

VI.—INDEX TO DESOR'S SYNOPSIS DES ECHINIDES FOSSILES. By F. A. BATHER, M.A., D.Sc., F.R.S. Avec une note sur les dates de publication du *Synopsis* par Jules Lambert. Published by the Author, Fabo, Marryat Road, Wimbledon, England, May, 1910. Price to subscribers, 7s.

THIS Index, to the preparation of which the GEOLOGICAL MAGAZINE drew attention some time ago, has now been published and should prove of great use to every worker on Echinoids, whether fossil or recent, and to those who, without claiming to be specialists, frequently have occasion to look up a name. Reference is made particularly easy by the fact that the Index is arranged in two parts, the first under the names of species in alphabetical order, the second under the names of the genera, the name of each genus being followed by a list of the specific names that are in any portion of the book associated with it. The value of such an Index will be more apparent when it is remembered that the *Synopsis* was issued in parts and that several of the pages were cancelled, additions being made later on. Also there were several series of Addenda, and various names occur either in the plates, or in the tables, or in foot-notes, to which reference is by no means easy; in fact, many of them almost entirely escape observation.

Systematists have long been puzzled by the fact that this original *Synopsis* was issued in separate parts, and that owing to the destruction of the original wrappers they were quite unable to determine the dates of the various names that occur in it. This task has now been accomplished for them by Mr. Jules Lambert, who, together with the late P. de Loriol, spent many years in trying to obtain the necessary details. The whole of the results are summarized in a collation of a supposed bibliographically complete copy.

Dr. Bather deserves the gratitude of his fellow-workers for undertaking this laborious task, and we may express a hope that their gratitude will be shown by a speedy sale of the work.

VII.—BRIEF NOTICES.

1. HANGING VALLEYS.—In the Bulletin of the American Geographical Society (1909) Professor D. W. Johnson deals with two questions involved in the problem of glacial erosion: (1) Are hanging tributary valleys a reliable indication of glacial erosion of the main valley? (2) May not hanging tributary valleys result from glacial widening of the main valley, instead of from glacial deepening? In the paper the author discusses the origin of hanging valleys, and deals with a number of glaciated valleys in Europe.

2. THE RELATION OF GEOLOGY TO TOPOGRAPHY.—Professors D. W. Johnson & F. E. Matthes contribute a chapter with this heading to Breed & Hosmer's *Principles and Practice of Surveying* (New York). After pointing out the value of a knowledge of geology to the topographer, as giving him "some understanding of the conditions under which the surface was formed", the writers point out by a series of diagrams the differences between accurately and inaccurately mapped mountain areas. They show also how correct contouring of

a district brings out the detail of glaciation, alluvial fans, volcanic features, dome mountains, and general physiography or topographical geology.

3. OIL SHALES OF CANADA AND SCOTLAND.—Dr. R. W. Ells has just issued in the Department of Mines, Canada (Ottawa, 1910), a long report on the oil-shale industry of Scotland, New Brunswick, and Nova Scotia. This report treats of the geology, history, statistics, analyses, cost of plant, commercial value, and many other points useful to those interested.

4. "ELEPHANTS' OR BUFFALOES' WALLOWS" THE WORK OF EARTH-WORMS.—*The South African Journal of Science* is the organ of the South African Association for the Advancement of Science, and is a monthly record of science and economics. In the part for February, 1910, J. A. H. Armstrong writes on the geology and mineralogy of Natal, and he refers incidentally to those curious pits or hollows known as "elephants' or buffaloes' wallows". Setting aside the older theories as to their origin, (1) wallow holes, (2) native iron-ore digging, (3) ancient gold-diggings, (4) percolating waters, Mr. Armstrong thinks they are the work of earth-worms alone. He gives a number of strong arguments in favour of his views, and seems to have made a singular and thoughtful observation.

5. MOUNT ETNA.—On March 23 this volcano burst forth into activity after a series of minor earthquakes, the outbreak being the most violent since the great eruption of 1892. Streams of lava issued from five craters, and united to form a great stream that moved at the rate of more than 60 feet an hour, and was estimated to be 12 feet high and more than 1500 feet in width. Quantities of scoriæ were also ejected mainly from the highest crater. The lava-stream subsequently divided, portions extending to the Galvagna district, south of Mont San Leo, approaching Borello and also Nicolosi. Ultimately more than fourteen craters were in eruption. On the evening of March 26 the volcanic activity ceased, but a renewed eruption, of less intensity, was reported on March 28, and on April 9 it was announced that Etna was again in violent eruption.

