a subsidiary coal company. Of these items the commission says:

"These items are disallowed upon the present application, the commission holding that no proof has been presented showing that they are proper subjects for capitalization under the mortgage upon the Delaware & Hudson Company railroad properties, and without expressing any present opinion upon the question of their capitalization states they are matters which may be brought up in a subsequent application."

**San Diego (Cal.) Electric Railway.**—This company has acquired the electric properties of the Coronado Railroad and assumed all transportation obligations of the electric portion of railroad on July 1.

**San Diego (Cal.) Southern Railway.**—This company has acquired the National City & Otay Railway and the steam railway portion of the Coronado Railroad and on July 1 assumed all transportation obligations of the companies which it has acquired.

**Danbury & Harlem Traction Company, Danbury, Conn.**—Application has been made in the Superior Court at Bridgeport for the foreclosure of the Danbury & Harlem Traction Company's property. The application is made by the Knickerbocker Trust Company, New York, in the interests of the bondholders. It is alleged that the company has defaulted payment of interest on the \$360,000 of its bonds that have been issued.

**Washington, Arlington & Falls Church Railway, Washington, D. C.**—The Washington, Arlington & Falls Church Railway has passed from a receivership into the control of a syndicate represented by R. A. Chester, formerly vice-president of the Commercial National Bank of Washington. Mr. Chester has been elected president and J. W. Rich secretary and treasurer. The new owners are said to be interested in the Washington, Alexandria & Mount Vernon Railway.

**Chicago & Milwaukee Electric Railway, Chicago, Ill.**—Foreclosure proceedings will probably be started within a few days in the United States Circuit Court in Chicago against the Chicago & Milwaukee Electric Railroad of Wisconsin, by the bondholders of the company. The proceedings will result, it is asserted, in the ultimate control of the road by bondholders. On July 3 the company defaulted in the payment of the interest on \$14,000,000 of outstanding bonds. Both the Chicago & Milwaukee Electric Railroad of Illinois and the Chicago & Milwaukee Electric Railroad of Wisconsin are affected. The proceedings against the Wisconsin corporation will be to satisfy the demands of the holders of \$10,000,000 of bonds outstanding against it. This foreclosure, however, will be subject to the \$1,000,000 of receivers' certificates issued to complete the line.

**Boston & Worcester Electric Companies, Boston, Mass.**—A meeting of stockholders of the Boston & Worcester Electric Companies was called for July 15 for the purpose



of authorizing an issue of \$600,000 three-year 6 per cent notes to be secured by a deposit of a majority of the shares of the Boston & Worcester Street Railway, which are now in the treasury of the Boston & Worcester Electric Companies. Upon the authorization of this issue it is proposed to dispose of approximately \$300,000 for the purpose of paying for the extension of the Boston & Worcester Street Railway into Natick and double tracking the main line from Southboro to the railroad station in Framingham and for equipment and car houses.

**Fitzgerald & Ocilla Electric Railway, Fitzgerald, Ga.**—This company has increased its capital stock from \$50,000 to \$100,000, and authorized the issuing of \$250,000 in bonds for the building, equipping and improving the road. [S. R. J., Feb. 1, '08.]

**United Railways Company, St. Louis, Mo.**—The United Railways and the North American Company have incorporated a subsidiary company known as the Missouri Electric Railway, into which will be consolidated all the electric railways in St. Louis County. The capital is \$1,000,000. The incorporators are: Robert McCulloch, general manager of the United Railways; James Adkins, secretary of the United Railways; Bruce Cameron, E. P. Walsh and H. P. Taylor. The lines that will comprise the Missouri Electric Railway are the St. Louis, St. Charles & Western, the Midland or Creve Coeur, the Housman to Kirkwood, the St. Louis & Suburban between Wellston and Floresant, and the St. Louis & Meremac River to Kirkwood and Meremac Highlands with branches. The United Railways has 106 miles of electric railway in the county.

**New York (N. Y.) City Railway.**—Adrian H. Joline and Douglas Robinson, the receivers for the New York City Railway, have cut off the 15 per cent dividend which was paid annually to the stockholders of the Central Crosstown Street Railway, under the terms of the lease made when the company's lines were taken over by the Metropolitan Street Railway. The receivers informed the stockholders a few weeks ago that the operation of the lines under the lease was unprofitable and that unless the terms of the lease were modified the agreement would be terminated. The receivers added that if the stockholders were willing to release them from the obligation to pay the 15 per cent dividend on the outstanding stock they would be willing to continue the operation of the property and to pay the interest on the funded debt and other fixed charges.

**Orange County Traction Company, Newburg, N. Y.**—The Orange County Traction Company has been granted permission by the Public Service Commission of the Second District of New York to refund obligations amounting to \$100,000 by an issue at par of four notes to the amount of \$25,000 each.

**Yonkers (N. Y.) Railway.**—The Public Service Commission of the Second District of New York has approved the issue of \$65,000 receivers' certificates by the Yonkers Railway Company. The proceeds are for the purchase of 15 double truck cars.

**Toledo Urban & Interurban Railway, Toledo, Ohio.**—Upon application of the Union Savings Bank & Trust Company, Cincinnati, Harry W. Lloyd, of Lloyd & Rettig, has been appointed receiver of the Toledo Urban & Interurban Railway and authorized to lease to the Toledo, Bowling Green & Southern Traction Company the Toledo Urban & Interurban Railway's line to Perrysburg for \$20,000 a year.

**American Light & Traction Company, Philadelphia, Pa.**—The directors have declared, with the usual preferred dividend, a quarterly dividend of 1 $\frac{3}{4}$  per cent upon the \$6,760,700 common stock payable Aug. 1, 1908. To stockholders of record July 22, increasing the annual rate from 6 per cent to 7 per cent.

**Philadelphia (Pa.) Rapid Transit Company.**—The directors of the Philadelphia Rapid Transit Company have decided not to bring the subject of issuing \$5,000,000 of new bonds before the stockholders of the company until the annual meeting on Sept. 16.

**Montreal (Que.) Street Railway.**—This company is said to have received an offer from the Canadian Public Service Corporation to lease its property to that company for a period of 50 years at a guaranteed yearly rental of 10 per cent. It is also reported that the Canadian Public Service Corporation has made overtures to the Montreal Power Company. Leslie M. Shaw, ex-Secretary of the United States Treasury, is said to be interested in the Canadian Public Service Corporation.

**Gainesville, Whitesboro & Sherman Railway, Gainesville, Tex.**—This company has filed a mortgage to secure \$1,000,000 of bonds in favor of the American Trust & Savings Company, Chicago, Ill.

## Traffic and Transportation

### New Electric Railway Commission of the District of Columbia

The Interstate Commerce Commission has created a board to be known as the District Electric Railway Commission, to be composed of three members to act as a board of inquiry and investigation into all complaints touching or affecting matters in the District of Columbia over which the Interstate Commerce Commission has been given jurisdiction by the act of Congress approved on May 23, 1908. Brig.-Gen. John M. Wilson, U. S. A., retired; Henry L. West and Thomas W. Smith, residents of the District of Columbia, have been appointed members of the commission to serve without salary, Gen. Wilson to act as chairman. The commission ultimately will appoint a salaried executive to handle the details. The regulations for the operation and equipment of cars in the District of Columbia follow:

Under the authority conferred upon the Interstate Commerce Commission by Public Act No. 134, approved May 13, 1908,

It is ordered, That the following rules and regulations (numbered 1, 2, 3, 4, 5, 6 and 7) for the operation and equipment of street railway cars within the District of Columbia be and the same are hereby made and prescribed, and obedience thereto and compliance therewith is hereby required of and enjoined upon all street railway companies, their officers, agents and employees, operating street cars within the District of Columbia, on and after July 10, 1908:

1. Every street railway car operated in the District of Columbia shall be fully equipped with front pick-up fenders of the Blackstone, Claude, Tobe; Preusser or Parmenter pattern, and with wheel-guard fenders of the Brightwood automatic, the Blackstone, the Eldridge Smith, the Tobe or the Parmenter improved pattern: Provided, That any street railway company may substitute for the above any other fender or wheel-guard which may hereafter be approved by the Interstate Commerce Commission.

2. Every street railway car operated in the District of Columbia must be so constructed or altered that a clear space of 15 in. in height above the rails is provided between the wheel-guard and the adjacent end of the car in order to allow the effective action of the wheel-guard.

3. Platforms of street cars shall be guarded by gates of a construction and operation approved by the Interstate Commerce Commission.

