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The Relation of Capital and Value

In its lengthy and studied destruction of the plan for reorganization of the Third Avenue Railroad System the New York Public Service Commission, First District gives the emphasis of italics to the following reformative dictum: "The commission believes the proposition to be sound that capitalization should have a direct relation to value." Fortunately for those who are endeavoring to perfect the reorganization of the property and therefore need to know the attitude of the commission the decision improves upon this non-committal and flexible conclusion. It appears to be the present physical value and capitalization which the commission would maintain near a parity. If the regulating body uses its vast power to cling so closely to the theory that experimentation and development are forever penalized the public which desires good service will be the greatest and the longest sufferer in the end.

Tight Gear Cases

The presence of sand and grit in the lubricating grease of railway motor gears is responsible for much of the wear that takes place on the face of the gear teeth. It would be surprising to some master mechanics to learn that the grease used in the gear cases of cars running on sandy roadbeds sometimes contains as much as 20 per cent of gritty matter. The movement of the gear teeth over one another, even with new gears, is a sliding movement and not a true rolling movement and under the heavy tooth pressures in common use the metal is cut away rapidly when the lubricant carries any appreciable quantity of abrasive foreign matter. In the manufacture of gear cases care is taken to make the two halves fit tight to prevent the entrance of dust and leakage of the grease but no dust guards are provided at the openings around the armature shaft and the axle. Dust guards to seal these openings are not more expensive or difficult to put in than are dust guards in the back of a journal box and if properly maintained they would keep out much of the foreign matter which finds its way into the lubricant. The process of burning the grease out of gear cases to clean them does not remove the grit and when new grease is put in it absorbs all of the objectionable residue and soon becomes as bad as the grease which was taken out. The most effective method of cleaning gear cases is to boil them thoroughly in a strong solution of potash. This removes the grit with the grease and has the great advantage of incurring no liability of warping or cracking the thin metal plates.

Electrify It

The recent accident in the Hoosac Tunnel which stalled a trainful of passengers therein for a couple of hours ought to point a moral; whether it will bear fruit needful for repentance,

as a revivalist says, is quite another matter, but we earnestly hope it will. The Hoosac Tunnel, as it was the earliest, is still one of the more important of the world's great tunnels, so far as length is concerned. The traffic through it is perhaps less than some. The problems of ventilation have been settled no more successfully than in later tunnel work and the air in the tunnel is undeniably very bad. The nature of the accident precluded getting out until the rescue train could be sent, and the passengers had to stand it as best they could, fortunately with no serious results, although the newspapers report that the air was almost nigh suffocating and intolerably hot. Fortunately the stop was near the central shaft of the tunnel, and everybody, so far as reported, escaped without material injury. Thanks to the care with which the ordinary trunk line is operated the stalling of a train in the tunnel is a rare accident. Its seriousness lies in the fact that if circumstances are against good ventilation the element of danger to the passengers cannot be neglected. At the present time when electric traction has been applied with great success to many of the world's long tunnels it seems most unfortunate that the first of its class, to which American engineers may well point with pride, has not yet been electrified. It is earnestly to be hoped that the lesson, albeit not a disastrous one, will be thoroughly learned and applied so that the next time a train gets caught in mid-mountain it can get out again without risk to the passengers.

Complimentary Tickets

It is questionable if any other courtesy creates as much good will in proportion to its cost than the presentation of complimentary car tickets or a pass in some form to a street railway man visiting a property outside his home territory. It is often the case that the actual amount of money saved the visitor is trifling, for at present rates one can patronize the average urban property for a good many hours before the total expense reaches \$1. Nevertheless the feeling of hospitality which one experiences on being offered the "freedom of the system" is a lasting one, and indicates that the latch string is out in a way that nothing else can. The other side to this question is the abuse which easily tends to corrupt the issue and application of free tickets. This is so keenly felt that sometimes all but perhaps half a dozen of the employees of a company, outside of the uniformed force, are obliged by the rules of the company to pay cash fares for all trips on the system. An expense account then takes care of fares on company business, but such a plan plainly leaves no ready opening for hospitality in the direction of free transportation to accredited visitors. Each company obviously must decide its policy according to local conditions or statutes, bearing in mind that once a free list begins it is a herculean task to stop it. If the practice has advantages that outweigh its defects in the eyes of the management, it is still eminently proper to endeavor to prevent abuses by unauthorized persons by issuing such tickets in limited numbers under a single cover; by providing that they shall be non-transferable and that one shall be lifted on every car ridden upon. It is a plan of no little merit, also, to require the signature of the user agreeing to hold the company harmless for any accident or damages that may occur in the use of the free tickets. The tickets should be detached from the proper stub in the presence of the conductor, as this will tend to confine their use to the grantee, and they should be consecutively numbered as to the book or lot issued.

THE SMALL STEAM TURBINE

The steam turbine has now become so customary a form of equipment for large power stations that one almost instinctively thinks of it at the outset in laying out stations of even moderate capacity. One finds not infrequently turbo-generators of as low as 300 kw to 500 kw capacity used in small stations which have to supply power both for lighting and for railway purposes. For the latter work a converter has to be used, worked under very disadvantageous conditions. As is well known, the smaller turbines, while admirable machines from an operating standpoint, are not anywhere nearly so efficient as the big ones familiar in central-station operation. More than this, the efficiency of a turbine depends so completely upon the perfection of the condensing apparatus that in plants only ordinarily equipped in this respect the efficiency falls off still further. Exact figures on steam consumption are very hard to obtain from the small plants, tests being seldom made and less seldom published. It is very doubtful, however, whether under such conditions the turbines do themselves or the station full justice, even bearing in mind the fact that turbines as a class operate relatively well at light loads. They are, of course, easy to operate and take but little space, yet the average plant of say 500 kw capacity is not situated where ground space is particularly valuable and the smaller turbine units themselves are not relatively as cheap in first cost as are the larger ones. We would very much like to see some operating statistics on steam consumption per kw-hour from plants of the character to which we have been referring. It seems rather likely that the results would be no better than those which could be obtained by the reciprocating engine sets, which have often been replaced by the turbines.

Of course, in large plants the lessened labor of operation with the more modern units counts for a great deal, but where there is only one engineer this advantage is not important, since there is no chance of eliminating labor but merely utilizing five-eighths of a man, so to speak, instead of three-quarters. Even the guarantees on the small turbines do not show any material advantage, considering these things, over the reciprocating engine performances and unless the auxiliaries are thoroughly overhauled as to give the turbine its full vacuum the efficiency falls off in a way that is very discouraging. These small steam plants present indeed one of the toughest problems in electrical engineering when an attempt is made for really good efficiency. The load factors are almost universally bad and cannot be bettered except in fortunately situated cases where a considerable industrial load can be carried. Here, of course, there is a chance for improving the situation where railway service is undertaken from the same station, since the heavy railway load comes on with the cessation of industrial work. Considering the fact that there are many small plants for every big one the problem from the economic standpoint is really an important one. It would be an exceedingly good thing if something like systematic tests of the smaller generating units could be carried out, tests designed to show what could be done with a turbine plus a converter as compared with two generators or a single generator for both alternating and direct current worked by reciprocating engines.

The main thing in such stations is first to provide apparatus efficient from the standpoint of steam consumption, and second, to ensure as high a load factor as is practicable. Where there

is no industrial load to be had the conditions are extremely bad for as a rule the railway service itself calls for a very varying load. A goodly amount of small motor service, however, helps out admirably in steadying the load, and now and then one finds a small plant in which the day load is a very comfortable one and the time of difficulty comes with the lighting load. Data on performance of stations of this class are greatly to be desired, and we hope this comment may stir up engineers and superintendents to look into their operating conditions and make public the results for the benefit of those in like circumstances who need help and have no definite basis on which to base improvements.

GIVING TRANSFERS ON A COMMON ROUTE

Among the abuses of the free transfer system which has grown out of its extension to cover a maximum number of route combinations in a given district, the practice of giving free checks between cars operating on a common route is often a source of considerable loss. For instance, two cars leaving a down-town terminus *A* for suburban points *C* and *D* may share the same route as far as a junction point *B*. To enable a passenger to take any car in the general direction of his destination it is customary to issue him a free transfer, good at *B*, to the car bound for point *C* in case he boards a car headed for point *D*, and vice versa. Practically passengers will frequently let their own cars pass and take cars bound for other points in order to obtain the stop-over benefits of the transfer at the junction point. The tendency is to crowd the cars of the company with non-revenue passengers between the suburban terminals and the junction point, since a considerable proportion of the riding is on transfers. If the headway between the lines of cars occupying a common route as far as the junction point varies, the existence of too liberal transfer privileges tends to result in the crowding of certain cars while others are but partly filled. The general result of such a transfer system is to force the company to handle more or less traffic at a disadvantage. The fundamental cost of carrying a passenger to his destination in two cars is inevitably greater to the company than the expense of transporting him in a single car, especially when the two cars share a portion of their routes.

Where the service is of a fairly frequent character it would seem as though the transfer between cars on the same route might be discontinued without any serious inconvenience to the public. There is little to be gained by taking a journey in steps where through cars are run over the route at intervals of less than 10 minutes. It is to the advantage of the public to make its trips without change, and the company's interests are better served by confining riders as far as possible to their own particular cars. If this can be done, the volume of the service can be more closely fitted to the traffic requirements and the average loading of the cars improved. The withdrawal of transfer facilities between cars on common routes need not in any way affect the granting of such privileges between intersecting lines.

The primary and legitimate object of the free transfer, or even the transfer for which a nominal charge is made, is to provide for transportation between points not connected by through service and not to furnish facilities for step-by-step movement across a city when the territory in question is

already provided with a frequent and satisfactory through service. In Boston a start has been made in this direction by the withdrawal of free transfers to Newton cars from the outward-bound Brookline Village-Oak Square service, on that part of the route which is already provided with frequent through service between the down-town terminus and Newton. There is no question that this is a line along which economies can be instituted by a company without any unreasonable hardship to the public.

A NOVEL ELECTRIC LOCOMOTIVE

A steam turbine electric locomotive has recently been undergoing preliminary trials on the Caledonian Railway in Scotland and has created much interest among British engineers on account of the novel combination of a steam locomotive type boiler, high speed condensing turbo-generator set supplying direct current at from 0 to 500 volts and air cooling coils for the condensing water. The idea of a self-contained generating outfit supply current to motors on the driving wheels is not new. As far back as 1893 J. J. Heilmann, of Paris, designed and built a 100-ton steam-electric locomotive which was given a trial on the Western Railway of France. It had a Lentz boiler with 1562 sq. ft. of heating surface, an opposed cylinder, horizontal compound, reciprocating engine capable of developing 1000 hp at 600 r.p.m. and a direct-current dynamo of equivalent output. Each of the eight pairs of driving wheels was revolved by an 80-hp gearless motor flexibly mounted on the axle. The steam consumption of the engine, which ran non-condensing, was 21 lb. per ihp-hour; the dynamo had an efficiency of 93 per cent, and the motors an efficiency of 85 per cent. After a few desultory trials this ingenious but impracticable machine was relegated to the scrap heap.

Since the failure of the Heilmann composite locomotive, the gasoline engine has been developed to a high degree of efficiency and reliability, and the Heilmann principle, except that a gasoline motor has taken the place of the steam engine, has been embodied in the number of gaso-electric cars which have been built during the past five years. This has led some people to consider that the Heilmann plan was justified, but the conditions, it seems to us, are entirely different. A gasoline engine has a thermal efficiency of over 20 per cent as compared with less than 15 per cent for the best stationary steam plants, and on this account its use as a prime mover in a self-contained motor car or locomotive is warranted. No figures of steam or coal consumption of the new steam turbine electric locomotive have been made public, but we cannot see where any appreciable saving will be effected over the ordinary steam locomotive which will produce an indicated horse-power on about 22 lb. of steam per hour. Stationary steam turbines of 600 hp, operating under favorable conditions with high vacuum, seldom require less than 21 lb. of steam per hp-hour. When the electrical losses are considered the gain in fuel consumption, if any, over the steam locomotive, would be very small. The turbine locomotive must weigh greatly in excess of a steam locomotive of equal power and it does not do away with smoke and dirt; it may have a slightly higher rate of acceleration and certainly will cost much more.

Altogether we believe it has few inherent advantages and some serious disadvantages. It is an interesting engineering freak and nothing more.

INSTRUCTION CAR OF THE BOSTON & NORTHERN STREET RAILWAY

Several electric railways have in the past few years conducted energetic campaigns for the improvement of car handling, and particular attention has been given to the instruction of both old and new motormen in improved methods. By establishing trainmen's schools at fixed points much good has been accomplished, and in recent years the plan of operating a specially equipped car for this purpose has found considerable favor. Among the latest companies to equip their lines with instruction cars are the Boston & Northern and the Old Colony Companies. This organization recently undertook the building of two instruction cars of unique characteristics, one for use on the lines north and the other on the lines south of Boston. The first of the two cars, which are practically identical in design and equipment, has now been completed and placed in service by the department of motive power and machinery. The work of instruction has been organized in a sub-department headed by Howard W. Irwin, who is responsible for the detailed design and arrangement of the instruction cars and their adaptation to the work in the various divisions of the northern and southern lines. Under the superintendent of instruction is a general instructor for each system. Under each instructor is a chief instructing motorman, who supervises this work at various car houses. On the two systems are about 1500 motormen, 875 being on the northern and 625 on the southern lines.

The car as shown in Fig. 1 is of the semi-convertible type, with a Brill "easy-access" body mounted on double trucks and equipped with four GE-80 motors. It is 45 ft. 10 in. long over all, with a body 33 ft. 11 in. long, carrying two trolleys. The car is fitted with sliding doors 3 ft. 2 in. wide at each side of each vestibule, the doors being operated by compressed air. The interior of the car has no fixed seats, although a few chairs are provided for the instructor and the class. The inside apparatus embraces type M and also the type K-28-J control systems, including a short-circuiting switch which gives the operator the use of the control in the "K" form when desired. Hand wheel and crank type brakes are provided, and the car is also fitted with the General Electric Company's straight-air brake equipment, with the CP-27 compressor.

The car has a hinged demonstration blackboard which can be swung across the vestibule when the class is in session. Diagrams are sketched on the board to show the path of the current from the positive pole of the generator in the power house, through the feeder and trolley lines to the car, and thence back to the station through the return circuit. Fig. 2 is the general view of the car interior, showing the equipment as a whole. The apparatus on the right consists of rheostats and a contactor switch in the control circuit of the car itself, followed by a bank of multiple unit contactors and reverser switch in circuit with the type M control wiring of the car. On the left is an air compressor piped to a demonstration braking system, followed by a GE-800 demonstration railway motor and controller. At the further end of the car are various other

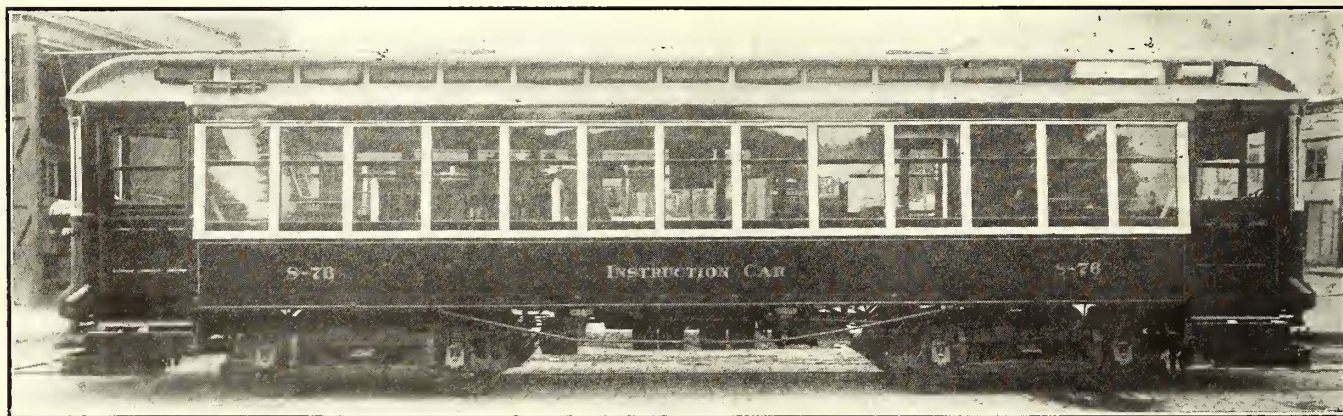


Fig. 1—Massachusetts Electric Instruction Car—Exterior View

The introductory work with the new car consists mainly in utilizing it as an instructing headquarters for the more experienced men at the different car houses, classes being held at each important operating center. At present five men at a time are taken into the car each morning and shown the apparatus, with short and pointed demonstratory talks, after which the effects of various methods of handling, occurrence of troubles and special equipment combinations are studied at first hand. In the afternoon the class is taken out on the lines of the local division in a so-called "school car," which is any regular passenger car withdrawn for experimental operation by the class. This work includes controller handling, location and remedying of troubles artificially produced, brake service, adjustments and examination of the effects of poor and good operation. The work in the instruction car in the morning is begun by a discussion of elementary electrical principles, followed by actual demonstration of the phenomena of the magnetic field, Ampere's law, magnetic blowout, current measurement, principles of car equipment design and operation, with the study of the effects of improper handling of the apparatus. The equipment of the instruction car is sufficient to enable the instructor to duplicate the characteristics of any car on the company's lines. The car itself may be operated by either hand or multiple unit control, and an ammeter and a voltmeter are provided to show the current and potential conditions in operation. In addition to the motive power equipment, much auxiliary apparatus is installed to facilitate closer study of the motorman's road work.

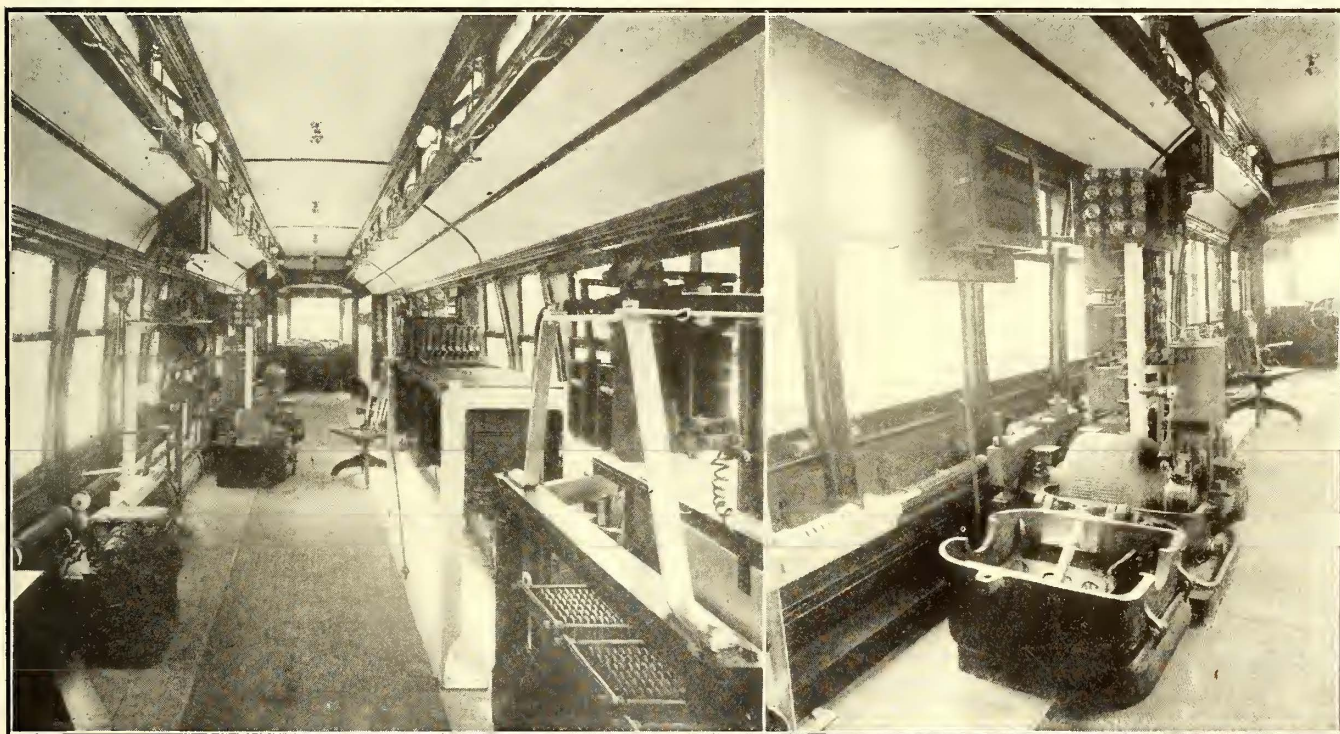
devices and a special board upon which any motor combination possible in a double or quadruple equipment can be reproduced.

Fig. 3 shows the demonstration motor, controller and resistances. Behind the frame carrying the resistances, but not shown in the photograph, is mounted a rectangular coil of 400 turns of No. 20 B & S wire, carrying 1 amp when switched into circuit. At the end of the blackboard talk the instructor cuts this coil into circuit, thus creating a magnetic field in its range of influence. The coil is mounted in a vertical plane and operated on pivots, so that when a bar of iron is brought near it the coil will move toward the iron and illustrate the fundamental principle of the electric motor. A permanent magnet is also available for this demonstration, so that the attraction of unlike poles and the repulsion of like poles can be clearly shown. From the demonstration of the magnetic field the instructor passes to the GE-800 motor on the floor and current is passed through the field coil shown in the view, with the case opened. A specially shaped bar of iron which fits the field pole faces as indicated is then set against the poles and the class is invited to pull it away. The magnetic flux is so strong when the current is flowing through the fields that the most muscular man in the class is unable to stir the bar. By this trial the students gain a wholesome appreciation of the power of the forces concerned in car movement. With the circuit broken, the magnetism disappears instantly. The latter experiment is thus most effective in showing what happens to a field coil in the on and off positions of the controller handle. The trial of strength

between the class and the pole pieces adds interest to the work by enlivening the instruction period.

An elementary description is then given of the principles of the magnetic field as applied to railway motors, and the different parts of the motor are named and their functions explained. Analogies are drawn between the simple magnetic field and exciting coil and the field coils of the commercial motor, and the parallel between the armature coil and core and an elementary magnetic circuit. The necessity of the commutator and brushes is also explained. The motor is fitted with a Prony brake for reproducing running conditions with a load upon the motor. The instructor shows the class the effect of a break in the armature circuit by raising a set of brushes off the commutator. This motor is also so connected that it can be used to explain the principle of the generator. The energy then employed electrically is absorbed by resistances and the incandescent lamp bank shown in Fig. 3. With this equipment emergency stop conditions can be illustrated, assuming that the trolley is off the wire and that the brakes fail to work. The emergency stop is made by throwing open the main line switch, reversing the controller and throwing the main operating handle into full mul-

with reservoir mounted on angle irons near the car floor, automatic governors of the Christensen and General Electric types, with switches permitting operation on either, floating levers, tie rods, and a brake cylinder equipment mounted about 5 ft. above the floor on a wrought-iron frame and connected to absorbing springs through appropriate levers and operated by an engineer's valve. All the piping which carries a continuous pressure of air is painted red and all other piping is painted black. When the brake equipment is operated, the horizontal spiral springs at the ends of the levers take up the thrust from the cylinder. The exhibit is provided with sectionalized engineer's valves, showing the port openings for the various operating positions in regular and emergency service. The air gages in the car vestibules have duplex pointers, a black hand indicating the pressure in the brake cylinder and a red hand the air pressure in the reservoir. With the exhibition air equipment the jarring of the car due to emergency operation can be well simulated, and all degrees of skill in brake manipulation shown, including graduation of the release, lap running, regular and emergency applications. A gage is provided with this apparatus, together with a standardized muffler of the same type



Figs. 2 and 3—Massachusetts Electric Instruction Car—General Interior and G.E.-800 Demonstration Motor with Resistance and Controller

tipple position. The motor then becomes a generator and the deceleration is well illustrated by the rapid slowing down of the armature and the lighting of the resistance lamps on the panel.

Near the demonstration motor is mounted a box containing a pair of arc lamp carbons set in a horizontal line movable by hand to form an arc. A magnetic coil below the carbons is equipped with a short-circuiting switch and core whose tip is brought within a few inches of the arc. This coil can be excited by opening the short-circuiting switch around its terminals, and the arc blown out, so illustrating in a simple but convincing manner the principle of the magnetic blowout. When the apparatus is in good adjustment the tendency of a collapsing magnetic field to extinguish an arc is as apparent as the blowing out properties of a developing field. The box has a window composed of two plates of glass of dark red and dark blue respectively, so that the behavior of the arc can be watched safely. The short-circuiting switch and box containing the blowout coil can be seen at the left of the lamp bank in Fig. 3. The demonstration motor is provided with a K-10 controller.

The demonstration air brake equipment of the car is illustrated in Fig. 4. It consists of a Christensen A-1 compressor

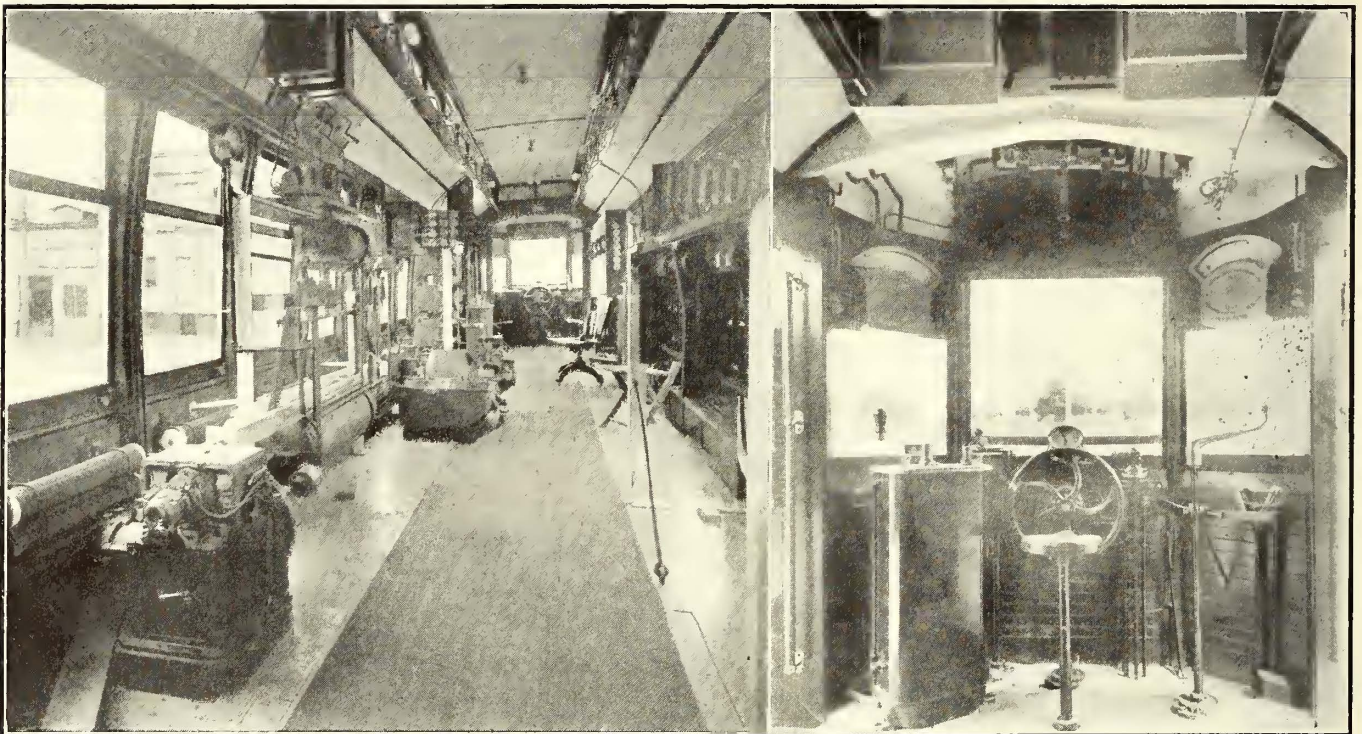
inside the car. At one end of the car the panels ordinarily cutting off the view of the operating cylinder and levers for the pneumatically controlled sliding doors are omitted, so that the working of this mechanism can be studied at length.

