

# WILEY



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Review

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Even as a series of practical rules the Wakefield system was applicable only at a certain stage of colonial development. When conditions changed, and the colonies outgrew the system, it was wisely abandoned. The discovery of gold, for example, in Australia in the early fifties both furnished the necessary incentive to emigration and upset all nice calculations as to the price of land and the amount of labour required to cultivate it. But before its abandonment his system had left its mark on economics and social history in Australia." A select bibliography is given, with a list of the libraries where authorities can be consulted in London.

A. W. A.

#### POLAR REGIONS.

**British Antarctic Expedition, 1907-9, under the Command of Sir E. H. Shackleton. Reports on the Scientific Investigations.** Geology, Vol. 1. Glaciology, Physiography, Stratigraphy, and Tectonic Geology of South Victoria Land. T. W. E. David and R. E. Priestley. With Short Notes on Palæontology by T. G. Taylor and Prof. E. J. Goddard. London: Heinemann. 1911. Pp. xxiv. and 319. 95 Plates, 1 Panorama.

The first volume of the great work on the geology of Sir Ernest Shackleton's Antarctic Expedition of 1907-1909 will doubtless long remain the standard authority on the geology of South Victoria Land. Its chief conclusions and discoveries have been previously announced, and in so long a volume the most important facts are inevitably somewhat buried in detail; but the loss of novelty is more than compensated by the advantages that the authors have had the opportunity, after full discussion, of reconsidering their conclusions, which are accompanied by the full evidence in their support. So full a work also reveals the negative evidence as to the absence of various types of glacial deposits, which naturally cannot be safely inferred from the preliminary papers.

This volume is the work of Prof. Edgworth David and Mr. Priestley, the two geologists with the expedition, and it contains some palæontological contributions by Mr. Griffith Taylor and Prof. Goddard. The text is illuminated by some extracts—of which there might well have been more—from the contemporary journal of Prof. David, which are written with the picturesque eloquence so often found in his writings.

After the physiographic introduction there is a chapter on the geological bearings of Antarctic meteorology. The South Polar cyclone is readvanced in somewhat novel relations, for the authors accept the existence of a (p. 25) "great Antarctic high-level cyclone overlying the permanent anticyclone." The longest section of the work is devoted to glacial geology, which occupies two-thirds of the work. One of the most interesting sections is the discussion of the Ross Ice Barrier, in which the authors reject Scott's theory of its origin, and adopt the view that it consists mainly of snow-drift over an original sheet of sea ice and glacier ice. One of the most valuable contributions is the account of the glacier tongues which project into the Ross Sea. The authors describe them as maintaining a permanence in position and extent that is at first puzzling; for their observations show that a thickness of  $3\frac{1}{2}$  feet of ice is melted annually from the lower side of the ice-floes, and the fierce gales in this area would appear almost certain to shatter the ice-tongues and blow them out to sea, unless they have a solid foundation. The authors make the interesting suggestion that the ice-tongues rest on long banks or eskers formed of morainic material dropped from the melting ice. This view would have been warmly welcomed by those early writers on eskers who maintained their marine origin.

The view would however appear inapplicable to the typical Irish eskers, as it would hardly account for their anastomosing course, and they must be much narrower in proportion to their length than the suggested Ross Sea eskers. The proportions which the authors are prepared to allow for eskers is shown in their account of the mounds of fluvio-glacial gravel at the Blue Lake in Ross Island which they describe as eskers; one of them has diameters of 3 yards by 3 yards, another is 10 yards by 15 yards, while the longest is  $7\frac{1}{2}$  yards by 26 yards.

The chapter on vulcanism describes Mount Erebus, which with characteristic enterprise was promptly ascended by the Shackleton Expedition and found to be a huge dome of kenyte. The chapters on the geological history are the shortest but perhaps the most important, for the work of the combined expeditions has shown the presence of Cambrian, Devonian, and Gondwana fossiliferous deposits. Mr. Taylor contributes a valuable account of the Archæocyathi in the limestones of South Victoria Land. The Beacon Sandstone with its coal-seams is referred to the Gondwana, and the authors advance some interesting considerations regarding the absence of glacial deposits in this series. Part of the Beacon Sandstone is referred to the Devonian owing to Dr. Smith Woodward's determination of the fossil fish; but most of that formation is certainly younger, and is provisionally correlated with either the Coal Measures of Newcastle in New South Wales, which are Permo-Carboniferous, or with the Trias-Jura System of Eastern Australia. The evidence is scanty; but no one is so qualified to judge it as Prof. David.

In dealing with the igneous rocks one interesting fact announced is that in the basalt of Cape Barne, which contains 50 per cent. of magnetite, this mineral is the latest product of crystallization. Jensen's full account of this rock promised in the second volume will be read with interest.

The last two chapters deal with the general geographical relations of Antarctica. They show the great former extension of the ice in this region and institute interesting comparisons between the structure of South Victoria Land with the Graham Land region and with South America. South Victoria Land is a great horst between the foundered area of the Ross Sea to the east and the main Antarctic plateau to the west; and the authors favour the view that the fault movements were of Pliocene Age. The igneous rocks have the composition characteristic of what is known as the Atlantic type. The interesting sections on p. 295 show a remarkable resemblance between the Antarctic horst and the Andes of Patagonia, which are represented as a horst rising above a low coastal plain and archipelago formed by step faulting. If the Pacific coast of South America is to be assigned to the Atlantic coast type, hardly any coast will be left of the Pacific type.

The volume is superbly illustrated by ninety-five plates and sixty-seven figures, including a selection of beautiful photographs and instructive maps and sections. Two striking photographs show the Ross Sea so crowded with pancake ice as to resemble a tropical pool covered with the leaves of the *Victoria regia*.  
J. W. G.

#### GENERAL.

**Cities in Evolution: an Introduction to the Town Planning Movement and to the Study of Civics.**— Patrick Geddes. London: Williams & Norgate. 1915. Pp. xvi., 410. 7s. 6d. net.

This work is written with a fine optimism, which, as the last page shows, even these depressing war times fail to subdue. The keynote of the book is struck in the following passages:—