4. The fenders must be kept in thorough working order and in good repair when in use.

5. No street car shall move at a greater rate of speed than 15 m.p.h. in the city of Washington, nor at a greater rate of speed than 20 m.p.h. in the suburbs of said city. Street cars shall not exceed a rate of speed greater than 6 m.p.h. at street crossings. When it is necessary for street cars to stop at street crossings they shall stop on the near side thereof; the front end of the car or train to rest on a line with the curb on the near side of the intersecting street, except where the mechanical appliances make it impracticable to do so: Provided, That in cases where stops are now allowed on both sides of a crossing, such stops may be continued if the railroad companies so desire: Provided, That cars moving south on Seventh Street northwest shall be allowed to stop on the far side of Rhode Island Avenue, in lieu of the near side thereof. No motorman or conductor shall refuse to stop to take up a passenger unless all the seats in the car or train are occupied.

6. Wherever street railroads cross each other all cars or trains bound north or south shall have the right of way over trains or cars bound east or west, and all motormen shall, on approaching intersecting crossings, stop their cars or trains and see that the way is clear before crossing: Provided, That the provisions as to the right of way shall not apply where branches of the same street railway cross each other: Provided, further, That the cars and trains of the Capital Traction Company shall have the right of way at the intersection of Thirty-second and M Streets northwest.

7. Flagmen shall be stationed at the crossings of all street-car lines, when in the judgment of the Interstate Commerce Commission the public safety requires the same. And from and after the direction of the commission to any street railway company to station a flagman at any such crossings, it shall be unlawful for any motorman to run or operate any motor car over such crossing in the absence of a flagman. No street car shall stand upon a street or avenue for a longer period than five minutes unless the way be obstructed, nor stop so as to obstruct a street crossing or intersecting street; and no street car shall follow a preceding car moving in the same direction at a less interval than 100 ft., unless coupled thereto. Every street car in

motion after sundown shall have two lights, one displayed at each end thereof.

It is further ordered, That copies of this order be served forthwith upon all street railway companies operating street cars within the District of Columbia.

**Pay-as-You-Enter Cars for Kansas City.**—The Kansas City Railway & Light Company, Kansas City, Mo., is planning to begin a complete service soon on its Troost Avenue line with pay-as-you-enter cars.

**Freight Rates Granted in Massachusetts.**—The Massachusetts Railroad Commission has issued two orders authorizing the Fitchburg & Leominster Street Railway to conduct a freight and baggage business in the city of Fitchburg and town of Lunenburg.

**Separate Office for Merit System.**—The Fort Wayne & Wabash Valley Traction Company is establishing a separate department for the operation of the merit and demerit system in effect on the company's lines. A system of forms and files is to be installed and the record of every employee of the company will be kept in the general offices at Fort Wayne, Ind. The department will be in charge of the transportation office.

**No More Dogs on Brooklyn Cars.**—The Brooklyn Rapid Transit Company has announced that on account of the numerous complaints that have been received from passengers, dogs will no longer be carried on the various lines comprising its system. Accordingly the issue of permits for dogs has been discontinued and all outstanding permits will expire on July 31. After that date passengers will not be permitted to carry dogs on the lines of the company.

**Curtailing Passes in Kansas City.**—The Kansas City Railway & Light Company, Kansas City, Mo., has refused to renew the passes of deputy marshals and deputy sheriffs. It had been the practice of the county court to pay the company \$30 a year for each pass that was issued to the officers. Policemen ride on the street cars free, but they carry no passes. Conductors are instructed to recognize a policeman's star, but not to recognize the star of a deputy sheriff or deputy marshal.

**Right of P. S. C. to Fix Fares Questioned.**—The right of the Public Service Commission of the Second District of New York to order a reduction in the maximum rate of passenger fare, fixed by the Legislature, is questioned by Lewis E. Carr, attorney for the Delaware & Hudson Company. Mr. Carr appeared before the commission on July 6 in opposition to the application to have the rate of fare reduced from 10 cents to 5 cents on the United Traction Company's lines between Albany and Watervliet. In reply, Chairman Stevens said that he disagreed with Mr. Carr. He did not wish to express his own views on the matter, but suggested that possibly the position in this case might provide a good opportunity to carry to the courts the question raised by Mr. Carr.

**Chicago City Council Limits Stopping Space for Surface Cars.**—The Chicago City Council has passed an ordinance designating the limits within which the ends of cars shall stop at street crossings in the business district. The ordinance requires the car crews to stop all cars to receive or let off passengers at the intersection of streets so that the front end or the rear end, as the case may be, shall not be less than 5 ft. nor more than 15 ft. distant from the nearest intersection line of cross streets, so as not to interfere with the travel on cross streets. In any block more than 500 ft. in length cars shall stop, when so desired, at the middle of the block. Rules regulating the running of cars and stopping for passengers shall be posted in a conspicuous place in each car.

**Ohio Electric Railway Establishes Service Between Lima and Bellefontaine.**—On July 11 the Ohio Electric Railway established a service between Lima and Bellefontaine which calls for four trains each way daily. Trains leave Bellefontaine at 6:25 a. m., 10:25 a. m., 2:25 p. m., 6:25 p. m.; arriving at Lima 8:35 a. m., 12:35 p. m., 4:35 p. m. and 8:35 p. m., respectively. Trains leave Lima 6:20 a. m., 10:20 a. m., 2:20 p. m. and 6:20 p. m., arriving at Bellefontaine at 8:25 a. m., 12:25 p. m., 5:25 p. m. and 8:25 p. m. On Aug. 1 the complete schedule will be placed in effect and the running time will be shortened. At the same time service will be established between Lima and Springfield. This line touches Lewistown Reservoir at Lake View and Russell's Point, affording electric railway service to Lewistown Reservoir, and the first train service, either steam or electric, to Yoder, South Warsaw, Waynesfield and New Hampshire. This practically completes the Ohio Electric Railway from Cincinnati to Toledo, with the exception of the short stretch from Custar to Toledo, which will be in operation at an early date. The trackage between Toledo and Cincinnati will enable the Ohio Electric Railway to install the longest through service of any electric railway in the world.

## Personal Mention

**Mr. Walter E. Robinson** has been appointed claim agent of the Cincinnati (Ohio) Traction Company.

**Mr. Charles D. McKelvey** has been appointed chief inspector of the Board of Railroad Commissioners for the State of New Jersey.

**Mr. Barrett Smith**, formerly with J. G. White & Company, New York, has become connected with Stone & Webster, Boston, in charge of their publicity interests.

**Mr. Charles E. Johnson**, of Waterville, Me., has been elected treasurer of the Waterville & Oakland Street Railway and the Portland & Brunswick Street Railway.

**Mr. Joseph A. Johnson, Jr.**, secretary to Mr. Percy Warner, president and manager of the Nashville Railway & Light Company, Nashville, Tenn., has been appointed advertising manager of the company.

**Mr. O. D. Havard** was recently appointed chief engineer of the power station of the Lackawanna & Wyoming Valley Railroad, and Mr. R. P. Kearney was recently appointed roadmaster of the company.

**Mr. P. E. Mitchell**, formerly with the Knoxville Railway & Light Company, Knoxville, Tenn., has been appointed superintendent of power of the Birmingham Railway, Light & Power Company, Birmingham, Ala.

**Mr. S. C. De Witt** has resigned as electrical engineer of the Windsor, Essex & Lake Shore Rapid Railway, Windsor, Ont., and has become general superintendent of the Federal Electric Construction Company, Toronto, Ont.

**Mr. C. K. Minary** has recently been elected president of the DeKalb-Sycamore & Interurban Traction Company, DeKalb, Ill. Mr. Minary is president and treasurer of the Benton Harbor-St. Joe Railway & Light Company, Benton Harbor, Mich.

**Mr. John H. Parant**, one of the inspectors in the employ of the Massachusetts State Railroad Commission, has been given supervision over all the railroads and street railways in the central part of Massachusetts under the new system of dividing the State into districts.

**Mr. A. E. Egolf**, chief dispatcher of the Ohio Electric Railway at Springfield, has been appointed assistant superintendent in charge of the company's line from Zanesville to Dayton, succeeding Mr. A. F. Schoepf, who has been appointed superintendent of city lines at Zanesville.

**Mr. Clarence J. McQuaig**, Montreal, Canada, has been elected a director of the Tri-City Railway & Light Company, Davenport, Iowa. Mr. McQuaig is well known in financial circles in Montreal and has long been interested in the Tri-City Railway & Light Company.