In general the auxiliary iron work in the car is painted with aluminum coating and all working iron is coated black. The car heaters are installed on transite panels at the side of the car body, and the heating circuit is wired to an ammeter in the vestibule, so that the amount of current taken with different heater combinations can be readily measured. In one vestibule are mounted a Weston ammeter of 500-amp capacity, and a voltmeter of the same make with a maximum reading of 600 volts. These are used in operating the car on grades and level track, when the current consumption and effect of heavy power demands on the line are to be illustrated. If the controller is handled so that the motors are abused at electric track switches or other points these instruments are useful in showing up the conditions numerically, and the rise and fall of current as the motors pass through the various series-parallel combinations is registered on the ammeter in view of the instructor and the class. The vestibules of the car have double-throw knife

switches by which the car can be connected to either system of control, and the contactors of the type M control are mounted on a frame inside the car so that the entire process of automatic acceleration can be watched, as can any manipulation of the master controller in its effect upon the motor and rheostatic connections. In connection with the K-28-J hand controller equipment of the car the contactor switch, which is ordinarily located under the car floor, is mounted on a frame inside the car itself, and the cable connections for this switch are carried along the car in a wooden trough. A special knife switch is provided so that if desired the contactor of the hand-control circuit can be short-circuited and the breaking of the main motor circuit carried to the large controllers on the platforms. A ribbon fuse in a suitable box is also installed in the main circuit and located inside the car. Four four-pole double-throw knife switches are installed near the multiple unit contactors so that the motor armature leads can be thrown upon each type of control as desired. The reverser of the multiple unit system is equipped with a mechanical handle to facilitate throwing it back and forth in connection with the instruction. The car is also fitted up with three hand-operated block signals of the type

board. The fan motors and the lamps in the field and rheostatic circuits are connected with two controllers located at the right of the demonstration board, and in this way the result of every movement of either controller handle is reproduced in graphic form on the diagrams. Two tubular incandescent lamps are placed behind each armature disc, and the latter is screened by a red mica window in each case, so that whenever a fan motor is turning to represent the application of current to a genuine two or four-motor equipment, a red light shines from the corresponding disc.

With this equipment every combination of motors and resistances possible can be reproduced in miniature. As each step is taken in moving the controller handle for either equipment as drawn from point to point the lamps light in each part of the drawing which represents the part of the circuit made alive in the actual car. As the current is theoretically cut off from a resistance grid the corresponding lamp is extinguished, and as the current is thrown upon the motors the fans start and the speeds of the illuminated discs vary according to the theoretical connection as to resistances, series and multiple combinations, while the lamps in the motor-field diagrams are illuminated with



Figs. 4 and 5.—Massachusetts Electric Instruction Car—Demonstration Air Brake Equipment at Left and Vestibule Equipment

used generally by the Boston & Northern lines, so that the classes can be instructed in the manipulation of these when desirable. Fig 5 shows the equipment of the car vestibule. All wiring is in conduit.

The most novel and interesting feature of the car is the motor demonstration board, illustrated in Fig. 6. This is 8 ft. long, 4 ft. high and 8 in. deep, and is supported on hinged brackets which facilitate its use with varying sizes of classes in the car. Upon the face of the board are painted diagrams of the circuits of a two-motor and a four-motor equipment, with rheostatic connections as indicated. Incandescent lamps with clear white bulbs are inserted in the diagrams of the resistance grids, two 8-cp lamps being used in each resistance diagram for the two-motor equipment, and three 16-cp lamps in each resistance circuit as sketched for the four-motor service. At the top of the board, which has a facing of dull white galvanized sheet iron, are drawn the fields and poles of four railway motors, a 16-cp lamp being inserted in the drawing of each field coil, following the plan observed in the resistances below. In the center of the drawing for each motor is installed a disc operated by a 12-in. 110-volt direct-current fan motor located behind the

an intensity which varies as the theoretical voltage upon an actual car equipment.

The combinations of motors and resistances which can be illustrated on this board enable the instructor to show the classes precisely what results occur at every controller position, both in normal and emergency operation. In this way points which have long been obscure to motormen can be made plain in a few moments, and in addition artificial faults in the equipment can be produced and remedied in exactly the same manner that is necessary to eliminate trouble on a car in service. To illustrate the results of too fast feeding of the controller handle a relay is mechanically connected to the controller spindle and connected so that a too rapid acceleration lights a lamp above, while a current flow that would be produced by an extremely quick passage of the controller handle from the first to the last point results in the blowing of a small spring-held fuse in a box above the controller. With the instruction board any motor can be open-circuited by lifting the brushes—an arrangement having been planned for installation which will include projecting brushes and a representation of a commutator ring at each fan motor. The results of grounding any motor or resistance can

also be simulated, and the bad distribution of load when three motors of a four-motor equipment are run can be seen. The brilliancy of the lamps corresponds in each case to the amount of current which would be flowing through the car circuit with the controller in the corresponding position, and the speed of each fan motor and armature disc varies as does the impressed voltage. An improvement will shortly be added in the form of a set of arrows on the diagram showing the direction of the current with different positions of the controller handle. These arrows will be illuminated by candelabra lamps located behind the panel, so that the course of the current can be followed with still greater facility. The fan motors are reversed by the controller in just the same way that the motors of a car equipment are reversed. In the drawing the lines representing motor field leads are painted black, while the armature lines are painted green. A feature of the board is the facility with which the dropping out of one motor in transition from series to parallel is shown for a double equipment, or the dropping of two motors at this point in a four-motor equipment. Seven snap switches are installed at the side of the board to create artificial troubles. The heat radiated from the resistance lamps furnishes an excellent object lesson of the efficiency of operating on resistance

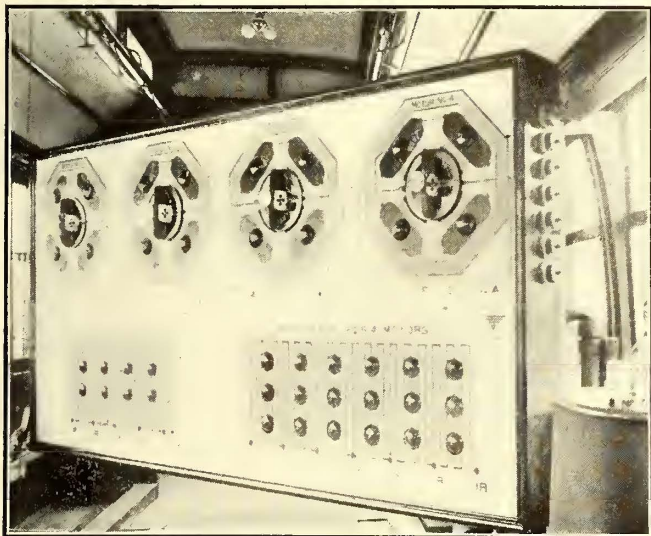


Fig. 6—Massachusetts Electric Instruction Car—Motor-Demonstration Board

in the handling of the actual car equipment. One point which has long puzzled motormen is that of the number of motors which start turning on the first notch of the controller. A frequently held opinion is that all the motors do not start at once, but the fallacy of this is quickly shown by the apparatus, so long as the mechanical conditions are right. It is expected that this equipment will be helpful to the legal department of the company in reproducing controller combinations involved in accident cases, either for the benefit of the attorneys or the jury, as conditions require.

The exterior of the car is painted Merrimac green, and the interior lighting is accomplished by ten two-light clusters of frosted 16-cp lamps carried along on the under side of the monitor and in the center of the car roof, which is painted white with a tinge of green. The lamps are of the round bulb type, and there are 42 on the car as a whole. The car aisle is provided with rubber matting and the interior finish is of mahogany, no glossy surfaces being installed. A desk will shortly be added for the instructor's use.

The use of recording watt-meters on the cars of the South Shields, England, tramways, resulted during the past year in a reduction of current consumption per car mile from 1.36 watt-hours to 1.18 watt-hours. This has been largely responsible for a gain in net earnings for the year of \$6,100. The use of car meters also enables the company to locate feeder losses easily.

MEETING OF THE COMMITTEE ON CONSTRUCTION OF SCHEDULES AND TIME TABLES

A meeting of the committee on construction of schedules and time tables of the American Street & Interurban Railway Transportation & Traffic Association was held at the Engineering Societies Building, New York, on Aug. 4. The following were present: N. W. Bolen, superintendent of transportation, Public Service Railway, Newark, N. J., chairman; Timothy Connell, time-table clerk, Boston Elevated Railway; William Siebert, superintendent of surface lines, Brooklyn Rapid Transit System, and H. C. Donecker, secretary of the association. The meeting was also attended by L. H. Palmer, superintendent of transportation, Metropolitan Street Railway, New York; Alexander Jackson, superintendent of the Time-Table Department of the Public Service Railway, and Joseph Downs, chief clerk to N. W. Bolen. The meeting was held for the purpose of considering the answers to data sheet No. 58, upon which the committee will largely base its report to the convention at Atlantic City this fall. Full replies were received from the companies to whom the requests for information were sent. Inspection of the data sheets and the experiences of the members of the committee showed that the maximum number of cars operated at 11 o'clock in the morning was nearer the normal average figure of cars operated than the number in use at any other hour of the day, for at that hour all the extra cars have been eliminated from the schedule. As the committee has received in response to its inquiries figures showing the maximum number of cars operated during the morning and evening rush and at the hours of 11 a. m., 2 p. m. and 9 p. m. it was decided to chart the results reported at the various points and to show also the aggregate miles of single track on which the operation of the cars was based.

The answers to the questions as to the method used to ascertain the service required on new extensions, particularly in territory not already served by electric lines were considered by the committee. A brief summary of the method outlined by the various companies will be given in the report of the committee. The members of the committee mentioned the practice on their individual properties. The character of the section served by new extensions of existing systems was considered carefully and into the determination of the service required there entered a question as to the relative factory business or residential character of the district. Mr. Bolen said that before a new line was opened the extent of the initial service contemplated was decided and the actual development of the service was the factor which determined regulation subsequently.

The subject of determining running time on the lines and the method of checking was discussed. It was decided that the number of companies using different methods of determining the running time should be shown in the report of the committee. Franchise requirements, vehicular traffic, the number of stops, grade crossings, drawbridges and delays out of the ordinary determine the running time. Mr. Siebert expressed it as his opinion that the running time should be changed several times a day, although no fixed rule to govern time or the extent of the changes could be made. These changes would depend upon local conditions. On the Brooklyn Rapid Transit system changes are made at 6:30 a. m., 7:30 p. m., midnight and 6:30 a. m. The changes take place at the hour specified without relation to the position of cars on the lines, and motormen wherever they may be operating conform to the rules in this respect. The Boston Elevated Railway operates on the special time all day Sundays and holidays. On these days the Brooklyn Rapid Transit system has but two different rates of speed. Mr. Connell stated that on the Boston system the changes of running time are made on a different basis from that mentioned by Mr. Siebert. In a certain belt in the downtown district changes are made by time and outside of that belt they are made by location. To prevent undue interference with the time due to this system schedules are prepared so as to allow for the change.

In discussing the inquiry of the committee as to the method used to keep trainmen on schedule time, Mr. Bolen said that the only way was by inspection. Mr. Siebert said that in Brooklyn inspectors check their lines every day, but special inspectors are used from time to time, sometimes at junction points and at other times at other places where attention can be given to this feature as well as other questions of operation concerning which information is desired. Mr. Bolen said that on the Public Service Railway representatives of the transportation department were placed at terminal and intersecting points periodically to check the time of the different lines. Mr. Palmer said that daily reports were made up in his office from reports of the division offices. The total results of each line were computed in order to show how much the line was behind on the average. These reports were sent to the general manager. Time tests are made periodically to show whether there is any necessity for change. Before a change is made a reason, such as increasing congestion, is needed to show that real necessity for change in the running time exists. Changes in the running time on the Metropolitan lines are made at about 7 a. m., 7 p. m. and midnight, although different hours are used on different lines. The adjustments due to changes in running time are made on the schedules. As to the method used in keeping trainmen on scheduled time, it was stated that most companies indicated the use of starters at the end of the line. Mr. Bolen said that the usual practice was to depend upon general inspection by a uniformed man reporting to the division superintendent. The Boston Elevated Railway requires such inspection at all times. It was a part of the duty of the inspectors and should be done without waiting for complaint or special instructions. Mr. Bolen said that the principal necessity of the company in the operating department was to keep the cars on time. Good results were secured by having employees check the operation of different lines. Mr. Jackson said that an inspector should report any delay of 2 minutes on a car to the stationmaster or supervisor in charge of car house. If the man responsible was behind time on the following day he should be reported and discipline applied.

The committee decided upon the following tentative definitions for a straight run and a swing run:

A Straight Run: "One which works continuously through the entire period of run with the exception of the time when the crew is relieved for dinner or supper as the case may be."

A Swing Run: "One in which the time composing the run is divided into two or more periods, with intervals of two hours or more intervening."

The subject of allowing crews to pick runs was discussed. Mr. Bolen said that the custom on the Public Service Railway is to have runs picked about once in three months and that men who have been in the service were entitled to have choice of runs. Mr. Connell stated that the practice of the Boston Elevated Railway is to assign the runs and permit the men to change among themselves. Seniority is the basis of assignment.

A compilation will be made of the reports showing how many companies construct their time-table on the hourly basis and the number that use the trip basis.

Mr. Palmer suggested that descriptions of several representative methods of checking passenger counts on the various lines be given. Mr. Connell said that the Boston Elevated Railway requires its conductors to make a record on day card for each route for use of the auditor and also a trip sheet showing the results of every trip. Mr. Bolen said that the results of the Public Service Railway on the various lines were tabulated in order that the operations of the different divisions of the system might be watched. Mr. Palmer said that various forms were used on the Metropolitan lines and counts were taken whenever it was thought necessary. Some of the charts submitted, showing the results of passenger counts, will be presented in the report of the committee. Practically all the companies report that regular service was maintained during stormy weather. A tabulation will be made showing to what extent the Sunday or holiday schedules are under direct supervision of the local superintendent or supervisor.

The extent of the use of "patches" on standard tables to

increase or decrease the service as conditions require will be shown in a tabulation.

A similar tabulation will be made regarding the allowance of lay-overs in the schedules at the end of lines. A summary of the methods used by various companies to ascertain the amount of lay-overs required will be given in the report of the committee. Replies on the average speed per trip, including the lay-over, and the average speed, excluding the lay-over, will be tabulated. Tabulations will be made showing the methods of working night-car crews.

One inquiry of the committee related to the use of block numbers, or run numbers, or both, and a tabulation of the responses will be made. Mr. Bolen thought this was a very interesting feature of the data sheet.

The methods of making time-tables will be described in detail by the committee.

MEETING OF THE COMMITTEE ON TRANSFERS

A meeting of the Committee on Transfers of the American Street & Interurban Railway Transportation & Traffic Association was held in New York on Friday afternoon, Aug. 5. Those present were: Chairman M. R. Boylan, general auditor, Public Service Railway Company, Newark; F. T. Wood, assistant to the general manager, Metropolitan Street Railway Company, New York, and T. C. Cherry, superintendent, Utica & Mohawk Valley Railway, Utica. Henry Bullen, Detroit; Alexander Reunick, Philadelphia, and R. E. Lee, Cincinnati, were unable to be present, but had written to the chairman making certain suggestions which were presented to the committee by Mr. Boylan at the meeting.

Mr. Boylan stated that about 100 replies had been received to the data sheet sent out by the committee, and the subjects were discussed in the order in which the questions appeared on the data sheet.

The first point considered was in regard to the method of dating the transfer. To this question 89 replies had been received, indicating a very wide diversity of practice, including punchings for the year, month and day of the month, printing the day of the month only on the transfer, printing the day of the week and of the month on the transfer, the use of a. m. and p. m. coupons, different colors for a. m. and p. m. transfers, printing a. m. and p. m. on the transfers, etc., with combinations of practically all of these methods.

Mr. Boylan showed samples of the present Public Service Railway's transfers, which are printed with the day of the week and month in red as "Wed. Aug. 4" with a p. m. coupon. On certain lines the company also has a North and South or East and West direction marking and transfers for different lines have distinctive colors. The only punchings required on this transfer are time and, when used, the direction. The company prints the estimated number of transfers required for each day and has about 12½ per cent waste. If there is so much riding that the supply of transfers printed for the day gets low the company issues emergency transfers on which the month and day of the month appear at the top of the transfer and are punched at the car house. Mr. Boylan stated that this transfer had proved very satisfactory, except where there was a possibility of belting; that is, where passengers could ride to the business district on one line and return to their original point on another. The arrangement of the Public Service Railway system was such that in some cases a general direction mark on the transfer could not be used to prevent this abuse. On routes of this kind the company plans to use a transfer which will indicate the point of origin of the passenger. These points of origin will be punched by the issuing conductor and this plan, Mr. Boylan thought, would eliminate this abuse. This transfer would be required on only 10 or 11 lines owned by the company.

Mr. Wood explained the system of transfers on the Metropolitan Street Railway, New York. This consists, briefly, in using three different colors for direction. Green, or north-bound transfers, are issued to persons by conductors of north-

bound cars and are valid only in a general northerly direction. The transfers issued by conductors of south-bound cars are red in color and are valid only in a general southerly direction. The transfers issued by a cross-town conductor are printed on white paper and are good either northward or southward. Conductors of cross-town lines issue transfers only on the payment of a cash fare, while conductors of north-bound or south-bound Avenue cars, or those which extend longitudinally on Manhattan Island, issue a transfer to persons who have paid their fare either by cash or by another transfer. The name of the line issuing the transfer is printed at the top of the ticket and the ticket states the lines to which passengers can transfer and the points at which the transfers must be made. The date as "Monday August 8" is printed in black on the transfer. Each line has two sets of transfers, one for a. m. use with the a. m. hours printed on it in black on a white background; the other set is for p. m. use with the hours printed in white on a black background, with space at the bottom of the p. m. space for the early 1 a. m. to 4 a. m. hours. The only punch which the conductor has to make is the time limit.

Mr. Cherry showed samples of the transfers used on the Utica & Mohawk Valley Railway. On these the month is punched at the carhouse, but the day of the month as "19th day" is printed in red. Tickets of different colors are used for a. m. and p. m. transfers. The company also has an ingenious method of indicating the line to which the transfer is given and the transfer point by one punch. The face of the transfer bears the names of the connecting lines and the back of the transfer contains the junction points and each junction point is directly back of the proper connecting line, so that a punch mark through the connecting line also punches the transfer point.

Discussion developed the fact that even these elaborate precautions were not entire proof against attempted fraud on the part of passengers. Coupon transfers would be accepted during the evening rush hours, when the conductors did not have time to examine the transfers carefully, and it would be found later that an a. m. transfer had been used on which a p. m. coupon had been ingeniously pasted. Even transfers like those in New York in which the a. m. and p. m. designations are clearly printed on the face of the transfer were subject to abuse and Mr. Wood reported that transfers had been presented on the New York system in which the original time limit had been obliterated by pasting and a later hour punched in the transfer. These frauds were discovered, of course, when the transfers were checked. The only protection seemed to be rigorous prosecution of the guilty parties and publicity.

The members of the committee discussed at length the relative methods of indicating direction, time, etc., by different colors, coupons and printing on the transfers, and will offer valuable suggestions and recommendations on this subject in its report to be presented at Atlantic City.

In discussing the number of transfers in a pad the general practice was found to be 50, but on some lines with light traffic certain companies used pads of 25 transfers.

Mr. Boylan then gave an interesting account of the method of checking transfers on the Public Service Railway. In addition to checking the transfers a record is kept of the average receipts for each run and of the average number of transfers issued. When the new transfer showing the originating point is adopted a record will also be kept of this information which should be of great assistance to the transportation department in the preparation of its schedules. The transfers are turned in by the conductors on each half trip on the lines where such a plan is practicable. On other lines they are turned in at the end of a round trip. At the beginning of his run each conductor indicates on his day card the amount of change in his pocket and also puts on his day card the amount of change with which he concludes the day.

The subject of ejections was also considered very carefully by the committee. Mr. Wood stated that on the Metropolitan Street Railway conductors were not allowed to eject passengers for any cause except when a passenger was dangerous or grossly offensive to other passengers. For any other cause which would seem to require ejection, such as presentation of

a transfer in which the time limit had expired and refusal to pay fare, the conductor is required to notify the first inspector or starter whom he passes and the inspector or starter then takes charge of the ejection. In a case of this kind the company ejects promptly any passenger who presents a wrong transfer, but rarely if the only error in the transfer is that the time limit has passed.

Mr. Cherry was strongly of the opinion that all able-bodied passengers who presented wrong transfers should be ejected if they refused to pay their fares. He believed that such a position could be defended from every point of view and that it would raise the company in the estimate of the public. No trouble had followed from this practice in Utica. In only one case had a decision been rendered against the company for ejections of this kind. In this instance a passenger had received an award of \$125, not because the company was not justified in ejecting him, but because the jury considered that too great a force had been used in the ejection. In the trial, which was in the Supreme Court, Judge Andrews held that the transfer, which was dated 5.30 p. m., was restricted on its face to use on the first connecting car passing the transfer point, or until about 5.33 p. m. Consequently at the time when the passenger attempted to use it, at a few minutes after 6 p. m., the transfer was void and the company had the right to eject the passenger but to use only such force as was necessary to remove him. The judge declined, therefore, to submit to the jury any other question than that whether unnecessary force had been used by the crew in making ejection. The jury concluded that this had been the case and on this point only the award was made.

Other points discussed by the committee to be considered in the report to be presented at Atlantic City are: Questions of whether transfers should be registered, as on the Public Service Railway, or not registered, as in New York and on the Utica & Mohawk Valley Railway; whether the punch mark should indicate the beginning or the end of the time limit; whether transfers should be given at the first or last intersection; the time allowance to be permitted on transfers, and the legal rights of the company in regard to the issue and acceptance of transfers

HINTS FROM A CONDUCTOR

It is a common practice to use a stop sign on the span wire to indicate proximity to railroad crossings, dangerous street crossings, school houses and fire houses, but anything which is worth doing is worth doing well, and it would be a great convenience to the motormen if the sign should also indicate the reason for the stop. This could be accomplished by using before and after the word "Stop" F for fire house, S for school, R.R. for railroad crossing, etc. At present a motorman cannot distinguish a school stop from any other stop. Consequently, a good deal of time is lost in making stops at school streets after 4 p. m. and on holidays, when the children are at home. In this connection a notice could be posted on the bulletin board at every depot when the occasion warranted it, reading "No school to-day." Then no school stops would have to be made. Drivers of vehicles on cross streets leading to dangerous crossings might often be warned to advantage that they are approaching street railway tracks by attaching a warning sign to slow down on a post at a short distance before the crossing is reached.

The municipal authorities of Stockholm, Sweden, have granted a concession to a local company giving it the right to operate trackless trolley omnibuses through the main streets of that city. Petrol omnibuses were originally planned but trackless trolley buses were substituted in the terms of the agreement as they operate more quietly and are free from objectionable odors.

A tube railway has been proposed in London to extend from Victoria Embankment to the Crystal Palace, with a branch to the Elephant and Castle. The total length of route is $8\frac{1}{4}$ miles and the cost is estimated at £3,080,000 per mile.

VALUATIONS OF THE DETROIT UNITED RAILWAY

The Detroit United Railway is one of the important street railway properties of which valuations have been made recently. While the system of this company comprises both urban and interurban mileage, the valuations were confined to the property appertaining to the service within the city limits of Detroit. Two independent valuations have been made, one on behalf of the company and the other for the subcommittee on appraisal of the Committee of Fifty, appointed by Mayor Breitmeyer, of Detroit, to investigate the street railway situation and effect a settlement of the existing conditions. The following is in part a review of facts which have been related in the issues of the *ELECTRIC RAILWAY JOURNAL*.

In the organization of the Committee of Fifty various phases of the inquiry were assigned to subcommittees composed of several members. The "committee on appraisal" was assigned the duty of "ascertaining the value of the properties of the Detroit United Railway in the city of Detroit, both tangible and intangible." As the members of this committee were without practical experience in the work to which they were assigned, they decided to engage an engineer to assume direct charge. The question of the expense involved in this aspect of the inquiry and the features assigned to other subcommittees received early consideration, and in the negotiations with engineers respecting the appraisal estimates of the cost were requested.

The committee on appraisal selected Frederick T. Barcroft, an engineer of Detroit, to make the appraisal. A printed statement, bearing Mr. Barcroft's name, dated Feb. 5, 1909, contains the following suggestion of "a method of arriving at the actual cost of reproducing the physical properties of the street railway company":

Statement.—Any system of obtaining information is just so good as the power back of it is competent and effective in having the system observed rigidly. A compilation of facts can only be obtained by a uniform method applied to every detail.

First—Find out positively and definitely what there is to appraise. Do this by an examination of the various franchises or grants. Carefully study and compile the conditions covering the physical properties existing upon the expiration of the leases.

Second—Appoint as head an official appraiser. He must be a man who has the technical knowledge necessary to guide the work by consultation and advice. He must be a man in whom the public will have confidence that the work will be honestly, thoroughly, fairly and conscientiously performed, free from every influence but the desire to present to your committee a report that will be backed up by facts, and facts only, not theories or ideas.

"If such a man found cannot without great compensation devote his entire time to the work, then pay him so much a day, or, what is better, a fee to act in an advisory capacity as matters demand throughout the entire work; \$500 would probably cover this item.

Third—Appoint as his assistant an executive manager, who will consult and advise with the appraiser to evolve and establish a system of operations. A fee of at least \$500 will be necessary for this, as the work will be arduous. He will be under the general direction of the chief, and will be the medium through which the facts will be obtained, consolidated, condensed and put into shape, in clear detail so that anyone can see and understand upon what information the total has been reached. Let him get such assistance as the situation may demand.

"These two men, under the guidance and control of the appraisal committee, will handle the business arrangements necessary to accomplish the desired result.

Fourth—The assistants must be men adapted to the work, who will feel keenly the responsibility resting upon them, be absolutely free from political influences, and be of proven competency and experience, loyal and thorough, able to work long hours, and not consider this work in the light of a job; must thoroughly appreciate the fact that it is not a lump sum to be obtained for the present value, but that a complete detailed re-

port of each and every item of tangible property is necessary, as the summary sheet will probably represent the footings of 200 or 300 pages of report.

"By personal inspection, a report on every piece of physical property of the company has, its tracks, their construction, cars, freight, passenger and express, buildings, machinery, poles, wires, conduits, power houses, barns, repair sheds, and property improved and unimproved, etc. Reports to be made on blanks, signed and checked, that can be filed for future reference, the values to be placed upon these different items to be decided upon by fair averages extending over a period of years. The present value to be reached by the percentage of condition.

Fifth—This work need not take a great length of time nor cost any large sum of money. The tangible property is all within the city limits and of easy access.

"Instead of hiring a great army of men, an extensive office force, a few men only are necessary. Maps and records of the street car company and of the city engineer's office can be obtained very cheaply. This system is based somewhat on experience gained from the appraisal of the railroads of the State, made in 1901 under the supervision of Prof. Mortimer E. Cooley, whose assistant I had the honor to be, and in the appraisal of other large properties.

Sixth—Synopsis of Probable Cost.—Appraiser, \$500; assistant or manager as an executive head, \$500 plus; authorities on car equipment, power-house work, outside overhead installation, track work, buildings, etc., of quality mentioned in paragraph 4, say, \$2,000 to \$3,000. Total, \$3,000 to \$4,000. Time, four to eight weeks."

The time required for the appraisal and the expense involved appear to have proved to be greater than the preliminary estimate. Statements differ regarding the costs of the appraisal and of the other expenses of the Committee of Fifty and subcommittees. A report of the appraisal was completed on Nov. 4, 1909, and was accepted by the committee on appraisal. It was received without action by the full Committee of Fifty. The city of Detroit purchased the report on the appraisal from the Committee of Fifty for \$17,500. To June 3, 1910, the city paid for compiling and printing \$5,741.37. An expenditure of \$492.80 by the city for printing other reports of the Committee of Fifty made the expense to the city on the date named \$23,734.17, but claims for additional costs in connection with the entire work are understood to be still unsettled. E. A. Burch, a member of the appraisal committee, said that the cost of the appraisal itself was "in the neighborhood of \$12,000." Mr. Barcroft says that he has not been reimbursed for the services and expenses of himself and the members of his staff and advisors, and in an interview published in the *Detroit News* of April 23, 1910, he quoted a letter from Frank W. Eddy, chairman of the Committee of Fifty, on Feb. 23, 1910, which said:

"Notwithstanding the fact that Mr. Barcroft has received nothing for his work, he has been loyal and steadfast to the committee and has its entire confidence."

In this interview Mr. Barcroft is reported to have said:

"Mr. Eddy says I promised to defend my appraisal in order to get the money that was due me. That is not true. As a matter of fact, I was involved very little—only a few minor bills that I had paid out of my own pocket. The facts were that the Committee of Fifty was out of money. The banks had refused them further credit. Mr. Eddy and Mayor Breitmeyer were involved several thousand dollars and they said I alone could get the money by promising to defend my report.

"I never got any money from the Committee of Fifty personally. The bills which were incurred in making the appraisal I gave to the appraisal committee, and they were transmitted to the Committee of Fifty as a whole. They were paid direct to the men who worked under me. I have not received 1 cent for my eight months' work from any source."

