II.—SOME POINTS IN THE GEOLOGY OF ANGLESEY.

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I REGRET that in consequence of the omission of a correction in my letter (GEOL. MAG. Dec. 1881), I represented Dr. Callaway as stating that the Nebo rock was *granitoidite* instead of a part of the *granitoidite series*. When the letter was written, I was not able to refer to Dr. Callaway's paper for his exact words, and on seeing the paper two or three days later, and finding that I had not given accurately the words, I wrote at once to the Editor of the GEOLOGICAL MAGAZINE, asking him to substitute for the word "*granitoidite*" the words "*Pre-Cambrian rock*." By inadvertence this was not done, and as proofs of letters are not usually sent to authors for correction, I found that the alteration had not been made when the December MAGAZINE appeared. Admitting this verbal inaccuracy, my argument however is not affected.

Dr. Callaway's words in the paper referred to (GEOL. MAG. 1880, p. 118) are as follows: "As confirming the identity of the Anglesey and Twt Hill *granitoidite* the following fact is of importance. Messrs. Bonney and Houghton have detected at Twt Hill a passage between the *granitoidite* and a quartzose conglomerate with a south-east dip. I have visited this section, and, having examined the rock inch by inch, I can entirely confirm their identification. There are no signs of a fault between the *granitoidite* and the conglomerate, and the transition between the two is gradual and unbroken. I have had the good fortune to discover this identical conglomerate in Anglesey. It is exposed in two quarries near Nebo two miles south-west of Amlwch, dipping to the north-west at a high angle. Lithologically it is perfectly indistinguishable from the Twt Hill rock; the quartz has the same glazed surface, both conglomerates contain disseminated crystals of cubic pyrites and are tinged with the same dingy purple colour. I could find no *granitoid* rock in these quarries, but the ordinary *granitoidite* occurs on about the same strike one-third of a mile to the north-east. That this conglomerate is not Cambrian or Ordovician is proved by the fact that in these quarries black Ordovician (Caradoc or older) shales rest on its upturned edges. It is also associated with bands of quartzose grit as in the Twt Hill locality."

Dr. Callaway's position is clearly this:

1. He believes that there is an unbroken transition between the quartz conglomerate and the *granitoidite* at Twt Hill. In other words that the Twt Hill quartz conglomerate is a part of the *granitoidite series*.
2. He identifies the quartz conglomerate and grit at Nebo with the quartz conglomerate at Twt Hill by their lithological character.
3. He concludes that the quartz conglomerate at Nebo is Archæan, and a part of the *granitoidite series*, because black Ordovician shales rest against and on it, as he believes, unconformably.

I have contended as follows:—1. That the Twt Hill quartz con-

glomerate is the basement bed of the Cambrian resting against the Pre-Cambrian granitoid basis.

2. I also identify the quartz conglomerate at Twt Hill with that at Nebo.

3. I hold that the disagreement in dip of the conglomerate and shales, in the northern quarry at Nebo, is due to a fault, as shown in Fig. 3 in my paper (*GEOL. MAG.* 1881, p. 197). The discordancy between the shales and conglomerate in the other or lower quarry of Dr. Callaway is due to the crushing of the conformable overlying shale during the movements of the underlying unyielding grits, but the apparent unconformity indicated by Dr. Callaway in his section (*Q. J. G. S.* vol. xxxvii. 1881, pl. viii. fig. 6) does not exist. The divisional planes which he takes for bedding are joints approximately parallel to the fault. To make this clear I give a copy of Dr. Callaway's section, Fig. 1, and my own section of the same quarry, Fig. 2.

Fig. 1. Section across Lower (Southern) Quarry, S. of Nebo, Anglesey.

Dr. Callaway's Section (*Q. J. G. S.* vol. xxxvii. pl. viii. fig. 6*).

N.W.

S.E.

a = Cambrian shales. *b* = Cambrian grit (called by Dr. Callaway Pre-Cambrian).

Fig. 2. Section across lower (Southern) Quarry, S. of Nebo, Anglesey.

Dr. Roberts's Section.

a. Black slate much crushed = Cambrian shales.

b = Cambrian grit (called by Dr. Callaway Pre-Cambrian).

b'. Black slate and subordinate sandstone.

c. Veined and jointed grits, conglomeratic in parts.

d = Dyke. *F F* = Faults.

The points at issue must now, I think, be perfectly clear.

Dr. Callaway (*GEOL. MAG.* Feb. 1882, p. 57) says, referring to my criticism, "I have always been perfectly aware that the black shale is faulted against the grit. Indeed, in my note-book I find a section (dated July 20, 1880) which is almost a facsimile of the figure in Dr. Roberts's paper." He then adds that his view is that the shales were both unconformable and faulted. I have quoted in an earlier

* In Dr. Callaway's Plate, the upper bed *a* is marked "*a* = Cambrian?"; and the lower bed is marked "*a* = Gneissic series," "fig. 6, *c* on *a*."

part of this communication Dr. Callaway's description of this section, and it contains no single word about faulting. Nor does his paper (Q. J. G. S. vol. xxxvii. p. 220), in which he refers to the same sections. It is much to be regretted that Dr. Callaway did not publish the section in his private note-book, "which is almost a *facsimile*" of mine, and which he admits to be a faithful representation of the facts, instead of the inaccurate and misleading sections given in his paper just referred to. The case then stands as follows: Black shales and a quartz conglomerate are shown in juxtaposition in two quarries, near Nebo. Dr. Callaway has asserted that they are unconformable, and has based upon that certain arguments. In the northern or upper quarry he now admits that there is a fault, while in the southern or lower quarry (Fig. 2) he has, according to my interpretation, mistaken joints for bedding; the base of the crushed shales as a matter of fact coinciding in direction with the bedding of the conglomerate.

In concluding I may just observe that Professor Bonney no longer holds the view which Dr. Callaway so strongly supports in the first quoted paragraph, namely, that the Twt Hill conglomerate is a part of the granitoidite series. Does Dr. Callaway still adhere to this view?

The last point in Dr. Callaway's paper as to felsite pebbles I pass over, inasmuch as I have dealt fully with that matter in my reply to Prof. Bonney.

In the foregoing I have not touched upon the metamorphic rocks of Anglesey, to which a considerable part of Dr. Callaway's paper is devoted. That is a subject in no way connected with the matters treated of in this paper, and I leave it for another communication.

III.—NOTES ON SOME FOSSILS FROM THE RED BEDS OF THE LOWER DEVONIAN, TORQUAY, SOUTH DEVON.

By ROBERT ETHERIDGE, F.R.S., F.G.S., etc.

(PLATE IV. Figs. 4—11.)

MR. A. CHAMPERNOWNE having requested me to examine and briefly notice some fossils in his collection, obtained from the Red Homalonotus Beds of the Lower Devonian, Torquay, I have endeavoured to comply with his request so far as the condition of the specimens permits. Besides the *Homalonotus* remains, there are a number of Mollusca preserved as casts, but, for the most part, so distorted by slaty cleavage, as to render their determination most difficult.

The following remarks on the probable affinities of the fossils figured on Plate IV. may, it is hoped, induce other collectors to examine the beds from whence they were obtained, and so lead to the discovery of more perfectly preserved specimens.

LAMELLIBRANCHIATA.

1. *Cypricardia lævisulcus*, Eth. sp. nov. (Pl. IV. Figs. 4 and 5.)

There appear to be two genera of Bivalve Mollusca represented here, namely, *Cypricardia* and *Modiolopsis*; the former might be a