

apparent from the geological survey map, although there is evidence of much faulting, folding, and unconformity. There are good views of the Usk and Sugar-loaf, of the Bloreng, and of the serpentine curves of the Wye. Agriculture, mines, and minerals are also dealt with. The alluvial levels bordering the Severn, locally known as "the Moors", are said to contain the deepest and richest soil in the county.

In the volume on the Isle of Man the geology is not satisfactory: it is remarked that "Underneath all rocks is the primeval granite, the foundation material of the earth's shell", and that the "very early granite" of Dhoon and Foxdale is covered by "Primary rocks, which may conveniently be termed Cambro-Silurian, i.e. of the same structure and formation as the Cambrian, the Ordovician, and the Silurian rocks of Wales". As the geological map at the end of the volume, based on that of the geological survey, gives these rocks as Manx Slates (Cambrian?), the author might well have referred to the Survey memoir by Mr. Lamplugh to aid him in his geological descriptions, and he would then have learnt more about the "vast deposits of marl" beneath the surface in Kirk Andreas and Kirk Bride. In other respects the volume is full of interesting information, including remarks on place-names and surnames, antiquities, etc. The illustrations are effective, but those of Spanish Head, Calf Island, and Sulby Glen are not so clear as the picture of the Manx cat and many others. In the volume on Carnarvonshire the author acknowledges help from Mr. E. Greeuly in the geological chapter, which is excellent though brief. Mines and quarries are separately dealt with, and there are views of the Penrhyn quarries. As remarked, there is a reduced demand for roofing-slate, as tiles are now more generally favoured by architects. Other views include the precipices of Carnedd Dafydd, Snowdon, Aberglaslyn Pass, Dolbadarn, and a group of black cattle. A concise history of the county may be mentioned among the many topics dealt with in this volume.

#### V.—BRIEF NOTICES.

1. COTTESWOLD NATURALISTS' FIELD CLUB.—In part ii of vol. xvii of the Proceedings of this Club (November, 1911), Mr. L. Richardson contributes a paper on "The Inferior Oolite and Contiguous Deposits of the Chipping-Norton District, Oxfordshire", describing in detail the succession of strata seen in many quarries in connexion with the 'Chipping Norton Limestone', so named by Hudleston in 1878. That limestone is newer than the *Clypeus* Grit of the Inferior Oolite, and represents the Lower Fuller's Earth; it is succeeded by a series of dark clays, together with marls and sandy limestones of estuarine character, to which the name 'Neæran Beds' has been given by Mr. E. A. Walford, while above comes the Great Oolite. In the Swerford area Mr. Richardson notes four subdivisions in the Chipping Norton Limestone, while elsewhere seventeen subdivisions are noted in the Neæran Beds. Local evidences of non-sequence between the Chipping Norton Limestone and beds above and below are indicated.

Mr. E. Talbot Paris describes and figures two new species of

*Gervillia* and one of *Perna* from the Neàran Beds. In further papers Mr. Paris contributes "Notes on some species of *Gervillia* from the Lower and Middle Jurassic Rocks of Gloucestershire", with text-illustrations and two plates, and a note on *Gervillia acuta* from the Scarborough Limestone. Mr. T. H. Withers gives a short note "On the occurrence of *Pollicipes* in the Inferior Oolite".

Mr. J. W. Gray deals with "The North and Mid Cotteswolds and the Vale of Moreton during the Glacial Epoch". In this article the author has discussed very fully the facts and opinions brought forward by various geologists. With regard to land ice he remarks that "There does not appear to have been any intrusion of these ice-sheets into the Cotteswold area, except, perhaps, the northern flanks and the Vale of Moreton"; and that "There are no signs of the passage of any of the great ice-sheets over the Cotteswold uplands". Some of the higher gravels are considered to have been "introduced by Tertiary streams that have been beheaded by the development of the Severn tributaries". The great accumulations of limestone-rubble on the Cotteswold slopes were probably due to "extensive snowfields liable to seasonal melting", as suggested by Witchell.

Although the Severn and Avon plain may have been subject to estuarine conditions during Pleistocene times, "there is no evidence that any of the gravels above a height of about 150 feet O.D. were laid down in an arm of the sea." Some of the marine shells, such as have been found at Cropthorne, may have been derived from Glacial beds in the Upper Severn valley. No evidences of Palæolithic Man have been found in the district described.

