

fathoms, so as to constitute the essential condition by which Animal life is limited to these depths, it would obviously be premature to assert. The Author ventures to think, however, that he has shown that the Physical conditions of any Inland sea, which, like the Mediterranean, is cut off from the general Oceanic circulation, must be such as greatly to modify its relation to Animal life; and that it is a matter of great scientific importance, especially in relation to Geological inquiry, that these conditions should be carefully inquired into.

The Red Sea would probably be found to present in many particulars a striking contrast both to the Mediterranean and to the open Ocean. Its Thermal condition, as has been already shown, is altogether peculiar; for while its surface-temperature rises as high as that of any Intertropical portion of the Ocean, that temperature seems to be maintained with very little reduction, even to its greatest depths. But the Red Sea further differs essentially from the Mediterranean, in not being the recipient of any great Rivers bringing down *detritus* from the land. This, of course, will affect the condition of the bottom, on which we should not expect to find the abundant sedimentary deposit that is everywhere settling down in the abyssal depths of the Mediterranean. It will also leave the bottom-water clear: and in this respect the condition of the bed of the Red Sea will be more favourable to Animal life than that of the Mediterranean. But the absence of Organic sediment, if the views previously adduced be correct, will constitute a still more important difference between the conditions of the two seas in relation to Animal life; for while its progressive decomposition in the abyssal water of the Mediterranean consumes its Oxygen and imparts to it Carbonic acid, at a greater rate than "diffusion" can counterbalance without any vertical circulation in the water itself, and thus tends to render the depths of that sea uninhabitable, the absence of the like source of impurity in the water of the Red Sea may be expected to leave its abyssal water in a condition fit to support a moderate amount of Animal life: since the process of diffusion, even without vertical circulation, will maintain a certain amount of interchange of gases between the superficial and the deep strata.

These views are suggested merely as fair inferences from our present very limited knowledge, to be confirmed or set aside by the result of future inquiries.

NOTICES OF MEMOIRS.

GEOLOGICAL SURVEY OF ENGLAND.

I.—EXPLANATION OF QUARTER-SHEET 98 S.E.; ILLUSTRATING THE GEOLOGY OF THE NEIGHBOURHOOD OF KIRKBY LONSDALE AND KENDAL. By W. T. AVELINE, F.G.S.; T. MCK. HUGHES, M.A., F.G.S.; and R. H. TIDDEMAN, B.A., F.G.S.

THIS is a description of part of the Lake District, the greatest portion of the area being in Westmoreland, the remaining parts being in Lancashire and the West Riding of Yorkshire. The rocks described include the Lower Silurian, Coniston Limestone=Caradoc or Bala Beds; Upper Silurian, Coniston Flags and Grits, Bannisdale Slates, and Kirkby Moor Flags=Wenlock and Ludlow Rocks; the Upper Old Red Conglomerate, the Carboniferous series, and the Permian beds. The physical geography of the area is described, and Mr. Hughes points out that all the great valleys in the neighbourhood of Kirkby Lonsdale coincide with lines of fault: these he describes in some detail; he makes a few remarks also on the formation of swallow-holes. The Silurian rocks and their fossils are described by Messrs. Aveline and Hughes, chiefly by the latter. Mr. Hughes gives the account of the Old Red Conglomerate, which is regarded as the basement bed of the Carboniferous series. The Carboniferous rocks are described by Messrs. Aveline, Hughes, and Tiddeman, and the Permian rocks by Mr. Hughes.

Two plates of horizontal sections are given, which are described by Mr. Hughes. Mr. Aveline gives a brief notice of the Alluvium; a detailed description of which is reserved for another memoir, explanatory of the Drift deposits of the area.

This little work contains a great deal of information condensed into a small compass, and at the same time it is furnished in a very readable style.

II.—REPORT OF THE MINERS' ASSOCIATION OF CORNWALL AND DEVONSHIRE. 8vo. (Falmouth, 1872.)

THIS Report contains, among other matters, some observations by Mr. Wm. Argall on "Gossans." He defined "gossan" as a mixture of cellular quartz and earthy oxide of iron, often found in the upper parts or "backs" of mineral lodes. He also stated that oxide of tin was, in Cornwall at least, a very common ingredient in gossan. It results from the partial decomposition of the upper part of the lode, and is generally valuable as an indication of metalliferous deposits. Gossan is particularly characteristic of copper lodes. The backs of tin lodes do not usually show so much gossan as those of copper or iron lodes, although in some instances gossan has been seen at depths of thirty fathoms. In lead lodes, associated with pyrites, it often happens that before the lead ore is reached, the miners come upon a variety of green and brown gossans of different mineral and chemical characters.

Captain Maynard read a paper on "Heaves" and "Slides"; Captain Noble made some remarks on lodes of iron ore in the parish of Constantine; and Mr. H. Stephens described the mineral phenomena of Huel Rose in the parish of Sithney.

III.—POST-GLACIAL GEOLOGY OF LANCASHIRE AND CHESHIRE.

IN the GEOLOGICAL MAGAZINE for March we published a paper by Mr. T. M. Reade on the Post-Glacial Geology and Physiography of West Lancashire and the Mersey Estuary. The author has communicated a paper treating of the same area to the Liverpool Geological Society. It is accompanied by a large coloured map, showing the deposits between the Mersey, Dee, and Ribble; these are the Boulder-clay, Washed-drift sand, Inferior peat and Forest-bed, Formby and Leasowe Marine beds, Superior peat and Forest-bed, and Recent Silts. There are also two plates of horizontal sections and one of vertical sections, all coloured.

REVIEWS

I.—THE GEOLOGY OF ARRAN AND THE OTHER CLYDE ISLANDS; WITH AN ACCOUNT OF THE BOTANY, NATURAL HISTORY, AND ANTIQUITIES. By JAMES BRYCE, M.A., LL.D., F.G.S.S.L. & I. (Glasgow and London: Collins, 1872.)

DR. BRYCE'S serviceable little work—chiefly occupied with the attractive subject of the geology of Arran—has now reached a fourth edition. When a book arrives at this stage, its merits have