**Mr. A. C. McBride**, auditor of the Washington, Frederick & Gettysburg Railway, Frederick, Md., has been appointed general manager and superintendent of the company to succeed as general manager Mr. George W. Smith. Mr. McBride is now acting as auditor, general manager and superintendent of the company.

**Mr. Clyde Green**, who has been traction manager of the Cataract Power Co., Hamilton, Ont., since the electric roads were merged, has been appointed master of construction of the company, and Mr. Frederick Griffith has been made traction superintendent, temporarily, with Mr. John Gibson as assistant superintendent and yardmaster.

**Mr. E. P. Maize**, retiring master mechanic of the Rochester (N. Y.) Railway, was recently presented a diamond scarf pin by the employees of the mechanical department of the company as a token of esteem. Mr. Maize, as previously mentioned in the ELECTRIC RAILWAY JOURNAL, is succeeded at Rochester by Mr. T. Scullin, formerly master mechanic of the Cleveland (Ohio) Electric Railway.

**Mr. J. A. Blake**, New Haven, Conn., who manages the parks of the Connecticut Company, operating the electric railways controlled by the New York, New Haven & Hartford Railroad, is in Europe in the interest of the company he represents. The amusement park has been taken up in England as a part of street railway work, and Mr. Blake was interviewed in London regarding American methods of management. He is quoted as saying that he finds it pays better to have a number of small parks in or near a number of little towns than to have one big amusement place to which people can only get once or twice a season. If a park is handy the people are driven to it by the heat in summer.

**Mr. E. A. Newman**, general manager of the Portland (Maine) Street Railroad, was presented a handsome loving cup on July 9 by a committee from the New England Street Railway Club consisting of Mr. John J. Lane, Mr.

Charles N. Wood, Mr. John F. McCabe and Mr. Clarence E. Learned, in behalf of the club. A letter was also presented to Mr. Newman from the club speaking of the high terms in which he was held by that body and thanking him for the hospitality of Thursday, June 25, at which time Mr. Newman entertained the club. The cup is 15½ in. high and 11 in. wide. The lower section is of peculiar style of repousse work of Metele. The base is hand hammered and the vase which rises from it is made in one piece of sterling silver. The handles are made of two beautifully matched elk horns in their natural color and finish. The cup bears the following inscription: "Presented to E. A. Newman, General Manager of the Portland Railroad Company, by his Guests, Fellow Members of the New England Street Railway Club, June 25, 1908."

Mr. George L. Radcliffe, for many years general superintendent of the Cleveland (Ohio) Electric Railway, has accepted the position of superintendent of the Schenectady (N. Y.) Railway. Mr. Radcliffe began his railway work with Mr. J. J. Stanley on the Broadway & Newburg Railway in Cleveland, serving first as a clerk. He advanced gradually to higher positions and eventually became superintendent of the Cleveland Electric Railway. When Mr. Henry A. Everett and his associates secured control of the company, Mr. Radcliffe became connected with one of the companies which now is part of the Utica & Mohawk Valley Railway, and remained in Utica three years. Mr. Horace E. Andrews and Mr. J. J. Stanley again came into control of the Cleveland Electric Railway following the embarrassment of the Everett-Moore syndicate and Mr. Radcliffe returned to the company as superintendent. After the consolidation of the Cleveland City Railway and the Cleveland Electric Railway he became general superintendent of the consolidated system, controlling all the lines in the city.



George L. Radcliffe

OBITUARY

E. E. Hartman, superintendent of the Denver & Interurban Railroad, Denver, Colo., is dead. Mr. Hartman some time ago submitted to an operation and soon thereafter it became apparent that his physical resources were not sufficient to insure his recovery. As noted in the issue of the ELECTRIC RAILWAY JOURNAL for July 11, J. D. Welch succeeds Mr. Hartman with the Denver & Interurban Railroad, he having been appointed when hope was finally abandoned of Mr. Hartman's recovery.

Thunderstorm Causes Damage in New York

After a week of torrid weather New York and vicinity was visited on July 14 by a severe thunderstorm which seriously affected transportation interests. The rain flooded many lines in the suburban districts and delayed traffic seriously and within the city limits also interfered with the operation of cars on a number of lines. At the height of the storm the sewers at Sixth Avenue and Ninth Street failed to carry off the water and it backed up into the tunnel of the New York & New Jersey Railroad. As a result, service had to be temporarily abandoned in New York above Christopher Street.

The New York, New Haven & Hartford Railroad suffered more severely than any of the other lines, and the electric service of this company between New York and Stamford had to be abandoned for two hours. The interruption of service on the New Haven lines occurred when commuters were returning to their homes, and many persons were inconvenienced. A hurry call was sent to Stamford, and the steam locomotives with fire up at the roundhouse there were pressed into service to relieve the congestion. The company says the interruption of traffic was not directly traceable to lightning. Several of the circuit breakers failed, interrupting the service until they could be replaced. No other apparatus was injured and the experts of the company attribute the failure of the circuit breakers to inductive disturbances. Additional protective apparatus is now being installed to guard the circuit breakers and no more trouble from this source is expected.

Construction News

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

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

FRANCHISES

\*Dothan, Ala.—J. R. Keyton has applied for a franchise to build and operate a street railway over the streets of Dothan.

\*Huntsville, Ala.—Ed. L. Pulley has applied to the City Council for a franchise to use Madison or Franklin Streets for a street railway which he and his associates propose to build through South Huntsville to the fair grounds.

Pasadena, Cal.—The Pacific Electric Railway has applied for a franchise for a line on East California Street from Lake Avenue to the eastern boundary of Tournament Park.

\*Sandersville, Ga.—C. G. Rawlings and J. A. Irwin have been granted a franchise to operate an electric street railway from Sandersville to Tennille.

Monroe, Mich.—The Toledo, Ottawa Beach & Northern Railway has been granted a franchise to build an electric railway in Monroe.

Lincoln, Neb.—The Citizens' Street Railway has been granted a franchise to build an extension on South Street between Nineteenth and Twenty-sixth Streets.

Babylon, N. Y.—The South Shore Traction Company has been granted a 50-year franchise to build and operate an electric railway on Main, Cooper and John Streets.

\*Mount Pleasant, Tex.—H. W. Peterman has been granted a 25-year franchise to build an electric street railway on the principal streets of Mount Pleasant. A line will first be built to Red Springs and Dellwood Park, 1 mile southeast, to be followed by a belt of the city. It is proposed to have the line in operation within four months. A company will be organized with a capital stock of \$50,000 and an application for a charter will be made at once.

Racine, Wis.—The Common Council has voted to extend the life of franchises on certain streets held by the Milwaukee Electric Railway & Light Company for a period of 34 years when other franchises held by the company will expire.

RECENT INCORPORATIONS

Oakland, Swallow Falls & Uniontown Electric Railway, Oakland, Md.—This company has been chartered to build a double-track, standard-gage electric way from Oakland, Md., to Uniontown, Pa., with a single track, lateral branch from Swallow Falls down the river about 2 miles, to the hydro-electric plant, also a single track, lateral branch, from Cranesville, on the main line, to Kingwood, W. Va. The route for the railway from Swallow Falls to Oakland has been secured and located. H. P. Tasker, general manager. [E. R. J., June 20, '08.]

Asheville & Carolina Railway, Asheville, N. C.—Incorporated in North Carolina to construct an electric railway from Asheville to the South Carolina line, a distance of 35 miles. Capital stock, \$200,000. Headquarters, Asheville. Incorporators: C. F. White, J. W. Brunson, Jr., F. J. Allison and F. R. Grant, of Asheville, and P. F. Patton, L. W. Walker and J. W. Rowland, of Hendersonville. The newly organized company will take over the franchise of the Asheville & Hendersonville Railway, which owns the right of way of the proposed electric railway between those two cities, and this right of way will be included in the Asheville-South Carolina line. The line has been surveyed and Hendersonville will be included in the proposed route. Actual work on the construction of the road will begin about the middle of August. The same concern has also been granted a charter with a capital stock of \$100,000 in the State of South Carolina, with authority to construct an electric railway from Greenville, S. C., to the North Carolina boundary, a distance of 40 miles. The South Carolina section of the road will be known as the Greenville & Carolina Railway. The two roads will come together at the border line and form one continuous line of electric railway from Greenville, S. C., to Asheville, N. C. The route from Greenville to the State line has not as yet been definitely decided on. The contract for the construction of the proposed road has been let to the Carolina Construction Company. [S. R. J., May 2, '08.]

