

on both sides of the question; my object, however, in writing this, was not to discuss the origin of the Chalky Boulder-clay, but to point out that the more remarkable disturbances in the Chalk near Norwich are of glacial origin, and subsequent to the deposition of the Norwich Crag. The section at Litcham, described by Mr. S. V. Wood, jun., tells the same story; and having visited the Bluffs at Trimmingham on many occasions with my colleague, Mr. Clement Reid, I have been led to adopt his explanation that the disturbances of the Chalk there were produced by land-ice.

FAKENHAM.

HORACE B. WOODWARD.

THE PRE-CAMBRIAN ROCKS OF BRITAIN AND BOHEMIA.

SIR,—In Mr. Marr's valuable paper *On the Pre-Devonian Rocks of Bohemia*, published in the last number of the Geological Society's Journal, there is one point on which further evidence would seem desirable. I refer to his correlation of the Bohemian gneissic series with the St. David's Dimetian. He describes the Bohemian rocks as "gneiss," "gneissic rock . . . interspersed with small garnets," "white foliated quartzose rock," "crystalline limestone . . . strongly foliated, and containing silvery mica." Besides these rocks there is a "band of graphite" and dykes of "black eclogite." Having examined the Dimetian of St. David's from top to bottom, I did not find any one of the varieties named by Mr. Marr. The series is mainly composed of quartzite and granitoid rock, and the existence of foliation has not been proved in either the quartzose or the more felspathic types. I do not deny the Dimetian age of the Bohemian gneiss, but I should hesitate to accept the present evidence as decisive of the point. From Mr. Marr's description, the Pebidian age of étage A appears highly probable, and the discovery is of great interest. The two Pre-Cambrian groups in Bohemia are in their lithology not unlike the two Anglesey series, of which full descriptions will shortly be communicated to geologists. If the older Anglesey series could be definitely accepted as Dimetian, Mr. Marr's opinion would receive strong confirmation.

C. CALLAWAY.

WELLINGTON, SALOP, Nov. 30, 1880.

ON THE TUSCAN SERPENTINES.

SIR,—The author of the notice of Prof. Pantanelli's paper *I Diaspri della Toscana, etc.* (GEOL. MAG., 1880, p. 564) inadvertently attributes to me an opinion which I do not hold, when he includes me among those who have recently maintained "that the (Tuscan) serpentines represented true submarine lavas of the Upper Eocene." On the contrary, in my paper (Vol. VI. p. 362) I am at some pains to show that these serpentines are intrusive in the diaspro, etc. The evidence against their being contemporaneous lava flows is strong. It is a remarkable thing that olivine rocks appear very rarely to reach the surface. I have never myself seen a serpentine which was not intrusive. Some pierites, however (*e.g.* that described by Professor Geikie in his paper on the Volcanic Rocks of the Firth of Forth), and limburgites appear to be lava flows, as may possibly be one or two other olivine rocks.

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