

not in the least affect the question of the Triassic age of the Lancashire Pebble-beds.

As regards these latter, which consist of brownish-red sandstones, with pebbles of coloured quartz scattered throughout their mass, there has never been any question even amongst the most ardent *Philo-Permianists*; and they have been correctly described as Triassic by Ormerod, Binney, and all other good geologists who have examined the country. An experience of some twelve years in working out the Triassic and Permian formations of the midland and north-western counties enables me to confirm their views. These Pebble-beds are the equivalents of the quartz-ore Conglomerates of the central counties, which frequently constitute the only representatives of the Bunter Sandstone; and if they are not of Triassic age, then there is no Lower Trias in England, or in Europe, or indeed anywhere; and the Permian Empire must spread its broad ægis far beyond its present bounds! This, however, is out of the question. The Pebble-beds, and the Lower Red and Mottled Sandstone, which form the lowest division of the Bunter, lie discordantly with reference to the Permian Beds throughout; and, in the neighbourhood of Manchester, any conformity which may exist is only local and accidental. Discordance is the rule, the reverse the exception, all along the margin of the South Lancashire Coal-field; and if Mr. Hamilton will come down here, I shall be very happy to show him that the Pebble-beds cannot 'turn out to belong to the Permian series.'—I am, Sir, faithfully yours, EDWARD HULL.

GEOLOGICAL SURVEY OF GREAT BRITAIN,
MANCHESTER: August 3, 1865.

To the Editor of the GEOLOGICAL MAGAZINE.

SIR,—With reference to a short paper on a supposed 'Pre-Cambrian Island,' read by me at the British Association last year, and inserted in your Magazine for December last, I have to beg you to apply a *caveat*. I did not, I hope, speak at all dogmatically on the point to which I could give but a very moderate degree of attention; but knowing of how great interest the fragments of old *Pre-Cambrian* land are to geologists, I did try to draw some of my friends who have the leisure to that neglected locality, St. David's. The result has justified my endeavour, if it has not turned out exactly as I could have wished. The Rev. W. S. Symonds and the Rev. H. H. Winwood, of Bath, visited the spot this year, attracted by this notice, and they saw some reason to doubt the correctness of the suggestion I made—'that the Syenite-ridge of St. David's was a portion of the old land of which the Hebrides, parts of the north-west coast of Ireland, and the Malverns, are fragments.'

My supposition has now been tested by the close observation of my friends just mentioned, and my colleague, Mr. H. Hicks. Like myself, Mr. Hicks at first paid far more attention to the fossiliferous beds *above* the Cambrian, than to the metamorphic or igneous rocks at their base. But his keen eye and good hammer, once turned to

the point, he has I think, proved that I was in error, by finding portions of the schist entangled in the syenite-trap.

I know that the last edition of the Geological Survey Map represents the rocks as altered on the north side, and unaltered on the south. There can hardly be this difference. My friend Mr. Hicks believes there is alteration on the south side too; so both authorities are against me at present. There are plenty of sections, but so many cross-faults which require to be allowed for, before even the true succession can be established, that I cannot admit that I am beaten until the syenite has been thoroughly examined on both flanks; and I can only hope good observers will go again and again to this interesting point. The last edition of the Survey Map confines the syenite to St. David's and its neighbourhood; while it makes the trap of Ramsey Island a greenstone, similar, I suppose, to that of St. David's Head, and altering similar rocks. We may assume that it is a continuation of the St. David's trap, as I ventured to do in my paper. But if the trap and schists of Ramsey Island be really quite different from those of St. David's, opposite, an unmarked fault, N. and S., of no little magnitude, must occupy the Sound. The whole thing, therefore, wants investigation. Who will do it? I am quite certain, whoever does will have the cordial co-operation of my friend Mr. Hicks; and I really have no time to find out my own mistake, if it be one. Altered rocks are crotchety things to deal with; and a sharp anticlinal like that of St. David's does not take place without many a parallel fault which may bring the unaltered rock against the trap, and deceive others, as it appears to have deceived

Yours truly, J. W. SALTER.

ON THE FOSSILS FROM THE SILURIAN SHALES OF MOFFAT, DUMFRIESSHIRE.

My colleague Mr. Carruthers, and Mr. Young of the Hunterian Museum, Glasgow, having called my attention to the communication of Mr. Brown (*ante*, p. 382) regarding his discovery of fossils in the Moffat Graptolite Shales, I have, through the kindness of Mr. Brown, been permitted to examine his specimens. I submitted them to Mr. Carruthers, who is acquainted with the beds from which they were obtained, and he has supplied me with the following notes regarding the fossils and the strata.

Besides the Graptolites which abound in these shales, there have been found two species of a phyllopodous crustacean, *Peltocaris*, described by Mr. Salter in the 'Quarterly Journal of the Geological Society,' vol. xix. p. 87. viz., *P. aptychoides*, Salt., and *P. Harknessi*, Salt. Prof. Harkness has found specimens of the small brachiopod, *Siphonotreta micula*, M'Coy (Cat. of Fossils in Mus. of Pract. Geol., p. 17). Mr. J. Stevens, for some time an enthusiastic explorer of the Moffat Shales, discovered a single specimen of *Tentaculites*. The lighter coloured arenaceous deposits of Hunterbreck Hill contain the impressions of *Crossopodia Scotica*, M'Coy; *Nereites Cambrensis*, M'Coy, and other Annelids (Murchison's 'Siluria,' p. 199). These