

## NOTICES OF MEMOIRS.

I.—A SHORT SKETCH OF THE GEOLOGY OF NASSAU.<sup>1</sup>

THE characteristic geological formations of the Province of Nassau belong to the Devonian series, and are named from the geographical site where they are most clearly developed, the Rhine System. The lower strata of this system are of a sandy character, and show in their fossil remains a predominance of Brachiopods (*Spirifera*, *Orthis*, *Terebratula*), and of these *Spirifera macroptera* occurs by far the most frequently, on which account Sandberger has classified the upper strata as the Spirifer Sandstone. Of other families of Mollusca, the *Pleurotomaria Daleidensis*, *Bellerophon trilobatum*, and *Conularia* (*Coleoprion*) *gracilis* are found in great numbers, but within a limited area. In Crinoidea the genus *Ctenocrinus* is peculiar to the Spirifer Sandstone, and fragments of the arms of these and of the genus *Isocrinus* are abundant. Crustacea are represented by the genus *Homalonotus*. *Pleurocanthus laciniatus* is the fossil most widely disseminated; but the *Pleurodictyum problematicum* must be regarded as the most characteristic in this group.

Contrary to the opinion of Murchison and Sedgwick (Geol. Trans. vol. ii. page 221), who are inclined to refer these beds to the Silurian system, the German geologists Sandberger and Römer regard them as a separate formation, approaching the chalky beds of the Rhine system more nearly in the character of their fossil remains. The superposed strata show a still more calcareous character, and have a far greater variety of fossil remains, corals, and gasteropodous mollusca. As characteristic species may be cited *Stringocephalus Burtini*, various species of *Pleurotomaria*, *Euomphalus*, *Terebratula*, and two Spirifers of a different species from those met with in the strata just mentioned. Among the Crustacea the genus *Cypridina* is most frequently represented, especially in the upper layers. The general character of the fauna point to an epoch in the formation of the land when the sea had retreated, leaving only inland lakes, on whose borders a new order of animal life could find a suitable habitat.

Above the sandy and chalky beds of the Rhine system lie a series of rocks, which resemble most closely the Coal-formation, both in their lithological character and their fossil contents. Especially is this the case with the flora. The fauna presents partly the same character as the limestone, and partly shows a new and entirely distinct facies. It is more fully developed in Westphalia, the Harz mountains, and in Devonshire. The fauna is not so manifold as that already noticed; the characteristic fossil from which the rocks are indeed named by German geologists is *Posidonomya Becheri*; *Pecten* and *Goniatites* are also found, but mostly in a very fragmentary condition. The remains of plants, on the other hand, are more numerous and better preserved. *Calamites Suckowii*, *Cyperites bicarinata*, and many other still undetermined species, frequently occur. A fern of the genus *Sphenopteris* is met with, but more rarely.

<sup>1</sup> Being a brief abstract of Dr. F. Sandberger's recently published book on the Mineralogy and Geology of Nassau.

The strata just described are found in their fullest development on the ridge of the Taunus mountains, and its northward slope to the valley of the Lahn. On the southern slope of the range, towards the Main, and its junction with the Rhine, the Tertiary formations and alluvial deposits are considered to exhibit traces of the former existence here of a large inland sea, the Mayence Basin, which extended from Rudesheim to Bâsle. A sand-pit on the Biberich road, S.W. of Wiesbaden, affords a good opportunity for studying the beds of this group. The strata here lie in a nearly horizontal position, and show, after a layer of sea-sand and various chalky beds, regular alternations of fresh water and marine deposits, according to their mollusca, and lastly, a layer of coarse alluvial sand and gravel, rich in fossil remains. Besides a great quantity of mollusca (*Planorbis*, *Lymnaea*, *Cyclas*, *Helix*, and *Valvata*), all agreeing very nearly with existing species, the remains of mammalia occur here—*Elephas primigenius*, *Rhinoceros leptorhinus*, *Hippopotamus major*, *Ursus spelæus*, *Cervus euryceros*, etc. Fragments of tusks, and the fore-leg (tibia) of the first-named animal, have been brought to light this winter in the sand-pit just mentioned, where only a slight upper stratum of yellow sand has been deposited above the coarse gravel, which is here 20 feet deep. The remains all show traces of having been long exposed to the water, and are encrusted with yellow sand and calcareous matter, seemingly the remains of the shells of marine mollusca. The whole series of these Tertiary beds appears to be referable to the Miocene epoch, being more recent than the deposits of the Paris and London basins, but older than those of the Apennine range.

B. E. W.

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 II.—TRANSACTIONS OF THE GEOLOGICAL SOCIETY OF GLASGOW.

Vol. iv. part 2, 1873.

THE contents of this part contain papers of much interest, and chiefly devoted to Scottish geology. Besides an abstract of the Proceedings of the Society for the year 1871–2, some of the papers read at these meetings are published in full, which, together with a biographical notice of the late Dr. Scouler, and the closing address of the President, Dr. John Young, “On Geological Terminology,” form the bulk of this part. Glacial and Post-Tertiary geology, as in the preceding part, are prominent subjects, and a paper “On the Valley of Loch Lomond,” in which the author, Mr. G. H. Kinahan, advocates similar views as to the origin of its form and the deeps and shallows of the lake, to those respecting the form of Loch Derg, given in this MAGAZINE (Vol. X. p. 486), and which he considers to be primarily due to breaks in the rocks.

J. M.

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 III.—BRIEF ABSTRACTS.

- 1.—LUDWIGITE; A NEW MINERAL SPECIES. Ludwigit, ein neues Mineral aus dem Banate. Von G. Tschermak. *Mineralogische Mittheilungen*, 1874, Heft i. pp. 59–66.

