

NOTICES OF MEMOIRS.

I.—ADDITIONAL NOTES ON THE CAMBRIAN OF CAPE BRETON, WITH DESCRIPTIONS OF NEW SPECIES. By G. F. MATTHEW, LL.D., F.R.S.C. (From Bulletin of the Natural History Society of New Brunswick, Canada, No. xx, vol. iv, pt. 5.)

THIS article deals with two subjects: (A) New Species of the Etcheminian or Basal Cambrian; (B) The Tremadoc Fauna. Under the first the development of the three perforate genera *Acrothyra*, *Acrotreta*, and *Acrothele* is described. The two first have been found in the lowest fossiliferous beds of the Basal Cambrian; from which they are traced upward, the first to *Protolenus* fauna (under *Paradoxides*), the second into the Ordovician. The first genus is specially prevalent in the Etcheminian or Basal Cambrian beds, one species being found in the Lower and another in the Upper Etcheminian beds.

A point worked out in this article is the change in size and form of *Acrotreta* as time went on. The first species known were about twice as wide as high, but towards the close of the lifetime of the genus the height and width were about equal, though in two species the height exceeded the width.

Acrothele was not found in the Lower Etcheminian, but comes in with the Upper Etcheminian fauna. Various species are quoted, ranging from this fauna to the top of the Cambrian.

There are described in this paper, of *Acrothyra* one new species and six mutations; of *Acrotreta*, one new species and two mutations; of *Acrothele*, two new species and one mutation.

The second part of the paper relates to species of Gasteropods and Trilobites recognized as representatives of the Tremadoc Fauna. *Asaphellus Homfrayi* is cited, also a new species, *A. (?) planus*. Species of *Triarthrus*, *Parabolinella*, and *Bellerophon* were found, also *Lingulella* and *Acrotreta*.

Six plates of figures are given to show the forms and characters of new species described.

II.—ON THE RELATION OF THE SILURIAN AND ORDOVICIAN ROCKS OF NORTH-WEST IRELAND TO THE GREAT METAMORPHIC SERIES. By JAS. R. KILROE and ALEX. MCHENRY.¹

UPPER Silurian rocks, as high as Wenlock, have been metamorphosed along the Croagh Patrick range, which led to their inclusion in the great metamorphic group when the ground was originally mapped. The corresponding rocks of Wenlock age on the south margin of the Mayo and Galway Silurian basin, near Killary Harbour, are not metamorphosed, and rest unconformably upon the metamorphic group.

This stratigraphical break has for many years been supposed to form an insuperable objection to the acceptance of Murchison's

¹ Read before the British Association, Section C (Geology), Glasgow, Sept., 1901.

conjecture that the metamorphic rocks of Galway, Mayo, etc., are altered representatives of the Lower Silurian or Ordovician rocks. This, however, is not an obstacle, for a break, accompanied by overfolding and possibly metamorphism of Lower Silurian strata, has been proved to have occurred in Llandoverly times, which admitted of Wenlock or possibly Tarannon beds being unconformable to unmetamorphosed Lower Silurian as well as to the metamorphic group. All this happened prior to a second violent disturbance and overfolding which accompanied the metamorphism of Wenlock strata already mentioned, and which occurred in Ludlow times.

A comparison of the Lower Silurian series in the west of Ireland with the metamorphic group of the same region and Donegal, shows so strong a resemblance between them—as regards the lithological characters of individual members in their original form, their order of succession, and certain peculiar coincidences of associated sedimentary components, described in detail in the paper—that it forms a creditable *prima facie* argument for their correlation.

One instance may here be mentioned. At Westport and Achill Beg thick bands of fine conglomerate, associated with black slate, occur as an integral part of the metamorphic group, while on the south shore of Clew Bay thick bands of fine conglomerate—very similar in character to those in Achill Beg—occur in association with black slate, which, though sufficiently crushed to justify their inclusion by the original surveyors in the metamorphic ground, are now known to be of Lower Silurian age, identical with rocks of this age in Clare Island.

The chief objection to ascribing the metamorphic rocks of Mayo and Galway to the Lower Silurian age has been the present difference of condition between them and the fossil-bearing Lower Silurian rocks of the adjoining area. This difference seems to us explicable by conceiving that the great dislocation which occurred in Llandoverly times, and occasioned an inversion of strata by overfolding at Salrock between the Killaries, carried unmetamorphosed Lower Silurian rocks about Leenane against and over rocks of, say, the same age, near Leenane, which had undergone metamorphism in connection with granitic intrusions. These may be seen in the vicinity of Kylemore. Unfortunately the great zone of break is now concealed by newer strata, and further is obscured and complicated by post-Ludlow faults.

III.—THE *GLOSSOPTERIS* FLORA OF AUSTRALIA. By E. A. N. ARBER, B.A., Trinity College, Cambridge.¹

THE *Glossopteris* flora is one of the most remarkable and widely distributed of fossil floras. Typical members, such as the fern-like plants *Glossopteris* and *Gangamopteris*, with the Equisetalean genus *Phyllothea*, occur in rocks of Permo-Carboniferous age in India, Australia, South Africa, and South America, pointing to the

¹ Read before the British Association, Section C (Geology), Glasgow, Sept., 1901. See also GEOL. MAG., Dec., 1901, p. 573.

former existence of a southern continent whose flora was for the most part distinct from that of the same age in Europe and North America.

In the Newcastle beds of New South Wales all the typical members of the flora occur without any admixture of northern types (e.g. *Lepidodendron* and *Sigillaria*), as has been recorded from similar beds in South Africa and South America. The flora of the Newcastle rocks is interesting botanically both on account of the wide distribution of the chief members, which show points of identity and unity in type with those of the Lower Gondwana of India and the Permian of Russia, and also from the morphological characters presented by many of the plants themselves. The collection which forms the subject of these remarks is in the Geological Museum, Cambridge, and is noteworthy as being one of the earliest (1839–44) formed of fossil plants from the continent of Australia.

R E V I E W S.

J.—HISTORY OF GEOLOGY AND PALEONTOLOGY TO THE END OF THE NINETEENTH CENTURY. By PROFESSOR KARL ALFRED VON ZITTEL. Translated by MARIA M. OGILVIE-GORDON, D.Sc., Ph.D. 8vo; pp. 13, 562. (London: Walter Scott, 1901. Price 6s.)

THOSE who are not familiar with the German language will be grateful to Mrs. Ogilvie-Gordon for this translation of von Zittel's comprehensive and most interesting History of Geology, which was published two years ago. In the present work the text of the original has been curtailed by the omission of a chapter on Topographical Geology, and in a few places the subject-matter has been amplified—the changes being made with the author's approval.

Geology is rightly regarded as a modern science, for prior to the days of Hutton and William Smith there were no established principles for the interpretation of the facts. Nevertheless, we know that from the earliest days of which records are preserved, curiosity and interest were manifested in the rocks and stones that form the solid earth; and, while there were many shrewd guesses about former extensions of the sea and other physical changes, the observations were disconnected and the hypotheses for the most part were fanciful. Aristotle and Seneca in the earlier times; Leonardo da Vinci, George Bauer (Agricola), and Conrad Gesner prior to the seventeenth century, are among those whose views command most respect and admiration: but every philosopher who dealt with the origin or history of the earth appears to be mentioned by von Zittel. If we marvel at the erudition which has enabled the author to deal with these old writers and to point out so clearly the chief part which each has taken in the advancement of sound knowledge, we marvel still more when we come to later times with its multitude of workers and of books and papers, and find the same exhaustive treatment of the subject, with references necessarily brief,