A TRACKLESS TROLLEY.

Active interest in trackless trolleys has been revived by the demonstrations on an experimental line recently constructed at Scranton, Pa. The line was 800 feet in length, and the ground traversed by the coach, exhibited conditions such as would be met with on many country roads. Nevertheless, the progress, ease of manipulation, and comfort in riding were all that could be desired.

In outward appearance, the trolley coach resembles an omnibus, having a trolley-car platform, with step on either side, at the rear, and a seat for the motorman in the front.

Briefly stated, the object sought is to provide means whereby passenger coaches might be propelled through the streets, without the use of tracks, by means of electric current furnished from a main generating station, and continuously supplied to the motors on the coach truck through feed and return wires run above the coach. The trolley is designed to permit the coach to turn out a distance of 15 feet to either side of the road, and thus to avoid interfering with either light or heavy traffic. At the same time it will enable the motorman to thread his way through congested thoroughfares crowded with all kinds of vehicles as readily as could be done with any other type of ordinary conveyance.

Since the trackless trolley system obviates the use of running rails it is especially adapted for asphalt pavements in residential localities; also, in small towns and villages, and for temporary service to summer resorts. Another field of usefulness is in joining villages whose traffic is not sufficient to warrant the expense of the installation of track lines or for meeting the requirements of outlying districts where feeders to main-track lines would be desirable. Moreover. the system permits the operation of combination passenger and freight lines, the trolleys of the slow freight cars merely being pulled off the wires at any point to allow the faster passenger coaches to pass. Furthermore, by means of a removable line extension the freight cars may be run off 100 feet or more from the trolley line to distant stores or warehouses.

When operated in localities where there is a considerable fall of snow in winter, it is suggested that instead of piling up the snow on the sides of the road, a snow roller may be used for packing down the snow, and thus insuring good sleighing.

No data as to the cost of operation in comparison with street car lines can as yet be given. The cost of installation of the trolley wires and supports is about $1,600 per mile, while the cost of coaches, having a capacity of twenty passengers seated and fifteen standing, with motors and trolleys complete, is about $2,600 each.

The inventor of the system is A. B. Upham, president of the American Trackless Trolley Company, of Boston.—Street Railway Journal.

CANADIAN SOCIETY OF CIVIL ENGINEERS.

The first meeting of the Electrical Section was held on 15th October. W. A. Duff was appointed secretary. Dr. R. B. Owens, Professor in the Electrical Department of McGill University, president of the section, occupied the chair. Dr. Owens gave an outline of the work of the section to be followed during the coming winter and called attention to the important bearing of the subjects on engineering advancement generally, and the needs and development of Canada in particular. The subject of the evening, "The Electrical Equipment of some Canadian Hydro-Electric Power Plants," was introduced, and R. S. Kelsch, of Montreal read his paper entitled "The Reorganization of the Lachine Rapids Hydraulic & Land Co.'s Station." A discussion followed and the opinion seemed unanimous that the Lachine Company and Mr. Kelsch were to be congratulated upon the success of their work. The paper and discussion showed how satisfactorily a power-house could be controlled by one man at one point, while the apparatus to be controlled covered a very large area. The discussion also covered such points as the need and operation of time-limit devices and reverse current relays; the uses of fuses and circuit breakers on generator and feeder panels; the question of synchronizing in such a plant and the ease of its accomplishment; the question of satisfactory governing of the waterwheels; the operation of high tension oil switches on short circuit; the safety to be gained by use of lightning protective apparatus; the use of such on line and in station and both; the difficulty of sudden excessive rises of potential, their causes, magnitude, results and precautions necessary; the question of high voltage insulation, test of apparatus and material, and proper factor of safety to be employed.

At the second meeting a paper was read by P. M. Lincoln, of the Westinghouse Electric & Mfg. Co., and late electrical engineer for the Niagara Falls Electric Plant. The subject matter of the paper was a comparison of A. C. and D. C. systems of electric traction with special reference to the application of the single phase A. C. motor, to the Washington, Baltimore & Annapolis Electric Railway, by the Westinghouse Co. A. H. Armstrong, of the General Electric Co., Schenectady, then read his paper which was a comparison between steam and electric methods in heavy railroad work. Both papers were made more clear by a number of large sized diagrams of performance curves, which could be seen by everyone. The amount of labor needed to collect and prepare the data, etc., presented by these curves seemed enormous, one member remarking that the companies must have had a thousand men working for months on these curves. A prominent visitor remarked that he was particularly struck with the foresight and advance of the General Electric Co. In his opinion all steam roads would eventually be connected to electric ones, and this company had already spent much time and thought on what was now thirty or forty years in advance of us.

Professor Herdt's paper on "Polyphase Equipments of European High Speed Electric Railways," having been printed and distributed, was taken as read and the meeting thrown open to discussion. The meeting was told that there was no secret as to the principle used to prevent sparking in A. C. commutator motors, while, of course, the details of the design were rightly considered private. The question of best trolley voltage and location of transformers in the single phase A. C. system were discussed, and the reasons given for the method employed by the Westinghouse Co. on their road. The question of the use of induction motors instead of the commutator type was brought up and reference made to the work in Germany and Italy. The question of running lights from the same circuits with the railway motors was also discussed, and it was shown to be impossible in the case of heavy railroading, though perhaps possible in the case of a number of smaller units on long distances. and quite practicable in the case of city service, such as in Montreal. Mr. Lincoln's paper showed very careful estimates of cost both of construction and operation, showing a substantial advantage in favor of the single phase A. C. system in the ideal case taken, viz., a line sixty miles long with power station centrally located, transmission to substations at 20,000 volts, a trolley voltage of 3,000 reduced on the cars to a suitable low voltage at the motors, a proper starting effect being produced by varying this voltage to the motors by means of inductor regulators.

Mr. Armstrong's paper showed what a saving could be effected by the application of electric motive power to heavy trains of 1,000 and 1,500 tons, and was exceedingly instructive in this respect. The interest in both papers was very evident; the fact that the many prospective urban and interurban railway systems cannot afford to ignore an A. C. system, so carefully worked up, and promising such marked advantages over its old competitor and the fact that so many people believe (and hope for their own comfort), that steam will eventually be replaced by electricity on trunk lines are evidence of the great importance of the meeting. The discussion was taken part in by Prof. Owens, E. H. McHenry, chief engineer of the C.P.R.; P. G. Gossler, and Messrs. Lincoln, Armstrong and Herdt.