\*Little River Power & Transportation Company, Fayetteville, N. C.—This company has been incorporated to operate power plants and street railways. Capital stock, \$15,000, to be increased to \$100,000. Incorporators: W. D. McNeill and J. F. Gilmore.

**\*El Reno (Okla.) Interurban Railway.**—This company has been incorporated in Oklahoma to build an electric railway from El Reno via Oklahoma City to Shawnee, Okla.; also from El Reno to Chickasha, from El Reno to Clinton and from El Reno to Enid, Okla., making a total length of line of 250 miles, to cost not more than \$18,000 per mile. Capital stock, \$25,000. Directors: James W. Maney, Oklahoma City, Henry Schafer, Herman K. Schafer, Herman Dittner and Thomas F. Blake, all of El Reno, Okla.

**Bermuda Companies, Ltd., Montreal, Que.**—Incorporated under the Dominion Companies Act to construct and operate an electric railway in the colony of Bermuda. Capital stock \$100,000. Headquarters Montreal. Provisional directors: A. A. Allan, C. Morgan, C. G. Heward, E. G. T. Penny, Montreal; G. M. Allen, New York.

**Gallatin Pike Railway, Nashville, Tenn.**—This company has been incorporated for the purpose of building and operating either a steam or an electric railway along the line of the Gallatin Pike from the present extension of the Nashville Railway & Light Company's line to a point on said pike where it is intersected by Maplewood Lane, a distance of about 2 miles. Capital stock, \$25,000. Incorporators: E. B. Rucker, C. H. Gillock, M. H. Sharpe, P. A. Shelton and J. H. Zarecor.

**Uvalde (Tex.) Street Railway.**—This company has been incorporated in Texas to build and operate an electric railway for passenger and freight service between the Southern Pacific depot and Uvalde, a distance of about 2 miles. Capital stock, \$50,000. Incorporators: Joe C. Kerbey, John T. Smith, of Austin; M. M. McFarland, of San Antonio. The company intends to begin construction within two months. [E. R. J., June 20, '08.]

**The Narrows Terminal Belt Line Railway, Tacoma, Wash.**—Incorporated to construct an electric railway from the end of Center Street to Belmarlow Beach. The company also intends the construction of a power plant near American Lake, and a water right allowing it to take 2000 ft. of water per second from the lake has been filed. Capital stock, \$250,000. Incorporators: Lucian F. Cook, Henry L. Gray, Charles E. Cutter, C. A. Tonneson and Fred S. Cook.

#### TRACK AND ROADWAY

**Huntsville, Ala.**—It is announced that the Huntsville & Chattanooga Interurban Electric Railway & Power Company will be organized this week to construct an electric railway to the fair grounds through South Huntsville. It is the plan of the promoters eventually to build extensions to Birmingham and Chattanooga. The road is said to have already been financed. Capital stock will be \$50,000. E. L. Pulley, promoter.

**Holbrook, Ariz.**—H. Lee Chilson, secretary of the Navajo Improvement Company, Winslow, Ariz., is authority for the statement that this company probably will let construction contracts by Oct. 1. It will build a railway, to be operated by steam or electricity, between Holbrook and Fort Apache, Ariz., a distance of 100 miles. Surveys are being made now and right of way is being obtained. E. S. Campbell, Prescott, Ariz., president; Thos. Maddox, chief engineer, Williams, Ariz. [S. R. J., May 30, '08.]

**Little Rock & Pine Bluff Traction Company, Little Rock, Ark.**—At a recent meeting of the stockholders of this company plans were formed for financing the project. After the road has been graded between Little Rock and Pine Bluff first mortgage bonds will be placed upon the market to raise the balance of the money. John M. Rose, secretary of the company, states that it was estimated that \$100,000 would construct the grade and the minor bridges between Little Rock and Pine Bluff. Approximately 5 miles of grading has been done on the line on the J. R. Alexander place. Officers: O. P. Robinson, president; John M. Rose, secretary; Oscar Davis, treasurer. [S. R. J., April 11, '08.]

**Paris & Subiaco Traction Company, Paris, Ark.**—It is expected that construction work will begin in September on this proposed electric railway which is to be about 6 miles long. An extension of 8 miles more may be built later to the mines of the Southside Anthracite Coal Company. Capital, \$60,000. Directors: D. J. Young, of Fort Smith, Ark.; Conrad Elsken, G. G. Dandridge and Henry Stroup, of Paris, Ark., and Charles J. Jewett. [S. R. J., Feb. 15, '08.]

**Santa Monica, Cal.**—Justice J. C. Steele, as a member of the committee of fifteen on railroads, is considering a plan for purchasing several sections of the Los Angeles-Pacific Company's track within the city limits.

**Connecticut Company, Hartford, Conn.**—This company has invited proposals for the construction of the proposed electric railway between Hartford and Middletown. Work will begin as soon as the contract has been awarded, and it is expected that the road will be completed early next year. The line will run through the intervening towns of Wethersfield, Rocky Hill and Cromwell, and between Crom-

well and Middletown the cars will run over the steam tracks of the Valley division, which will be equipped with an overhead trolley. About 12 miles of road will be built.

**Connecticut Company, Stamford, Conn.**—This company expects to build during the next six weeks a double track on Atlantic Street, from State to Bank Streets. W. G. Young, superintendent.

**Atlanta (Ga.) Northeastern Railroad.**—This company has been organized and will shortly apply for a charter to build an electric railway from Atlanta through Roswell and Alpharetta to Cumming, a distance of 40 miles. The survey for the route is already under way and is announced that the company will begin construction within 30 days. Capital stock will be \$50,000. Among those interested are: T. F. Martin and J. L. Murphy, of Atlanta; J. I. Teasley, W. A. Lummus and J. P. Brooke, of Alpharetta; J. O. Crowley and C. C. Foster, of Roswell; C. L. Harris and W. R. Otwell, of Cumming, and F. C. Tate, of Jasper.

**\*Augusta, Ga.**—It is reported that surveys are being made and other steps being taken for the erection and equipment of a power plant and electric railway from Augusta up 10 or 12 miles into South Carolina, in the Stevens Creek country, near the Savannah River. A dam and water reservoir about 8 miles distant is a part of the plan. It is stated that options have been secured and all preliminary work completed. J. L. Hankinson and P. Wood are interested in the project.

**Columbus, Ga.**—A delegation of Crawford citizens on July 3 held a conference with the directors of the Columbus Board of Trade and the Columbus Railroad officials relative to constructing an interurban electric railway between Columbus and Society Hill, in Macon County, Alabama, via Crawford and Marvyn. The proposed line would be 34 miles long and would cost about \$300,000. The Crawford committee was requested to submit detailed information regarding the population and products of the territory proposed to be tapped, and also what financial assistance would be given by the villages that would be benefited.

**Rome (Ga.) Railway & Light Company.**—This company expects to take up about a mile of 60-lb. T-rails and relay with 80-lb. T-rails suitable for paving. The contract for this work will be awarded this month. H. J. Arnold, superintendent.

**Marion, Bluffton & Eastern Traction Company, Bluffton, Ind.**—This company placed contracts last week for the building of 1500 ft. of track in Marion. R. F. Cummins, general manager.

**Fort Wayne & Springfield Railway, Decatur, Ind.**—It is reported that this company has directed a corps of engineers to begin the work of surveying for the extension of its line from Decatur to Berne. A. W. Fishbaugh, Celina, chief engineer.

**Frankfort, Ind.**—The Clinton County Board of Commissioners has granted two petitions which ask that special elections be ordered in Center and Ross townships to allow taxpayers to vote on the proposition of voting subsidies to the Indianapolis, Frankfort, Delphi & Chicago Traction Company, which proposes to construct an electric railway between Frankfort and Delphi. The election will take place on Aug. 11. [S. R. J., May 2, '08.]

**Chanute (Kan.) Electric Railway.**—L. H. Phillips writes that this company intends to start construction work on a 10-mile standard-gage street railway system in Chanute within 30 days. The overhead trolley system will be adopted. The power station will be located at Chanute. An amusement park 2 miles west of the city will be reached by this line. The company also proposes to sell current for lighting. William Gray, president; S. W. Brewster, secretary; D. M. Kennedy, treasurer, all of Chanute. [E. R. J., July 4, '08.]