DIFFERENCES IN TWO APPRAISALS

While the work on the appraisal for the committee was under way the company proceeded with its plan to make an independent appraisal. This valuation was made by Robert B. Rifen-

berick, assisted by Bion J. Arnold and Horatio A. Foster as consulting engineers. Summaries of the totals of the two appraisals were made public at about the same time, and the figures of the company were about double those indicated in the Barcroft showing. The tables compare as follows:

	Company figures as of March 1, 1909.	Barcroft figures as of Oct. 1, 1909.
Real estate.....	\$993,294.38	\$513,547.55
Buildings.....	902,291.25	578,763.00
Power plants.....	2,651,137.19	1,219,050.88
Battery stations.....	429,068.45	200,487.69
Power distribution.....	2,010,739.50	1,088,062.96
Track.....	9,349,407.20	2,599,222.49
Rolling stock.....	5,129,954.00	2,861,403.09
Shops.....	984,116.94	308,719.06
Tools, etc.....	981,028.73	728,158.14
Overhead charges.....	.....	1,024,310.00
Paving.....	1,219,816.57	.....
Other items.....	25,327.54	.....
Totals.....	\$24,676,181.75	\$11,121,724.86

To the committee figures, as stated, the value of unexpired franchises, computed in accordance with the report of Prof. Henry C. Adams and based on the Barcroft physical valuation of the property, applied to car-mileage under operating conditions as they exist, would add \$2,810,613. The company has not submitted an estimate of franchise values.

The subcommittee on appraisal supplemented its report by an analysis, in which it said:

FURTHER REDUCTIONS SUGGESTED

"This appraisal was made of the property of the Detroit United Railway as a going concern in its present condition, under the supposition that present traction relations are to continue. Should no settlement be arrived at satisfactory to the city of Detroit, then your committee submits that this appraisal be reduced in the following items and amounts, viz.:

"A. Section 1. Real estate in such amount as the land now occupied by its power plant shall bear to the whole amount.

"B. Section 3. Power plants, \$1,219,050.88.

"In connection with this item your committee begs to state that power can now be and is purchased much cheaper from central power plants than it can possibly be produced by the Detroit United Railway, which is compelled to equip for the maximum load, with the result that during the greater portion of the 24 hours a part of the equipment is idle. Conditions are rapidly reaching a period when water-power companies will deliver power in this city at a minimum of the present cost to produce from coal.

"Again, the city has the electric lighting plant which could divert its power during certain portions of the day to the traction department at a very much reduced cost. We, therefore, unhesitatingly declare that this item should be eliminated. In proof of this statement the Detroit United Railway now finds it advantageous to purchase from the Edison Illuminating Company approximately 3500 hp daily.

"C. Section 9. Item \$728,158.14, we believe, should be reduced in amount approximately \$600,000. This item covers stock, supplies, materials and tools employed and used in the repair of the interurban cars and which our engineers were unable to separate from that used in the manufacture and repair of city cars and equipment.

"D. Section 10. Overhead charges, or cost of organization, \$1,024,310. This item your committee agrees should also be eliminated in the event that no settlement is reached, inasmuch as this item naturally disappears with the expiration of franchises.

"E. Section 12. Franchises. The value placed upon the unexpired franchises was computed by Professor Adams under the operating relations as they now exist, viz., rates of fare, etc. Under this valuation it is obvious that certain portions of through routes are given a value which might disappear entirely if transportation on those outlying portions were estimated independently of their operating relations with operations upon streets on which the franchises have expired. Eliminating these portions would reduce the value of the franchises approximately \$998,000. It is also apparent that this value would be further reduced by the credits, due to the city, upon the lines where franchises have already expired.

"In summary, your subcommittee feels that the Committee of Fifty should take into consideration all the facts in dealing with this question, which is of such interest to our citizens, and should it become necessary for the city to take over this property that the purchase be made on an equitable basis of value, which your committee believes has been accurately determined, and which is herewith respectfully submitted."

The report is signed by the following members of the appraisal committee: Joseph Boyer, chairman; Edwin A. Burch, Fred C. Hees, David W. Simons, William W. McMahon, Louis R. Geist and W. W. Hannan.

POSITION OF THE COMPANY

Immediately upon a preliminary publication of the figures of the Barcroft report dissent was taken by the company to the result. J. C. Hutchins, the president, wrote to F. W. Eddy, chairman of the committee, that the company had understood that it was to be the policy of the committee if differences should arise between the railway and the committee engineers, to have a hearing. It was the plan of the company to have Messrs. Arnold and Foster appear before the committee as its final representatives. While the Committee of Fifty received the report on the Barcroft appraisal without action and did not have a hearing on the subject, President Hutchins made public in addition to the statement of values given in the foregoing a letter in which he discussed the totals of the committee report. He showed that an appraisal of the Detroit city properties, 10 years previous, made under the direction of Hazen S. Pingree by Prof. M. E. Cooley, Prof. E. W. Bemis and others, indicated a physical value of \$7,806,737 and a franchise value of \$8,478,564, a total of \$16,285,301. Since that time there had been expended on capital account \$6,298,615. Mr. Hutchins stated in his letter that the values of materials had advanced 30 per cent.

In January, 1910, the City Council of Detroit passed a resolution requesting the Committee of Fifty to continue its organization and hold itself in readiness to take up for consideration any part of its report which might be disputed by the company; also to afford the company hearings, take evidence and report its findings to the Council. Later, in accordance with this request, the committee resolved to submit the entire matter to a board of arbitration.

PLAN FOR ARBITRATION

James O. Murfin, judge of the Wayne County Circuit Court, was named by the Committee of Fifty, and Claudius D. Grant, formerly justice of the Supreme Court of Michigan, by the company to be members of the board of arbitration. The two thus selected named Robert W. Taylor, judge of the United States Circuit Court at Cleveland, who had just arbitrated the differences between the Cleveland Railway and the city of Cleveland, as the third member. After a conference between the members of the board formal announcement was made that hearings would be commenced on June 25.

The board decided that the Barcroft appraisal should be used as a basis from which the work should be directed and that the company should be invited to present facts and figures concerning matters omitted, if any, and errors, if any, in that report.

A few days later, Mr. Barcroft made public a statement in which he outlined in detail the reasons why he declined to appear before the board of arbitration. This statement was a copy of a letter addressed by Mr. Barcroft to Chairman Eddy, of the committee, which stated, in part:

"The trouble we experienced last year in trying to accomplish a task without funds or without proper vigorous support warns one against a repetition of this method of procedure.

"For the future, therefore, I must consider among other things the financial question, proper regard for my own business and the purpose of your scheme.

"Your arbitration proposition would simply strengthen the hand of the company which we were supposed to 'investigate' by giving them every consideration possible, both by arrangement and by the apparent moral support of the Fifty.

"Mr. Hutchins stated that we were to have access to every

paper, voucher or record the company possessed. Every facility and assistance was to be given me in order that nothing would have to be surmized and that fairness and justice could be done to the city and the company. The arrangement was confirmed in every possible manner by many persons and in many public statements of the officers, so as to leave no doubt in the mind of the public that the utmost freedom and frankness was to be the policy of the company in assisting me to become familiar with its private affairs.

"And it may be said with simple truthfulness that these promises of the company were never kept.

"Information that was trivial, that which was public property, or which could be obtained without the company's assistance, their ideas of quantities and identification of property were given, but no detail or information divulging the company's records, vouchers, books or private business methods was disclosed.

"So far as the arbitration proposition, as at present contemplated is concerned, as Corporation Counsel Hally so aptly asks: 'What is there to arbitrate?'

"And to what purpose? It does not tie the railway company to anything, but is simply an opportunity to file another expression of what its hired outside advocates 'think' the company's property is worth. They do not bind themselves to abide by any conclusion.

"One side is open, the other is not committed to anything. How can you arbitrate on one side? Arbitration generally comes after the city has had a chance to see books and private papers, and the city then, if there is a dispute, will require some time to analyze the Detroit United Railway contention. How can the board arbitrate a 'difference' before there is any 'difference'? It surely is not the field of any arbitration board to create facts or to arrange the suit for the parties litigant; to prepare the case for the parties at issue. This is certainly an unusual way of proceeding. In addition to this the board of arbitration has no power to subpoena witnesses nor to enforce a demand for the production of papers.

"Any investigation and arbitration should be limited to the company's own men and it should be compelled to open up all private books, vouchers, contracts, etc. It does not need the services of outsiders to tell the 'cost' of its property. Such information is public property in Wisconsin, New York and Massachusetts, and should be at the service of the city. Any statement that the company makes should be subject to proof by my accountant, not only for last year, but for any previous year.

"The company is entitled to its fares and revenue returns during the life of the franchises. Is it entitled to anything more than the original costs of its property, less depreciation for condition at the present time now that the franchises have expired?

"It occurs to me that it would show some foresight to establish the following:

"1. Whether the Detroit United Railway will bind itself to whatever decision is reached by the board of arbitration if the proceedings are under official control?

"2. Will the Detroit United Railway fulfill the promise of its president to give me access to all papers, contracts and vouchers and a list of costs, and permit my accountant to verify same?

"3. Will the Detroit United Railway give me a statement of the original construction costs of the whole or any designated part of its property, subject to my accountant's verification?

"4. Will the city's case be arranged for, handled and guided by Corporation Counsel Hally, under the direction of the council?

"Surrounded by such official protection and authority as I have herein indicated, I can assure you that it will afford me great pleasure to represent the city through the Common Council and Corporation Counsel Hally in this most important matter, but not otherwise. The city's interests, from my experience in such matters, and from the experiences gained particularly with this company during the last year, are not properly safe-

guarded by the proceeding you suggest, and I must absolutely decline to be a party to it."

C. D. Joslyn, attorney for the company, filed with the board of arbitration on April 28, 1910, a bill of particulars relative to the value of the property. This bill contained the statement of values which is compared in the foregoing with the Barcroft figures. The language of the bill, with the exception of these figures, was published in the *ELECTRIC RAILWAY JOURNAL* of April 30, 1910, page 796. It was stated that the Barcroft appraisal did not include the entire property and items or disclose any method of ascertaining the value.

Formal approval of the board of arbitration by the City Council of Detroit was announced on April 26, 1910.

As Mr. Barcroft adhered to his determination not to appear before the board of arbitration as constituted, Frederick W. Walker, vice-president and chief engineer of the Milwaukee Northern Railway, was engaged by the committee to succeed Mr. Barcroft. After investigation of the subject it was concluded by Mr. Walker and Clyde I. Webster, general counsel for the Committee of Fifty, that the appraisal was in such form that an outside engineer not in possession of the details which Mr. Barcroft retained, would be unable to testify intelligently before the board of arbitration in defense of the appraisal. In a letter addressed by Messrs. Walker and Webster to Mayor Breitmeyer, it was stated:

REPORT OF F. W. WALKER AND C. I. WEBSTER

"This board of arbitration has announced that it will proceed judicially, the same as a court, and that it will confine itself to the evidence submitted and will reach its finding solely on the case made before it. About this position there cannot be the slightest doubt, for it has said: 'Your so-called Barcroft appraisal printed is, of course, no proof in any sense of the word.' * * * 'We need the evidence of experts, those who have knowledge of values, for, of course, we have to determine judicially the value of this property from the evidence submitted to us,' and further, 'our finding will be worthless for the purpose for which it was designed unless it is brought about through a careful procedure which will inspire confidence not alone in us, but in the public,' and still further, 'This is an adversary proceeding. Those who are experts, and those who are not—witnesses—should be examined rigidly by examination and cross-examination in order to elicit the truth for our benefit.'

"These plain statements of the character of the proceeding make it necessary for your committee to present its case in the most complete manner supported by witnesses whose competency is above question, in order to furnish the board evidence of record, beyond which it cannot go, upon which to base its finding and for which it has specifically asked.

"Furthermore, from a personal examination of the inventory prepared by the Detroit United Railway, we have come to the conclusion that it intends to present its case in great detail, with the greatest of care and will offer in support of its contentions the testimony of outside experts in addition to that from the experts within the ranks of its officers and employees.

"It is, therefore, absolutely necessary to be prepared to present your case with at least equal clearness and force, and it would be unjust to you and to the city of Detroit for any person or persons to undertake to proceed without the most careful and studied preparation. The company has been preparing its case for a long period of time and is familiar with its property in the minutest detail, and the men who present your case must of necessity prepare themselves similarly."

Subsequently the executive committee of the Committee of Fifty asked Mayor Breitmeyer and the City Council to relieve it of the obligation to give a hearing to the company on the Detroit United Railway appraisal. The report of the executive committee said, in part:

"Because of the unfortunate, deplorable and, to our mind, wholly inexcusable conduct of Mr. Barcroft, who made the appraisal for us and in whom we placed the fullest confidence at time of securing his services, and who we consider has violated this confidence and what we believe to be pledges and promises to defend his work, we have found it impossible to proceed with

the hearings and arbitration. The reports of Mr. Webster, our attorney, and Mr. Walker, our engineer, explain fully the circumstances and conditions that confront us. This book of Mr. Barcroft's, we find, is so arranged as to be valuable to no one except Mr. Barcroft.

"This report shows three plans which can be followed, and we recommend that one of these three methods be adopted and the work carried forward. These three plans are:

"Proceed with Mr. Barcroft with the hearing and arbitration of the appraisal made by him.

"A new appraisal made under an engineer who will turn over to the city complete details.

"A valuation board of three engineers to take a value on the property.

"We do not believe that the money paid by the city for the appraisal taken should be lost to the city and we do not feel warranted in spending the money that would be necessary for a new appraisal. We recommend that the Mayor and the Common Council proceed to give the Detroit United Railway a hearing with Mr. Barcroft in full charge of the engineering part of the work, and Corporation Counsel Hally in full charge of the legal part of the work before the present board of arbitration, if possible, in the members of which board we all have the utmost confidence, or before any other board of arbitration, or in any other manner satisfactory to Mr. Barcroft, Mr. Hally and yourself."

CRITICISM OF APPRAISAL

The report of Frederick W. Walker, engineer, and Clyde I. Webster, attorney, mentioned in the foregoing, says in part:

"A careful study of this appraisal and of the inventory of the property as prepared by the company has convinced us that in the form in which this appraisal was published it is impossible, with any reasonable degree of accuracy, to determine what property is included and what is not included in arriving at the values under the several sections which go to make up the total value placed upon the railway. We have come to the conclusion that except to Mr. Barcroft personally the appraisal in book form without the detail which has been withheld, which has cost about \$17,000, is of no real value, and, therefore, a new appraisal is necessary unless Mr. Barcroft will appear, and produce the details and testify and explain.

"From an examination of letters which have passed between Mr. Barcroft and Mayor Breitmeyer and Frank W. Eddy, chairman of the Committee of Fifty, and the circular, telegram and letters sent to the assistant engineers by Mr. Barcroft relative to the situation, we have come to the conclusion that his present refusal to appear is largely based on personalities. His feelings toward the Mayor, Mr. Eddy, the Committee of Fifty itself, the board of arbitration, Mr. Webster and the company, are so extreme that as long as the arbitration is conducted directly or indirectly by the Committee of Fifty there appears to be not the slightest doubt of his continued refusal to testify and explain, and thus give a value to his work.

"In order to prevent personalities and personal feelings from interfering with a settlement of the street railway question in Detroit, both Mr. Eddy and Mr. Webster offered to resign, but to no effect. This is found in the record of the hearing before the board of arbitration. April 27, 1910.

"As the result of extended labors, we reluctantly reached the conclusion that the only portion of the appraisal which the Committee of Fifty has in its possession, the summary in book form, is of no value whatever as an appraisal and cannot even be used with safety to check against the inventory of the property to determine whether there have been omissions. The appraisal book does not purport to contain the reports of the assistant engineers on the various divisions of the work for which they were responsible, as drawn up and signed by them, and does not contain such reports. For any engineer to attempt to make use of this appraisal book, without the original reports and all the detail, would be unwise and very dangerous."

The report of Messrs. Walker and Webster contained the following resolution adopted at a meeting in Chicago of five engineers, not residents of Detroit, who assisted Mr. Barcroft in the appraisal work:

"Whereas, Frederick T. Barcroft has not at the present time agreed to appear before the board of arbitration and assume charge of the support of the appraisal made under his supervision as director of appraisal;

"Now, therefore, we the undersigned non-resident engineers who assisted him in his appraisal and who have agreed to appear in support of same will, unless he signifies in writing on or before May 20, 1910, his willingness to appear before said board of arbitration and support his appraisal, appear under the direction of F. W. Walker, engineer for the Committee of Fifty."

The failure of the board of arbitration plan was announced by Mayor Breitmeyer in a communication addressed to the Council on July 5. The City Council has under consideration the employment of an engineer to make a new appraisal at the expense of the company. The company has agreed to adopt the method of a board of valuation.

(To be continued.)

REDUCTION OF ACCIDENTS IN PHILADELPHIA

Some interesting statistics of accidents on the lines of the Philadelphia Rapid Transit Company are contained in the following statement which appeared in the *Philadelphia News Bureau*, Aug. 8:

"Pay-within cars in use by the Philadelphia Rapid Transit Company have more than fulfilled the expectations of the company in reducing certain classes of accidents. This is strikingly shown in the report on street railway accidents issued for 1909 by the Pennsylvania Railroad Commission, as well as by information furnished by the company as to the showing to be made in the annual report of the company for the fiscal year of 1910:

"The year 1909 witnessed the introduction of the pay-within cars and about 200 were put in use in that year, although the average number in service throughout the year was considerably less. Yet the reduction in the two classes of accidents which the pay-within cars are expected to affect, those resulting from falling or jumping from the car, was approximately 50 per cent. In 1908 the number of persons killed by falling or jumping was 16 and the number injured was 758. In 1909 these figures had been reduced to 8 killed and 435 injured. In 1908 the total killed in all classes of accidents was 79 and the injured 1588. In 1909 the total killed were 59 and the total injured 1187, showing that accidents other than those due to jumping or falling were also reduced, though not in the same proportion. This reduction in other classes of accidents is attributed by the company to the campaign of education it had inaugurated.

"In 1909 the expenses of the accident department of the company were 5.80 per cent. of the total receipts of \$18,797,992, or \$1,090,283. This compares with a ratio of 5.88 per cent. in 1908 and represents a saving of \$36,054 over the accident expenses of that year. The company is not yet ready to furnish exact details of the accident account for 1910 which will appear in the annual report to be issued next month, but it is stated from an official source that the total expenses will considerably exceed those of 1909. No different result, of course has been expected in view of the large number of accidents occurring during the strike when the cars were of necessity operated in many cases by inexperienced hands.

"As far as the accidents resulting from falling or jumping from cars are concerned, it is stated that the number of killed and injured from these two sources will be decidedly less than in 1909, thus furnishing further verification of the efficacy of the pay-within cars, in preventing accidents of these two classes. There are now about 400 pay-within cars in operation in the city. Accidents of the various classes which are properly chargeable to public carelessness, and over which the company can exercise little or no direct control, have markedly decreased in the year just closed. This highly satisfactory condition is regarded as a result of the continuance of the company's campaign of public education on transit matters."

PLAN FOR REORGANIZATION OF THIRD AVENUE ROAD DISAPPROVED BY COMMISSION

The opinion in which the New York Public Service Commission for the First District disapproves the proposed plan for reorganization of the Third Avenue Railroad was written by Commissioner Milo R. Maltbie. It rejects the second application by the reorganization committee of holders of the 4 per cent consolidated mortgage bonds of the Third Avenue Railroad Company. The property has been purchased on behalf of the committee at foreclosure sale and the new corporation which was organized to acquire the property, the Third Avenue Railway Company, joined in the application to the commission for approval of the issue of securities.

The old company had outstanding a total of \$58,560,000, par value of securities, as follows: First mortgage bonds, \$5,000,000; consolidated mortgage bonds, \$37,560,000; stock, \$16,000,000. It was proposed that the new company should continue the first mortgage securing \$5,000,000 bonds and in addition issue the following, making a total of \$59,916,000: First refunding 4 per cent bonds, \$15,790,000; adjustment mortgage, 50-year, 4 per cent income bonds, cumulative after three years with voting powers until full interest is paid for five consecutive years and redeemable at par and interest on three months' notice, \$22,536,000; stock, \$16,590,000. A brief statement of the proposed distribution of securities follows:

To holders of present consolidated bonds: \$9,390,000, or 25 per cent, of which 10 per cent is for unpaid interest, in refunding bonds; \$22,536,000, or 60 per cent, in adjustment income bonds; \$9,390,000, or 25 per cent, in stock; total, \$41,316,000, representing principal and 2½ years' interest. To present stockholders: On payment of \$45 cash per share on present stock, \$6,400,000 in refunding bonds and \$7,200,000 in stock.

The cash derived from the assessment on stockholders was to be used as follows: Payment of receivers' certificates, \$2,500,000; franchise taxes, \$1,500,000; renewal of tracks, \$1,000,000; reorganization expenses, \$1,190,000; "other companies," \$1,010,000; total, \$7,200,000.

The opinion specifies three propositions submitted in the brief of the applicants upon which the application is based as a matter of law:

"(1) The applicants rely upon the reorganization statute, stock corporation law, sections 9 and 10, as entitling them to issue the proposed securities.

"(2) If Section 55 of the public service commissions law has established actual present value as the sole rule and standard of capitalization on a reorganization, the applicants assert that it would operate necessarily to repeal the reorganization statute and that there has been no such repeal.

"(3) It is fairly well settled, they maintain, as a general rule of law applicable to reorganizations that the reorganized company may issue securities at par for the old securities, although the property may not have an actual present value equal to par, and that such issues are not fictitious, or watered or fraudulent issues of stock or bonds."

The commission believes that Sections 9 and 10 of the consolidated stock corporation law are to be deemed in force, subject in case of conflict to the provisions of the public service commissions law. It holds that the re-enactment of the stock corporation law provisions in the consolidated laws of 1909 has not operated in any respect to change this conclusion. The opinion continues:

"It being distinctly provided by the provisions of the stock corporation law, Section 10, that the plan or agreement for reorganization must not be inconsistent with the laws of the State, any plan or agreement for reorganization in the case of such public service corporations must conform to the provisions of the public service commissions law. The commission * * * is not limited to a clerical check of the property to be acquired, but must determine whether the issue is reasonably required and is in respect of its amount such as ought to be allowed, and whether the purposes of the issue are reasonably chargeable to operating expenses or to income."

Apart from the interpretation of the law, the opinion states that other "statements clearly indicate that the applicants believe the petition should be granted for the following reasons:

"(1) Because the stock and bonds of the former Third Avenue Railroad Company were issued according to law and for the full value to bona fide investors;

"(2) Because the former company has expended upon the corporate property and assets an amount in excess of the proposed capitalization;

"(3) Because the estimated cost of reproduction of the whole system would fully equal 90 per cent of the par or face value of the securities it is proposed to issue;

"(4) Because the security holders during the past few years have not received an adequate return upon their actual cash investment."

Taking up these points the opinion says, in part:

"There seems to be no question but that the stocks and bonds of the old company were lawfully issued. It may be admitted for the sake of argument, although not decided, that the bonds were sold for their full value and that the stock was paid for at par. But does it follow that the holders of bonds of the defunct company are, therefore, entitled forever to bonds in any successor company having a par value or having interest equal to the old bonds? Does it follow that stockholders of the defunct company are entitled forever to stock in the successor company having a par value equal to the old stock? There is no legal basis for such a right, for when the property of a bankrupt company is sold to a new company the security holders have been deprived of their property and their rights are limited to the proceeds of such sale. Neither is there any moral basis for such theory, for the stockholder starts with the distinct understanding that if the company is mismanaged or if the results are not as expected, he may lose his investment.

"But the theory presented by the applicants is not that stock and bondholders of a defunct company have any rights, legal or moral, to equal shares in the securities of the new company, but rather that the purchasers of the property at foreclosure sale have a right to capitalize the new company, regardless of the value or cost of the property, at an amount equal to the *par value* of the securities foreclosed, because the persons who held them paid par or full value.

"A necessary corollary of this theory is that capitalization need have no relation to value.

APPROVAL OF RAILROAD COMMISSION

"The fact that the Railroad Commission approved the issuance of the bonds now being refunded does not alter the situation. It merely indicates at the most that the securities were properly issued, but no such certificate did or could guarantee the holders that they would perpetually have property to the full value of their investment."

Concerning the amount expended on the property, the opinion says that "the former company had bonds (\$42,560,000) and stock (\$16,000,000)—total \$58,560,000. The bonds and stock were all issued, except \$4,200 par value of stock. No evidence whatever has been presented to show what became of the money obtained from the sale of stock. No evidence was presented to show that the proceeds of the first mortgage bonds—face value, \$5,000,000—actually went into the property, except the 'book' entries. But there is considerable evidence as to the disposition of the funds obtained from the sale of the consolidated bonds—face value, \$37,560,000."

Marvyn Scudder, an accountant employed by the commission, was directed to ascertain how the proceeds of the sale of the consolidated bonds were used and the results are summarized as follows: "The bonds sold had a face value of \$36,557,000 and netted the company \$35,950,174.44. Certain additional receipts, interest on deposits, \$164,496.20, and sundry items, amounted to \$320,302.14. Deducting the balance on hand June 30, 1907, there remains to be accounted for the sum of \$36,434,961.73." The opinion says that the disposition of this sum was, apparently, approximately as shown in Table I.

Certain of these items are further analyzed. The stocks and bonds purchased are shown to have a par value of \$5,465,400.

The opinion declares: "One of the companies is in the hands of a receiver, and by sale under foreclosure decree the stock will be entirely wiped out. In another instance the stock is admitted to be worthless, and in still other cases the present earnings are not such as to warrant a payment of par." Some of the other items are also criticized.

TABLE I.—APPARENT DISPOSITION OF BOND PROCEEDS.

To purchase stocks and bonds of subsidiary companies, par value \$5,465,400.....	\$9,000,000
To pay notes, loans and accounts payable, and other items....	8,600,000
To pay interest and coupons, including sundry minor expenses..	1,900,000
To pay taxes, assessments, lawyers' fees, operating expenses, etc.	1,400,000
To advance to subsidiary companies.....	3,500,000
To pay for wages, materials, cars, machinery, contractors' claims and supplies.....	12,000,000
Total.....	\$36,400,000

The conclusion is reached "that the evidence does not substantiate the assertion that the Third Avenue Railroad Company spent upon the corporate property and assets an amount equal to or in excess of the capitalization of the new company."

Discussing the question whether expenditure proves value the commission says:

"The mere fact of investment does not establish a perpetual value not only because a mistake in judgment may be made, but also because property may be allowed to deteriorate, because progress in the arts may make it obsolete, and because a change

expenses, etc. The applicants presented no evidence to show that 15 per cent, as estimated by Mr. Floy, or even 10 per cent of the cost was ever paid by the Third Avenue Railroad Company upon rolling stock for engineering or administration.

"Mr. Connette also testified that a 10 per cent allowance for the general expenses included under the heading of engineering, administration and incidentals computed upon seven items, is ample in this case.

"Mr. Connette estimates the total cost to reproduce anew the entire property of the Third Avenue system to be \$42,907,816, or about \$3,500,000 less than Mr. Floy's appraisal. Mr. Connette considers that the question is not whether a certain percentage somewhat arbitrarily selected shall be applied to every item, but whether \$2,370,000 as a general contractor's profit and nearly \$3,000,000 for engineers' fees and general administration expenses during construction are sufficiently liberal. He considers that these allowances are adequate to cover an estimated period of construction of two years, which period is agreed to by Mr. Floy." The estimates of Mr. Connette, showing cost to reproduce, depreciation and present value are given in Table II.

The value shown in Table II was changed by credit for deferred maintenance, made good since Sept. 1, 1909, and debit for depreciation down to Feb. 28, 1910. Mr. Connette testified that reduction in deferred maintenance had been \$352,310 and

TABLE II.—DEPRECIATION AND PRESENT VALUE, SEPT. 1, 1909—APPRAISAL OF THIRD AVENUE SYSTEM.

