Master Mechanics' Convention.

The annual convention of the American Railway Master Mechanics' Association was held at Saratoga, N.Y., June 24 to 26. A number of important reports were presented, of which the following are summaries:

TON-MILE STATISTICS.—The report of this committee is based on a series of tests of switching engines made by G. L. Fowler. The observations show that the arbitrary allowance of six miles an hour for engines in switching service is much too high, and that, for strictly yard work, "four miles an hour for passenger switchers, and 3½ miles for freight switchers would undoubtedly be a liberal allowance." Further tests will no doubt be made, using a dynamometer at both ends of the engines in order to obtain the average drawbar pull. When this is done, the ton mileage can be computed by dividing the drawbar pull by the train resistance at the average speed, and multiplying the quotient by the total mileage. In the past, there was less need of a ton-mile basis for switching service because most switch engines were about the same size, having cylinders 18x24 in., drivers 50 in., and a steam pressure of 145 lbs.—the tractive effort being about 18,000 lbs. There are now many switch engines in service having a tractive effort of 32,000 lbs. Evidently the larger engine will do more work in a given time than the smaller machine, and hence the mileage is an unfair basis for comparison.

ELECTRICALLY DRIVEN SHOPS.—This is a review of the systems now used for driving machine tools by electricity. The relative merits and cost of each system, as determined from experience, are given. The data on which the report is based are given in considerable detail and will be found invaluable to designers of railway shops.

LOCOMOTIVE FRONT-ENDS.—This is a summary of the series of tests which Prof. W. F. M. Goss has been making. Many of the problems of the front-end have been solved, and it is concluded among other things that the taper stack is more efficient than the straight stack of the same diameter; that the higher the stack, the stronger the draft, and that there is a definite relation between the position of the exhaust nozzle and the diameter of the stack. Equations are given for proportioning the several elements in the front-end for given conditions. Attention is also called to the uneconomical feature of the diaphragm, and it is recommended that further tests be made for the purpose of dispensing with the diaphragm, if possible. About 30% of the total draft is dissipated in drawing the hot gases from the tubes and under the baffle plate.

SPECIFICATIONS FOR LOCOMOTIVE FORGINGS.—The committee has given a set of specifications for locomotive axles and forgings, covering the physical and chemical requirements of each, methods of making tests and general instructions for inspectors. Three sets of specifications are given, one for driving wheel axles, one for miscellaneous forgings and one for billets. A method is suggested for obtaining test pieces from axles without impairing the value of the axle for service. The specifications have been prepared to conform to those recommended by the International Association for Testing Materials, and the requirements are such that no difficulty should be encountered by the makers in meeting them.

RECENT IMPROVEMENTS IN BOILER DESIGN.—The report is a comprehensive review of the progress which has been made in the design of locomotive boilers. Examples of modern construction are given, both English and American. Suggestions are made pointing out the lines along which further improvements can be made. The tendency to overcrowd the boiler shell with tubes is criticized, and it is recommended that tests should be made for determining the relative efficiency of long and short boiler tubes.

PISTON VALVES.—This covers the subject in a thorough and comprehensible manner, and the experience of many roads with different forms of valves is given in detail. The designs of piston valves generally used are shown, and their relative merits are discussed. This subject has been receiving considerable attention, and the piston valve has been, at times, severely criticized on account of its large clearance spaces. — Railroad Gazette.

Recent Dominion Legislation.

The following acts relating to transportation and allied interests, passed at the current session of the Dominion Parliament, were assented to June 25:—

Amending Chap. 8 statutes 1900, authorizing the granting of Railway Subsidies.

Respecting the Kootenay Central Ry. Co.

Respecting the C.P.R. Co.

Respecting the Quebec and New Brunswick Ry. Co.

Respecting the British Columbia Southern Ry. Co.

Respecting the Canada National Ry. and Transport Co.

Respecting the Huron and Ontario Ry. Co.

Respecting the Niagara Grand Island Bridge Co.

Respecting the Ottawa, Northern and Western Ry. Co.

Correcting a clerical error in the Act to incorporate the Edmonton and Slave Lake Ry. Co.

Incorporating the Quebec, Saguenay and Gulf of St. Lawrence Ry. Co.

Incorporating the Coast Yukon Ry. Co.

Incorporating the Kootenay, Cariboo and Pacific Ry. Co.