**Washington, Frederick & Gettysburg Railway, Frederick, Md.**—It is officially announced that a contract has been let to J. E. McDonald & Company, Frederick, by the Washington, Frederick & Gettysburg Railway for the extension of its line from Lewistown, Md., to a connection with the Monocacy Valley Railroad, about 3½ miles. The line will be about 65 miles long when completed, extending from Great Falls, Va., to Gettysburg, Pa.; 14 miles are now constructed and 3½ miles are under construction by McDonald & Company. D. C. Kemp, president. [S. R. J., May 30, '08.]

**Boston & Eastern Electric Railway, Boston, Mass.**—The last hearing of the Boston & Eastern Electric Railway was held before the Railroad Commission on June 30. Benjamin Johnson, counsel of the General Electric Company, Lynn, stated that his company would not object to the road if its route does not by the new plans cut into the property owned by it. Mr. Coyle, for the Boston & Maine Railroad, urged that the commission has not the jurisdiction to pass upon the project on account of the absence of legislative

action permitting the building of a tunnel by the company under Boston Harbor. He says that if the road should be built it would take away practically all the suburban traffic of the Boston & Maine and the Boston, Revere Beach & Lynn roads within 15 miles of Boston. For the same money many improvements could be made in the present systems, by spending, say, \$11,000,000 (the estimated cost of the Boston & Eastern Railroad) upon four-tracking and other benefits. The final argument was made by Ezra Thayer, for the Boston & Eastern Electric Railway. He sketched the development of all the hearings and emphasized the absence of expert electrical testimony against the details of the project as worked out by J. H. Bickford, the chief engineer. He urged that the roads now in the territory have in no case stated any definite plans of action toward improving the conditions and referred to the published utterances of Presidents Tuttle and Cassatt on the electrification of steam railroad suburban service to the effect that so far electrification has been the result of special needs and that the modern interurban line is the proper one to handle the suburban passenger traffic. He pointed out the limitations of the present transportation systems in attempting to handle the kind of service proposed by the Boston & Eastern Electric Railway and said that if the board decided against allowing the Boston & Eastern Railway to build a line to Revere Beach it would not affect the soundness of the project as a whole. The board took the matter under advisement.

**Connecticut Valley Street Railway, Greenfield, Mass.**—This company is engaged in building one-half mile of new track. J. A. Taggart, superintendent.

**Pittsfield (Mass.) Electric Street Railway.**—This company has asked the Railroad Commissioners for approval for a Massachusetts street railway location that is expected to form a part of the through line projected between Buffalo and Boston. The proposed location would extend the company's lines from Pittsfield to the New York-Massachusetts boundary, where a New York line is projected from Albany to meet it. The Pittsfield location begins at the boundary line between the city and Hancock and runs westerly on the State highway through the town of Hancock to the edge of the town of Lebanon, stopping at the State boundary. P. C. Dolan, manager.

**Calumet & Lac la Belle Traction & Power Company, Houghton, Mich.**—Upon the application of this company an order has been issued by Judge Loyal E. Knappen, of the United States Court at Grand Rapids, restraining the Houghton County Street Railway from building that part of its extension between Mohawk and Calumet which passes over land under condemnation. This order prevents the railway company from doing any work on the land that the Calumet & Lac la Belle company seeks to have condemned for a right of way, but has not stopped work on the rest of the line. [S. R. J., April 18, '08.]

**United Railways, St. Louis, Mo.**—This company is reported to have begun reconstructing 25 miles of track in different parts of the city. It is estimated that the improvements will cost approximately \$750,000. The reconstruction of the Broadway line in Baden and beside O'Fallon Park has just been completed and about 1000 men are now rebuilding the Broadway line beside Calvary and Bellefontaine cemeteries. The Bellefontaine line, on Michigan Avenue, has been furnished and a force of workmen is now rebuilding the same line on Virginia Avenue, between Primm and Bates Streets. Reconstruction is also in progress on Tenth Street, between Franklin and St. Louis Avenues. Robert McCulloch, general manager.

**Southern Traction Company, of Illinois, St. Louis, Mo.**—E. F. Harper writes that this company proposes to build an electric railway from East St. Louis to Belleville, a distance of 14 miles. The surveys for the line have been made and 6 miles of the line have already been graded from East St. Louis to Centerville Station. One mile of track has been laid in East St. Louis and Belleville. The company proposes to install both the bracket and span wire type of overhead construction. Headquarters, St. Louis, Mo. Contractor, H. D. Mephram, Jr., 412 Lincoln Trust Building, St. Louis. Chief engineers, Harper Brothers, East St. Louis, Ill.

**St. Louis, Lakewood & Grant Park Railway, St. Louis, Mo.**—We are advised that this company expects to place during the next three weeks contracts for 1¼ miles of additional track. Willard E. Winner, president.

**New York & North Jersey Rapid Transit Company, Paterson, N. J.**—Plans and specifications are being prepared for the construction of an interurban electric railroad between Paterson, N. J., and Suffern, N. Y., preparatory to letting contracts. M. R. McAdoo, Colt Building, Paterson, N. J., general manager. [E. R. J., June 20, '08.]

**Rochester, Scottsville & Caledonia Electric Railway, Rochester, N. Y.**—This company has decided to branch out in several directions as well as carrying the line on through to Portage, a distance of 55 miles, following the Genesee Valley and skirting the shores of Silver Lake. The line will cross the river between West Henrietta and Scottsville, thence will run southwesterly to Garbutt, Wheatland, Mumford and the State Fish Hatchery. Thence to Caledonia, to the salt mines of Retsof and Greigsville, touching at Le Roy and passing through the Oatka Valley to Pavilion; then across Pear Creek, through La Grange and Perry Center to Perry, Silver Lake, Castile and Portage. D. C. Salyerds, Scottsville, N. Y., president. [S. R. J., Jan. 18, '08.]

**Oneida (N. Y.) Railway.**—It is reported that this company contemplates securing franchises and the rights of way for an extension of its lines to Kenwood by way of Sherrill. The line is to be completed by Dec. 1. C. Loomis Allen, manager.

**Rochester-Corning-Elmira Traction Company, Rochester, N. Y.**—This company has applied to the Public Service Commission, Second District, for authority to issue \$1,000,000 bonds and \$500,000 of its capital stock to build its line from Rochester and Lakeville to Conesus Lake. The request is also made, for the purpose of building a road from Lakeville to Dansville, for an issue of \$1,250,000 bonds and \$750,000 of its capital stock at par.

**Weaverville Electric Company, Asheville, N. C.**—It is stated that this company is ready to receive bids to build 4 miles of line from Newbridge station to the town of Weaverville, N. C. Three culverts of about 300 ft. in length to be built and about 20,000 yd. of earth to be moved. The road will connect with the Southern Railway at Craggy station, on the Knoxville division, and will obtain its power from the Weaver Power Company. Officers: John H. Carter, president; R. S. Howland, treasurer; G. W. Epps, secretary; B. M. Lee, chief engineer, all at Asheville.

**Cape Breton Electric Company, Sydney, N. S.**—The City Council has approved of the construction of a number of extension lines in the city. It is expected that construction upon these extensions will be undertaken at once. A. K. MacCarthy, superintendent.

**Scioto Valley Traction Company, Columbus, Ohio.**—This company expects to award contracts during the next 10 weeks for the construction of three-quarters of a mile of track and overhead work. R. Fullerton, purchasing agent.

**Columbus, Canton & Eastern Transit Company, Columbus, Ohio.**—It is officially announced that this company will build an electric railway to connect Columbus, Newark, Coshocton, Newcomerstown, New Philadelphia, Canal Dover and Canton; total to construct, 150 miles. Surveys are partly made and the right of way is three-quarters secured. Capital has not been obtained. No contracts have been let. Michael Lubold, president; Clyde J. Knisely, chief engineer; W. J. Wise, secretary, all at New Philadelphia, Ohio. [S. R. J., May 16, '08.]

**Dayton & Troy Electric Railway, Dayton, Ohio.**—This company has recently built a double-track extension at Troy, Ohio.

**Chester (Pa.) Traction Company.**—This company expects to let contracts during the next two weeks for the construction of 1½ miles of track. A 9-in. girder railer will be laid. The company is reconstructing its present track on Ninth Street in Chester and Eddystone, Pa., on the through Darby & Wilmington line. Arthur G. Jack, superintendent.