Group.	Total cost to reproduce.	Scrap value.	Wearing value.	Obsolescence, inadequacy and age.	Deferred maintenance.	Wear and tear.	Total.	Remaining wear.	Present value.
1. Buildings and structures.....	\$6,758,733	\$493,392	\$6,265,341	\$1,985,803	.....	.....	\$1,985,803	\$4,279,538	\$4,272,930
2. Track	9,643,728	579,272	9,064,456	201,484	\$566,000	\$3,104,628	3,872,112	5,192,344	5,771,616
3. Paving	3,125,426	.....	3,125,426	.....	518,424	1,562,713	2,081,137	1,044,289	1,044,289
4. Distribution system.....	2,833,728	944,595	1,889,133	389,951	.....	168,823	558,774	1,330,359	2,274,954
5. Overhead distribution system.....	1,106,273	243,150	863,123	139,398	21,565	205,617	366,580	496,543	739,693
6. Duct lines.....	1,902,058	.....	1,902,058	175,532	.....	38,559	214,091	1,687,967	1,687,967
7. Power equipment.....	3,329,044	*253,438	2,938,890	956,490	.....	.....	956,490	1,982,400	2,372,554
8. Rolling stock.....	6,962,406	255,600	6,706,806	1,621,694	.....	.....	1,621,694	5,085,112	5,340,712
9. Removing obstructions.....	1,169,209	.....	1,169,209	.....	.....	.....	.....	1,169,209	1,169,209
10. Paving over obstructions.....	1,098,052	.....	1,098,052	.....	.....	.....	.....	1,098,052	1,098,052
11. Real estate.....	4,375,120	.....	4,375,120	.....	.....	.....	.....	4,375,120	4,375,120
12. Tools, supplies and fixtures.....	541,343	.....	541,343	.....	.....	135,335	135,335	406,008	406,008
13. Horses, harness and wagons.....	56,874	.....	56,874	.....	.....	14,219	14,219	42,655	42,655
14. Salvage material and apparatus.....	5,822	.....	5,822	.....	.....	1,456	1,456	4,366	4,366
Totals.....	\$42,907,816	\$2,769,447	\$40,001,653	\$5,470,352	\$1,105,989	\$5,231,350	\$11,807,691	\$28,193,962	\$31,100,125

*A figure of \$136,716, representing the Brook Avenue substation, is included in the power equipment group, and appears in the columns for cost to reproduce and present value, but does not appear in the other columns in the group. The apparent discrepancy will be avoided by subtracting this figure of \$136,716 from the figure for cost to reproduce before making computations and then adding it to the result of the computations in order to obtain the present value. This figure was treated in this manner because a scrap value could not be obtained owing to the fact that an estimated value for the substation was used, although the substation was not complete at the time of appraisal.

in economic conditions may decrease the use made of it by the public. The commission believes the proposition to be sound that capitalization should have a direct relation to value."

Regarding the value of the property the opinion says:

"The applicants submitted an estimate of an engineer—Henry Floy— of the 'cost of reproduction by a new company,' which, they assert, amply justifies the proposed plan of capitalization. E. G. Connette, transportation engineer of the commission, was asked to examine this estimate and inventory. In many instances the two engineers agree, but in several important cases they differ considerably. In the main Mr. Connette's appraisal has been accepted.

"Each engineer begins with the subcontractors' cost of labor and material, assuming there is to be a general contractor also. Mr. Floy estimated such cost to be \$38,319,382, excluding the Mamaroneck line. Mr. Connette fixed \$37,595,458 as the appraised cost of labor and materials.

"To the cost of labor and materials Mr. Floy added 10 per cent for contractors' profit upon all except five items. To the amounts thus obtained, he added 15 per cent on all except two items to cover engineers' and architects' fees, administration expenses during construction, incidentals, contingencies, etc. The total thus reached was \$46,389,805, with the Mamaroneck line omitted.

"Mr. Connette did not add an allowance for contractors' profit or for engineering upon the cost of removing obstructions and of paving over obstructions. Mr. Connette also maintained that 5 per cent upon rolling stock, amounting to over \$331,500, was ample for engineers' fees, administration

that accrued depreciation amounted to \$320,619, leaving a net increase in value of \$31,691. This makes a total of approximately \$31,600,000 as the present value of the physical property upon Feb. 28, 1910, omitting development charges.

Respecting the argument that as certain lines started as horse-car lines and a few were changed into cable roads and then into electric roads, the new company should be allowed to capitalize not only the present value of the property actually taken over, but the cost of the horse-car lines and the cable roads that have disappeared, the opinion says:

"There is no adequate information before the commission to show how extensive or costly these changes were. However, it is doubtless true that money was spent for horse-car lines and cable roads that have ceased to exist. The statement is made as to the Third Avenue Railroad Company, proper, that in the present book cost of road and equipment and in the liabilities which are outstanding, there is an amount of about \$2,000,000 for horse-car lines and equipment and about \$8,000,000 for cable roads. These figures have not been proved, but whatever may be the amounts, the question is whether the new company should be allowed to issue securities that do not represent any property to be acquired or necessary expenses connected with such property.

"During the period of horse-car operation the Third Avenue company declared dividends averaging about 13 per cent, ranging from 8½ per cent to 25 per cent. During this period the company could have amortized or accumulated by sinking fund a sufficient amount to have paid off the entire cost of the road and still have paid dividends of over 8 per cent and

founded a reserve fund besides. From 1891 to the time when electrification began, the average rate of dividend was somewhat less; and from 1900 to date the dividends have been very small. But the capitalization of the company represented not actual plant investment, but large premiums paid for stocks, interest charges and even operating expenses. If from the beginning a reasonable amount as depreciation had been set aside out of earnings to take care of the various changes which have taken place, if the company had been conservatively financed and expenditures carefully watched, it is probably true that dividends of 6 per cent, 7 per cent or 8 per cent could have been declared and yet a sufficient amount have been accumulated to write off the old horse-car and cable roads that have disappeared. However, it is the first duty of every company to see that its capital investment is kept intact.

"Companies that are soundly financed make ample provision for depreciation before dividends are paid, and the capitalization of replacements, repairs, etc., is only pardonable as a temporary makeshift to be avoided wherever possible."

DEVELOPMENT CHARGES

On the subject of development charges the opinion states:

"The applicants have asked that approval be granted to the issuance of securities to pay expenses connected with the organization and incorporation of the new company. Mr. Floy included in development charges an estimate of the expenses connected with the incorporation, organization and promotion of the old Third Avenue company. It is apparent that both cannot be granted. As a new corporation is to come into being, and as we are dealing with the issuance of securities for the new company, the estimated expenses connected with the establishment of the bankrupt company as a corporation should be omitted entirely from consideration.

"Mr. Floy considers discounts and promoters' profits, aggregating 15 per cent, or 60 per cent of the total development charges, as proper items to be included in the value of the property. This theory is wrong, for value does not depend upon the amount of discount or other inducements which a company must give in order to raise sufficient cash to pay for that property.

"It might be thought fair if a rate were being fixed to allow a company which had failed to earn a fair return upon its unimpaired investment during the early years of its existence to make up these deficiencies by larger earnings during the later years. But this principle is entirely different from the one enunciated by the applicants.

"The proper period for the capitalization of development expenses ends when operation actually begins. Securities ought not to be issued to cover operating expenses, fixed charges or dividends after that time, except possibly in a most unusual case when such procedure is absolutely necessary to preserve the undertaking. In such an abnormal case, repayment must be made sooner or later out of earnings.

"Interest during construction is undoubtedly a proper capital charge.

"If we begin with Mr. Floy's estimates for legal expenses, proceedings, consents, interest and taxes, and omit duplications, corporate expenses of the passing Third Avenue company and unearned dividends, reserving discounts, etc., for consideration elsewhere, the amount for development charges will be about \$3,500,000. In view of the large amounts which the commission is asked to capitalize under the heading of reorganization expenses or expenses connected with the organization of the new company, the above amount seems adequate. Adding the above amount of \$3,500,000 to \$31,600,000, there is obtained as the total appraised value of the physical property upon Feb. 28, 1910, \$35,100,000."

To this amount, say, \$1,750,000 is added for current assets, making a total value of \$36,850,000. The opinion estimates the current liabilities, including receivers' certificates and underlying securities (with the Tarrytown company omitted) at \$18,710,744.

The commission is willing to allow "securities to be issued for all necessary expenses" in connection with the organization

of the new company, but "if the total should be found to be unusually large, it may be necessary to require that a part be amortized out of earnings within a reasonable time." It states the cash requirements at practically \$27,000,000, as follows: Net value of property to be acquired, \$18,150,000; obligations to be refunded, estimated at \$6,000,000; expenses of organization of new company, estimated, \$800,000; improvement of plant, estimated, \$2,000,000. The commission believes that the amount of capital represented by bonds should not be in excess of the amount upon which there is definite certainty that interest may be earned. It presents a statement for the year ended Sept. 30, 1909 (the Yonkers, Westchester and Tarrytown lines being omitted), which shows a surplus of \$1,682,900. Deducting \$382,900 for franchise taxes and depreciation leaves \$1,300,000 as the estimated amount available for interest on the refunding and the income bonds and dividends on the stock, whereas it would require to pay 4 per cent on the refunding bonds, 5 per cent on the income bonds and 6 per cent on the stock, a total of \$2,753,800. The commission concludes that such a statement would not justify a capitalization of \$55,000,000.

Assuming that all provision for normal wear, depreciation, etc., on all property except buildings and structures, power plant equipment and rolling stock be made directly out of earnings, the commission figures that the amount which should be set aside annually for depreciation on these three divisions of property would be about, using the straight line method and the valuation of the applicants: Power-plant equipment, 5 per cent, \$175,000; rolling stock, 5 per cent, \$380,000; buildings and structures, 2 per cent, \$145,000; total, \$700,000. If allowance is made for compound interest instead of simple amortization and interest compounded semi-annually at the rate of 5 per cent per annum, the annual payments would be about: Power-plant equipment, 20 years, \$105,000; rolling stock, 20 years, \$230,000; buildings and structures, 50 years, \$35,000; total, \$370,000. The opinion states that it "would not be safe, however, to consider that the annual contribution could be reduced below \$500,000, if the capitalization were to be that proposed by the applicants. Provision should also be made for other reserves. It need not be large, and a part of 1 per cent of the gross earnings would probably be ample."

Upon other estimates the commission concludes that if gross earnings were to reach \$8,000,000 and operating expenses 60 per cent, and if taxes were to decline, reserves to be omitted and depreciation to be reduced, the net income might be made to reach \$2,300,000. But before obtaining the amount available for interest on the \$55,000,000 of proposed new securities, the commission adds that there has yet to be deducted the interest on the underlying securities, mortgages and notes payable of the subsidiary companies, which would be about \$640,000.

In its final conclusion the commission says:

"Upon the record of the case the petition of the applicants could have been denied without any extended discussion of the issues involved. But the commission desires to facilitate an early reorganization of the Third Avenue system upon a sound and permanent basis, and has believed that a decision setting forth the attitude of the commission upon the questions presented in connection with this application would aid in this direction.

"Pending the submission of a revised plan, the issuance of a formal order will be held in abeyance, so that an opportunity may be given the applicants to amend their petition and to submit proof upon certain points upon which there is doubt. There are several other matters to be considered besides the issuance of securities, but that is so fundamental and so many others depend upon it that it is considered preferable to dispose finally of the question of capitalization before proceeding to take up the other matters.

"The rejection of the plan now before the commission does not necessarily involve a refusal to allow the stockholders of the old company to participate in the profits of the new company unless they make a generous contribution to pay an assessment."

REPORT ON FINANCIAL AND OPERATING RECORDS OF THE PITTSBURGH RAILWAYS

On July 28 Bion J. Arnold submitted to Mayor Magee of that city the following letter and report on the financial and operating records of the Pittsburgh Railways Company. The text is reproduced practically in toto, but several of the less important maps, diagrams and tables are omitted.

LETTER OF TRANSMISSAL

"Supplementing my previous discussion on Pittsburgh's Immediate Transit Needs, submitted to you July 19, the accompanying record of financial operations of the Pittsburgh Railways Company will be found to review the principal facts upon which it was before possible to touch only in a general way. The analysis of the operating results is purposely comprehensive, in order to meet different points of view. These data necessarily assume the form of extracts from the company's records, either direct or in indirect graphical form. I have used the graphical method extensively in order to show relations as well as absolute quantities. These records are presented largely as findings of facts, and hence are simply commented upon where necessary to emphasize essential points.

"The conclusions to be drawn from these facts will be found elsewhere in my report.

RECORD OF FINANCIAL RESULTS.

"The first table gives the income and expense accounts of the Pittsburgh Railways Company for the last eight fiscal years, or since the organization of the surface railways into one system. This information has been plotted graphically

972. A decided effort was apparently made in 1909 to reduce expenses in order to counteract this drop in earnings. In this effort the car service was cut down, the expenditures for maintenance of way and equipment were curtailed to a very low limit and the amount of extraordinary maintenance, which had been started the previous year, was cut by two-thirds. The result was that although the earnings fell off \$931,167 in the year ending March 31, 1909, as compared with the previous year, the deficit for the year was but \$228,005 more than the year ending March 31, 1908. Apparently it was impossible to keep up these economies and with the return of earnings during the past year, the allowances for maintenance and service have increased to nearer the normal requirements.

"The result for the last fiscal year, or that ending March 31, 1910, is apparently a fair indication of what may be expected of the present property.

"A study of the percentage diagram shows that it will be impracticable to reduce the actual operating expense (in per cent of earnings) below the following amounts, which may be considered normal:

Maintenance of equipment.....	7.0 per cent
Maintenance of way.....	5.0 per cent
Transportation and power.....	35.0 per cent
General expenses.....	8.0 per cent
Bridge tolls.....	1.0 per cent
	56.0 per cent
Taxes	4.0 per cent
Total	60.0 per cent

"It will be noted that the above does not include any allowance for depreciation. The only items of this nature in the

TABLE I—INCOME ACCOUNT, PITTSBURGH RAILWAYS COMPANY, FOR FISCAL YEARS ENDING MARCH 31, 1910.

	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.
Gross earnings from operations.....	\$8,320,285	\$8,699,106	\$8,569,476	\$9,512,615	\$10,232,619	\$10,144,102	\$9,212,935	\$9,922,015
Operating expenses:								
General expenses.....	\$537,534	\$607,735	\$724,815	\$774,108	\$851,908	\$880,202	\$849,864	\$969,676
Transportation and motive power.....	2,594,521	2,922,431	2,767,707	2,922,169	243,327	3,574,142	3,244,117	3,599,857
Maintenance of way and structures.....	319,179	405,393	561,907	629,871	511,957	454,365	328,235	541,176
Park and Duquesne Garden.....	149,462	60,612	37,101	49,977	132,237	.....	.....	.....
Maintenance of equipment.....	650,315	650,166	592,561	658,901	632,981	677,697	600,006	737,749
Total operating expenses.....	\$4,251,012	\$4,646,339	\$4,684,252	\$5,035,028	\$5,371,513	\$5,586,407	\$5,022,225	\$5,839,458
Bridges tolls.....	114,644	118,217	113,904	128,547	108,732	116,699	108,564	109,353
Taxes	436,966	422,325	352,487	364,426	291,711	408,430	397,721	418,126
Total operating expenses and taxes.....	\$4,802,623	\$5,186,881	\$5,150,644	\$5,528,002	\$5,771,957	\$6,111,538	\$5,528,510	\$6,366,939
Net earnings.....	\$3,517,662	\$3,512,224	\$3,418,832	\$3,984,613	\$4,460,662	\$4,032,564	\$3,684,424	\$3,555,076
Other income:								
Rent of buildings and real estate.....	\$31,289	\$65,310	\$69,194	\$53,758	\$47,875	\$54,215	\$51,902	\$46,950
Interest and discount.....	18,989	17,437	8,075	10,774	5,013	15,222	14,123	16,531
Miscellaneous	24,449	17,196	18,450	20,022	31,013	13,612	17,125	15,468
Total other income.....	\$74,728	\$99,944	\$95,719	\$84,555	\$83,902	\$83,050	\$83,152	\$78,954
Total income.....	\$3,592,390	\$3,612,169	\$3,514,551	\$4,069,169	\$4,544,565	\$4,115,615	\$3,767,577	\$3,634,030
Deductions from income:								
Rentals of leased property.....	\$1,864,872	\$1,997,883	\$2,036,688	\$2,136,306	\$2,178,252	\$2,201,597	\$2,258,011	\$2,278,869
Miscellaneous interest and discount.....	61,749	150,996	168,549	205,184	278,514	365,453	343,185	435,756
Tenement expenses.....	2,926	14,924	8,031	8,676	2,693	3,100	2,937	4,669
Total deductions from income.....	\$1,929,547	\$2,163,804	\$2,213,269	\$2,350,167	\$2,459,460	\$2,570,150	\$2,604,134	\$2,719,295
Net income.....	\$1,662,843	\$1,448,364	\$1,301,281	\$1,719,002	\$2,085,104	\$1,545,464	\$1,163,442	\$914,735
Fixed charges:								
Interest on funded debt of Pittsburgh Railways Company and leased companies.....	\$1,380,592	\$1,464,440	\$1,582,833	\$1,676,103	\$1,734,199	\$1,734,687	\$1,792,064	\$1,869,989
Surplus or deficit for year.....	\$282,250	d \$16,076	d \$281,551	\$42,898	\$350,904	d \$189,223	d \$628,621	d \$955,254
Extraordinary maintenance expenses:								
Way and structure.....					\$245,485	\$271,640	\$79,640	\$324,993
Equipment					*94,645	*60,393	*41,000	*41,205
Total					\$340,131	\$332,033	\$120,640	\$336,198
Net surplus or deficit for year.....					\$10,773	d \$51,256	d \$749,262	d \$1,321,453

NOTE.—d = deficit. * Includes \$40,000 car trust notes.

and a study of the table and accompanying diagrams will bring out the most important facts in the financial history of the system. The striking fact is that there has been a deficit for the last three years, increasing from \$521,256 in 1908 to \$1,321,453 in 1910 (for the fiscal years ending March 31).

"In seeking a cause for this deficit the falling off of earnings during the recent financial panic is at once noticeable. In 1906 the earnings increased \$943,238 over the previous year, and in 1907 there was another increase of \$720,004. If this rate of increase had not been disturbed, it is safe to say there would have been little or no deficit, which during the past three years has accumulated until it now reaches a total of \$2,591,-

company's account is the expense for 'extraordinary maintenance which never has amounted to 4 per cent of earnings.

"This study, therefore, indicates that the deficit cannot be avoided by economy in operating expenses, and this fact focuses attention on the annual fixed charges, viz.:

"Rentals of leased property.

"Interest on funded debt of Pittsburgh Railways Company and leased companies.

"Miscellaneous interest and discount.

"These three items have been constantly increasing in amount since the organization of the company until last year when they amounted to over 45 per cent of the income.

"If the operating expense cannot be reduced to less than 60 per cent of the earnings, and if depreciation requires an allowance equal to 10 per cent, making a total of 70 per cent, only 30 per cent of the earnings will be available for fixed charges. If these charges amount to 45 per cent instead of 30 per cent, there must be an annual deficit equal to 15 per cent of the earnings anticipated. On the other hand, if this is to be avoided

tary of Internal Affairs and shows the total single-track mileage of all companies operating in the Pittsburgh district, and now constituting the system of the Pittsburgh Railways Company. It indicates nearly continuous growth from about 43 miles in 1886 to 581 miles in 1910.

"During the period of most rapid extension of the trackage, 1890 to 1896, the system increased from 63 miles to 337 miles,

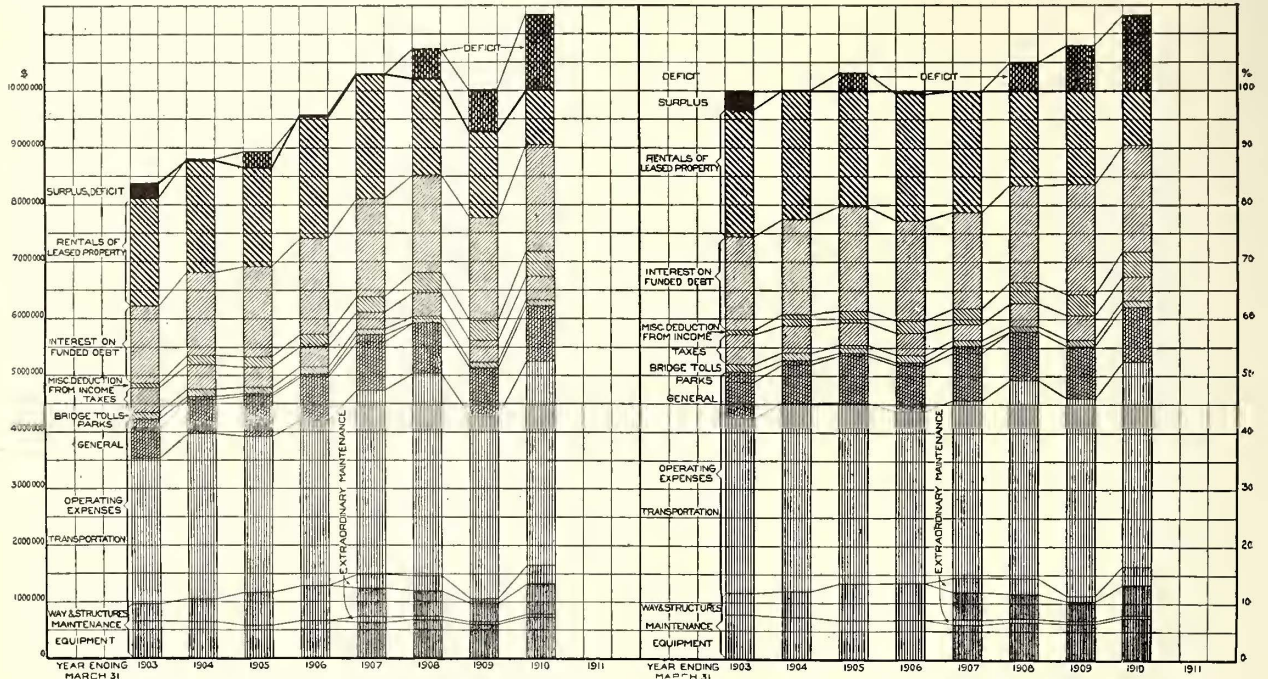


Fig. 1.—Pittsburgh Railways Report—Actual and Percentage Distribution of Expenditures

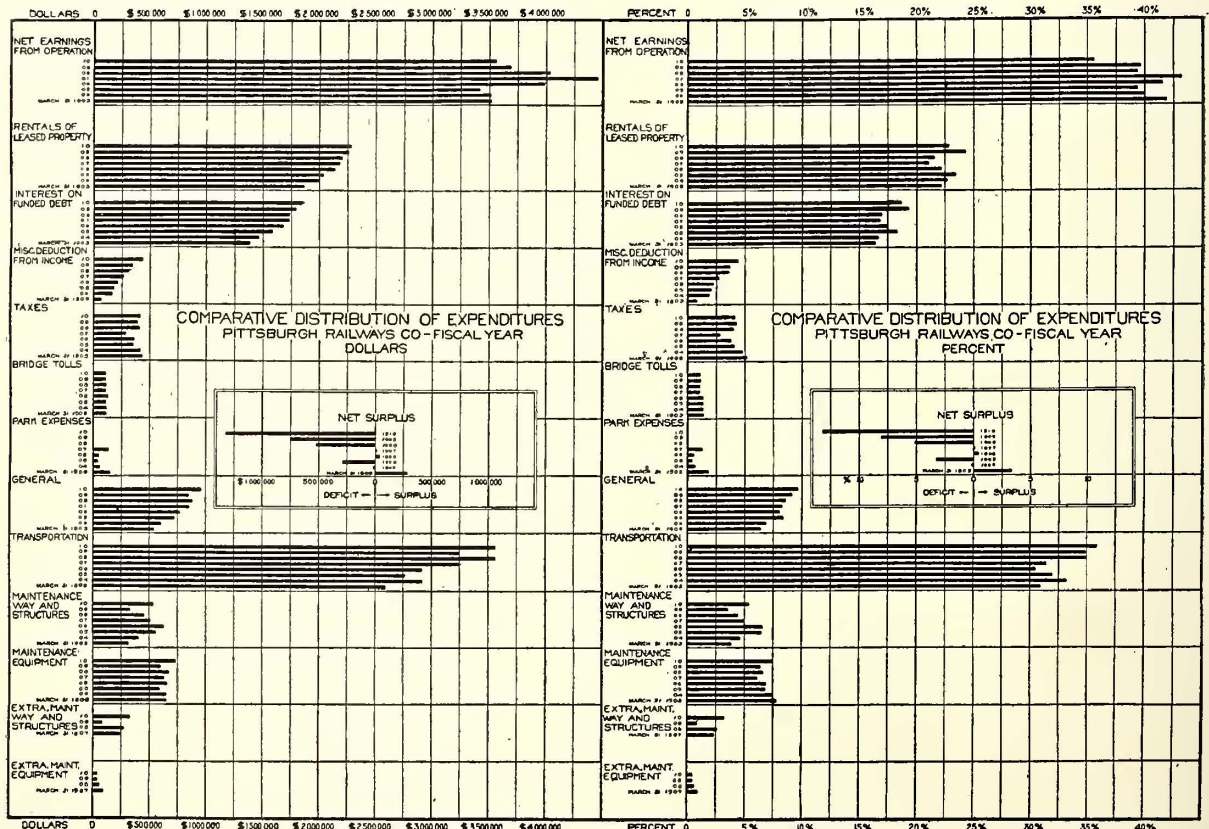


Fig. 2.—Pittsburgh Railways Report—Comparative Actual and Percentage Distribution of Expenditures

the fixed charges must be reduced by one-third on the basis of the present earnings, or else the earnings must increase by 50 per cent, i.e., to about \$15,000,000 per year, before the present fixed charges can be equitably earned without a deficit.

RECORD OF TRACK MILEAGE

"Curve, Fig. 3, is taken from the reports to the State Secre-

or at an average rate of 55 miles per year. The record was nearly 100 miles per year in 1895-6. Since 1897 track extensions have been maintained at an average rate of 20 miles per year, in fact, the lines of the Pittsburgh Railways Company have been extending at a slightly greater rate than the population.

RECORD OF YEARLY EARNINGS

"The important diagram, Fig. 4, records the annual earnings since 1881 of all companies comprising the present Pittsburgh Railways system, following in succession the various extensions of system and changes in motive power. The droops in the earnings curve indicate the results of financial stringencies in 1893, 1904 and 1908. In 1893-4 earnings fell approximately \$900,000 below what they would have been, based on previous increase. In 1904 the earnings were affected \$800,000 and in 1908 nearly \$2,000,000 by the panic of that year. That these declines are directly traceable to financial conditions of the district is clearly evident by comparison with Pittsburgh bank clearings, where the same droops are in evidence. The

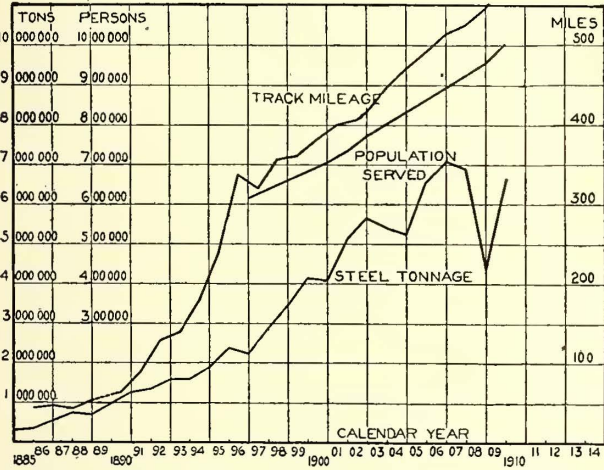


Fig. 3—Pittsburgh Railways Report—Miles of Track, Population and Output of Steel

net result of the two panics is that the earnings of last year were \$3,000,000 less than might have been expected by estimating upon a rate of growth prevailing at the time the present system was organized. At that time (1902) the earnings were in-

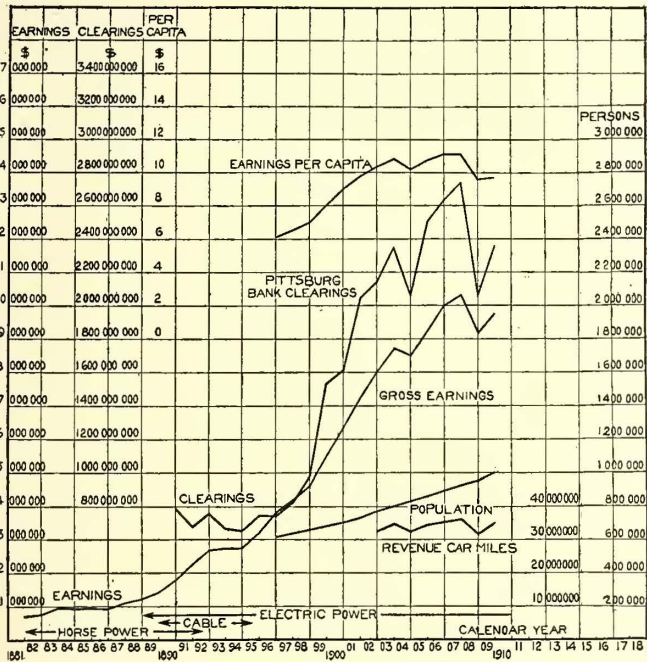


Fig. 4—Pittsburgh Railways Report—Growth of Population and Earnings

creasing at a greater rate than during any subsequent period. "The curve of population covers the entire traction district served by the present company and indicates a present population of over 1,000,000 people. In interurban territory, tributary population has been considered as lying within a strip 1½ miles on either side of the railway company's line.

"In times of normal business prosperity, earnings per capita should grow with the population. The record for Pittsburgh

indicates that, at times, the growth has been at a much faster rate.

"Small depressions in the curve of revenue car-miles occur in 1904 and 1908, as in the case of earnings, showing that with the decrease in revenue, the service rendered was also decreased.

