

Dr. Smith Woodward, and some foraminifera are included in this paper as an appendix by Heron-Allen and Earland.

Mr. Newton, while formerly laying stress on the similarity of the fauna to the Claiborne, Mokattam, and European Middle-Eocene, has now, after further study, come to regard this as an Upper Lutetian stage, recognizing at the same time the Bartonian facies of the material. The Mollusca are extremely well preserved, and have been reproduced from the excellent photographs of Mr. P. Dollman. Mr. A. E. Kitson and Dr. J. D. Falconer must be congratulated on securing the publication of so interesting a collection, which forms a valuable addition to our knowledge of the geology of this part of West Africa.

ON THE EASTERN PART OF THE ARCTIC BASALT PLATEAU. By H. G. BACKLUND. *Meddelanden från Abo Akademis Geologisk-Mineralogiska Institut*, No. 1. pp. 53, with 2 text-figures. Abo, 1920.

OUR knowledge of the great basalt plateaus of Siberia is very slight in comparison with the great amount of detail available as to the western and extreme northern parts of the Arctic Province. The paper now under review is a most tantalizing production, since the author states that he had in his possession material from regions covering the whole of the eastern area, hinting darkly at a mysterious accident which deprived him of almost all his specimens and notes. After this catastrophe he decided to publish a detailed account of the small amount that remained. Full descriptions are given of three specimens, one from Bennett Island in the extreme north of the New Siberian Islands, and one from Wilkitski Island, to the east of the same group; the third specimen examined in detail came from the Adzra river, in the Petchora region, west of the Urals. The first-named proves to be an olivine-trachydolerite, the second a basaltoid nephelinite, and the third a basalt very like a type described from Spitsbergen, and of the normal Brito-Arctic facies. From these results, and from the author's general knowledge of the eastern plateau, it is concluded that the rock-types found are very similar to those of the western and northern areas from Spitsbergen to Britain, namely, for the most part normal basalts and olivine-basalts, with an occasional local lapse into alkaline types.

The physiographic relations of the Siberian basalts are peculiar; the lava-flows only occur in deeply eroded valleys, which they partly fill. Apparently the fissures never opened as high as the general plateau surface, which consists of sedimentary rocks. The extrusion of the lavas is correlated with isostatic continental uplift on a large scale. Unfortunately, in the concluding and most interesting sections of the paper, the author's English becomes somewhat obscure, and some of his points are difficult to follow; he seems to consider, however, that in addition to isostatic adjustment some form of

magmatic pressure is necessary to account for the phenomena observed, and that molten magma may exert even more force than admitted by Gilbert in his laccolithic theory, though not so much as formerly supposed by von Buch and his followers.

R. H. R.

REPORTS AND PROCEEDINGS.

GEOLOGISTS' ASSOCIATION.

9th June, 1922.

“The Liassic Rocks of Glamorgan.” By A. E. Trueman, D.Sc., F.G.S., University College of Swansea.

The Liassic rocks of Glamorgan occur in several small outliers near Cardiff and in a broad tract stretching between Bridgend and Cowbridge, and southwards to the sea. This area is known as the Vale of Glamorgan. In a previous communication the Liassic outliers near Cardiff were described (*Proc. Geol. Assoc.*, xxxi, 1920, p. 93). In the present paper an account is given of the zonal succession in the larger area; only the lowest zones of the Lower Lias are represented (*planorbis-semicostatus*), but these are unusually thick (350 feet) and several subdivisions are recognized. Particular attention is drawn to the gryphæate lamellibranchs of these zones and to their use in correlation.

In the west of the area the Lias is often of littoral character; the littoral deposits accumulated near the shores of several small islands, mainly of Carboniferous Limestone. These deposits are best exposed in the cliffs near Southerndown and Dunraven. The relations of the littoral deposits to the normal Lias limestones and shales are discussed and consideration is given to the physical conditions under which the rocks were laid down.

The paper includes petrological notes on the limestones and conglomerates, and notes on some of the ammonites.

“The Recession of the Chalk Escarpment and the development of Valleys in the Chalk between the Mole and the Darenth.” By C. C. Fagg, F.G.S.

Contrast in altitude and features of Chalk area east and west of the Brighton Road. Gaps and passes in the North Downs. Some significant sections. The water-table in the Chalk. Springs and Bourneflows. The Gault outcrop as the decisive factor. Its former extension southward and upward. Mole Gap and Kenley Valley becoming dry. Recent landmarks in recession of escarpment—Limpsfield Gravel—(500 feet, Acheulian). Passes at Merstham, Godstone, and Pebble-Combe. Relation of these to *fluvial* erosion of “Dry” valleys. Valleys not all of same age. Variety of stones on the Chalk Plateau and their significance. Position of Tertiary escarpment at Worms Heath and Woodmansterne at close of Pliocene. Possible evidence of present flora of the district.

Critical review of other hypotheses for formation of Chalk Valleys.