**Hanover & McSherrystown Street Railway, Hanover, Pa.**—John Dobbbling, contractor for the construction of the extension of this system to Littlestown, is pushing the work to completion as rapidly as possible. The roadbed is completed to within a mile and a half from the borough limits of Littlestown. The company has not yet obtained the right of way within the borough, and if an adjustment cannot be obtained the company will make the depot near the borough and proceed with the work to Gettysburg. The bridge over the Conewago Creek, near Rebert's mill, is nearly finished, and at an early day cars can be run over the entire route from Hanover to Littlestown.

**Indiana (Pa.) Counties Street Railway.**—At a recent meeting of the stockholders of this company steps were taken for extending its system from Homer City to Blairsville. The contract will be let within a few days to a construction company and it is expected that the line will be completed and in operation to Josephine at least by fall and to Blairsville within the year. The right of way is now being secured. It was decided to award the construction of the extension in sections in order to push the line to completion at the earliest date possible. J. D. Ake, Indiana, general manager.

**Schuylkill & Dauphin Traction Company, Lykens, Pa.**—J. W. Moyer, president of this company, Pottsville, Pa., states that surveys are in progress and right of way is being obtained. Capital is partly secured. Contracts will be let when engineering work is completed, which probably will not be for nine months. The line will connect Reinerton and Reiner City; Lykens and Berrysburg and Ashland and Millersburg, and will be 63 miles long. The same company operates the Lykens & Williams Valley Electric Street Railway from Lykens to Reinerton. E. L. Boyd, chief engineer, Tamaqua, Pa. [S. R. J., May 9, '08.]

**Pittsburg & Westmoreland Railway, Pittsburg, Pa.**—This company expects to build an extension to its system over Main Street in Irwin to Third Street.

**Hull (Que.) Electric Company.**—An agreement has been reached with the City Council with respect to the double-tracking of the lines in, and the construction of a belt line round, the city. Work has been started on the laying of the second track, and it is expected to have it completed early in July.

**Abilene (Tex.) Street Railway.**—It is announced that work will be again commenced on this line Oct. 1 next and possibly by Sept. 1. Some changes have been made in the route, but in the main it will extend from Simmons College campus to Valley View addition, thence south through town, terminating in the southwest portion of the city. Wm. G. Swenson, secretary.

**Houston (Tex.) Electric Company.**—This company is extending its street railway system to the Brooke Smith addition. Local manager, David Daly.

#### POWER HOUSES AND SUBSTATIONS

**United Railroads of San Francisco.**—This company has applied for permission to rebuild its power station at the corner of Beach and Buchanan Streets. The estimated cost of the building is \$63,000. Charles N. Black, general manager.

**Jacksonville (Fla.) Electric Company.**—This company recently installed 2½ miles of new 500,000 circ. mil cable to improve service on the Phoenix Park line.

**Augusta (Ga.) Railway & Electric Company.**—This company is contemplating the purchase of a 350-hp generator. Jas. R. League, general manager.

**Indianapolis, Columbus & Southern Traction Company, Seymour, Ind.**—This company is compounding one of the engines at its Edinburg power station, the work of rebuilding it being done by the Buekey Engine Company. The company is also installing a 1000-kw Allis-Chalmers generator in lieu of the 500-kw generator heretofore used and a new condenser. A. A. Anderson, general manager.

**Oskaloosa (Ia.) Traction & Light Company.**—We are advised that this company expects to purchase one 1000-sq. ft. heater for extending its heating system. H. W. Garner, manager.

**Southern Traction Company of Illinois, St. Louis, Mo.**—We are advised that the equipment of this company's power station will include two 500-kw, 6600-volt, 25-cycle turbo-generators, three 366-hp water-tube boilers, one 500-kw rotary converter and one 500-kw rotary converter which will be installed in the substation. The contracts for this apparatus have not yet been awarded. Harper Brothers, East St. Louis, Ill., chief engineers.

**Holmesburg, Tacony & Frankford Electric Railway, Philadelphia, Pa.**—This company expects to install one 400-hp water-tube boiler, also an additional feed-water pump. The company will build an addition to the boiler room of its power station. Henry Glazier, superintendent.

#### SHOPS AND BUILDINGS

**Cincinnati, Milford & Loveland Traction Company, Cincinnati, Ohio.**—This company has secured land at Syeamore Street, Cincinnati, for terminals. The property is L-shaped and large enough for commodious freight and passenger depots. It is said that a one-story brick building will be erected on the land.

**Scioto Valley Traction Company, Columbus, Ohio.**—We are informed that this company is planning to build a new store house.

**Hanover & McSherrystown Street Railway, Hanover, Pa.**—We are advised that this company contemplates building a 50-ft. x 17-ft. addition to its repair shops. R. E. Manley, manager.

#### AMUSEMENT PARKS

**Muskegon (Mich.) Traction & Lighting Company.**—We are advised that this company expects to purchase a number of amusement devices for its park. It is intended to purchase either ball games or doll racks. H. S. Nelson, purchasing agent.

## Manufactures & Supplies

### ROLLING STOCK

**West Penn Railways Company, Pittsburg, Pa.**, has ordered a number of cars from the Cincinnati Car Company.

**Scioto Valley Traction Company, Columbus, Ohio**, is in the market for 60 steel tires. R. Fullerton, purchasing agent.

**Hanover & McSherrystown Street Railway, Hanover, Pa.**, expects to purchase a single-truck snow plow. R. E. Manley, manager.

**Toledo & Chicago Interurban Railway, Kendallville, Ind.**, has recently purchased from the General Electric Company three 4-motor equipments.

**Seattle Electric Company, Seattle, Wash.**, has placed an order with the National Brake & Electric Company for 14 motor ear equipments and 26 trail car equipments.

**Chicago & Southern Traction Company, Chicago, Ill.**, has ordered a combination baggage and express car from the Niles Car & Manufacturing Company.

**Marquette County Gas & Electric Company, Ishpeming, Mich.**, through A. L. Drum & Company, Chicago, has placed an order with the Niles Car & Manufacturing Company for a passenger coach.

**Chippewa Valley Railway, Light & Power Company, Eau Claire, Wis.**, expects to place contracts during the next four weeks for two sets of interurban trucks. Geo. B. Wheeler, general manager.

**Penn Yan, Keuka Park & Branchport Railway, Penn Yan, N. Y.**, has purchased one electric locomotive equipped with Westinghouse motors, Taylor trucks, the body being built by the Jones Sons Company.

**Lexington & Interurban Railway, Lexington, Ky.**, has placed an order with the J. G. Brill Company, Philadelphia, for two interurban cars to weigh 36 tons each. The specifications call for the following details: Wheel base, 6 ft. 6 in.; length over all, 55 ft.; width over all, 9 ft.; body, wood; underframe, wood; air brakes, one Westinghouse Traction Brake Company, one National Brake & Electric Company, control system, L-4 controllers; curtain fixtures, Forsyth, No. 86; curtain material, Pantasote; destination signs, celluloid, removable; hand brakes, Brill, ratchet handle; heating system, Peter Smith; headlights, GE new arc; interior finish, natural cherry; motors, type and number, four Westinghouse, 112 (each); paint, Tuscan red; sanders, Nichols-Lintern air; seats, Brill-Winner type, rattan; trolley poles and attachments, GE base, 13-ft. 4-in. pole; trucks, type and make, Brill, 27-E-2.

### TRADE NOTES

**Fiber Conduit Company, Orangeburg, N. Y.**, has moved its Chicago office to 1741 Monadnock Building.

**Morden Frog & Crossing Works, Chicago, Ill.**, has moved from 618 The Rookery, Chicago, to 823 Commercial National Bank Building, Chicago.

**Marwick, Mitchell & Company, New York.**—The subject of the need for system and modern methods in municipal accounting is considered in a pamphlet issued by this company.

**Indianapolis, Columbus & Southern Traction Company, Seymour, Ind.**, has shipped to the Jewett Car Company, Newark, N. J., two 45-ft. passenger cars to be lengthened to 55 ft. by the addition of a baggage compartment.

**Robert W. Hunt & Company, Chicago, Ill.**, have moved its New York office from 66 Broadway to 90 West Street. The company has recently opened offices at 1445 Syndicate Trust Building, St. Louis; 425 Washington Street, San Francisco, and Canadian Express Building, Montreal.