MONTHLY TRAFFIC RECORD

"Table II and Fig. 5 shows the varying riding habit of the passengers from season to season. It will be noted that con-

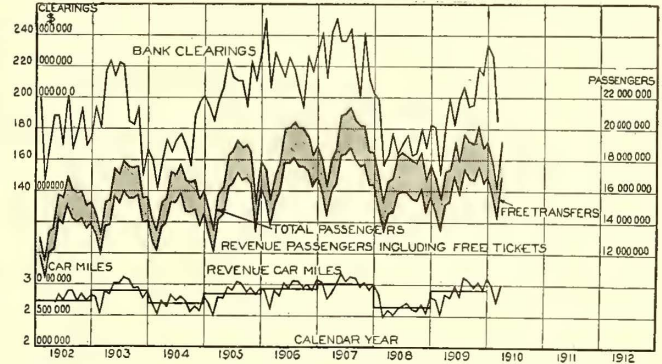


Fig. 5—Pittsburgh Railways Report—Monthly Record of Passengers, Car-Miles and Bank Clearings

siderably more passengers are carried in the summer than in the winter months, February being the lowest of the year, both on account of season and its being the shortest month. In general, July shows the largest traffic. Outside the monthly changes, a gradual increase in traffic is recorded from 1902 to 1908, with the exception of a slight drop in 1904. The depression of 1908 shows very plainly the effect of the panic commencing October, 1907. Since then a gradual improvement is recorded, and the first five months of 1910 would indicate that in this respect the number of passengers carried will exceed the record of the banner year, 1907. The record of revenue passengers includes the users of free tickets; but as free tickets

TABLE II—REVENUE PASSENGERS (IN THOUSANDS) CARRIED BY MONTHS, PITTSBURGH RAILWAYS COMPANY.

	1902.	1904.	1906.	1908.	1910.
January	11,812	12,789	15,529	14,907	15,786
February	10,407	12,162	13,831	13,515	14,271
March	12,044	13,645	15,274	14,615	16,903
April	12,265	13,888	15,958	14,705	.....
May	14,198	15,281	17,828	15,916	.....
June	13,893	15,247	17,811	15,985	.....
First six months.....	74,621	83,041	96,235	89,646	.....
July	15,133	15,815	18,199	15,946	.....
August	14,284	14,773	17,602	15,519	.....
September	14,002	14,683	17,646	15,424	.....
October	14,271	14,826	17,290	16,145	.....
November	13,600	13,827	16,321	14,644	.....
December	13,878	14,533	16,944	15,629	.....
Second six months...	85,169	88,460	104,005	93,309	.....
Total year.....	159,791	171,502	200,240	182,956	.....
Free transfers.....	18,910	21,653	25,494	26,759	.....
Total rides.....	178,702	193,156	225,734	209,715	.....

NOTE.—Free tickets included in revenue passengers. Data exclude passengers carried on Inclines and Pittsburg & Castle Shannon Railroad (except after July, 1909, electrification). Cash fares larger than 5 cents pro rated as excess passengers on a basis of 5 cents.

are issued to employees of the company only, their effect is inappreciable.

"The shaded section lying above the curve of revenue passengers in Fig. 5 indicates the number of free transfers issued. These varied from 10 per cent to 13 per cent in excess of revenue passengers, during the first year, 1902, or 13 per cent to 16 per cent during 1908, the greater percentage occurring during the summer months.

"Bank clearings for comparison are also plotted by months in Fig. 5. It will be noted that the fluctuations in clearings are closely reflected in the monthly passenger business of the Railways Company. It is also interesting to note that the bank clearings for the present year are again on the increase.

"Revenue car-miles vary with the season somewhat similar to passengers. The record shows that an effort is made to vary the car-miles to suit passenger traffic both by seasons and by years. Again the depression of 1908 is conspicuous, and to a

less degree in 1904. Note that the number of car-miles furnished during 1908 was less than any previous year shown. The years of 1903 and 1904 were practically equal in passengers carried, but car-miles averaged about 2,000,000 less, showing the effect of the policy of retrenchment prevailing. Again, the revenue passengers carried in 1908 was in excess of 1903, but the car-miles per month averaged about 250,000 less. That considerable improvement was made in the car service in 1909 is evidenced by the rising curve, and for the first five months of

TABLE III—TOTAL PASSENGERS PER REVENUE CAR-MILE BY MONTHS, PITTSBURGH RAILWAYS COMPANY.

	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.
January	4.93	5.22	5.32	5.47	5.97	5.88	5.92	6.06	5.98
February	4.81	5.24	5.36	5.41	5.90	5.87	6.13	6.07	5.96
March	5.12	5.28	5.56	5.64	5.87	6.27	6.38	6.04	6.22
April	5.13	5.43	5.84	5.87	6.34	6.17	6.66	6.22	...
May	5.27	5.76	6.08	6.17	6.67	6.54	6.96	6.42	...
June	5.70	5.64	6.27	6.38	6.78	6.87	6.93	6.40	...
July	5.83	5.76	6.32	6.29	6.68	6.83	6.77	6.28	...
August	5.53	5.69	6.12	6.23	6.54	6.62	6.87	6.24	...
September	5.78	5.95	6.45	6.58	6.78	6.82	6.91	6.46	...
October	5.59	5.91	6.28	6.23	6.49	6.60	6.85	6.57	...
November	5.48	5.58	5.98	5.38	6.30	6.38	6.58	6.43	...
December	5.39	5.42	5.72	6.13	6.17	6.14	6.32	6.17	...
Average, year....	5.43	5.59	5.97	6.06	6.38	6.43	6.60	6.28	...

1910 the car-miles furnished is greater than during any corresponding period in the company's history.

OPERATING RESULTS PER REVENUE CAR-MILE

"Gross earnings per revenue car-mile increased steadily from an average of 24.1 cents in 1902 to a maximum of 28.3 cents in 1908, and on account of the increased number of car-miles in 1909 the earnings dropped to 27.4 cents per car-mile. The earnings per car-mile in the summer months are about 2 cents higher than the earnings per car-mile in the winter months, but during 1909 the difference between seasons was not so marked. These differences are shown in Fig. 6.

"Operating expenses per revenue car-mile increased from 12.1 cents in 1902 to 16.2 cents in 1907, while for the last three years the average has been practically 16 cents.

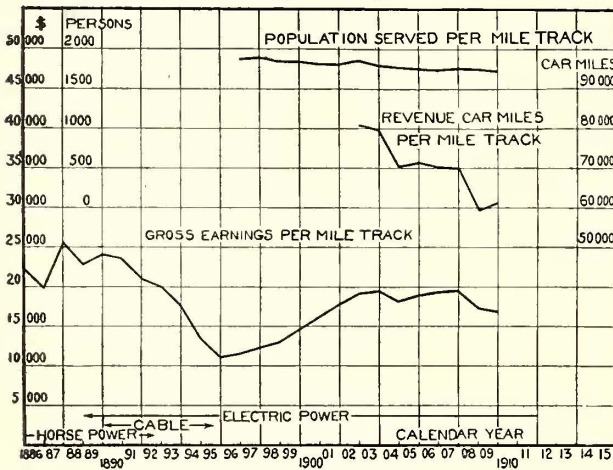


Fig. 6—Pittsburgh Railways Report—Earnings, Car-Miles and Population per Mile of Track

"The number of total passengers per revenue car-mile is the best measure of service from year to year, as this ratio takes into account the number of transfer passengers. According to this record, the standard of service furnished decreased from 1902 to 1908 with a considerable improvement in 1909.

RATIO—PER MILE OF SINGLE TRACK

"The slight droop in the upper curve showing the people served per mile of track, Fig. 6, indicates that the trackage of the system has increased at a faster rate than the population. In 1897 there were 1870 people served per mile. Although population since then has been constantly growing, the track has extended so much faster that in 1909 only 1727 people were served per mile.

"The number of car-miles per mile of track is a measure of the relative service rendered at different times in carrying capacity. Since 1902 a reduction from 80,000 to 60,000 has been made, although last year shows a slight increase. Outside the

actual shrinkage in service rendered, part of this reduction may be due to expansion into suburban territory where less frequent service is demanded.

"The chief point of interest relative to earnings is the comparison between horse and cable lines and the present electric lines. Horse-car lines earned from \$20,000 to \$25,000 per mile, a record which has never been exceeded in Pittsburgh. The shrinkage in earnings to \$12,000 per mile which followed the building of cable and electric lines was largely due to excessively rapid expansion. Since 1895 earnings per mile have steadily increased to nearly \$20,000 per mile, although twice checked by business depressions. For the last year the earnings averaged nearly \$17,000 per mile.

PER CAPITA RECORD

"One of the most important factors in studying the transportation system is the average riding habit of the population as measured by the earnings per capita, and the most encour-

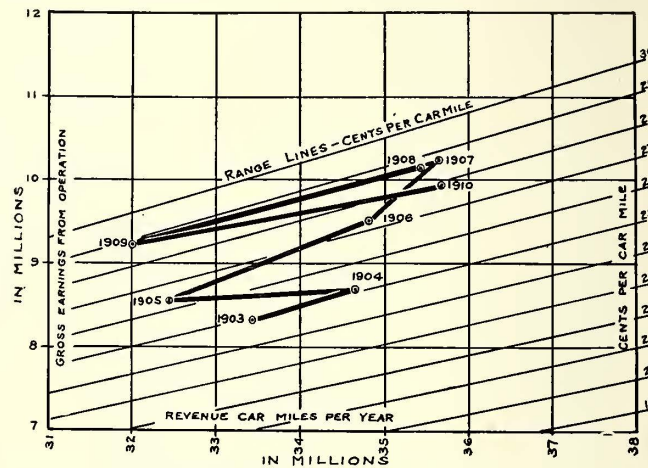


Fig. 7—Pittsburgh Railways Report—Diagram Showing Variation in Car-Mile Earnings

aging aspect is the gradual increase in earnings per capita as the population increases. The actual relation varies in different cities, but, in general, it may be said to increase at a rate at least equal to the rate of increase in population.

"Earnings per capita in Pittsburgh, as shown in Fig. 8, have increased within recent years from \$6.19 in 1896 to a maximum of \$11.15 in 1906-7, falling to \$9.70 in 1909. At present the average is about \$10. It is noticeable that the earnings per capita increased at a greater rate before the organization of

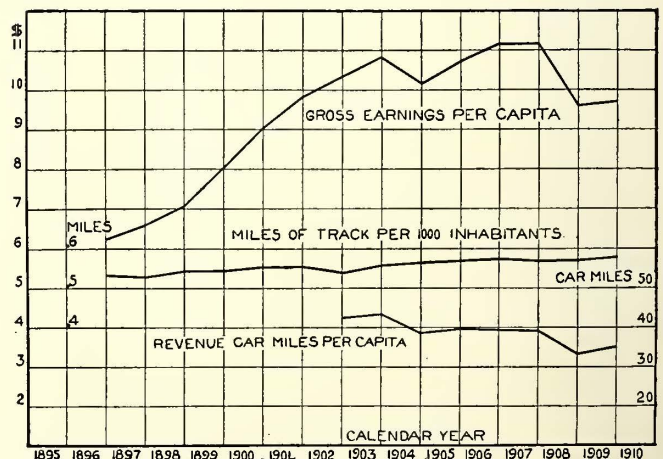


Fig. 8—Pittsburgh Railways Report—Car-Miles, Miles of Track and Gross Earnings Per Capita

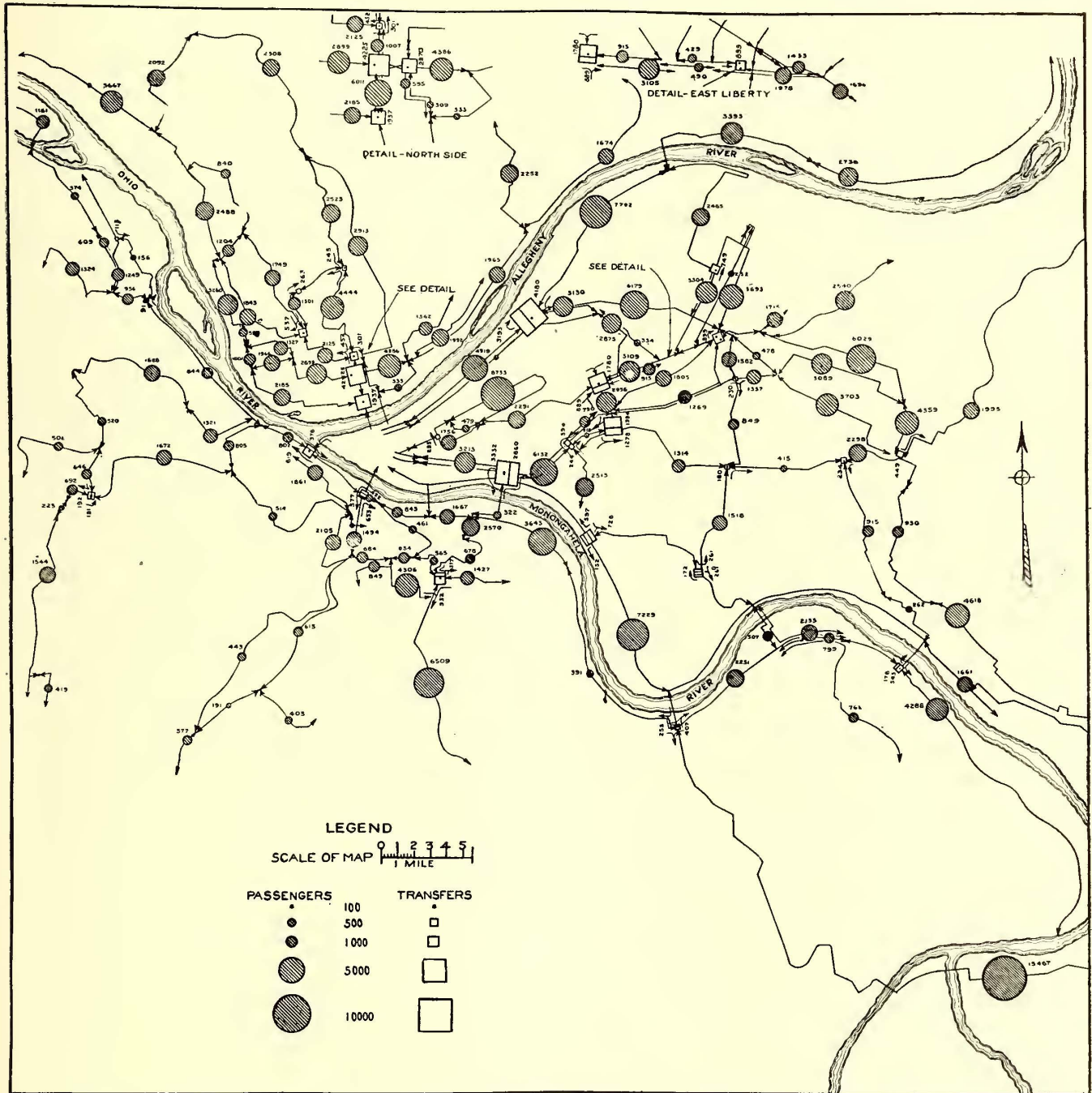
the Pittsburgh Railways Company than since that date. The depressions of 1904 and 1908 are due to commercial conditions of the district, as elsewhere noted.

"In miles of track per 1000 inhabitants, the system has grown since 1906 somewhat faster than the population served, from 0.535 to 0.578, or slightly over 8 per cent.

"The curve of revenue car-miles per capita covers the period of the present company. It shows a decrease from 42.6 in 1902 to a maximum of 33.2 in 1907, increasing to 35.0 in 1909, a net reduction since 1902 of 20 per cent. Note that both upper and lower curves fell to lower levels during the same period, but whether the reduced riding habit in earnings per capita was the result of decreased service or vice versa is a question. Probably the drop is not due entirely to lack of service, but to extensions of track into outlying territory.

num of 59.2 per cent in 1907. These figures are for calendar years and do not include taxes.

"The run-off mileage of the system is a nearly constant factor, amounting to about 3 per cent of the total. This covers all the run-off and run-on, or so-called "dead" mileage of strictly revenue-earning cars between the car barns and point of service, and is a measure of the proper location of car barns with reference to routes served. This dead mileage is included in all calculations involving revenue car-miles.



Pittsburgh Railways Report—Outbound Passenger Movement in Pittsburgh and Vicinity for Typical Day

RATIOS

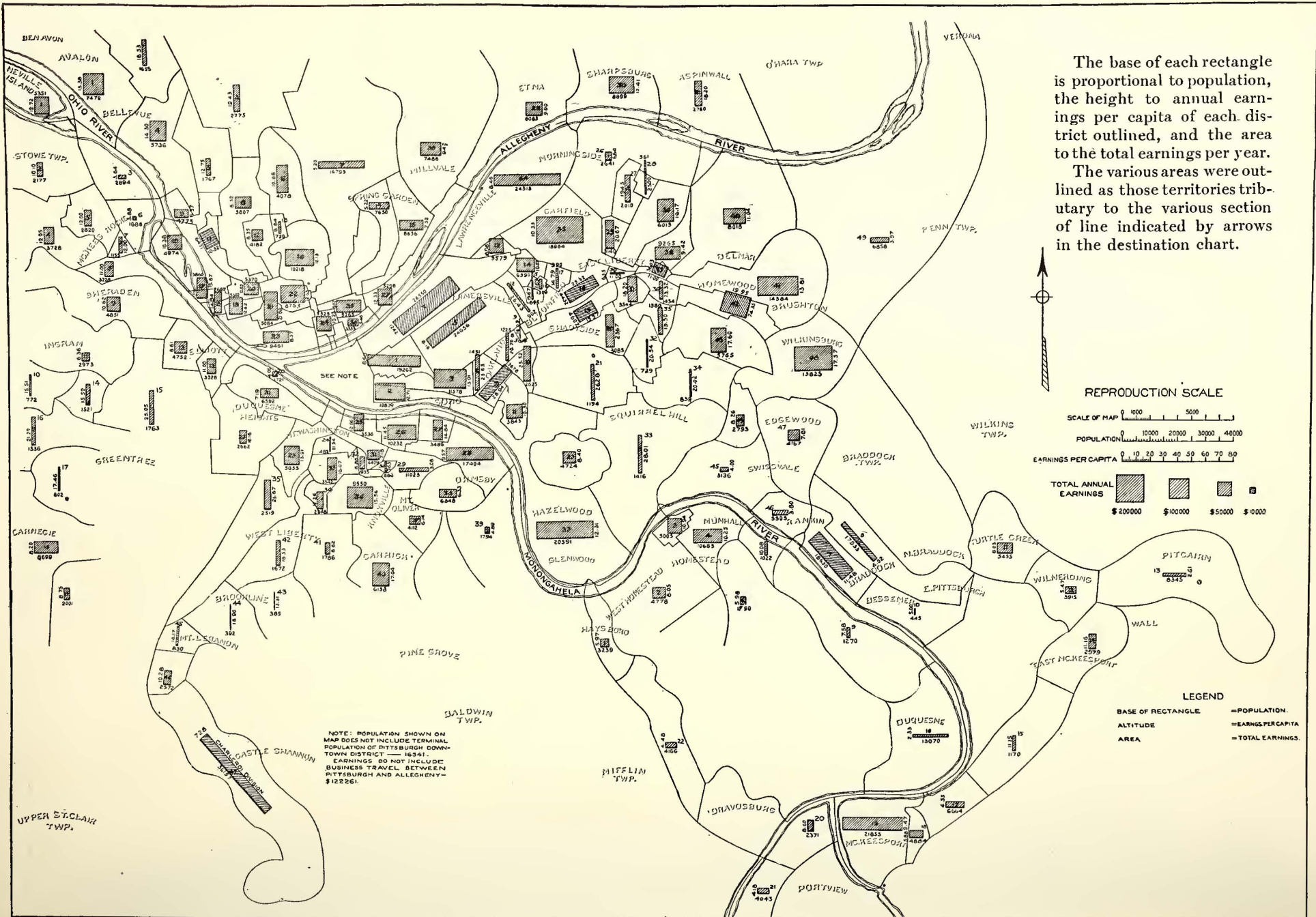
"Bank clearings are a fair index of trade conditions. The curve of bank clearances in Fig. 9 shows a reasonably uniform ratio; that for every \$250 in clearings the railway company earns \$1, or that earnings are equal to about four-tenths of 1 per cent of banking business done.

"The ratio of expenses to earnings from operation of the system is important in furnishing the measure of the company's policy in returning a certain part of the earnings to the system in various forms, such as car operation, maintenance, etc. This ratio has increased from 50.6 per cent in 1902 to a maxi-

COMPARATIVE YEARLY RECORD

"A curve has also been plotted [not reproduced] to show the relative effect of periods of prosperity and depression in the Pittsburgh district upon railway earnings, and upon other similar indices of commercial conditions, such as (1) bank clearings, (2) steel tonnage, (3) railroad freight tonnage, (4) telephone calls, (5) post-office receipts.

"The freight tonnage included all in and outbound freight handled within a district about 40 miles around Pittsburgh, not including freight in transit. Similarly, telephone calls were those within the suburban district served. Steel tonnage



Pittsburgh Railways Report—Distribution of Annual Passenger Earnings in Pittsburgh and Vicinity

embraced the output of all mills around Pittsburgh, as reported by the American Iron and Steel Association. Post-office receipts covered most of the suburban offices within a radius of 8 miles.

"No industry escaped the panic of 1908, but the recovery

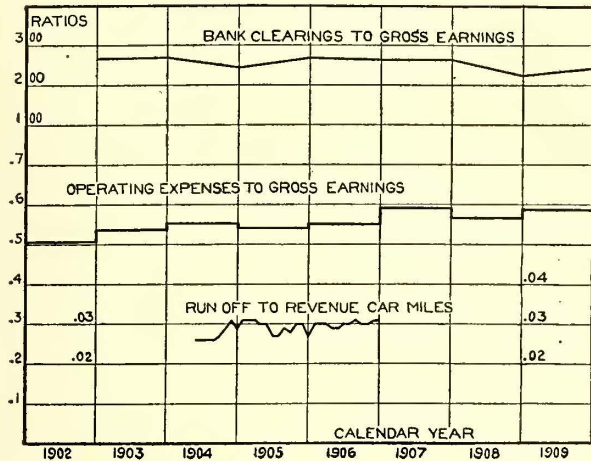


Fig. 9—Pittsburgh Railways Report—Ratios of Bank Clearings and Operating Expenses to Gross Earnings and of Run-off to Revenue Car-Miles

during 1909 indicates that the district is rapidly regaining the prosperity which it enjoyed during 1906-7. The post-office receipts and telephone calls were affected to a much less extent than bank clearings and steel tonnage.

COMPARATIVE FINANCIAL RESULTS

"In studying the results previously shown, it is instructive to compare Pittsburgh with other cities. This is accomplished graphically in Fig. 10, which resembles the first diagram discussed in this section of the report.

"The two important quantities shown here are (a) total operating expenses (not including depreciation, reserve or

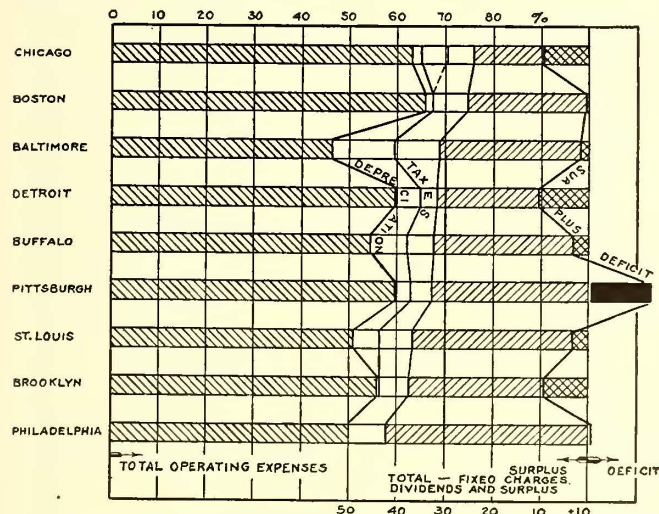


Fig. 10—Pittsburgh Railways Report—Comparative Financial Results of Urban Railway Systems in Per Cent of Total Income

taxes) and (b) total fixed charges, dividends and surplus (or deficit). The former represents the equivalent of service rendered, i.e., that per cent of income put back into the property. The latter represents the total amount retained by the company or its subsidiaries, i.e., the per cent of income taken out of the property.

"From the standpoint of the riding public, this diagram possesses an unusual interest, as it shows what proportion of the fare is retained by the operating company as returns from its investment. Whether or not the return is entirely adequate in each case involves a number of factors not shown here. For the present it suffices to draw attention simply to the relative

cost to the patrons of the railway service in the various cities, and to facilitate comparison, the cities are arranged according to the relative return on the investment to the operating Company.

"The important thing to note is that if the fixed charges and dividends charged against the Pittsburgh system represent actual expenditures, then Pittsburgh pays for its traction service at a higher rate than any of the cities shown, i.e., over 40 per cent of the income, however, the deficit of 13 per cent shown reduces this charge to about 33 per cent, which is less than some of the cities show.

"It is instructive to note that in Chicago and in Boston the returns to the companies is relatively smaller than in any of the other cities. In Chicago the new traction ordinances fix the return on the investment, while in Boston the capitalization is regulated by the State Railroad Commission.

"The latest available fiscal returns are reported—all on a basis of per cent of total income."

Mr. Arnold's report was accompanied by the two maps reproduced herewith. One shows the outward passenger movement in Pittsburgh and vicinity for a typical day and represents in a relative measure the destination of the patrons of the railway system. In addition there was a cross-river "business transit" of 16,500 persons, not shown. Approximately the total travel per day, outbound and inbound, would be twice that indicated by the diagram. The results shown on this diagram were based upon a traffic count for one day during August, 1906, made by Ford, Bacon & Davis, consulting engineers, giving by actual count the number of passengers alighting from cars within the various sections designated by the arrows.

The other map gives the distribution of annual passenger earnings of the system as distributed by Ford, Bacon & Davis, according to a destination count made by them. This map indicates the importance of considering not only the population, but also the relative riding habit in studying the transportation facilities necessary for any district. On outlying lines all population within a distance of 1½ miles on either side of the line is considered tributary to them. The earnings per capita varied in 1906 from \$2.33 to \$28.01, and averaged approximately \$11 for the entire district.

AMERICAN EQUIPMENT ON JAPANESE RAILWAYS

Four new trolley lines have been opened recently in the Kobe district of Japan. Four miles of the Kobe Electric Company's line, which will be 18 miles in length, have been opened for service. The generator, rails, poles and air brakes are American, the running gear and machinery of cars English, and the woodwork of cars and overhead wires Japanese make. The Minomo-Arima Electric Railway Company's 18-mile line to mountain summer resorts opened recently. The rails, generators, boilers and running gear and machinery of cars are American, the woodwork of cars and overhead wires Japanese make. The Keihan Electric Railway has opened a line 28 miles long, connecting the important cities of Osaka and Kyoto, and running through other large towns. Nearly all of the materials came from England, though the overhead wires came from the United States, while the woodwork of the cars was made in Japan: The Keishin Electric Railway, from Kyoto to Otsu, and the Uji Electric Railway, from Fushimi to Uji, now building, will connect with this line. The Hyogo Electric Railway has opened its first section—from Hyogo to Suma; it will extend 12 miles along the shore of the Inland Sea to Akashi. The material has come chiefly from the United States, the woodwork of the cars and the overhead wires being made in Japan.

The Interborough Rapid Transit Company, New York, has decided to install electric fans in all subway cars to improve the ventilation. A fan will be mounted under the upper deck at each end of the car.

EXHIBIT ARRANGEMENTS FOR THE ATLANTIC CITY CONVENTION

The committee on exhibits of the American Street and Interurban Railway Manufacturers' Association has made several important changes in the plan of exhibit spaces on Young's Million Dollar Pier at Atlantic City, where the display of electric railway apparatus and equipment will be made at the time of the convention, Oct. 10 to 14. The new plan is reproduced herewith. It provides approximately 78,000 sq. ft. of exhibit space, which is more than has been available in any previous year. In 1908, when the exhibits were first placed on the Million Dollar Pier, only 65,000 sq. ft. of floor space was used by about 200 exhibitors. Applications received up to Aug. 6 by the committee total 52,000 sq. ft.

The principal changes made in the original plan for this year are in Building No. 1. The main lobby has been enlarged by removing some of the spaces in the center of the building and adding spaces on each side to give a circular area near the main entrance. In Marine Hall the shape of the front of the booths has been modified so as to improve the general appearance. All of the spaces in this section have been renumbered from 600 to 690, inclusive. Since the 1908 convention the meeting room on the end of the pier has been moved and about 100 ft. and 22 extra spaces of large size have been added at the outer end of Building No. 3. These spaces may be used for heavy exhibits, such as trucks or machine tools. Altogether 394 separate booths have been planned, varying in size from 204 sq. ft. down to 63 sq. ft.

The location of the registration booths and committee offices at the entrance to the pier from the boardwalk will be the same as in 1908. A booth for the registration of railway delegates and guests will be at the right of main entrance and a booth for the registration of members of the Manufacturers' Association will be on the left. The office of the secretary and executive committee of the Manufacturers' Association will be located back of the manufacturers' registration booth.

