Review: American Glaciology

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AMERICA.

CANADA AND NEWFOUNDLAND.

'Historical Geography of the British Colonies.' Vol. 5, 'Canada, Part III. Geographical.' (Pp. vii., 302.) Vol. 5, Part IV. 'Newfoundland.' (Pp. xii., 274.) By J. D. Rogers. (Oxford: Clarendon Press. 1911. *Maps*. 4s. 6d. *each*.)

These two volumes are a notable addition to Sir Charles Lucas' well-known series. The Newfoundland volume is almost purely historical, but in the earlier part we find topics of prime geographical importance in the early discoveries and attempts at settlement. The Canadian volume, on the other hand, is purely geographical in arrangement and treatment. The three great physical divisions of the old eastern highland, the middle plains and the western mountains are explained, subdivided, and described in detail. This part of the work is highly to be commended for its clarity; only on one point it is rather difficult to follow the author—in the apparent doubt as to the applicability of the term "lakes" to Lake Winnipeg and other sheets of water in its vicinity. On the physical basis is built up the story of settlement and development, so that the inclusion of the volume in an historical series is amply justified. Some data are furnished for the distribution of settlers according to original nationality. This subject as treated by Mr. Rogers will possess an additional, retrospective interest in view of the ethnological work recently undertaken by the Canadian Government. We may also follow the process of opening up communications, by water, trail, road and rail, and, thanks to the writer's careful dating of events, are enabled once more to marvel at the extraordinary rapidity of this process in the last few decades. The publication of the volume has fallen rather unfortunately in date with regard to the use of census figures, which are mostly ten years old, but this will be easy of remedy in a further edition. References to authorities are copiously given in both volumes.

AMERICAN GLACIOLOGY.

G. F. Wright, 'The Ice Age in North America and its Bearings upon the Antiquity of Man.' 5th edit. Ohio (London: C. Higham & Son), 1911. xxi. + 763 pp., ix. pls., 196 figs., 3 maps. 20s. *net*.

The appearance of Dr. G. F. Wright's 'The Ice Age in North America' in a fifth and enlarged edition shows the usefulness of the work as a general account of the glacial geology of that continent. The new edition summarizes much of the fresh evidence concerning North American glaciation, especially regarding the Western mountains, and the extension of glacial deposits beyond the line of great terminal moraine in Pennsylvania. The well-known theory of Carvill Lewis, that every sheet of land ice is limited by a terminal moraine, has been found to require revision even for the area where it was founded. The new edition includes an account of Lake Agassiz by Mr. Warren Upham. The author describes his work as "really a treatise on the whole subject of the Glacial period"; but the sections on the areas outside North America are now so incomplete that the work would have been improved by their omission. The chapter on the glacial deposits of Europe is no more up to date than the reference to "Prof. A. Geikie." The statements in regard to the Shackleton Expedition are also inadequate and unsatisfactory. The bibliography of thirty pages is irregular and incomplete, but is a useful list of American literature. The text might have been shortened with advantage in the sections dealing with theories that do not occupy the same position as they did twenty years ago. The author claims in his new preface that the later investigations "have not seriously affected the main theories adopted twenty years ago," but "pertain

mainly to the details of the subject." The value of the book would have been enhanced had the author recognized more fully the great changes that have been made in the theories that were in vogue at the date of his first edition. He devotes much space to Croll's theory of the cause of the ice age, which he describes as still the most plausible of the cosmic theories, and it is apparently this theory to which he refers as "the current astronomical theory." The author does not, however, refer to Sir Robert Ball's restatement of the theory, or to Culverwell's unanswered and apparently unanswerable criticism. Mr. Harmer's paper offering a meteorological explanation is not noticed either in the text or bibliography. The author discusses the date of the ice age, and concludes from the evidence of Niagara, the falls of St. Anthony at Minneapolis, and several interesting but less-known examples, that the ice age terminated in America from eight to ten thousand years ago.

He disputes the longer estimates from Niagara, from (amongst other grounds) his observations of the rate at which the valley is being widened by the weathering back of the cliffs. He estimates that the shale is being cut backward by weathering at the rate of three inches a year, and calculates that, at the rate of only a quarter of an inch a year, the past widening of the gorge by sub-aerial erosion could have been effected in less than ten thousand years. In the discussion upon Niagara the reference to Dr. J. W. Spencer's work seems inadequate.

There is a summary of the statements regarding the North Polar area by Peary and Cook, whose testimony, strange to say, the author appears to regard as of equal value.

The author repeats his argument for the antiquity of man in North America as proved by implements and human remains; but American opinion is apparently still doubtful of the evidence advanced by the author. The Calaveras skull and the man from the Nebraska loess are still accepted by the author as the remains of early man; but the overwhelming balance of opinion in America appears to be that these remains are those of buried Indians. Dr. Wright makes no reference to Hrdlička's monograph on the subject (*Smiths. Inst., Bur. Ethnol., Bull.* 33, 1907).

J. W. G.

SOME LITTLE-KNOWN WEST INDIAN ISLANDS.

'A Naturalist on Desert Islands.' By Percy R. Lowe, B.A., M.B. London: Witherby & Co. 1911. 7s. 6d. net.

The author visited some almost unknown islands in the West Indies on Sir Frederic Johnston's yacht. Of these he gives us a pleasant naturalist's account of three groups, with good descriptions of their birds. Two islands, Swan and Little Swan, 98 miles from Honduras, are mainly of coral formation with coral reefs and knolls actively growing up around and between them. Both islets might be termed elevated coral reefs. The basis of Swan is an interesting deposit of a peculiar soft clay, which is formed of radiolarian ooze mixed apparently with both pelagic and bottom-living foraminifera. Abyssal oozes elevated to about 1100 feet, are also known in Barbados, Cuba, and many other West Indian islands, but it is most doubtful whether any deduction as to the existence or non-existence of land along the Panama belt can justifiably be drawn from the presence of such oozes in these islands. Little Swan in other respects seemed to be the more interesting islet, being more elevated, with several coral terraces having walls 10 to 15 feet high. Enough is told the reader to whet his appetite for more, but not enough to enable him either to accept the author's theories or to conceive others of his own.