This mineral occurs in limestone at Morawitz, in the Banat. It presents a finely-fibrous structure, the fibres being separated with

difficulty, and the mineral being therefore very tough. In consequence of this fibrous texture, it is not easy to determine the precise degree of hardness, but it is probably about five. Dr. Tschermak describes two varieties of Ludwigite; the colour of the one being blackish-green, whilst that of the other is almost black, with a slight tint of violet. Both varieties have been analyzed under Prof. Ludwig, of Vienna, after whom the species is named.

No. I. is the green variety, with specific gravity 3·951; No. II. is the black variety, with spec. grav. 4·016.

	I.	II.
Boric anhydride .....	16·09	15·06
Ferric oxide .....	39·92	39·29
Ferrous oxide ... ..	12·46	17·67
Magnesia .....	31·69	26·91
	100·16	98·93

The second analysis leads to the formula:  $3 \text{MgO} \cdot \text{B}^2\text{O}^3 + \text{FeO} \cdot \text{Fe}^2\text{O}^3$ . The first analysis shows part of the ferrous oxide isomorphously replaced by magnesia. It appears, therefore, that Ludwigite is a molecular combination of borate of magnesia with proto-peroxide of iron; the latter compound does not exist mechanically disseminated through the mineral in the form of magnetic iron-ore, but appears to be chemically combined with the borate.

F. W. R.

2.—RIVOTITE; A NEW MINERAL SPECIES. Note sur une nouvelle espèce minérale de la Province de Lerida. Par M. X. DUCLoux. *Comptes Rendus*, 1874, lxxviii. No. 21, pp. 1471-1473.

Under the name of *Rivotite*—a name proposed in memory of the late M. Rivot, of the Ecole des Mines—a new Spanish mineral is described by M. Ducloux. It occurs in small irregular masses disseminated through a limestone, on the western slope of the Sierra del Cadi, in the province of Lerida. Rivotite is a compact amorphous substance, varying in colour from yellowish green to dark greyish green. Its hardness is between 3·5 and 4, whilst its specific gravity varies from 3·55 to 3·62. According to M. Ducloux, the composition of Rivotite may be expressed by the following formula:  $\text{Sb}^2\text{O}^3 + 4(\text{Gu}, \text{Ag})\text{O} \cdot \text{Co}^2$ .

F. W. R.

3.—ON DATOLITE. Ueber Datolith. Von EDWARD S. DANA. *Mineralogische Mittheilungen*, 1874, Heft i. pp. 1-6.

Two years ago Mr. Dana published in *Silliman's Journal* a paper on the crystallographic characters of the well-known crystals of Datolite from Bergen Hill. He has since extended his study of this species, and has examined a fine series of specimens in Vienna. The results of this work are given in the present paper, which relates chiefly to the Datolite of Arendal in Norway, Andreasberg in the Hartz, and Toggiana in Modena. The occurrence, the symbols, and the angles of all the known faces are exhibited in a well-arranged table; whilst several figures of crystals are given in a lithographic plate accompanying the paper.

F. W. R.

- 4.—TAWNEY, E. B. Museum Notes—Dundry Gasteropoda. *Proc. Bristol Nat. Soc.*, new series, vol. i. part i. pp. 9–59. [1874.]

This communication is the result of a critical examination, by Mr. Tawney, of the Gasteropoda, now in the Bristol Museum, which have been obtained from the Inferior Oolite of Dundry Hill. He records sixty-six species in a determinable condition, besides casts and imperfect fragments of shells. Of the genus *Pleurotomaria* alone there are twenty-six species.

Out of the total number of species, no less than nineteen do not appear to have been hitherto figured, and fifteen species do not seem to have been cited before in British lists. The paper is illustrated by three well-executed lithographic plates. H. B. W.

- 5.—TAWNEY, E. B. The Coal Question. *Proc. Bristol Nat. Soc.*, new series, vol. i. part i. pp. 71–84. [1874.]

The author reviews the general results of the Royal Coal Commission, and discusses the future prosperity of England. H. B. W.

- 6.—STODDART, W. W. Geology of the Bristol Coal-field. Part I. *Proc. Bristol Nat. Soc.*, new series, vol. i. pp. 115–126. [1874.]

This part contains a general account of the physical geography of the district, with list of formations and typical localities where they are displayed, list of principal altitudes, etc. Mr. Stoddart refers also to the igneous rocks developed in the neighbourhood of Tortworth, on the Mendip Hills, and near Weston-super-Mare.

H. B. W.

- 7.—THOMAS, J. E. Prize Essay upon the Mineral Resources of the Counties of Flint and Denbigh, with suggestions for their development. (Mold National Eisteddfod, 1873.) 8vo. pp. 41. (Oswestry, 1873.)

The author describes the geological features of the district, and points out the mineral produce of each system of rocks. He then considers the resources of Coal, Lead, and Zinc more in detail, the extent to which they have been developed in this part of North Wales, and their present yield, glancing also at the future supplies that, it is to be hoped, may continue to be produced for many generations to come. In conclusion he gives a list of various collieries, iron works, lead mines, brickworks and quarries in the two counties. H. B. W.

## REVIEWS.

- I.—REPORTS OF THE GEOLOGICAL SURVEY OF THE STATE OF MISSOURI, 1855–1871. By G. C. BROADHEAD, F. B. MEEK, and B. F. SHUMARD. (Jefferson City, 1873.)

THE publication of this volume appears to have been delayed, for the maps were engraved, and the impressions contained in the volume were struck off, previous to 1861, so that they do not represent the present political geography of the respective counties, and in some instances their boundaries have changed.