2. MINERAL RESOURCES OF THE PHILIPPINE ISLANDS.—The Division of Geology and Mines, of the Bureau of Science, Manila, under the direction of the chief geologist, Dr. Warren D. Smith, has issued a report on the above subject (1911). The principal minerals are gold, silver, copper, manganese, and coal; and among other mineral products are building-stone, gravel and sand, lime and cement, brick and pottery clay. Occurrences of lead chromate, tin and zinc ores, platinum, and of beryl, spinel ruby, and garnet are recorded. The value of certain seepages of oil has yet to be proved. Gold occurs in placer deposits, and also in veins in igneous rocks (granite, gneiss, felsite, and decomposed andesitic rocks), in contact-zones with the sedimentary strata, and in fault-fissures. The sedimentary strata appear to be of Oligocene, Miocene, and later date. The granite and gneiss are regarded as probably pre-Tertiary or early Tertiary, the diorite-schist as probably pre-Tertiary. Some andesitic rocks are probably Miocene. The coal-bearing strata are grouped as Lower Miocene or Oligocene; there are four principal seams of variable quality, bituminous and gas-coal; and it is estimated that there are many million tons in the islands, although it is remarked that the inferior coals are found in some of the more accessible districts.

3. THE MAGDALEN ISLANDS.—Observations on these islands in the Gulf of St. Lawrence, by Dr. J. M. Clarke, have been published by the New York State Museum (Bulletin 149, Albany, 1911). They consist of "a chain of dissected and sea-wracked remnants of

continental land . . . fringed with sand spits and dunes and tied to one another by tremendous sand bars". They form, in fact, "a fearful menace to the sailor and his craft."

The rocks comprise hard grey or mottled schistose sandstones, with overlying purple-red sandstones, probably Permian; and at the base diabase in sheets accompanied by tuffs, and permeated by thin seams and sheets of gypsum, with also enormous gypsum beds intimately associated with the diabase. The lowest strata include, though they are but rarely seen, shales and limestones yielding goniatites and other fossils, of Carboniferous age. These are described by Dr. J. W. Beede, with a number of text-illustrations. Dr. Clarke remarks that in nearly every soil-section of the red rocks, there is a thin but persistent layer of pure white glistening sand, no doubt decoloured by organic acids. The islands have never been subjected to glacial action: they owe their preservation to slow elevation in later stages of their history.

The work is illustrated by a map and many views of rock scenery, including the Great and Little Bird Rocks, which afford nesting-places for gannets and other sea-fowl. There are also illustrations of sand-dunes and of the action of sand-etching on pebbles and boulders.

4. PROFESSOR A. C. SEWARD'S *LINKS WITH THE PAST IN THE PLANT WORLD* (Camb. Manuals of Science and Literature, Camb. Press, 1s) is a popular discussion of the relative antiquity of existing plants and their distribution in past times as compared with the present, especially as illustrated by the ferns, the *Sequoias*, *Araucarias*, and *Ginkgo*.

5. DEVONIAN FAUNA OF WISCONSIN.—An important illustrated monograph on the fossils of the Middle Devonian of Wisconsin, U.S., has recently been published by Dr. Herdman F. Cleland in the Bulletin of the Wisconsin Geological and Natural History Survey, No. xxi. Prefaced with a brief sketch of the stratigraphy and a short bibliography, pp. 27–161 deal with the fossils, which are illustrated upon fifty-three excellent plates. The Cephalopoda are of special interest.

6. OOLITIC UNIOS.—Mr. Wilfred Jackson has been paying especial attention to the figured types of Captain Thomas Brown and has had the good fortune to discover several of them among the miscellaneous fossils of the Manchester Museum. Of especial interest are two shells believed to be the originals of *Alasmodon vetustus*, Brown, from the Upper Estuarine Beds of Gristhorpe, Yorkshire. Mr. Jackson figures and discusses these in the *Naturalist*, 1911, pp. 104 seqq.

7. "THE RESOURCES OF TENNESSEE."—This is the title of a monthly pamphlet issued by the State Geological Survey of Tennessee for the purpose of calling the attention of builders and others to the products of their own country adapted to their special requirements. No. 2 (August, 1911) is before us and deals with the Camden Chert as an ideal road material, the Ferndale iron-ore deposit, and cement materials in Tennessee. Three thousand copies are printed, and an appeal is made to the local Press to aid the work the Survey is attempting by reprinting the matter thus circulated.

8. PAUL CHOFFAT.—The friends of Dr. Paul Choffat will find a list of his geological publications in the Comm. Serv. Géol. Portugal, viii, 1911. It is conveniently divided into subjects and occupies 30 pages.