6. THE NEW ZEALAND GEOLOGICAL SURVEY in Bulletin No. 7 (New Series), 1909, has issued a report on "The Geology of the Queenstown Subdivision, Western Otago Division", by Mr. James Park. This is evidently an attractive district, as Queenstown "is picturesquely situated on the raised lake-beaches and great moraine overlooking Queenstown Bay and Frankton Arm. Its scenic marvels and sunny salubrious climate have made it the chief centre of the tourist traffic in the South Island". The geological formations consist mostly of mica-schists grouped as Palæozoic, with strata grouped as Lower Miocene (Oamaru Series), Pleistocene Boulder-clays, moraines, and terrace-gravels, and Recent alluvial deposits. Evidence is given of overthrusting in the older schists, whereby wedges of Miocene strata have been included along certain thrust-planes, a feature of remarkable interest. Proof is also presented to show "that the Lake Wakatipu region was covered by a continuous ice-sheet of vast depth in the Pleistocene period—a continental ice-sheet that reached to the sea, and probably covered the greater part of the South Island".

Gold-bearing lodes occur in the schists, but alluvial mining has been by far the most productive source of the metal. Igneous rocks do not occur in situ, but many pebbles and boulders occur in the fluvio-glacial drifts, and these are described. The work is fully illustrated by maps, sections, and pictorial views.

7. BOARD OF AGRICULTURE.—We are glad to note that Dr. J. J. H. Teall, F.R.S., Director of the Geological Survey and Museum, is a member of the Committee recently appointed by Earl Carrington to advise the Board on all scientific questions bearing directly on the improvement of agriculture. A carefully surveyed geological map on the scale of 6 inches to a mile is the best foundation for the more detailed study of soils, and indeed for appraising the value of an estate. As we noted in reference to Soil Surveys in the United States (*Geol. Mag.*, 1908, p. 277), the so-called 'soil-maps' are geological maps representing the subsoils or geological formations (whether Solid or Drift), there is no attempt to map the constantly varying soils, but information relating to their depth and character is given in many places on the maps from data obtained by means of spade or hand-borer.

8. "SKETCHES OF GASPÉ" is the title of a little book by Mr. John M. Clarke (Albany, 1908), in which the author gives an interesting account of the scenery, geology, and of many other matters relating to "that vast peninsula of Eastern Quebec which lies between the mouth of the St. Lawrence River and the Bay of Chaleur, facing the waters of the Gulf of St. Lawrence".

9. GEOLOGICAL AND PETROGRAPHICAL RESEARCHES IN THE NORTH URALS.—"Recherches géologiques et pétrographiques sur l'Oural du Nord, le bassin de la haute Wichéra," by Professor Louis Duparc, aided by Professor F. Pearce and Miss Marguerite Tikanowitch (*Mém. Soc. Phys. et Hist. Nat. de Genève*, xxxvi, 1909, pp. 33-210). In this work the authors describe the eruptive rocks (diabases) which are generally intrusive in the metamorphic or pre-Devonian rocks, and these 'crystalline schists' are also described in detail. Middle and Lower Devonian, Carboniferous, and Quaternary deposits complete the list of formations represented. Brief descriptions only are given of them, attention being devoted to the geological structure and physical features, and to the mode of occurrence and origin of the iron-ores. The memoir is fully illustrated by pictorial views, plans, geological sections, and microscopic rock-sections.

10. THE WATERS OF THE GREAT LAKES OF NORTH AMERICA are described by Mr. R. B. Dole (*Journ. New England Water Works Assoc.*, xxiii, 1909). Samples were collected monthly for a year from each lake, and a tabular statement is now given of the mineral analyses. Around Lake Superior igneous and crystalline rocks predominate, and the water contains on the average sixty parts per million of solids; whereas Lakes Erie and Ontario contain about two and a half times the amount of solid constituents, due mainly to material derived from calcareous sedimentary formations. The lakes are almost invariably softer than their affluents, as might be expected from the effects of direct rainfall. The suspended matter is practically all deposited by sedimentation.