**The American-LaFrance Fire Engine Company, Elmira, N. Y.**, has brought out a non-freezing fire extinguisher in which the liquid is forced out of the extinguisher by carbonic acid gas. The latter is liquified at about 900 lb. pressure and is contained in a small steel bottle or flask held in the head of the extinguisher. When the extinguisher is to be used this flask is opened by the movement of a handle. The gaseous carbonic acid then provides ample pressure in the extinguisher. Additional charged flasks can be obtained cheaply.

**Dossert & Company, New York**, have received orders for 24 special solderless clamp connectors to be used in connection with Dossert cable taps as an anti-creeping device on the signal system of the New York Central electrical division. The same manufacturers have also received orders for 200 two-way reducers to be used in connecting the feeder cables to the switchboards in the Emporium Building in San Francisco. These reducers range in size from 450,000 circ. mil cable to ¾-in. solid rod down to No. 2

solid. This order also includes 400 terminal lugs ranging from 1,000,000 circ. mil down to No. 6.

**Massachusetts Chemical Company, Walpole, Mass.,** has placed on the market two new brands of friction tape numbered 310 and 311 respectively, the former one being cut straight and the latter on the bias. They are made of a special twisted cloth, run 250 ft. to the pound, are .011 thick and are said to be very strong. The compound with which they are impregnated and coated is neutral and will not deteriorate the fabrics. These tapes are primarily manufactured for armature coil taping and are much more efficient and can be more conveniently handled for this work than the ordinary webbings, the straight tape being used on the portion of the coil which goes in the slots and leads and the bias tape on the curls of the coil. The tape has a high dielectric strength and is so manufactured as to combine with insulating compounds and make a most thorough and workmanlike job.

**United States Steel Corporation, New York,** has purchased the entire capital stock of the Schoen Steel Wheel Company, McKees Rocks, Pa., and the business will be conducted under the direction of the Carnegie Steel Company. The Schoen Company was incorporated in 1901 to manufacture solid, forged and rolled steel wheels, for which E. A. Schoen, the organizer and president of the company, had devised many appliances. The plant has a capacity of 500 wheels a day. The Schoen Company has offices in Pittsburgh, Philadelphia and New York. A representative of the Carnegie Steel Company said in connection with the purchase that his company had contemplated entering the steel wheel business for some time and that this seemed the most reasonable method of doing so. The business will be conducted in the name of, and by the officers of, the Carnegie Company, although E. A. Schoen will remain in the capacity of consulting engineer. No important changes are contemplated at this time in the official force of the Schoen Company. As to developments and extensions, it was said, that the purchase being so recent, no program had been decided upon.

#### ADVERTISING LITERATURE

**Ohmer Fare Register Company, Dayton, Ohio.**—The address delivered before the Central Electric Railway Association at Toledo, Ohio, by John F. Ohmer, president of the Ohmer Fare Register Company, has been reprinted by the company in the form of a pamphlet for general distribution.

**Crocker-Wheeler Company, Ampere, N. J.**—Bulletin No. 105 of this company contains a description of its large size polyphase induction motors. A table of standard ratings is given, and the application of the motors for different classes of service is shown in a number of excellent half-tone illustrations.

**Pathe Freres, New York.**—The bulletin issued by Pathe Frères for the week of July 13 contains descriptions of the following films: "A Bashful Young Man," "In the Government Service," "The Father is to Blame," "The Poor Officer," "Bothersome Husband," "Korea," "Mystery of the Mountains," and "Runaway Mother-in-Law."

**Black Diamond Boring Machine Company, Monongahela, Pa.**—This company describes its boring machine in a new publication, and illustrates what it terms the most improved method of making good bearings at low cost. The company advocates boring out the bearings after forming them on a taper mandril. The company's boring machine is designed especially for this work.

**James J. Fitzgerald, Cleveland, Ohio.**—"Cleveland Investments" is the title of the vest pocket manual for 1908 of the principal Cleveland owned corporations, compiled and published by James J. Fitzgerald, Schofield Building, Cleveland. The book contains 132 pages and is bound in leather. The information covers banking and manufacturing organizations and the earnings, mileage, bond issues, etc., of electric railways owned and centering in Cleveland.

**Stromberg-Carlson Telephone Manufacturing Company, Rochester, N. Y.**—This company has issued a series of four picture postal cards printed in black illustrating its works at Rochester. The views shown are north along the buildings from University Avenue and Culver Road, factory buildings Nos. 2 and 3, main office building and the main offices and factories. The company has taken every means to improve the conditions under which its employees work and has surrounded the buildings with attractive garden spots and lawns.

**Recording Fare Register Company, New Haven, Conn.**—Bulletin No. 4 of this company describes the New Haven trolley harp and the company's various wheels for city, suburban and high-speed service, including its sleet wheels.

The New Haven harp is split horizontally and hinged midway of the shank, so that the upper part may be lifted readily and the wheel and pin inserted in the lower or fixed arm. The bearings that support the wheel are grooved on their underside and lie in recesses in the lower arm of the harp. The diameter, width, depth of groove and length of hub of each of the different wheels are given.

**Electric Service Supplies Company, Chicago, Ill.**—The "Keystone Traveller" for July, published in the interest of this company, has been issued. The cover is decorated with a picture of a bathing girl silhouetted against a black background. Some time ago the company announced in the "Traveller" that it would soon have an important announcement to make. The July issue contains the announcement, which is to the effect that about July 20 a new car equipment catalog of some 600 pages will be ready for distribution. The catalogs will be sent out in the order in which requests are received. A new Keystone ceiling light fixture is also announced. It is of cast iron and is artistic. Amusement is afforded in an article, entitled "Overheard In a Car Barn."

**Price Publishing Company, Lima, Ohio.**—This company has issued a vest pocket map of the electric railways in Illinois and Wisconsin. The cities, towns and villages located on the electric railways are shown on the map, and are alphabetically arranged and classified according to states. The population is also given. A note explains about roads in the territory under construction, and special mention is made of the plans for completing the Chicago & Milwaukee Electric Railway into Milwaukee. Instructions are given for reaching from the center of the city the various lines of Chicago, some of which operate for only a short distance within the city limits. The new map supplements similar maps of Ohio, Indiana and Michigan published by the same company.

**Edwin H. Ludeman & Company, New York.**—This company has issued companion catalogs of its Williams vertical compound medium speed engine built in sizes from 300 hp upward and its Williams Monogram vertical duplex compound engine from 25 hp to 500 hp. Both engines are described in detail and tables are presented showing the sizes in which they are made. The Monogram engine was brought out to meet the demand for a highly economical unit particularly adapted for direct connection to generators, pumps and blowers. While its first cost exceeds slightly that of single valve high speed engines, its economy, as shown on the diagram on page 9 of the catalog, is much better. Elsewhere in the publication the ultimate fuel saving is carefully shown in a table applying to 75 kw and 150 kw units respectively.

**Boston Manufacturers' Mutual Fire Insurance Company, Boston, Mass.**—This company has issued the third edition of its report, No. 5, on slow-burning or mill construction, with the old plates revised and new ones substituted for some of the old ones to accord with the accepted practice of to-day. The idea of the publication is to place information on the subject of fire protection before representatives of new or proposed establishments, as much can be done in planning a building to reduce fire hazard and do away with conditions which render severe damage and even loss of life probable. It has long been the practice of the company to give to its members without charge information on any point which can rightly come under its supervision and to offer for consultation the services of its experts who are familiar with the various hazards common in industrial plants. The nominal price of 25 cents has been placed upon the publication, which is much less than its cost, the idea being to limit requests for it simply to those who can make use of it to good advantage and will therefore value it.

**General Electric Company, Schenectady, N. Y.**—Devices for the automatic control of induction motors are described in Bulletin No. 4590, just issued by this company. The automatic compensators are designed for the remote or automatic operation of induction motors of the squirrel cage type in sizes of 5 hp and larger. They consist of two main oil immersed switches operated by solenoids, which are excited from one phase of the current supply. With the closing of the exciting circuit of the solenoids one of the main switches automatically connects the motor to the line through the compensator coils, and an adjustable time relay opens the first main switch at the proper time, cutting the compensator coils out of circuit and closing the second main switch, thus throwing the motor on the line. The same publication describes an automatic control equipment for use in connection with the General Electric Form M three-phase induction motors, the principal use of which is in maintaining a predetermined air pressure, water pressure or water level, by automatically starting and stopping motor driven pumps in the supply mains.