Incorporating the Joliette and Lake Manuan Colonization Ry. Co.

Respecting the Great North-west Central Ry. Co.

Respecting the G.T.R. Co. of Canada.

Incorporating the Shipping Federation of Canada.

Respecting the Atlantic, Quebec and Western Ry. Co.

Respecting the Hudson's Bay and Pacific Ry. Co.

Incorporating the Père Marquette International Bridge Co.

Incorporating the Regina and Hudson's Bay Ry. Co.

Respecting the Nipissing and James Bay Ry. Co.

Incorporating the Macleod, Cardston and Montana Ry. Co.

Respecting the Lindsay, Bobcaygeon and Pontypool Ry. Co.

Respecting the Edmonton, Yukon and Pacific Ry. Co.

Respecting the Ottawa Electric Ry. Co.

Incorporating the Nipissing and Pontiac Ry. Co.

Respecting the Calgary and Edmonton Ry. Co.

Respecting the Canadian Northern Ry. Co.

Respecting the Alberta Ry. and Coal Co.

Respecting the Lake Erie and Detroit River Ry. Co.

Respecting the Desjardins Canal.

Respecting the Canada Atlantic Ry. Co.

Incorporating the North-west Coal and Coke Ry. Co.

Respecting the Alberta Central Ry. Co.

Incorporating the Hudson's Bay and Occidental Ry. Co.

Respecting the Canadian Steel Co.

Incorporating the Huron, Erie and Buffalo Ry. Co.

Respecting the St. Mary's River Ry. Co.

Incorporating the Cardiff Ry. Co.

Respecting the Interprovincial and James Bay Ry. Co.

Respecting the Klondike Mines Ry. Co.

Incorporating the Hamilton, Galt and Berlin Ry. Co.

Respecting the Elgin and Havelock Ry. Co

Per Diem Charge for Cars.

At the annual convention of the International Association of Car Accountants and Car Service Officers, held recently in Quebec, the committee on per diem presented a lengthy report on the operation of the system. The committee points out "that the established rate of 20c. a day for the use of foreign cars is inadequate to cover the interest on the investment, depreciation and repairs, and that it has not acted as an incentive to return cars at times when cars are in great demand. The committee recommends that the rate be advanced to 30c. a day, although admitting that even that charge would still be inadequate. While the recommendation is a step in the right direction it does not go far enough. Certainly no road should expect to use the cars of other roads without equitable compensation. The theory underlying the whole system of interchange is reciprocity. Railways do not build cars to hire out at 20, 30, or any other number of cents per day. They build cars for their own use and expect when permitting their use by another line to receive an equal number of cars in return. To fix the per diem rate at too low a basis works a double wrong. It does not, on the one hand, pay for maintenance, and it furnishes, on the other hand, an incentive for railroads to borrow cars rather than to build them. The per diem rate should be very materially raised. On the basis of an even exchange there would be nothing to pay, and where the exchange is unequal the rental ought to be compensatory. The same argument will apply as to the return of cars. Twenty cents a day furnishes little inducement for a road to return borrowed equipment when it can earn from 10 to 100 times that amount by keeping it. From this standpoint, also, the present per diem rate encourages roads to borrow instead of building cars. There is certainly no incentive to invest large amounts in equipment if the needed cars can be had when wanted, and only so long as wanted, at the rate of 20c. a day. It is very easy to dodge the penalty clause of the arrangement, and, as stated by the committee in its report, a large number of roads have successfully illustrated how this may be done. Nor, when it comes to this part of the question, is it the smaller roads or those having the least equipment that are the chief offenders. According to the committee, 'the result has been that nearly every road has attempted to retain in its possession every car that it got hold of regardless of initials or ownership.' Such a condition will justify the raising of the per diem rate to an amount that will effectually check the practice. So long as the interchange is equal it makes no difference how high the rate is fixed, and simple justice requires that when it is unequal the burden should be upon the borrowing road."—Railway Age.

St. John's, Nfld., Street Ry.—We are advised that recent press reports, to the effect that suburban trolley cars, operated by storage batteries, were to be placed in service on the line, is "merely a newspaper story," and that the management knows nothing about any such project. (June, pg. 218.)

M. J. Haney, C.E., has returned recently to Toronto from his trip round the world, and is now at Charlottetown, P.E.I., superintending his contract for building the substructure of the Hillsboro' river bridge.