

increases as time goes on, so that it is deeper down now than ever it has been before.

It is obvious that the amount of compression which can be got out of a superficial shell certainly not more than two miles thick, and probably much less, the compression gradually diminishing and coming to an end at that depth, can have produced scarcely any appreciable folding. We must therefore look in some other direction for the cause of rock folding, thrust planes, and other phenomena of that nature. The probability is that the theory of the earth being solid throughout is incorrect.

NOTICES OF MEMOIRS.

I.—RECORDS OF THE GEOLOGICAL SURVEY OF NEW SOUTH WALES.
Vol. I. Part I. Department of Mines, Sydney, 1889. 8vo.
31 pp. and Plates i.—iv.

AS a significant indication of the increasing interest in geological science in New South Wales, it gives us pleasure to call attention to the first part of a new periodical, issued under the auspices of the Geological Survey of that colony, in which it is intended to record the discoveries and observations in the geology, palæontology and the mineral deposits of the country. The part just issued contains seven papers on a great variety of subjects, amongst which may be noticed 'Notes on the Geology of the Barrier Ranges District and Mount Browne and Tibooburra Goldfields, by C. S. Wilkinson, F.G.S., Geological Surveyor in charge'; 'Report on the Discovery of Human Remains in the Sand and Pumice Bed at Long Bay, near Botany,' by T. E. David, F.G.S., and Robt. Etheridge, jun., and 'On a Coral intermediate in structure between the Genera *Lonsdaleia* and *Spongophyllum*, etc.,' by R. Etheridge, jun.

G. J. H.

II.—FAUNE DU CALCAIRE D'ERBRAY (LOIRE INFÉRIEURE). Par CHARLES BARROIS. Contribution à l'étude du Terrain Dévonien de l'Ouest de la France. Extrait des Mémoires de la Société géologique du Nord, tome iii. Avril, 1889. pp. 384, pls. i.—xvii.

FROM the beds of limestone quarried near the small town of Erbray (Loire inférieure) a comparatively rich fauna was obtained by M. Cailliaud in 1861, who compared it with that of the Bohemian étage F., the so-called third Silurian Fauna of Barrande, and it has since been regarded as the sole representative of this particular division in France. This conclusion is now called in question by Dr. C. Barrois, who has made an exhaustive study of the fossils from these rocks, and described and illustrated them very fully in the present memoir. The limestones yielding the fossils occur as discontinuous lenticular masses in a series of fine argillaceous schists, which are unfossiliferous and estimated to be from 800 to 1000 mètres in thickness. Dr. Barrois recognizes three distinct levels in the limestones, each marked by particular litho-

logical characters, corresponding to as many palæontological zones. Some of the beds are largely crinoidal; the fauna on the whole is very varied, and the number of species described is about 200, of which 57 are considered as new. Amongst the corals simple forms of *Cyathophyllum*, *Zaphrentis* and *Amplexus* predominate. A new genus, *Briantia*, is proposed for simple corals allied to *Cyathophyllum*, but with a solid external zone of considerable width. New species of *Striatopora*, *Cœnites*, and *Acervularia* are likewise described; *Heliolites*, *Favosites*, *Beaumontia*, and *Alveolites* are also represented, but no forms of *Stromatopora* have been recognized. The Brachiopoda are very numerous; the principal genera are *Rhynchonella*, with two new species; *Orthis*, *Meristella*, *Athyris*, *Spirifer*, and *Centronella*? each with three new species; examples of *Strophomena*, *Atrypa* and *Pentamerus* are also present. Of the Lamellibranchs, the genus *Conocardium* is the most numerous represented. The Gasteropods all belong to the Holostoma, the principal forms are included in the genera *Pleurotomaria*, *Murchisonia*, *Bellerophon*, *Strophostylus*, and especially *Platyceras*, of which there are no fewer than 12 new species. The Cephalopods are mostly included in the subgenus *Jovellania*, and the Trilobites belong to *Calymene*, *Phacops*, *Dalmanites*, *Proetus*, *Harpes*, *Cheirurus* and *Bronteus*.

The fauna of the Erbray limestones bears a great resemblance to the Hercynian fauna of the Harz, and to that of the Étages F. G. H. of Barrande. It is referred by the author to the Étage Gedinnian, which is at the base of the Devonian in the West of Europe, and it likewise corresponds to the Oriskany sandstone and the Upper Helderberg of North America and the limestones of the Carinthian Alps and of the Urals. It is a distinctly lower stage than that of the Coblenzian, which by many authors is still regarded as the base of the Devonian. G. J. H.

R E V I E W S.

I.—THE PROBABLE CAUSE OF THE DISPLACEMENT OF BEACH-LINES. AN ATTEMPT TO COMPUTE GEOLOGICAL EPOCHS. By A. BLYTT.

[Printed in English, Christiania Videnskabs-Selskabs Forhandling, 1889, No. 1. With two Supplementary Notes.]

ON first thoughts it seems impossible to divine any connection between layers of septaria or bands of ironstone, and the eccentricity of the earth's orbit. Yet those who have read with attention a previous communication by the same author, "On Variations of Climate in the Course of Time,"¹ will perhaps not be surprised at the latest evolution of his doctrines.

A study of the Recent and Post-Pliocene deposits of Norway and Denmark furnished the author with evidence "that climate is subject to periodical alterations." He was also led to conclude that alter-

¹ Reprinted in "Nature," July 8th and 13th, 1886.