## ELECTRIC RAILWAY PATENTS

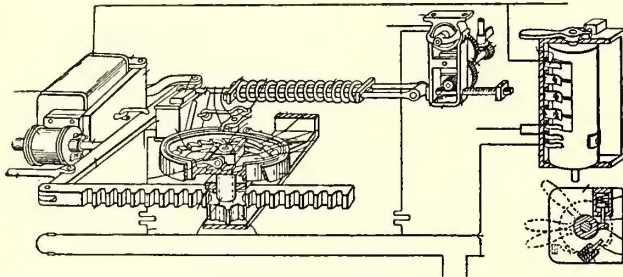
UNITED STATES PATENTS ISSUED JUNE 30, 1908.

[This department is conducted by Rosenbaum & Stockbridge, patent attorneys, 140 Nassau Street, New York.]

**Controller Operating Means**, 891,834; Thomas Gilmore, Jr., Norwood, Ohio. App. filed Nov. 3, 1906. The controller handle carries a pawl entirely covered thereby, a notched member with which the pawl co-operates to stop the handle at predetermined points in its forward movement, and means operated by the handle during a slight backward movement thereof for releasing the pawl.

**Device for Securing Bond Wires to a Rail Joint**, 891,860; Welles M. Post, Wilkensburg Borough, Pa. App. filed Sept. 12, 1907. Comprises a small metallic clip which is fastened to the web of the rail by the usual bolts of the fish plates and which supports the bond rails.

**Mono Railway System**, 891,882; Walter D. Valentine, Alhambra, Cal. App. filed Nov. 14, 1907. The rail has a head



Patent No. 891,947

formed with opposing upwardly converging anterior treads and opposing downwardly converging posterior treads, and a truck-frame having inclined wheels grouped about and adapted to roll upon said treads.

**Automatic Car Brake**, 891,947; James H. K. McCollum, Toronto, Ont., Can. App. filed Nov. 17, 1906. Provides an automatic mechanism for applying the brakes whenever the current of the motors is cut off at the controller.

**Differential Axle Device**, 891,958; Bagster R. Seabrook and Frank C. Briestly, Los Angeles, Cal. App. filed Sept. 30, 1907. Comprises a self-contained coupling box having the parts telescopically secured together by means of the frictional engagement of such parts.

**Trolley Wheel**, 892,016; Robert P. Stark and Charles R. Klingensmith, Creighton, Pa. App. filed April 23, 1907. The trolley wheel has a removable tread and flange portions and the hub is spirally grooved for the distribution of oil.

**Railroad Tie Construction**, 892,025; Edward D. Bennett, Pulaski, N. Y. App. filed Sept. 10, 1906. A metallic tie having sockets for the reception of wooden blocks to which the rails are secured.

**Brake Shoe**, 892,078; Clifton D. Pettis, Chicago, Ill. App. filed April 4, 1908. Comprises a cast metal body and a back plate of ductile metal having its ends folded back upon itself to form guide lugs.

**Metallic Railway Tie and Fastening**, 892,094; Clara E. Slenker, Beaver Falls, Pa. Administratrix of Frederick J. Slenker, deceased. App. filed April 29, 1907. A metallic railway tie of hollow box-form, closed at the bottom and having a longitudinal slot in its top wall throughout the length of the tie and teeth or projections adjacent to each edge of the slot for the greater portion of its length.

**Triple Valve**, 892,101; Edwin C. Washburn, Minneapolis, Minn. App. filed Sept. 16, 1907. A triple valve comprising a differential cylinder, a differential piston working therein, and a yielding constant tension device exerting a force tending to move the piston in opposition to the air pressure on the relatively large end or pressure area of said piston, said cylinder and piston having co-operating ports.

**Fluid Pressure Brake Mechanism**, 892,123; John H. Bleoo, Brooklyn, N. Y. App. filed March 5, 1908. Means whereby an air-brake system may be recharged while the brakes are set or applied without regard to the positions that the slide valves and pistons of the triple valves may be in at such time. Prevents undue recharging of auxiliary reservoirs when the brakes are off and the triple valves are in full release position.

**Derailing Switch**, 892,136; John H. Covey, Buffalo, N. Y. App. filed Sept. 20, 1907. Comprises a support having a pair of lugs which are provided with guide-ways extending in a vertical direction, a lever arranged between the lugs and having pins moving in the guide-ways, and a derailing block arranged on said lever.

**Air Brake Apparatus**, 892,148; Albert H. Geltz, Alliance, & Lee L. Hosack, Youngstown, Pa. App. filed Dec. 6, 1906. Provides a valve mechanism which will control the locomotive brake cylinders independent of the usual locomotive engineer's valve and the train pipe system, including the triple valve, but which will also co-operate with the locomotive engineer's at all times, by the manipulation of a single handle.

**Sander**, 892,151; John H. Hanlon, Somerville, Mass. App. filed Nov. 30, 1907. A pneumatic track sander so constructed that the nozzle is not likely to become clogged.

**Rail Cleaning and Scraping Device**, 892,172; August J. R. Marjenhoff, Charleston, S. C. App. filed Dec. 11, 1907. Details of construction.

**Sanding Device**, 892,198; Thomas T. Vest, Richmond, Va. App. filed Oct. 4, 1907. The flow of sand is automatically cut off upon removal of pressure for the purpose of opening the sand hopper, thus preventing waste of sand. Also has a discharge spout flexibly connected to the sand hopper and to the car truck so that the discharge spout follows automatically the curvature of the rails.

**Signaling System for Railroads**, 892,203; Max W. Zabel, Chicago, Ill. App. filed April 13, 1907. Has means whereby any block in a dispatcher's division may receive a selective signal to the exclusion of all other blocks, and whereby a positive indication is given to the dispatcher when the selective signal is received.

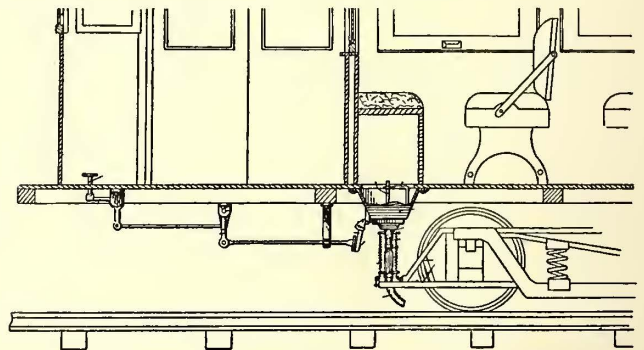
**Railway Signaling Apparatus**, 892,204; Max W. Zabel, Chicago, Ill. App. filed April 13, 1907. Relates to modifications of the above.

**Rail Fastener**, 892,207; Albert Aretz, Tarentum, Pa. App. filed Nov. 6, 1907. One fish-plate has integral pins which extend through the webs of the rails and engage the other fish-plate.

**Trolley Guard and Guide**, 892,272; Charles Latsch, Cleveland, O. App. filed Sept. 3, 1907. A pair of laterally swinging arms pivoted on the trolley harp and having rounded rollers at their upper ends adapted to close over the trolley wheel.

**Drop Trolley**, 892,279; Thomas H. Mars, Chicago, Ill. App. filed Oct. 5, 1906. A trolley retriever of the type having a special trip connection for supporting the pole which is released in case of sudden or abrupt movement. Is designed to prevent the pole from rebounding after it falls.

**Railway Tie**, 892,300; Carl G. Peterson, West Duluth, Minn. App. filed June 1, 1907. Comprises a pair of channel members each having a vertical web and horizontal upper and lower webs, the vertical web of each member having an opening and an angle brace piece extending through the opening and between the upper and lower webs of the other channel member.



Patent No. 892,198

**Railway-Rail Joint**, 892,328; Ptolman Stover, Visalia, Cal. App. filed Oct. 10, 1907. The fish-plates constitute a short section of the rail tread and have interlocking connection with the rails.

**Trolley Wheel**, 892,355; George C. Bourdereaux, Peoria, Ill. App. filed Aug. 29, 1906. A trolley harp in two sections suitably connected and which may be removed from the trolley arm without becoming separated.

**Electric Railway Signaling System**, 892,359; Yorke Burgess, Washington, D. C. App. filed Sept. 24, 1907. Signal means on each train, a pair of traveling contacts on each train, and a plurality of conductors each arranged to be alternately in the path of both contacts.

**Trolley-Ear**, 892,371; Charles W. Elliot, Tampa, Fla. App. filed April 9, 1906. Means whereby a trolley car is prevented from becoming detached from its fastening or support by reason of vibrations of the trolley wire due to the operations of the trolleys there-along or from other causes. Has a screw fastening with a cotter pin.