The committee on exhibits announces that the charges for carting and trucking exhibits from the railroad station to exhibit spaces in the pier has been reduced to \$5 per ton. The charge for exhibit space, in addition to membership fees in the association, will be 30 cts. per sq. ft., which includes partitions of a uniform design, a sign, carpet and free use of steam, compressed air and electric power.

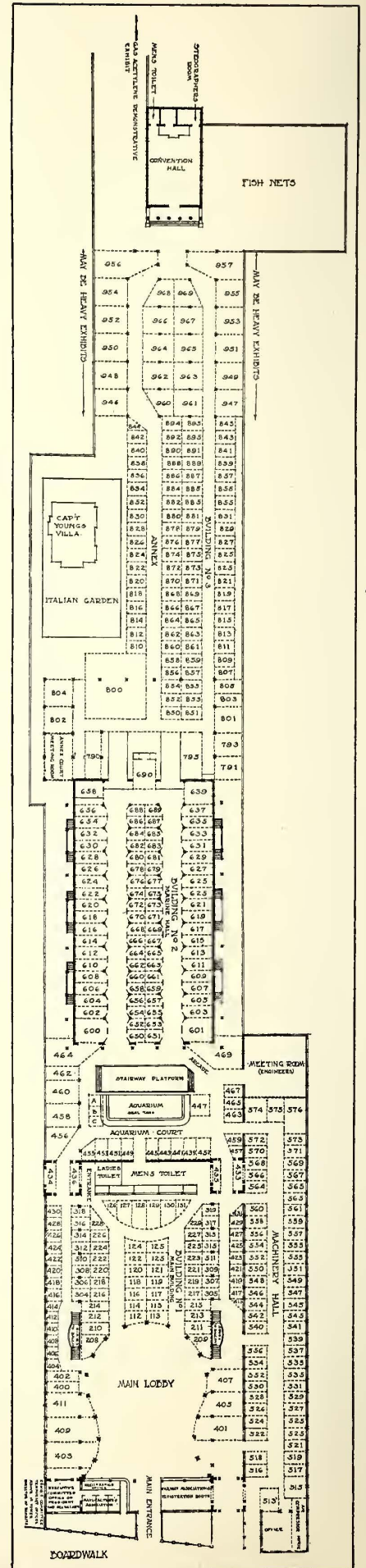
Exhibitors will install their own exhibits and may commence the installation on or about Oct. 1. All booths must be complete and in order by 8 a. m., Monday, Oct. 10. Arrangements may be made with P. E. Lam, contractor, Atlantic City, who will receive exhibit crates and boxes at the exhibitor's space, unpack and arrange the exhibits in the booth, prepare crates for storage and repack, ready for shipment at the close of the convention. The contractor will act for the exhibitor until his representative arrives and will arrange for bill of lading for return shipment after exhibit is repacked.

The weights allowed by the pier management are as follows: Main building 200-250 lb. per sq. ft.; Machinery Hall, 200-250 lb. per sq. ft.; Aquarium Court, 200 lb. per sq. ft. Building No. 2, 150 lb. per sq. ft. Building No. 3, 150-200 lb. per sq. ft. Concentrated loads of 10 tons or less will be permitted if placed directly over piles. A special bulletin regarding exhibits of cars on tracks near the pier will be issued by the committee at a later date.

A meeting of the committee on exhibits has been called for 11 a. m., Aug. 12, at the offices of the American Street and Interurban Railway Association, 29 West Thirty-ninth Street, New York City. At this meeting the committee will consider all applications for space received up to that time and equal preference will be given to all such applications in determining locations. If any objection is made by an exhibitor to the location assigned a hearing will be given by the committee. In order to avoid misunderstandings it would be well for all applicants for space to make sure that the revised numbers of spaces desired and not the original numbers as shown on the first plan prepared by the committee are assigned to them.

Additional information regarding exhibit arrangements may be had from K. D. Hequembourg, vice-president in charge of exhibits, Dunkirk, N. Y.; George Keegan, secretary of the Manufacturers' Association, 165 Broadway, New York City, or any of the following members of the committee on exhibits:

L. R. Ashurst, Jr., William Wharton, Jr. & Company, Philadelphia, Pa.; E. F. Chaffee, O. M. Edwards Company, Syracuse, N. Y.; F. J. Drake, Lorain Steel Company, Philadelphia, Pa.; F. H. Gale, General Electric Company, Schenectady, N. Y.; N. M. Hench, Carnegie Steel Company, Pittsburgh, Pa.; John C. Jay, Jr., Pennsylvania Steel Company, New York; J. A. Kucera, ELECTRIC RAILWAY JOURNAL, New York; C. N. Leet, National Brake & Electric Company, Chicago, Ill.; J. H. Milliken, McConway & Torley Company, Pittsburgh, Pa.; H. G. McConaughy, Dearborn Drug & Chemical Works, New York; J. C. McQuiston, Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa.; F. C. Randall, Allis-Chalmers Company, New York; Charles H. Thomas, Galena Signal Oil Company, New York; J. V. E. Titus, Electric Service Supplies Company, Philadelphia, Pa.; W. T. Van Horn, Brady Brass Company, New York; A. L. Wilkinson, Ohio Brass Company, Mansfield, Ohio; S. M. Wilson, The J. G. Brill Company, Philadelphia.



Plan of Exhibit Hall

EFFORTS TOWARD SETTLEMENT OF COLUMBUS STRIKE

The latter part of last week was spent by business men of Columbus, Ohio, in an endeavor to fix some basis for negotiations for a settlement between the Columbus Railway & Light Company and its striking union employees that would be satisfactory to both sides, but all efforts resulted in failure. On Aug. 8 the strikers proposed that the whole matter be referred again to the State Board of Arbitration and that both the company and the men agree beforehand to abide by the decision.

Conditions are becoming intolerable for the merchants, as their business amounts to very little, but just what action they propose to take is not known.

As a result of several meetings of business men, Dr. W. O. Thompson, president of the Ohio State University, on Aug. 5 presented a plan of settlement to the company. This was refused, but the company made a proposition in writing to take all the striking men back, including those who were discharged for cause, allowing the men freedom to belong to the union or not, and guaranteeing that there would be no discrimination. The Rev. Washington Gladden took this proposition to the officials of the organization and it was refused without reference to the men.

Former Attorney-General Frank S. Monnett, representing the union men, has written a letter to Governor Harmon, asking that a special session of the Legislature be called and that a law be enacted that will enable the city to take over and operate the railway property, after it has been appraised by a jury or committee.

Mr. Monnett and other attorneys for the men have also been endeavoring to find some law that will allow the appointment of a receiver to operate the property until some settlement has been reached.

Since the morning of Aug. 4 the State troops have been leaving Columbus, until the first of this week but few remained. The presence of soldiers had a good effect, however, as all rioting had practically ceased. Occasionally a stone was hurled through a car window at night, but this did not occur often. The people gained confidence from this and the patronage of the cars rapidly increased. The most serious feature of the strike during the week was that dynamite torpedoes were placed on the tracks in two different places. They were found before the cars passed and accidents were avoided.

Many of the soldiers wore the buttons handed out or sold by the union men and the members of the Sixth Regiment, of Toledo, on their return home, contributed \$500 in cash for the families of the strikers.

Mayor Marshall and Sheriff Sartain have had a difficult time securing men to act as deputies and police officials when all the troops were withdrawn. The police force will probably amount to 300 men, with the special officers. It is said that the business men have volunteered to aid in keeping order.

General Manager E. K. Stewart, of the company, states that as a last resort notices have been sent all over the State asking for young men who want permanent employment and that many applications are being made every day. He said that this action was delayed as long as possible in the hope that the old men would come back and take their runs. All the men who are given positions will keep them, he says, as the company cannot put them off after they have been engaged as permanent employees. He insists that the men may join the union or remain out, as they see fit, and that no distinction will be made by the company, but all will be treated with as individuals.

Formal complaints were filed against a number of patrolmen by the soldiers, who stated that they did not do their duty, but in most cases the soldiers failed to appear against the men at the time set for hearings.

STATEMENT FROM E. K. STEWART

E. K. Stewart, vice-president and general manager of the company, in a statement issued on Aug. 6 in reference to the finding of the board of arbitration, said:

"The daily papers have recently published something like a

column coming from the strike leaders, criticising a statement from me and claiming that the arbitration board found that I had 'unjustly discharged men for the sole reason that they had joined a labor organization,' and intimating that the board had declared that the company had practised 'coercion and intimidation to prevent men from joining the union.' There was no such finding by the board of arbitration, and the evidence contained nothing to justify any such finding, and there is nothing to justify such a statement and therefore I emphatically deny the statement.

"The board's finding related to three points, namely:

"1. The application blanks.

"2. The discharge of men for shortages, fights and rear-end collisions, and

"3. The manner of the barn foremen and inspectors toward the men.

"First: The board found that in the application blanks used since May 3 there were certain questions which should have been eliminated, but it further found that the testimony showed that the failure to strike out these questions was unintentional, as the company had given orders to its clerks to strike them out, and that they were so stricken out except in a few instances.

"The blank forms used were old ones which the company had on hand. While the board found that these questions were objectionable, my view has always been that their use was not a violation of the contract, and I respectfully beg leave to differ with the board on this point.

"But, nevertheless, my instructions were to strike them out in order to remove any ambiguity on the subject, and the mere fact that in a few instances they remained in the blanks, by oversight, should not be held to be a discrimination in the face of the only testimony on the subject.

"The next finding of the board was on the discharge of men. Let us see what this is. To quote from the board's report, the language is this:

"Second, discharging of men—The testimony shows that union men have been discharged since May 3, 1910, for alleged shortages, fights and for rear-end collisions."

"(a) The testimony produced shows that five union men have been discharged since May 3, 1910, for alleged shortages.

"As to one of these five men, we are unable to decide from the testimony whether or not his discharge was just or otherwise.

"As to two others of these five men, we are of opinion there was just cause for their discharge.

"As to the remaining two, we are of opinion there was not just cause for their discharge."

"Therefore, there were two men and only two men unjustly discharged for shortages, in the opinion of the board, neither member of which, so far as I know, ever had anything to do with the management of a street railway.

"Now as to the discharges for fighting. The board says:

"(b) The testimony shows that since May 3, 1910, five fights have occurred, each between a union man and a non-union man. In each case the union man has been discharged.

"As to one of these encounters we are unable to determine from the testimony whether the man was justly discharged.

"As to the other four remaining men, we are of the opinion that there was not just cause for their discharge."

"From the foregoing quotation it might be inferred that five men were discharged for fighting. In fact not a single man was discharged for fighting. There was no testimony to that effect, as the record conclusively shows. It is true that there were five fights. One of those grew out of a union man calling a non-union man a scab, and for that, and that alone, he was discharged.

"As to the other four fights between union and non-union men, the union men were not only not discharged for fighting, but they were not discharged at all, and when they left the service of the company they did so voluntarily when they went out on a strike.

"We have demanded in vain the names of those who are said

to have been discharged for fighting, but no one has attempted to furnish the names because it would be impossible.

"As to the rear-end collisions, the board found that the union men discharged for that cause were justly discharged.

"The third finding of the board is this:

"Third—Also, it was claimed by the union employees that the barn foremen and inspectors of the company discriminated in various ways against union men in their general conduct toward and treatment of such union men. The board is of the opinion, however, on the basis of the testimony offered, that these charges are not sustained as to any rights of the men with respect to their runs, trips, hours or other conditions of their employment. But it does appear, in some instances, that these foremen and inspectors were more friendly with non-union men."

"As an indictment against the company this is too trivial to deserve comment.

"As to the claim made 'that not a single union man has worked on a car since the strike was declared,' I have only to say that within the last few days a number of these men have reported for duty and returned to work. Whether they have abandoned the union I do not know and have not inquired.

"What the company is most interested in, and that which should interest every upright citizen, is the protection of property and the preservation of order. There has not been and there will not be any difficulty in operating the cars if that protection to which the company and every citizen is entitled at the hands of the authorities is properly extended. Plenty of men, anxious and willing to work, are at hand and there is no difficulty experienced on this score."

MR. STEWART'S POSITION TOWARDS UNIONS

Mr. Stewart has issued the following statement to the public regarding his attitude toward unions:

"Several times recently articles have been published concerning me, under the headline, 'This Man Hates Unions.'

"For the purpose of making my position on this subject clear to all classes of our citizens I submit the following statement:

"The statement above quoted is not true. On the contrary, I believe in the right of every man to take any lawful employment whenever and wherever he pleases, and to join or not to join a labor organization or any other organization as to him may seem best.

"That must be left to the individual choice and preference of each employee to be decided by himself. I do object, however, to men being coerced to join such organizations by intimidation, threats and violence, and I cannot admit, but on the contrary deny, that personal assaults, the wholesale destruction of property and the great public inconvenience are to be justified as arguments in favor of compelling men to join any organization against their will. If laws are to be enforced and personal rights protected without unjust discrimination, there can be no distinction between union men and non-union men.

"Both must stand alike before the law and before the tribunal of public opinion. This is the position I have steadfastly maintained as an employee, as an employer and as a citizen. If any of my fellow-citizens take a different view of the relations which should exist between employer and employee, and between the employees themselves, I am quite willing to submit our differences of opinion to the judgment of all fair-minded men.

"Both before and since the strike in May last, I told the employees of the Columbus Railway & Light Company that they should feel perfectly free to join the union or not as they might prefer, and that is the position I expect to maintain."

The United States Vice-Consul-General at Constantinople has forwarded to the Department of Commerce and Labor specifications and conditions governing a concession to be granted by the Imperial Ottoman Government to the most favorable bidder for a system of electric tramways in Constantinople and suburbs. Bids for this concession will be received at the Ottoman Ministry of Public Works until Oct. 15, 1910.

MACHINE FOR PUNCHING TRANSFERS

The accompanying cut shows the American transfer punch made by the Southworth Machine Company, Portland, Maine, for punching out the day and month from pads of transfers



Transfer Punch

before they are given to the conductor. The punch is provided with a self-climbing binder or indicator so that the pad of transfers is firmly held in the required position and the operator can see exactly what figure or month is to be punched. The die cuts onto a disk made of hard fibre, and by turning the knob at the back of the machine, this disk revolves so that a fresh cutting surface is presented as often as desired.

The die used in the American punch is conical or V-shaped. This provides a ready means of checking transfers, as they may be bunched and by looking along the edge the incorrectly punched transfers will be detected at once. The machine is operated by foot power and can punch several hundred pads in an hour. The shipping weight, including packing case is 160 lb.

THERMOSTATIC CONTROL FOR FIRE PROTECTION AND ELECTRIC HEATER REGULATION

The Electrical Automatic Appliance Company, Denver, Col., is making an automatic fire protection system which depends for its operation upon a given rise of temperature. The system is set at any desired degree, say, 130 deg. Fahr. or about 40 deg.



Thermometer in Case

above the highest normal point. It is arranged to sound an alarm at an indicating annunciator in the office, ring a gong on the street and also notify the fire department of the location of the trouble. The principal part of the system is a thermometer the expansion of which causes a bar to move toward an electrical contact which on being touched closes the



Tubular Thermometer

alarm circuit. For fire protection purposes, the thermometer is connected to an automatic bell which turns in an alarm over any telephone or telegraph circuit. A very loud explosive signal or whistle attachment may also be used in towns where there is no fire-alarm wiring system. The thermometer of the principle described is, of course, applicable to a great many other situations where thermostatic control is possible. This one design may be used to cut out certain heater circuits at predetermined temperatures or to maintain a constant degree of heat.

The British Board of Trade recently made an investigation of wages and hours of labor of tramway and omnibus employees in Great Britain. The average number of hours per week was 58.7, and the average length of holidays allowed each year was six days. Motormen received on the average \$7.36 per week and conductors \$6.46. In London the corresponding rates of pay are motormen \$7.76 and conductors \$7.38.

News of Electric Railways

Transit Affairs in New York

The Public Service Commission has made public letters recently exchanged between William McCarroll, acting chairman of the commission, and Theodore P. Shonts, president of the Interborough Rapid Transit Company. Mr. McCarroll wrote that he had learned that there seemed to be a misunderstanding as to the matter of negotiations between the commission and the company relative to the third-tracking and extensions to the Manhattan Elevated Railway and also to the Steinway tunnel. He suggested that the company make more specific statements as to the manner of proposed construction and the terms to be made with the city. In answer Mr. Shonts said that under Section 24 of the Rapid Transit Act, additions to elevated railroads are clearly excepted from the provision requiring the franchise to pass to the city at the end of a fixed period. This would give the company a perpetual franchise for the third track just the same as the original franchise of the elevated railway. As to the extension of the elevated railway in the Bronx, he proposes that the franchise be coextensive with the term of the lease of the Manhattan Elevated Railway to the Interborough Rapid Transit Company, which is 999 years. He also proposes that the city purchase the Steinway tunnel at one-half of its cost and make it a part of the subway system under the original subway contract. The company has heretofore stated that the tunnel cost more than \$7,000,000 and, with interest, one-half of the cost would probably be about \$4,000,000.

The Public Service Commission has sent to Mayor Gaynor, Comptroller Prendergast and President Mitchell of the Board of Aldermen, composing the rapid transit committee of the Board of Estimate and Apportionment, a reply to the letter sent by that committee, dated June 17, 1910, with which was transmitted a report made by a committee of engineers criticising the forms of contract that had been prepared for the tri-borough subway system. The commission in its reply quotes from special reports made by its engineers and counsel upon the points discussed in the original communication. The criticisms of the engineers of the Board of Estimate are not approved. In answer to the inquiry from the engineers of the Board of Estimate regarding covered excavations, the commission's engineers admit that it is preferable to have an open excavation on the grounds of economy and convenience of work, but they hold that the experience of the city in the construction of the present subway shows that there is so much hardship to business men and property owners along the route that such a method should not be permitted in Manhattan. The engineers of the Board of Estimate also criticised the unit price system of bidding adopted by the commission and urged that the percentage system be substituted. It is pointed out by the commission that the cost of subway work is not sufficiently well established to make it desirable for the commission's engineers to suggest prices as stated.

Samuel Rea, vice-president of the Pennsylvania Railroad, has written a letter to Mayor Gaynor and Chairman Willcox of the Public Service Commission, advocating the construction by the city of extensions to the present subway, as proposed by the Interborough Rapid Transit Company, in preference to the tri-borough route. Mr. Rea contends that the construction of an independent subway which would parallel part of the existing road would be unjustified and that the municipal government would better serve the public convenience by spending the money for extensions to the present subway rather than for the construction of the tri-borough system. These extensions would mean the continuation of the Interborough subway itself under Seventh avenue to the Battery and north from Forty-second street under Lexington avenue or Madison avenue. Mr. Rea explains that his company has spent \$125,000,000 in bringing the Pennsylvania Railroad into New York, and that for the distribution of the passengers which the company will handle the extensions to the present subway would give better facilities than the suggested tri-borough route.

Tentative Ordinance for Pittsburg Subway

The committee of the City Council of Pittsburg which is considering the subject of a subway, has invited applicants for a franchise to submit written propositions. Representatives of the Pittsburg Subways Company and the Rapid Transit Subway Company attended a meeting.

The form of ordinance prepared by Bion J. Arnold, Mayor Magee and the city law department was considered. The ordinance provides for the following route: A central loop, or circuit, under Virgin Alley, Ferry Street, Oliver Avenue, Liberty Avenue, Third Avenue and Grand Street, and extensions from the central loop to the intersection of Fifth Avenue and Keller Street in the East End, and a branch from the first branch to extend to Schenley Park. The exclusive use of electricity is stipulated. Within 21 months after acceptance of the ordinance by any company a board of three supervising engineers shall be appointed. The subway is to be completed within four years after the commencement of construction. Following are some of the provisions of the ordinance:

"The gross annual receipts of the company shall be expended in the following order and for the following purposes:

"Fifty per cent thereof to cover operating expenses, including administration, expenses, insurance, taxes, damages, maintenance, salaries and expenses of the board of supervising engineers, renewals, fund to offset the cost of financing and reserve fund for contingencies. Any surplus to be added to the sinking fund for purchase, improvement or extensions.

"The board of supervising engineers shall apportion said 50 per cent to the funds herein provided, provided always that no appropriations to any of the foregoing funds shall interfere with the prompt payment of interest on any bonds of the company, but this provision shall not prevent the failure to set aside the 50 per cent of the gross income for the purpose herein provided constituting a breaching of the conditions of this ordinance.

"Interest at the rate of 5 per cent per annum, cumulative, on 115 per cent of the capital account, said 15 per cent additional being added to cover cost of financing. Said 15 per cent to be returned from time to time by means of the fund to offset cost of financing. Whenever said fund is equal to 1 per cent of the capital account it shall be turned over to the company and applied to the reduction of the 15 per cent aforesaid, so that the company shall be entitled thereafter to receive 5 per cent on 114 per cent of said capital account, with like reductions, from time to time, until said 15 per cent is eliminated.

"One-half of 1 per cent per annum on the approved cost of construction to be placed in a sinking fund solely for one or both of the following purposes:

"For the purpose of purchasing the property of the company as herein provided.

"The building of extensions or improvements at the option of the city.

"The balance of the income to go to the company for a period of 25 years after commencement of operation, after which, for a period of 25 years, it shall be divided between the city and the company in the proportion of 25 per cent to the city and 75 per cent to the company, and thereafter to be divided equally until the city or its assignee purchases."

The ordinance also provides that the city shall have the right at any time at the expiration of 20 years to purchase the entire works and equipment of the company or to assign its purchase right to any corporation capable of operating the subway. If the city's option is assigned, the assignee is to pay 10 per cent more than the city would be required to pay.

American Society of Engineer Draftsmen.—On June 18, 1910, the first steps were taken to form a permanent organization to be known as the American Society of Engineer Draftsmen, embracing every branch of the profession, in-

cluding mechanical, electrical, civil, architectural, marine, sanitary, automobile and aeronautical draftsmen. The first meeting of the society was held on July 27, 1910. The officers of the society are: E. Farrington Chandler, president; Wm. B. Harsel, vice-president; Henry L. Sloan, secretary and treasurer, 116 Nassau street, New York.

Traction Situation at Toledo.—City officials of Toledo have suggested to A. E. Lang, president of the Toledo Railways & Light Company, Toledo, Ohio, that a suit be brought to declare the franchise rights of the company on certain streets void, under the ordinance making the grant. City Solicitor Schrieber has stated that if this is done the street rights could then be leased to the company until new grants are made. On the evening of Aug. 3, 1910, the City Council directed the solicitor to prepare legislation demanding the payment of the amount due the city at once. The claim is made that the entire debt of the company when the work on Broadway is completed will be about \$107,000.

Bonds for Municipal Line Sold in Part.—Bids were opened in San Francisco on July 11, 1910, for the sale of \$260,000 of bonds to provide for work on the Geary Street, Park & Ocean Railroad, which is to be owned by the city. Of the total issue only \$139,000 was subscribed. The following is the proposed plan of procedure as suggested by the Board of Public Works and approved by the Mayor: (1). Immediately upon the sale of the bonds authorized Dec. 28, 1909, contracts to be let for the rails, fastenings and special steel work, and for the mechanical and electrical equipment of the road and power station; (2), the acquisition of the lands for the westerly terminal, power station and car barn; (3), as soon as the time of the delivery of the materials and equipment above specified shall be determined, the acquisition of the necessary rolling-stock should be undertaken; and (4), the construction of the tracks, terminal and power stations, car barns, etc., either by day's labor or by contract, as the Board of Public Works shall determine.

Electrical Exhibition in San Francisco.—Preliminary plans have been completed for the electrical exposition to be held at the Coliseum, San Francisco, Cal., from Aug. 20 to Aug. 27, 1910, under the auspices of the Pacific Coast Electrical Exposition, of which D. M. Moses, 34 Ellis Street, San Francisco, Cal., is general manager. Among the firms that will exhibit are the following: American Steel & Wire Company, Standard Underground Cable Company, H. W. Johns-Manville Company, National India Rubber Company, Electric Railway & Supply Company, Kellogg Switch Board & Supply Company, Dean Electrical Company, Crocker-Wheeler Company, Benjamin Electric Company, Holophane Electric Company, Babcock Electric Vehicle Company, Weston Electric Instrument Company, *Electrical World* and *ELECTRIC RAILWAY JOURNAL*, Holabird Reynolds Company, National Electric Lamp Association, Studebaker Brothers Electric Storage Battery Company, Burroughs Adding Machine Company, Southern Pacific Railway, Sprague Electric Company, General Electric Company, and Pierson, Roeding & Company.

Standard Classification of Accounts in New Jersey.—Thursday, Aug. 18, has been set by the Board of Public Utility Commissioners of New Jersey for the first of a series of meetings to discuss a uniform system of accounts for the street railway companies of the State. Commissioner Thomas J. Hillery will preside. All of the companies have been invited to send representatives, and the Interstate Commerce Commission will also be asked to send a representative. One of the principal duties with which the commission is charged is the investigation of complaints regarding service, etc. Thus far there have been very few complaints. The commission has also decided that under the existing utility law its members are entitled to free transportation upon the steam railroads of the State, but not upon the electric railways. The board has divided its work under two heads: Railroad division, chief inspector, C. D. McKelvey, formerly superintendent of the New York, Susquehanna & Western Railroad; Utilities division, chief inspector, Philander Betts. The railroad division will continue to make its headquarters at Trenton. The utilities division will have its headquarters at 738 Broad Street, Scheur Building, Newark. The office in Newark was opened on Aug. 8, 1910.

Financial and Corporate

New York Stock and Money Market

August 9, 1910.

The betterment in market conditions was accelerated considerably by the favorable crop report issued by the Government on Monday. To-day there was considerable selling for profit, but the advances were consistent and the market closed at the highest levels of the day. The tractions have again carried their full share of the trading. Interborough and Brooklyn Rapid Transit, however, record substantial gains for the week.

Further importations of gold and additional engagements in London brought the movement up to \$14,500,000 for the week ended Aug. 8. Quotations to-day were: Call, 1½ to 2 per cent; 60 days, ¾ to 3½ per cent; 90 days, ¾ to 4½ per cent.

Other Markets

The tone of the Philadelphia market is particularly encouraging. Headed by Lehigh Valley, practically all the active issues record substantial advances. Philadelphia Rapid Transit closed to-day at 19½ bid and Union Traction at 44½.

Offerings were freely absorbed in the Boston market, but while the market was generally active, tractions were not dealt in to any great extent. In Boston Elevated, West End Street Railway and Massachusetts Electric only slight advances were recorded.

As regards traction shares, the Chicago market records no material change over the previous week.

In Baltimore sales have been recorded of United Railways 4s at 81¼ and United Railways funding 5s at 82½. The prevailing price for United Railways stock was about 15¼.

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

	Aug. 2.	Aug. 9.
American Railways Company.....	a42	a42
Aurora, Elgin & Chicago Railroad (common).....	*45	a50¼
Aurora, Elgin & Chicago Railroad (preferred).....	*82	a90
Boston Elevated Railway.....	122	123
Boston & Suburban Electric Companies.....	*15	*15
Boston & Worcester Electric Companies (preferred)....	*74	*74
Boston & Worcester Electric Companies (common)....	a10	a10
Boston & Worcester Electric Companies (preferred)....	a37	36½
Brooklyn Rapid Transit Company.....	74¾	75¾
Brooklyn Rap. Transit Company, 1st pref. conv. 4s....	*80	82¾
Capital Traction Company, Washington.....	a129	a129
Chicago City Railway.....	a195	a195
Chicago & Oak Park Elevated Railroad (common)....	*3¼	*3¼
Chicago & Oak Park Elevated Railroad (preferred)....	*7¼	*7¼
Chicago Railways, pteptg., ctf. 1.....	a75	a65
Chicago Railways, pteptg., ctf. 2.....	a16	a16½
Chicago Railways, pteptg., 3.....	a10	a11
Chicago Railways, pteptg., ctf. 4s.....	*5½	a5½
Cleveland Railways.....	*91½	*91½
Consolidated Traction of New Jersey.....	a73	a72
Consolidated Traction of N. J., 5 per cent bonds....	a103	a103
Detroit United Railway.....	*45	*45
General Electric Company.....	140½	143¼
Georgia Railway & Electric Company (common)....	a107	107¾
Georgia Railway & Electric Company (preferred)....	*86	a85
Interborough-Metropolitan Company (common)....	16¼	17¾
Interborough-Metropolitan Company (preferred)....	46	47¾
Interborough-Metropolitan Company (4½s).....	77¼	78¾
Kansas City Railway & Light Company (common)....	*25½	a25½
Kansas City Railway & Light Company (preferred)....	a79½	a79½
Manhattan Railway.....	128	*128
Massachusetts Electric Companies (common)....	a14¾	a15½
Massachusetts Electric Companies (preferred)....	a79	a82
Metropolitan West Side, Chicago (common).....	22	a20
Metropolitan West Side, Chicago (preferred).....	60	a60
Metropolitan Street Railway.....	*15	*15
Milwaukee Electric Railway & Light (preferred)....	*110	*110
North American Company.....	67½	68
Northwestern Elevated Railroad (common).....	a18	a21
Northwestern Elevated Railroad (preferred)....	a60	a65
Philadelphia Company, Pittsburg (common).....	a42¾	a43½
Philadelphia Company, Pittsburg (preferred)....	a42¼	a42¾
Philadelphia Rapid Transit Company.....	a18	a19¾
Philadelphia Traction Company.....	83	a82½
Public Service Corporation, 5 per cent col. notes....	a96	a96
Public Service Corporation, cts.....	a99	a99
Seattle Electric Company (common).....	a109	*109
Seattle Electric Company (preferred).....	a98½	*98½
South Side Elevated Railroad (Chicago).....	a63	a61
Third Avenue Railroad, New York.....	a10½	*10½
Toledo Railways & Light Company.....	6¾	7
Twin City Rapid Transit, Minneapolis (common)....	106½	*106½
Union Traction Company, Philadelphia.....	a43½	a44¾
United Rys. & Electric Company, Baltimore.....	a15¼	a14¾
United Rys. Inv. Co. (common).....	*27	*27
United Rys. Inv. Co. (preferred).....	54	*54
Washington Ry & Electric Company (common)....	a32¾	a33
Washington Ry & Electric Company (preferred)....	a88	a87½
West End Street Railway, Boston (common).....	a87½	a88
West End Street Railway, Boston (preferred)....	a100	*100
Westinghouse Elec. & Mfg. Company.....	55½	61
Westinghouse Elec. & Mfg. Company (1st pref.)....	*125	*125

a Asked. * Last Sale.

