

theory satisfy the conditions that impartial observers immediately set it down as a proved hypothesis. The fact of its being so is shown in the unusual course of the Canadian Government geological survey in publishing Mr. Upham's report of 156 pages, though the author belonged to a foreign service. This course seems to have displeased some members of our geological staff. To any one who examines the two pages (113 and 114) of observations as to glacial striae, and finds such an entry as "Between the Hudson bay and Lake Winnipeg, along the Severn, Fawn, Poplar and Bersen's rivers, on almost all exposed rock surfaces (A. P. Low) the glacial striae run S.W."; and also (page 115) "On the east shore of Lake Winnipeg between the Narrows and the mouth of Winnipeg river at numerous localities the glacial striae are S.W.," it must be evident that in its course the tremendous ice sheet could not have done other than scoop out Lake Winnipeg. We may, however, admit the possibility of there having been in the pre-glacial age a river valley to begin with.

4. Mr. Tyrrell says: "Finally, it would be interesting to know if the lecturer has any evidence of the "Trenton" age of the rocks beneath the city of Winnipeg, as a specimen received from a well bored at the water works at Armstrong's point consists of soft and argillite, the same as that at Stony mountain, and clearly indicates, in default of evidence to the contrary, the Hudson river age of the rock immediately underlying the drift and alluvium on which Winnipeg is built."

The discussion at this point was as to the occurrences of the "Trenton" rock from which natural gas is supposed to come. Dr. Dawson shows that there is "Trenton" at Rosenfeld south of Winnipeg; it is shown by Prof. Pantom and others that the Trenton is found at St. Andrews (south of Winnipeg). Mr. Tyrrell says probably Hudson river bed immediately underlying the drift at Winnipeg; and since Trenton underlies Hudson river it is almost a certainty that the Trenton lies below Winnipeg and can be reached by boring.

5. Mr. Tyrrell says: "It is also stated that 'some marbles occur on Lake Manitoba,' whereas it is quite certain that no such rock is found anywhere around that lake, and, in fact, there is no crystalline limestone or 'marble' known anywhere in Manitoba up to the present time."

Prof. Hind states that he found on St. Martin's lake, which is connected with Lake Manitoba by the short Partridge Crop river, and which is also connected with Lake Winnipeg, "partially metamorphosed sandstone rocks," at one point the "rock approaches the character of gneiss," "an island consists of gneiss with large quartz veins meandering through it," while further on were found "fragments of silicious limestone." It is locally believed that there is crystalline limestone in that region, and certainly the conditions described by Prof. Hind favor this view. These are all the matters raised in Mr. Tyrrell's criticism, and it will be seen that they are almost all debatable points.

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