Boston (Mass.) Elevated Railway.—James L. Richards, president of the Boston Consolidated Gas Company, has been elected a director of the Boston Elevated Railway to fill a vacancy.

Central Pennsylvania Traction Company, Harrisburg, Pa.—The report of the Central Pennsylvania Traction Company for the year ended June 30, 1910, as presented at the annual meeting of the stockholders of the company, held on July 26, 1910, shows gross receipts of \$790,127, operating expenses of \$574,929, deductions for betterments of \$121,752, leaving a balance of \$93,446, from which cash dividends were paid which amount to \$84,000, leaving a surplus of \$9,446. The total number of passengers carried during the year ended June 30, 1910, was 19,334,074, an increase of 1,241,094 over the previous year, or 6.8 per cent. The car mileage for the year ended June 30, 1910, was 3,122,860, an increase of 258,975 or about 9 per cent.

Cleveland & Eastern Traction Company, Cleveland, Ohio.—The Cleveland & Eastern Traction Company has made a mortgage to the Guardian Savings & Trust Company, Cleveland, Ohio, to secure an issue of \$1,000,000 of first mortgage bonds, of which \$764,000 will be issued in accordance with the plan outlined for the reorganization of the Eastern Ohio Traction Company. The remaining \$236,000 of bonds will be reserved for extensions, additions, improvements or betterments. The bonds are dated July 1, 1910, and are due on July 1, 1932, but are redeemable on any interest day, in part or in full, at 103 and interest. The bonds will not begin to draw interest, however, until 1912.

Columbus, Delaware & Marion Railway, Columbus, Ohio.—The Mercantile Trust Company, New York, N. Y., has received funds from the receiver of the Columbus, Delaware & Marion Railway to pay the coupon due on Feb. 1, 1910, on the first refunding mortgage 5 per cent bonds of the company, with interest at 6 per cent on the amount due.

Federal Light & Traction Company, New York, N. Y.—The Federal Light & Traction Company, the formation of which was noted in the ELECTRIC RAILWAY JOURNAL of June 11, 1910, page 1041, has organized as follows: James C. Colgate, Harrison Williams, Anson W. Burchard, Samuel McRoberts and Edwin N. Sanderson, executive committee; W. S. Iliff, president; Edwin N. Sanderson, vice-president; Craig Colgate, vice-president; H. H. Porter, secretary; H. N. Wadham, treasurer; A. Seaton Post, Jr., assistant treasurer; Richmond Talbot, assistant secretary; Charles K. Durbin, general manager; R. R. Colgate, Anson W. Burchard, Samuel McRoberts, Harrison Williams, M. D. Thatcher, P. W. Herrick, E. N. Sanderson, J. J. Bodell, J. C. Colgate, R. E. Breed, V. E. Macy, Craig Colgate, H. H. Porter, W. S. Iliff and Jerry Cray, directors.

Fonda, Johnstown & Gloversville Railroad, Gloversville, N. Y.—The Fonda, Johnstown & Gloversville Railroad has applied to the Public Service Commission of the Second District of New York for authority to issue \$463,000 of its first consolidated general refunding bonds, dated 1902, in order to pay certain existing obligations other than bonds issued for construction and to meet the cost of double tracking.

Frankford, Tacony & Holmesburg Railway, Tacony, Pa.—The Frankford, Tacony & Holmesburg Railway Company has been incorporated with an authorized issue of \$500,000 of capital stock and \$500,000 of bonds to acquire the property of the Holmesburg, Tacony & Frankford Railway, sold at foreclosure sale to a syndicate headed by George B. Atlee & Company, Philadelphia, Pa. The holders of bonds represented by the committee headed by Jacob S. Disston, president of the Tacony Trust Company, will receive bond for bond and 25 per cent in stock. Holders not identified with this committee were offered by the syndicate the right to exchange bond for bond up to June 15. Notice has been given by the committee represented by W. L. Haehnen, of Charles Fearon & Company, to holders of the receipts issued by the Fidelity Trust Company for the first mortgage bonds that upon production of the receipts they will be paid 80 per cent par value of their bonds in partial distribution. A further distribution will be made later. The officers of the new company are as follows: President, Meyer Schamberg, president of the West Chester Street Railway; vice-president, C. Bradford Fraley; secre-

tary and treasurer, Jacob M. Vedges; assistant secretary and treasurer, William S. J. Wetherill. Directors: Jacob S. Disston, president of the Tacony Trust Company; William L. Allen, Wilson Woelper, of George B. Atlee & Company; C. Bradford Fraley, John Rapp, vice-president of the Tacony Trust Company, and Frederick F. Hallowell, comptroller of the Western Saving Fund.

Indianapolis, Crawfordsville & Western Traction Company, Indianapolis, Ind.—It is reported that representatives of both the McGowan-Schoepf interests and the McKinley interests, which control the Terre Haute, Indianapolis & Eastern Traction Company and the Illinois Traction System, respectively, will bid for the property of the Indianapolis, Crawfordsville & Western Traction Company, which will doubtless be offered for sale under the suit for foreclosure brought by the Marion Trust Company, Indianapolis, Ind., in the Federal Court at Indianapolis. By purchasing the property of the Indianapolis, Crawfordsville & Western Traction Company and building 42 miles of line to Danville, the McKinley interests could establish a through line from Indianapolis to St. Louis. If the McGowan-Schoepf interests should purchase the property of the company they would probably abandon about 12 miles of the Lebanon branch of the Terre Haute, Indianapolis & Eastern Traction Company and build northwest to Attica, Williamsport and into Illinois.

Meadville & Cambridge Springs Street Railway, Meadville, Pa.—A committee consisting of James C. Chaplin, John M. Jamison, D. R. Hill and W. H. Parke has requested the holders of the \$300,000 of first mortgage 5 per cent bonds of the Meadville & Cambridge Springs Street Railway to deposit their bonds with the Colonial Trust Company, Pittsburgh, Pa., as depository.

Meridian Light & Railway Company, Meridian, Miss.—The Meridian Light & Railway Company has increased ferred stock, to \$2,000,000 common stock, all of which is outstanding.

New York, Westchester & Boston Railway, New York, N. Y.—The New York, Westchester & Boston Railway has applied to the Public Service Commission of the Second District of New York for authority to issue \$5,000,000 of 50-year first mortgage 5 per cent gold bonds to pay \$953,446 advanced by the City & County Contract Company in connection with the construction of the branch line from Mount Vernon to White Plains, and to meet the cost, estimated at \$4,294,549, of completing, electrifying and equipping this branch.

Ocean Shore Railway, San Francisco, Cal.—The committee of bondholders of the Ocean Shore Railway has announced the selection of G. C. Moore, A. C. Kains, R. D. Robbins, W. J. Dutton and Maurice Schweitzer, as a reorganization committee, with authority to bid in the property at the foreclosure sale, which is to be held on Sept. 1, 1910.

Philadelphia (Pa.) Rapid Transit Company.—The stockholders of the Union Traction Company will vote on Sept. 1, 1910, to increase the indebtedness of the company from \$1,500,000 to \$3,000,000. A statement issued by the company says that the increase is the guaranty of the rentals of the equipment lease of the Philadelphia Rapid Transit Company, which lease has been made the basis of an issue of car trust certificates, and that the increase is merely a formal ratification of the action already authorized at the special meeting of the stockholders of the company held on June 20, 1910.

Pittsburgh & Allegheny Valley Traction Company, Leechburg, Pa.—Reorganization under this title of the property of the Pittsburgh & Allegheny Valley Railway Company, sold at foreclosure sale on March 21, 1910, has been completed. The officers are O. W. Kennedy, president; George M. Hosack, vice-president; Frank W. Jackson, treasurer, and E. B. Hartman, Jr., secretary. The officers of the Pittsburgh & Allegheny Valley Traction Company and the directors are the same.

Wilmington & Philadelphia Traction Company, Wilmington, Del.—The Wilmington & Philadelphia Traction Company has elected directors as follows: Alfred I. du Pont, Henry P. Scott, George R. Webb, Charles C. Kurtz, J. H. Pardee, J. G. White and Oscar T. Crosby.

Traffic and Transportation

Fare Complaint Against Albany Company Dismissed

The Public Service Commission of the Second District of New York has dismissed the complaint of William S. Lodge against the United Traction Company about the fares charged between Albany and Troy. The commission holds that under the company's tariff as in force at the time of the hearing on June 1, 1910, the complaint was sustained, but that under the tariff made effective since the hearing the complaint should be dismissed. The company's tariff as in force at the time of the complaint and hearing did not deprive the continuous rider from paying a new fare as a new passenger on leaving the fare-break point and receiving a transfer thereon although he had used a transfer on the first 5-cent fare paid, but the tariff filed and made effective since the hearing does prohibit a second transfer to the continuous rider on payment of the second 5-cent fare. The opinion, written by Commissioner Decker, states:

"Respondent's fares are 5 cents for a ride within Albany or within Troy; 5 cents from any part of Troy, with or without a transfer in Troy, to Garbrance Lane, near the Albany line; 5 cents from Garbrance Lane to Albany, and to any part of Albany if no transfer has been used in Troy; 5 cents from any part of Albany to Schuyler's Bridge (two miles from the Troy line), if no transfer in Albany has been used. If a transfer in Albany has been used then the fare of 5 cents applies only to Cemetery, about midway between Schuyler's Bridge and Garbrance Lane. When a transfer is used in Albany and the passenger desires to go beyond a transfer point in Troy the total fare between such distant locations in Albany and distant locations in Troy is 15 cents, and the same applies in the reverse direction. All other riding between the two cities is under a fare of 10 cents. Notwithstanding such fare of 15 cents for a through or continuous ride, the passenger having used a transfer under a fare of 5 cents paid in Albany, can get off the car at Cemetery and boarding the car following pay a fare of 5 cents, which will entitle him to have a transfer and reach any part of Troy on respondent's lines, thus traveling by riding in separate cars for 10 cents over the same haul and distance that under respondent's tariff he must pay 15 cents for if he continues riding in the same car past Cemetery, the intermediate or fare-break point.

"Complainant alleges that this through or total charge higher than the sum of local fares is unlawful. No claim or showing is made that the fare of 15 cents is unreasonable. The extreme distance over these lines between parts of Albany and parts of Troy approximates 20 miles. Respondent is required by the Railroad Law to charge 5 cents for all riding within either city, but for compulsory traffic reasons it has extended the limits of the 5-cent fare for a considerable distance beyond the boundary of each city and this constitutes a valuable public privilege and advantage which ought to be preserved.

"It is held that no unjust discrimination results against the through passenger riding continuously in the same car past the fare-break point and paying the higher fare of 15 cents in favor of a passenger who changes cars at the intermediate or fare-break point and thereby obtains service under the lower combination of locals amounting to 10 cents for the same haul and distance involved. It is further held that under respondent's tariff as in force at the time of hearing the complaint was sustained, but that under the tariff made effective since the hearing the complaint should be dismissed."

In disposing of this case the commission announced the following general rulings:

"1. That through rates or fares greater than the sum of local rates or fares to and from an intermediate point are prima facie unlawful and are seldom capable of justification. In this connection reference is made to several decisions of the Interstate Commerce Commission upholding higher interstate charges fixed by two adjoining States. The commission says that such determinations are based plainly upon the view that local conditions or requirements applying in different States, while material upon the ques-

tion of the reasonableness of a through interstate charge, are not necessarily controlling; that this follows for the same reason that State authority cannot be controlled by a through interstate rate or fare or assignable part thereof in fixing a rate or fare within the State. The two regulating functions are exercised in wholly independent jurisdictions and applied to distinct subject matters.

"2. When through fares do exceed the sum of local fares the passenger is entitled to use the local fares by purchase of tickets or payment of cash fares to and from the intermediate point and conforming otherwise to conditions governing the transportation.

"3. When a carrier by interurban electric railway has established a tariff fixing a passenger fare between two points which is greater than the sum of the stated local fares to and from an intermediate point, and provided a regulation in the tariff that the passenger continuing to ride through in the same car must pay the higher through fare, the carrier is required by the law to adhere to its tariff rate and regulation during the time such fare and regulation are permitted to remain in force, and the passenger in exercising any right he may have to combine and use the lower local fares cannot claim the co-operation of the railroad company to the extent of defeating application of the through fare and regulation specified in the published tariff."

Metropolitan Street Railway, New York, Ordered to Exchange Transfers with Segregated Line

On Aug. 3, 1910, the Public Service Commission of the First District of New York served a final order on the receivers of the Metropolitan Street Railway, New York, N. Y., and the officers of the Central Park, North & East River Railroad directing them to enter into negotiations for the restoration of transfers between the cars of the companies at intersecting points. The order was issued under the recent amendment to the public service commissions law, under which the commission now claims authority to prescribe joint rates and through routes. A similar order by the commission, issued more than a year ago, was not complied with, and the question of the authority of the commission to issue such an order under the act creating that body is before the courts for settlement. The order of the commission as issued on Aug. 3, 1910, follows:

"Ordered, that the Central Park, North & East River Railroad and Adrian H. Joline and Douglas Robinson, as receivers of the Metropolitan Street Railway, be and they hereby are required to establish on or before Sept. 1, 1910, and thereafter maintain in operation for a period of not less than six months through routes for the transportation of passengers between the points and upon the lines specified in the following schedule, in each direction; and be and hereby are required on or before said date to establish and put in force a joint rate of fare for each such passenger by the use of a transfer slip, coupon ticket or other sufficient token delivered to each passenger and to apply said rate of fare to the transportation of passengers between the points and over the routes specified in the said schedule in each direction for and during the time aforesaid unless modified in accordance with the provisions of the public service commissions law.

"The Fifty-ninth Street line of the Central Park, North & East River Railroad means, in this schedule, the line on Fifty-ninth Street between the east side of First Avenue and the west side of Tenth Avenue.

"(a) From any point on the Fifty-ninth Street line of the Central Park, North & East River Railroad to any line operated by the said receivers across or to Fifty-ninth Street, and thence north or south on such receivers' line to its terminus.

"(b) From any point on any line operated by said receivers across or to Fifty-ninth Street, and thence east or west on said Fifty-ninth Street line of the Central Park, North & East River Railroad to its terminus.

"(c) From any point on any line operated by said receivers across or to Fifty-ninth Street, thence east or west on said Fifty-ninth Street line of the Central Park, North & East River Railroad to any other line operated by said

receivers across or to Fifty-ninth Street, and thence along said last named receivers' line in the original direction to its terminus. And it is

"Further Ordered, that this order take effect immediately and continue in force until changed or abrogated by the commission. And it is

"Further Ordered, that the said Central Park, North & East River Railroad and the said Adrian H. Joline and Douglas Robinson, as receivers, notify the Public Service Commission for the First District on or before Aug. 31, 1910, whether the terms of this order are accepted and will be obeyed."

Interference with Collection of Double Fares on Tacoma Line Enjoined

C. H. Hanford, judge of the United States Circuit Court of Tacoma, Wash., has rendered a decision granting the petition of the Tacoma Railway & Power Company for a temporary restraining order enjoining certain residents of Fern Hill from interfering with the collection of two fares. Passengers are to be given a receipt entitling them to the return of the extra fare if its collection shall be finally determined to be illegal. The decision of Judge Hanford follows:

"By initiating this lawsuit the city of Tacoma invoked judicial authority to settle a disputed question whether the annexation of new territory by the city had the effect, ipso facto, to obligate the Tacoma Railway & Power Company to reduce fare collectable on its line to the Fern Hill district within the annexed territory. The defendant has come into court showing a willing disposition to have the controversy judicially determined. Therefore, it is the right of both parties to have the question so determined without being vexed and unnecessarily burdened, by public clamor or hostile demonstration, interfering with efficient operation of the car service." It is an interference with the operation of a railway for passengers and bystanders to engage in angry disputes with trainmen on duty, because one of the difficulties in rendering good service is in securing and retaining the services of efficient men and one of the reasons why good men dislike the service is the heavy tax upon the nervous system, to have to be polite and pay strict attention to the details of the running of passenger cars, while smarting under the jeers and insults of persons inflamed by prejudice and encouraged by agitators. By such means the defendant is being interfered with in the operation of its Fern Hill line, and the police force of the city of Tacoma, insofar as it has taken a hand, restrains the employees of the defendant company from the use of such force as is necessary to eject passengers who refuse to pay the fare exacted.

"In practical effect the executive department of the city of Tacoma has reduced the fare on the Fern Hill line while litigation for the determination of the controversy as to the legal rate which the defendant may exact is pending at this time.

"To preserve the rights of all parties and for the sake of peace, the court grants the injunction prayed for, on condition that the defendants shall issue to each passenger from whom two fares shall be collected for a single continuous trip to any destination within the city or to Point Defiance Park, a ticket or receipt to be redeemed by refunding the extra fare if the exaction thereof shall be fully determined to be illegal, and file the usual injunction bond with an additional condition for the redemption of all such tickets if the court shall so order, and the court fixes the amount of the penalty of the bond at \$20,000."

Freight Rights Granted in North Adams—The Council of North Adams, Mass., has granted the Berkshire Street Railway, Pittsfield, Mass., permission to carry freight in North Adams.

New Jersey Company Adopts New Rule Regarding Stops—The Morris County Traction Company, Morristown, N. J., has decided to stop its cars only at street corners, road crossings and previously designated stations.

Pay for Extra Men in Brooklyn—The Brooklyn (N. Y.) Rapid Transit Company has announced that motormen and conductors who are designated as "extras" and are not

assigned to regular trips will hereafter receive \$1.50 per day by reporting each day to the depots of the different divisions to which they are assigned.

Complaint Against Fare on West Penn Railways—Complaint has been made to the Railroad Commission of Pennsylvania about the fare charged by the West Penn Railways, Pittsburgh, Pa. It is alleged particularly that the fare charged between Uniontown and Brownsville is greater than that charged between Uniontown and Connellsville.

Accidents in Chicago in July—Three hundred and twenty-six persons were injured and five killed in 308 street car accidents in Chicago in July, according to a report made by City Attorney Caverly. The following were the causes of the accidents: Crossing streets, 57; getting on or off cars, 110; riding on steps or platforms, 41; vehicle collisions, 41; car collisions, 16; other causes, 47.

Increase in Wages for Employees of Joliet & Southern Traction Company—Effective on Aug. 1, 1910, the Joliet & Southern Traction Company, Joliet, Ill., increased the wages of its employees as follows: First year, 21 cents an hour instead of 20 cents; second year, 22 cents an hour instead of 21 cents; third year, 23 cents an hour instead of 22 cents; fourth year, 24 cents an hour instead of 23 cents; fifth year and thereafter, 25 cents an hour instead of 24 cents.

Complaint Against Fishkill Electric Railway—The Public Service Commission of the Second District of New York has received a complaint in behalf of the residents of Glenham, Dutchess County, and vicinity against the Fishkill Electric Railway, Fishkill-on-Hudson, N. Y., regarding the service afforded by the company in Glenham. The complainant claims that the cars do not run often enough to accommodate the public, that there is no waiting room at the terminus, and also that the cars are much too crowded for comfort. An order of the commission was sent to the company on July 26, 1910.

Complaint About Fare Between Baltimore and Sparrows Point—The Public Service Commission of Maryland is investigating the complaint that the fare of 15 cents charged by the United Railways & Electric Company, Baltimore, Md., between Baltimore and Sparrows Point is excessive. The complainants contend that the fare should be 10 cents, one zone to extend from Baltimore to Dundalk and the second from Dundalk to Sparrows Point. Under the present plan one fare is charged from Baltimore to the Highlandtown car house, the second from the car house to Dundalk and the third from Dundalk to Sparrows Point.

Some Old Time Brooklyn Cars—This is the title of a little booklet issued by the Brooklyn (N. Y.) Rapid Transit Company somewhat after the style of Elbert Hubbard's "Little Journeys" and not a whit less artistic typographically. As the title of the publication indicates, the text tells the story of early types of cars in Brooklyn, particularly a prepayment car operated very much after the style of the present pay-as-you-enter cars. This car was resurrected by the company two years ago, mounted upon a truck and accorded a place of honor in the parade to celebrate the completion of the first subway under the East River. A half-tone of this car as it appeared in service is used as a frontispiece to the publication.

Newspaper Vending Machines in Louisville—The Louisville (Ky.) Railway has been experimenting for several months on two of its lines with the newspaper vending machines manufactured by the Louisville Automatic News Distributing Company. The results secured have been favorable and it is probable that the machines will ultimately be used on all the cars of the company. One machine is in the front of each car and another at the rear. The machine has a change-returning device, so that if a 5 cent piece is dropped in the slot, a two-cent newspaper and three cents drop out at the bottom. Patrons of the company who reside in the suburbs are said particularly to desire the extension of the machines to other lines.

Continuance of Transfer Withdrawal Requested—The Middlesex & Boston Street Railway, Newtonville, Mass., through Carl A. Sylvester, general manager, has petitioned the Massachusetts Railroad Commission to continue fur-

ther the withdrawal of free transfers. The company's petition states that by an order dated Aug. 4, 1909, the Commission approved a continuance of the withdrawal of free transfers by the company for a period of one year, so that a charge of 1 cent could be made for each transfer issued, and further points out "that the earnings do not warrant the restoration of said free transfers upon lines formerly operated by the Newton Street Railway as required by order of your board dated July 31, 1908, but that in order to secure, with least burden upon the public, a proper and just return upon capital actually invested, it is necessary to continue to make said charge of 6 cents as during the past year."

Special Transfers for Baseball Crowds in Louisville—The Louisville (Ky.) Railway has found it very successful to issue a special transfer slip to passengers from the grounds of the Louisville Baseball Club of the American Association. The regular transfer in use in Louisville has to be punched both as to time and the line to which it refers. To do this in the case of the baseball crowds would cause delay and so the special slip was devised to be handed to the passenger by the conductor without being punched. The special transfer can be used on any of the intersecting lines, the names of which are printed on the slip. Special colors are used to identify the baseball transfer, and the import of the slip is indicated in large type on the face of the slip. As the baseball park is some distance from the central part of the city, the conductor has time to collect the fares and return through the car and issue transfers.

Complaint About Fare on The Fonda, Johnstown & Gloversville Railroad—The residents and property owners of Hagaman have complained to the Public Service Commission of the Second District of New York that the 10-cent fare charged by the Fonda, Johnstown & Gloversville Railroad, Gloversville, N. Y., from Hagaman to Amsterdam is unjust and unreasonable and have asked that an order be made requiring a 5-cent fare between these points. It is stated that the distance from the Hagaman terminus of the Fonda, Johnstown & Gloversville Railroad to the waiting room of the company in Amsterdam is covered by two fare limits. There is a 5-cent fare from Hagaman to a point in Hanover, and an additional 5-cent fare from Hanover to Amsterdam. Passengers from Akin or Cranesville, suburbs of Amsterdam, may travel to Hanover, a distance of 5 or 6 miles, for a 5-cent fare, for which distance a passenger from Hagaman must pay an additional 5 cents. One of the zones for which a 5-cent fare is charged is said to be only 1 1/5 miles long. It is stated that the 10-cent fare operates against Hagaman, and that school children are not given equal privileges with the children of other villages. The complaint has been served upon the company.

Elevated Train Derailed in Boston—On Aug. 4, 1910, an empty train of four cars of the Boston (Mass.) Elevated Railway in charge of a single motorman was derailed near Tower F. Washington and Dudley Streets, Boston. The motorman was making a yard movement with the train when in some unaccountable manner it got beyond his control in the Guild Street yard, ran to the reverse curve at the tower at high speed, and was immediately derailed. Two of the cars fell into the street and the elevated structure was damaged somewhat. The motorman died without regaining consciousness and the cars were so badly wrecked that the cause of the accident is not known. All the controllers of the elevated cars in Boston are equipped with the so-called "dead man's handle," which returns to the off position unless held on the running points. The accident happened at 1.09 a. m., and no one but the motorman was seriously injured. President Bancroft, Vice-President Sergeant, Chief Engineer Kimball and other officials of the company reached the scene of the wreck soon after the accident and took active measures to clear the tracks so as to resume traffic. For a few hours Brookline and Jamaica Plain traffic to the Dudley Street terminal was diverted to the Tremont street subway, and during the early morning hours service between Dudley Street and Forest Hill via the elevated lines was suspended, surface car service taking its place. At 10.30 a. m. the elevated service was re-established, with the exception of the Dudley Street terminal loop, which was closed temporarily for repairs.

Personal Mention

Mr. C. S. Colony has been appointed trainmaster of the Lackawanna & Wyoming Valley Railroad, Scranton, Pa., to succeed Mr. Walter A. Wolfe, who has resigned. The position of inspector at Wilkes-Barre is abolished.

Mr. J. H. Rider has resigned as chief electrical engineer of the London (Eng.) County Council Tramways, to take effect on Aug. 31, to accept the appointment as chief electrical engineer for one of the mining companies in South Africa.

Mr. E. C. Johnson has been appointed chief engineer of the Los Angeles-Pacific Company, Los Angeles, Cal. Mr. Johnson was formerly assistant engineer in charge of construction on the Arizona Eastern Railroad in the Gila Canyon.

Mr. William M. Coleman has been authorized by Judge Lacombe in the United States Circuit Court to act as one of the receivers of the Metropolitan Street Railway, New York, N. Y., during the absence of Mr. Adrian H. Joline in Europe.

Mr. J. M. Gorman has been appointed assistant general manager of the Philadelphia (Pa.) Rapid Transit Company, to succeed Mr. Alexander Rennick, who has been appointed general manager of the company in addition to his office as vice-president of the company.

Mr. E. W. Olds has not resigned as superintendent of rolling stock of the Milwaukee Electric Railway & Light Company, as reported in other papers. Mr. Olds has not been in good physical health for some time past and is simply contemplating a trip to the Pacific Coast to regain his health.

Mr. Julian Griggs, formerly chief engineer of the Scioto Valley Traction Company, Columbus, Ohio, has been appointed chief engineer of the Lancaster Traction & Power Company, Lancaster, Ohio, for which he has acted in a consulting capacity for three years. Mr. Griggs also acts in an independent consulting capacity.

Mr. L. C. F. Bellamy has resigned as assistant manager of the Rangoon Electric Tramway & Supply Company, Burma. Mr. Bellamy had been connected with the Rangoon company for three years and during this time the system, which consists of 25 miles of track, has been electrically equipped. Mr. Bellamy is the son of the late C. R. Bellamy, for many years manager of the Liverpool Corporation Tramways.

Mr. Alexander Rennick, second vice-president and assistant general manager of the Philadelphia (Pa.) Rapid Transit Company, has been appointed general manager of the company, to succeed Mr. Charles O. Kruger, president and general manager of the company. Mr. Kruger has gradually relinquished the duties of the office of general manager to Mr. Rennick and will hereafter give his entire attention to the executive problems of management as president of the company.

Mr. H. W. Protzeller has been appointed general manager of the International Transit Company, which operates the street railway in Sault Ste. Marie, Mich., and Sault Ste. Marie, Ont., and the ferry which connects the two cities. For more than two years Mr. Protzeller was assistant superintendent of the Twin City Rapid Transit Company at St. Paul, Minn. Before becoming connected with the Twin City Rapid Transit Company Mr. Protzeller was in the employ of the General Electric Company, Schenectady, N. Y.

Mr. H. B. Nichols, who has been appointed chief engineer of the Philadelphia (Pa.) Rapid Transit Company, began his business career in 1885, in the City Surveyor's office, Boston, Mass. In the following year he became connected with several private engineering firms in the same city, principally on hydraulic work. In 1887 Mr. Nichols joined the engineering department of the New York & New England Railway, and during the next two years he was employed by Aspinwall & Lincoln, Boston, Mass., engineers. In 1900 he accepted a position as assistant engineer for the New England Telephone & Telegraph Company. During 1902 and a portion of 1903 Mr. Nichols was assistant engineer in charge of railway reconstruction work in New York.

In 1903 he entered the service of the People's Traction Company, Philadelphia, and in 1905 was appointed engineer of way of the Union Traction Company. Mr. Nichols served in that capacity with the Philadelphia (Pa.) Rapid Transit Company until he was appointed to his present position.

Mr. B. E. Merwin, superintendent of transportation of the Aurora, Elgin & Chicago Railroad, Wheaton, Ill., has been appointed general superintendent of the company, a position created recently. Mr. Merwin was connected with the Lake Street Elevated Railroad, Chicago, Ill., from the spring of 1893 until the spring of 1899, as train dispatcher and assistant superintendent under Mr. Frank Hedley, now vice-president and general manager of the Interborough Rapid Transit Company, New York, N. Y. In 1899 Mr. Merwin was appointed trainmaster of the Northwestern Elevated Railroad, Chicago, Ill., and on Jan. 1, 1900, was appointed superintendent of the Lake Street Elevated Railroad, which has been succeeded by the Chicago & Oak Park Elevated Railroad. On June 1, 1902, he resigned as superintendent of the Lake Street Elevated Railroad and accepted a position as general superintendent of the Interurban Railway & Terminal Company, Cincinnati, Ohio. On Nov. 1, 1907, Mr. Merwin accepted the position of superintendent of transportation of the Aurora, Elgin & Chicago Railroad.

Mr. A. R. Gould, president and general manager of the Aroostook Valley Railroad, Presque Isle, Maine, which was placed in operation early in July, 1910, is manager and contracting agent of the Maine & New Brunswick Electric Light & Power Company, Presque Isle, Maine. He has been identified with the development in Presque Isle for 23 years. He first engaged in business in Bangor. After two years, Mr. Gould went into the wholesale tobacco business in Presque Isle, and later bought the C. F. A. Johnson mill property at Presque Isle, which is now operated by the Aroostook Lumber Company, of which Mr. Gould is president. Subsequently he bought the municipal electric lighting plant of Presque Isle, and later he acquired the brick-making business and undertook to supply the business section of the city with exhaust steam from his mill plant. In order to facilitate the handling of products for his mill, Mr. Gould proposed the construction of an electric railway as early as 1902 to tap the timber resources of the Aroostook River. Surveys were made and other preliminaries arranged, but the construction of the road was delayed until Mr. Gould had financed a plan to develop the power of the Aroostook Falls.

OBITUARY

C. L. Bretz, president of the Cumberland & Westernport Electric Railway, Cumberland, Md., is dead. Mr. Bretz began his railroad career as a telegraph operator with the Pennsylvania Railroad at Newport, Pa.

George Flett, managing director of Dick, Kerr & Company, Ltd., England, was fatally injured in an automobile accident at Saltley, England, on July 27. He was returning from a meeting of the directors of the Metropolitan Railway, Carriage & Wagon Company, of which he is a member, when the car in which he was riding overturned in an effort of the chauffeur to avoid running over a child in the road. Before the development of electric traction, Dick, Kerr & Company occupied a very important position in England as contractors for engineering works and manufacturers of cable railway machinery. Early in the development of electric traction work Mr. Flett foresaw its future and after a careful study by him of the situation in this country and abroad, the company decided to engage in the manufacture of electric railway apparatus on a large scale. The late Prof. Sidney H. Short, who had recently resigned from the Walker Manufacturing Company, Cleveland, Ohio, was invited to supervise the construction of the new and extensive electrical shops at Preston, England, and afterwards became technical director of the works. Soon after a large factory for the construction of car bodies was built at Preston by the same interests. Dick, Kerr & Company have also been contractors for a large number of electric railways in Great Britain and other countries. Mr. Flett was an extensive traveler and paid a number of visits to this country. He was also an enthusiastic yachtsman. His age at the time of his death was 55 years.

Construction News

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

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

RECENT INCORPORATIONS

***St. Louis & Eastern Traction Company, East St. Louis, Ill.**—Incorporated in Illinois to build an electric railway to extend from Granite City, through Collinsville, Troy, St. Jacob, Highland, Pierron, Pocahontas, to Greenville. It will be a feeder to the Illinois Traction System and the East St. Louis & Suburban lines. Nominal capital stock, \$2,500. Incorporators and first board of directors are: A. W. Crawford, J. J. Frey, and A. M. Crawford, Hillsboro; C. C. Hoiles, Greenville, and C. C. Terry, Girard.

Coos Bay Rapid Transit Company, North Bend, Ore.—Incorporated in Oregon to build an electric railway from Coos Bay and extending to some transcontinental line in the same state. Capital stock, \$1,000,000. Incorporators: Fred Hollister, North Bend; George F. Averill, Marshfield; George M. Perrine, N. B. Campbell and R. P. Farding, San Francisco. [E. R. J., May 14, '10.]

***Park Gate Street Railway, Beaver, Pa.**—Application will be made on Aug. 31 by W. J. Coursin, H. L. Tucker, J. W. Humphrey, R. A. Todd and Fred C. Johnston for the charter of an intended corporation to be called the Park Gate Street Railway. J. W. Humphrey and J. Sharp Wilson are solicitors.

***Badger Railway & Light Company, Milwaukee, Wis.**—Chartered to build an electric railway from Whitewater to Lake Geneva. Capital stock, \$10,000. Incorporators: Harry B. Kamschulte, Gustav Pickhardt, Charles Zingsheim, Victor Lachmund and Chas. H. Franz, Jr.

FRANCHISES

Sacramento, Cal.—The Northern Electric Company, Chico, has applied to the Board of Trustees for a franchise on Nineteenth Street from C Street to K Street.

Galesburg, Ill.—The City Council has granted the Peoria & Galesburg Railway a nine-months' extension to its franchise in which to begin the construction of its line. [E. R. J., July 23, '10.]

Frederick, Md.—The Frederick Railroad has asked the Board of Aldermen for a franchise for a line over North Market Street, from Fifth Street, to connect with the tracks of the company on Patrick Street.

Syracuse, N. Y.—The Common Council has granted the Syracuse Rapid Transit Company an extension to its franchise so that it may lay double tracks and operate cars through East Willow Street, between Townsend and Lodi Streets.

***Charlotte, N. C.**—The Board of Aldermen has granted to Paul Chatham, Charlotte, a franchise to operate a street railway in Charlotte.

Ashland, Ore.—At a special election recently held in Ashland, John R. Allen, representing the Southern Oregon Railway & Power Company, Albany, was voted a street railway franchise. [E. R. J., Aug. 6, '10.]

Harrisburg, Pa.—The Common Council has passed the ordinance authorizing an extension within the city of the lines of the Harrisburg City Passenger Railway, operated by the Central Pennsylvania Traction Company, from Seneca Street to Division Street.

McKeesport, Pa.—The Jefferson & Wilson Street Railway has withdrawn its ordinance asking for a franchise to operate cars over the lines of the Pittsburgh Railways from Dravosburg Bridge to Market Street.

***Corpus Christi, Tex.**—H. H. Read and associates have applied to the City Council for a franchise for a street railway in Corpus Christi.

***Dallas, Tex.**—George Works and associates have applied to the Board of Municipal Commissioners for a franchise to construct and operate a street railway on Ross Avenue and Henderson Avenue. The line as proposed will extend from a connection with the Bryan Street line of the Dallas Consolidated Electric Street Railway at Garrett and Ross

Avenues eastward over Ross Avenue 900 ft. to Henderson Avenue and north on Henderson Avenue 700 ft. to the city limits.

TRACK AND ROADWAY

Phoenix, Ariz.—It is reported that surveyors are running a line for an electric railway from Mesa City to the Chandler ranch, a distance of 14 miles, to connect with a line from Phoenix to Mesa. Dr. A. J. Chandler, Mesa, is said to be interested in this project. [E. R. J., June 19, '09.]

Citizens' Light & Traction Company, Pine Bluff, Ark.—Press reports state that this company is considering plans for rebuilding its line in Pine Bluff.

San Joaquin Valley Electric Railway, Stockton, Cal.—Ground was broken on Aug. 1 by this company, near French Camp, south of Stockton. It is the intention to put on at least 200 men at once, and to have all of the grading completed in 90 days. Practically all of the rights of way have been secured. The line will be 44 miles long, and will extend from Stockton to Modesto. [E. R. J., April 30, '10.]

Vallejo & Northern Electric Railway, Vallejo, Cal.—The board of directors of this company have voted to increase the capital stock from \$2,500,000 to \$10,000,000. It was also decided to begin work at once. The line will connect Vallejo and Sacramento. [E. R. J., June 11, '10.]

Norwich, Colchester & Hartford Traction Company, Norwich, Conn.—This company is said to have completed most of the preliminary details of the construction of its proposed interurban railway. The layout has been practically finished, and most of the options needed for rights of way procured. Construction operations will begin at the Hartford end of the line next month, and it is expected that 10 miles of the road will be finished before the first of the year. Later in the summer work will be undertaken on the eastern section between Norwich and Colchester. Several important freight contracts have been made, and the promoters anticipate considerable revenue from freight traffic. [E. R. J., April 16, '10.]

Waterbury & Milldale Tramway, Waterbury, Conn.—At the annual meeting of the stockholders of this company, which proposes to build an electric railway between Waterbury and Milldale, it was voted to issue preferred stock to the amount of \$150,000, 7 per cent accumulative. The par value of the stock will be \$100 a share. Practically all the necessary rights of way have been secured and a complete survey of the proposed line of 9 miles has been made. The following officers were elected: Charles H. Clark, president, Milldale; Edwin S. Todd, treasurer, Milldale; John H. Cassidy, Waterbury, secretary. [E. R. J., Jan. 9, '09.]

***Rexburg, Idaho**—A movement is said to be under way in Fremont County for the construction of an electric railway that will encircle a large farming area. The proposed line will be 40 miles long, and would pass through Rexburg, Salem, Sugar City, Teton, Wilford, St. Anthony to Park, Egin, Plain Hibbard, Burton and back to Rexburg. The proposition made by Mr. Sewell, a capitalist of New York, is to form a company capitalized at \$1,000,000, Fremont County business men and farmers to subscribe \$100,000. The Rexburg Commercial Club has endorsed the movement.

***Illinois Western Interurban Railway, Quincy, Ill.**—It is reported that this company is being formed by A. J. Whitman to construct a gasoline motor railway to connect Quincy, Mt. Sterling, Ripley, Rushville, Littleton, Macomb and Bushnell. Eighty-nine per cent of the right of way has been secured from Quincy to Macomb. Plans and specifications for depots have been drawn with estimated cost of same. It is said that the line will be financed by New York capitalists.

Waukegan, Rockford & Elgin Traction Company, Waukegan, Ill.—This company announces that it will award contracts this week for the grading of its line between Waukegan and Rockford, a distance of 12 miles. Nearly \$100,000 has been raised to build it and the right of way has for the most part, it is reported, been donated. [E. R. J., July 9, '10.]

Ft. Wayne & Winona Traction Company, Ft. Wayne, Ind.—Engineers employed by this company, which propose to build an interurban railway between Ft. Wayne and

Warsaw, have reported that it will cost \$1,054,290 to construct and equip the line. It will be 40 miles in length. J. A. Barry, Ft. Wayne, president and treasurer. [E. R. J., June 25, '10.]

***Nashville, Ind.**—J. A. Johnson, Indianapolis, and associates, are promoting an electric railway to connect Nashville and Fruitdale, a distance of 16 miles. Work is to begin in 30 days. Financial backing is said to have been secured. A tunnel will be cut through Bear Wallow Hill, this being the most expensive work on the line.

***Emporia, Kan.**—It is stated that J. H. Dyer, Dayton, Ohio, is promoting a plan to establish a street railway and power plant in Emporia.

Wichita Railroad & Light Company, Wichita, Kan.—This company is said to be considering plans for improving its system in Wichita. The new work is to include the extension of the West Douglas Avenue line, the Pattie Avenue line to Linwood Park and the looping of the Riverside lines.

Louisville & Eastern Railroad, Louisville, Ky.—It is reported that this company will begin a survey of two routes to Eminence. It is proposed to build a branch line from Eminence to connect with the main line between Shelbyville and Simpsonville.

Arroostook Valley Railroad, Presque Isle, Me.—This company is said to have begun preliminary surveys for an extension through Woodland and Perham, as far as Madawaska Lake, about 19 miles.

Boston, Mass.—Bids will be received by the Boston Transit Commission until Aug. 30 for building Section 2, Beaver Hill tunnel, for the Cambridge connection, including a three-platform station located under a portion of the existing Park Street subway station and Boston Common.

Billings, Mont.—Press reports state that John A. Connolly, Muskogee, Okla., is taking preliminary steps in the construction of a street railway in Billings. At a special election, held June 20, a franchise was granted to Mr. Connolly for this line. He also holds a franchise for a line in Anaconda. [E. R. J., May 28, '10.]

Fonda, Johnstown & Gloversville Railroad, Gloversville, N. Y.—This company has applied to the Public Service Commission of the Second District for permission to exercise a franchise for the building of a double track along East Main Street in Amsterdam, and an extension of a single track line to the Eighth Ward.

Second Avenue Railroad, New York, N. Y.—The Public Service Commission of the First District has approved an application of this company for the electrification of its line from Chatham Square to Broadway, through Worth Street.

***Oregon City, Ore.**—G. Clarence Fields is reported to be interested in a proposition to construct an electric railway from Oregon City through the Molalla Valley. The line, if constructed, will cover the same territory surveyed by F. M. Swift, who has for the last three years been promoting the Clackamas Southern Railway.

Phoenixville, Valley Forge & Stafford Street Railway, Phoenixville, Pa.—It is stated that Philadelphia capitalists interested in Montgomery County electric railways have made a satisfactory proposition to the promoters of the Phoenixville, Valley Forge & Stafford Electric Railway, now under construction, and that negotiations will be closed upon the return of H. H. Gilkyson, treasurer of the company, for building the line. Grading has proceeded to a point near Valley Forge, and a number of culverts built. [E. R. J., May 28, '10.]

Pittsburgh, Steubenville & Wheeling Railway, Pittsburgh, Pa.—This company has nearly completed the survey of the preliminary line between Mount Lebanon and Bridgeville, and most of the right of way between the two boroughs secured. Construction on this section is to begin within the next few weeks. F. W. Ritchey will be in charge of field operation, and James Bryan will be the consulting engineer and contractor. Among the incorporators of the company are W. E. Hildebrand, Pittsburgh, and A. H. Kerr, Burgettstown. [E. R. J., Feb. 27, '09.]

West Penn Railways, Pittsburgh, Pa.—It is stated that this company is planning to double track its line between Uniontown and Brownsville Junction.

Cleburne, Tex.—The committee elected by the stockholders of the street railway recently met Daniel Hewitt and signed up the contract for the building of the street railway in Cleburne. [E. R. J., July 2, '10.]

Texas Traction Company, Dallas, Tex.—It is announced that this company plans to construct a line in Sherman extending to West Hill, also a line in McKinney. The Sherman line is to be completed by April 30, 1911, and the McKinney line by July 1, 1911.

SHOPS AND BUILDINGS

British Columbia Electric Railway, Vancouver, B. C.—This company is said to be considering a plan to erect car shops at some point on the lower mainland where sufficient cars may be built to supply the growing demands of the system. It is estimated that car shops giving employment to 1000 men will be required to fill the program of car construction for which the company is now planning for the next few years. The plans for the new freight sheds at New Westminster are now being completed and it is expected that construction will be commenced within a week. Two months will be required to build the sheds. The work of erecting the new passenger station at New Westminster will be started at once.

Los Angeles (Cal.) Railway—This company has awarded a contract to the Standard Construction Company for the construction of galvanized-iron lumber shed, 94 ft. by 192 ft., on Fifty-fourth Street, near Park Place, in Los Angeles.

Ft. Wayne & Wabash Valley Traction Company, Ft. Wayne, Ind.—J. Levering Jones, president, is said to have announced that this company is ready to erect interurban terminals, car houses and repair shops in Ft. Wayne if the city will abandon commercial lighting from its municipal lighting plant.

Wichita Railroad & Light Company, Wichita, Kan.—This company is contemplating the construction of a car house at Wichita, Kan. The cost is estimated to be about \$50,000.

Louisville (Ky.) Railway—This company has purchased property adjoining its car house on Pearl Avenue and will erect a freight and express depot on the site for the use of its interurban lines.

Paducah (Ky.) Traction Company—It is announced that this company plans the expenditure of \$50,000 on a new car house.

Wilkes-Barre & Hazleton Railroad, Hazleton, Pa.—This company, it is said, has decided to erect a new station at Ashley.

POWER HOUSES AND SUBSTATIONS

Southern Pacific Railroad, San Francisco, Cal.—This company has placed an order with the General Electric Company for one 300- and six 500-kw motor-generator sets.

Los Angeles (Cal.) Railway—A contract has been awarded by this company to the Alta Planing Mill Company for the erection of substation south of Agricultural Park.

Frederick (Md.) Railroad—Emory L. Coblentz, president of this company, is quoted as saying that arrangements have been made with the Hagerstown Railway for the erection of a joint power plant to furnish current to both companies. The plant is to be located either near Frederick, on the Monocacy River, or near Hagerstown, on the Antietam River. The plan is to form a company to be incorporated under the name of the Union Power Company, the stock of which will be held jointly by the Frederick Railroad and its allied interests and the Hagerstown Railway and its allied interests, and which shall sell current to both companies at the same rate. It is expected to have the plant in operation by May 1, 1911.

Syracuse, Lake Shore & Northern Railroad, Syracuse, N. Y.—This company has let the contract to the Burns Contracting Company, Syracuse, for the construction of a transformer station south of Ellen Street, Oswego.

Lewisburg, Milton & Watsonstown Electric Railway, Milton, Pa.—The power plant of this company at Milton was destroyed by fire on Aug. 2, entailing a loss of about \$30,000. The company has now in course of erection a new power station at Milton, which it expects to complete by Sept. 1.

Manufactures & Supplies

ROLLING STOCK

Nashville Railway & Light Company, Nashville, Tenn., is building 12 single-truck cars in its own shops at Nashville.

Southern Pacific Railroad, San Francisco, Cal., has placed an order with the General Electric Company for 12 four-motor 75-hp equipments.

Philadelphia (Pa.) Rapid Transit Company has placed an order with the General Electric Company for 20 two-motor 125-hp equipments.

Enid Interurban Traction Company, North Enid, Okla., which is constructing a 3-mile railway from Enid to North Enid, is considering the purchase of three storage battery or gasoline motor cars. H. M. Spalding, North Enid, president.

Worcester (Mass.) Consolidated Street Railway, reported in the *ELECTRIC RAILWAY JOURNAL* of July 2, 1910, as contemplating the purchase of 12 closed cars, has placed an order with the Osgood-Bradley Car Works for 20 closed cars.

San Diego, El Cajon & Escondido Electric Railway, San Diego, Cal., which has under construction a 55-mile railway between the points named, will purchase 35 cars. The line will be operated partly by steam and partly by electricity.

Fairview & Oklahoma City Railway, Fairview, Okla., which proposes to build a 4½-mile line from Fairview to Rusk, will soon be in the market for cars, either new or second-hand. W. B. Noble, Box 447, Fairview, general manager.

Jacksonville (Fla.) Electric Company, noted in the *ELECTRIC RAILWAY JOURNAL* of July 23, 1910, as having ordered 10 cars from the Cincinnati Car Company, will equip these cars, which will be of the semi-steel type, with maximum traction trucks made by the Standard Motor Truck Company, G. E. two-motor No. 219 equipments with K-36 controllers and G. E. air brakes.

Interborough Rapid Transit Company, New York, N. Y., reported in the *ELECTRIC RAILWAY JOURNAL* of June 4, 1910, as having ordered 40 elevated cars from the Jewett Car Company, has specified the following details for these cars:

Seating capacity	48	Interior trim.....	mahogany
Bolster centers, length,		Underframe	wood
	33 ft. 2 in.	Air brakes.....	West.
Length of body....	39 ft. 8 in.	Bumpers.....	Hedley anti-climber
Over vestibule....	47 ft. ½ in.	Car trimmings	bronze
Width over sills....	8 ft. 6 in.	Couplers	Van Dorn
Over posts, including belt,		Curtain fixtures....	C. S. Co.
	8 ft. 9 in.	Curtain material....	pantasote
Sill to trolley base....	10 ft.	Sash fixtures.....	Forsythe
Height from top of rail to		Seats	Heywood
sills	40 ¾ in.	Seating material.....	rattan
Body....	wood, metal posts	Treads	Universal

TRADE NOTES

Vaughn Rail Support Company, Chicago, Ill., has been incorporated with a capital stock of \$5,000. Incorporators are: Garrie L. French, David R. Jones and James E. Turner.

North American Railway Specialties Company, Chicago, Ill., has been incorporated with a capital stock of \$50,000. The incorporators are S. J. Cotsworth, S. P. McGough and E. M. Fry.

T. H. Symington Company, Baltimore, Md., reports orders to furnish ball-bearing center plates for 1400 cars for the Chicago Railways Company and 25 cars for the Metropolitan Street Railway, Kansas City, Mo.

C. H. Hughes & Co., engineers, New York, advise that owing to increasing business in making reports on public service corporations and investigating mechanical and electrical devices, they have moved to larger offices at 64 Wall Street.

Railway Brake & Shoe Company, Moundsville, W. Va., will erect a plant at Moundsville for the manufacture of brake shoes. The building will be 80 ft. x 300 ft., and, it is

estimated, will cost \$10,000. Nearly \$20,000 worth of equipment will be installed.

Strohmeyer Brake Shoe Company, Camden, N. J., has been incorporated with a capital stock of \$100,000 to engage in the manufacture and sale of brake shoes. The incorporators are: Julius Strohmeyer, C. A. Harris, Jr., H. S. Peddle and William W. Morton.

E. P. Morris Company, Elizabethtown, Pa., has just completed its new factory for the manufacture of electrical supplies. Mr. Morris reports that the shop is 100 per cent larger than his old one and that the company has sufficient orders to keep it busy for some time.

Shepherd Automatic Switch Company, Montgomery, Ala., has been organized with a capital stock of \$700,000 to manufacture railway switches opened or locked from the locomotive or an electric railway car. The officers are M. L. Shepherd, president; Nathan Lohman, vice-president; G. E. Kyser, secretary, and T. E. Lovejoy, treasurer.

American Rolled Gold Leaf Company, Providence, R. I., has engaged the services of Charles H. Bowers and T. J. Lawler. Mr. Bowers has been connected with the W. H. Coe Manufacturing Company, Providence, R. I., for the past ten years. His title will be railway sales manager. Mr. Lawler was, for about eight years, with Berry Brothers, Detroit, Mich.

Dossert & Company, New York, N. Y., have opened an office at 617 West Jackson Boulevard, Chicago, Ill., with George W. Armstrong, as western manager, for the territory included in the States of Minnesota, Wisconsin, Iowa, Indiana, Illinois, Missouri and Michigan. A large stock of standard sizes of the Dossert solderless connectors will be maintained at the Chicago branch.

American Ship Windlass Company, Providence, R. I., has received an order from the General Electric Company for six Taylor gravity underfeed retort stokers, to be used under two 225-hp Stirling boilers, in its plant at Pittsfield, Mass. The American Ship Windlass Company also reports an order from the Dayton (Ohio) Lighting Company for three Taylor gravity underfeed stokers.

C. C. Lockwood, Rockford, Ill., who deals in car advertising, has issued and copyrighted a new "getting off" sign, in which the proper methods are illustrated by large half-tone engravings, showing a lady getting on and off a pay-as-you-enter car. The instructions state that it is desirable to grasp the grab-handle with the right hand when boarding and with the left hand when leaving a car.

Whipple Supply Company, New York, N. Y., calls attention to the fact that in a collision between two street cars in Newark, N. J., on Aug. 5, one car which was equipped with the Hedley anti-climber was only slightly damaged while the platform of the other car, which was not so equipped, was completely demolished. In all accidents to cars equipped with anti-climbers which have been observed so far, these devices have demonstrated that they effectually prevent serious damage to the cars.

Stone & Webster Engineering Corporation, Boston, Mass., has been engaged by the Boston & Maine Railroad for the design and construction of a 1200-kw water-power plant at Franklin, N. H. Double transmission lines along the right of way of the railroad will carry the current at 22,000 volts to three substations. The power will be used for the railroad shops and for lighting the yards and station. Current will also be supplied to the Concord and Manchester branch, and to the Concord Street Railway and Contoocook Park.

ADVERTISING LITERATURE

Arthur S. Partridge, St. Louis, Mo., has issued list No. 34 of second-hand electrical and steam equipment for July.

Nachod Signal Company, Philadelphia, Pa., is distributing a bulletin containing a reprint of a paper read by Carl P. Nachod before the Engineers' Club of Philadelphia, entitled "An Automatic Signal for Electric Railways."

Norvell-Shapleigh Hardware Company, St. Louis, Mo., has recently published a mammoth catalog covering all of its products, among which are the following railway supplies: Linemen's tools, ticket punches, track drills, jacks, shovels and shovel handles, chain hoists, babbitt metal, lanterns, etc.

NEW PUBLICATION

Municipal Franchises, by Delos F. Wilcox, Ph. D., Vol. I, introductory, pipe and wire franchises. Engineering News Book Department, New York; 710 pages, price \$5.

The present volume, which will be followed by another next year, contains 21 chapters, of which the first five discuss the general situation under the titles of "How Franchise Rights Are Acquired," "What a Franchise Signifies," "Monopoly Profits, and Ways of Limiting Them," "Injuries to Individuals, and Ways of Preventing Them," and "Temptations to Public Wrong, and Ways of Overcoming Them." Then follow special chapters on franchises for electric light and power, telephone, telegraph, messenger water, sewer, heating, refrigerating, gas, and other public utilities. Railway franchises will be taken up in the second volume. The purpose of the book, as explained on page 24, is to simplify the fundamental conceptions as to the nature and purpose of franchise grants; to state the conditions which should be imposed with various classes of franchises; to describe the best types of those actually in force, and to discuss the principles involved in the regulation of public service utilities by means of taxation, rate regulation, public service commissions, referendum and municipal ownership.

Briefly, Dr. Wilcox believes in a franchise which grants a monopoly, but one in which the public retains the right to regulate the rates and service, as well as the complete control over the highway. He considers that the idea of getting good service by encouraging competition is fallacious because the inevitable tendency of an individual franchise is to seek the warm bosom of monopoly. A better plan is to admit the monopoly, but pull its sting by such regulation as will insure "adequate and humble" service at reasonable rates. Dr. Wilcox speaks favorably of the indeterminate franchise, but recognizes that it has serious objections unless coupled with the proviso that the city should pay the franchise holder the value of the operating plant in case of revocation. If franchises are sold he believes the principle of percentage of the gross receipts the most desirable, but owing to the complications involved when extensions are built, especially when the demand for extensions first comes from the public, the plan of limiting the profits of a franchise by its sale is generally unsatisfactory. The establishment of permanent rates in a franchise grant involves the possibility, indeed the probability, with changed conditions, of inequitable conditions for either consumer or producer, so that a provision for the periodic readjustment of rates is desirable from the standpoint of both the company and the public. Legislative regulation of rates, however, in order not to be confiscatory, must permit a reasonable rate of return on the investment, and thus the question of rate regulation must finally come for adjudication to the Federal Courts. Dr. Wilcox regrets that the Consolidated Gas decision of the Supreme Court was not absolutely conclusive as to the authority of a State legislature to wipe out the value of a franchise by the regulation of the rates charged by the owner, but in a matter so momentous as this to all cities and public utility companies he considers that on the whole it is not surprising that the court hesitated to go further than it did. A desirable form of franchise, if not the most desirable, in the author's opinion, is one in which the service is given at cost, including in cost a sufficient amount for operating expenses, maintenance, depreciation and a fair return upon the amount of capital actually invested. Under such conditions there would be no franchise taxes to be paid except possibly in unusually prosperous years. This, of course, would mean that the utilities would be operated not for the relief of the taxpayers, but for the benefit of the consumers.

The discussion of the general principles of franchises, which has here been reviewed, occupies about one-fifth of the book. The detailed discussion of individual franchises for the various classes of public utilities already mentioned follows. There are about 50 pages of index and references to authorities. The author, who is chief of the bureau of franchises of the Public Service Commission, First District, New York, dedicates the book to George E. Hooker, Milo R. Maltbie, George C. Sikes, Robert H. Whitten and Stiles P. Jones, "conspicuous representatives of the group of men who are devoting their brains and their energy to the establishment of a principle that 'a public franchise is a public trust.'"