

## UPPER DEVONIAN IN S. DEVON.

To the Editor of the GEOLOGICAL MAGAZINE.

DEAR SIR,—As my friend Mr. Pengelly asks me a question, having answered mine, it is but courtesy to reply. In speculating on the possibility of explaining the presence of these fish remains in the neighbourhood of Torquay and Looe, I said that the Uppermost Devonian (Upper Old Red) might occur in unconformable patches round the older rocks. We actually have the Upper Devonian at Newton Bushell. Phillips long ago figured the Upper Devonian *Phacops lævis* from thence, and Mr. Pengelly himself explained the way in which, having coiled themselves comfortably for a nap, they were smothered and decapitated in their beds. Newton Bushell is about as near to Torquay as Teignmouth; so, if my friend will not admit the presence of *Clymenia* pebbles at Shaldon to be a proof that the Upper Devonian lies immediately beneath the New Red there, I am sorry for him, but I cannot stop to argue the point. He may take Newton Bushell instead. Only, of course, the neighbourhood of Upper Devonian does not prove the neighbourhood of Uppermost Devonian,—it only makes it more likely.

My friend certainly told me the fish defences were from Looe Island; it now appears that one of them only came from thence. Will he describe and figure them, and give us the whole of the scattered (not to say buried) information in a tangible form?

Yours truly,

J. W. SALTER.

## DISTRIBUTION OF WHITE SANDS AND CLAYS SUBJACENT TO THE BOULDER-CLAY.

To the Editor of the GEOLOGICAL MAGAZINE.

SIR,—I shall be much obliged if you will allow me to add a word or two to the excellent paper in your June number, by Mr. Maw, on "The Clays and Sands subjacent to the Boulder-clay." I was able a few months ago to pay a hurried visit to a large pit in these deposits at the foot of the Weaver Hills, I believe the Ribden Pit, and one thing struck me very forcibly which seems to have escaped the notice of Mr. Maw and Mr. Edwin Brown. The mass of the materials seemed to me to be undoubtedly *derived from the Pebble beds of the Bunter, and not from Millstone Grit*. The description written on the spot in my note-book runs thus:—"The deposit consists of unstratified masses of clean mottled sand, incoherent pebble-beds, and little patches of clay, mixed together in the most confused manner. With the exception that the pebbles are all of quartz-rock, instead of flint, the mass is exactly like one of the mixtures of brick-earth, gravel, and sand, that lie in pipes in the Chalk." In both cases it seems that the underlying limestone has been dissolved by water, and that masses of the rock alone, Lower Tertiaries, or Bunter-beds, have been gradually let down into the hollow, while the insoluble earthy part of the limestone remained behind and furnished the clay.

If this view be correct, the deposits may be of any age later

than Bunter times, for there is no reason to believe that the Derbyshire limestone was under water from the end of the New Red Sandstone period till the Glacial epoch, and very likely not even then; and if any outliers of Bunter beds were left upon the Mountain Limestone, similar deposits might be forming at the present day.

I am also far from certain that the Ribden deposits are overlaid by true Boulder-clay; what I saw looked quite as much like the covering, often many feet thick, of local rainwash, which spreads over the hill country thereabouts. Of course, some of this may be of the same date as Boulder beds, some is very likely much older, and it is forming now-a-days after every shower of rain.

Yours obediently.

A. H. GREEN.

MONK BRETTON, BARNSELY, June 3rd, 1867.

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#### GRAPTOLITES.

To the Editor of the GEOLOGICAL MAGAZINE.

SIR,—Dr. Nicholson's paper in your last number might suitably have closed the correspondence which you have published between us, but I must ask you for permission to add a word or two.

Your correspondent gives up the relation between the capsules and the graptolites, as originally figured by him, to which I objected, and on which he based the whole of his argument for their being ovarian vesicles, and with this consequently that argument as well. But he has, in the paper in your last number, figured several specimens which prove "conclusively that there is an actual organic connection" between the capsule and the zoophyte. What do these specimens show? On the one species, *Graptolithus Sedgwickii*, he finds the "ovarian capsules" borne on the common cœnosarc (Pl. XI. fig. 16) as well as developed from individual polypites! and in the latter case the polypite sometimes is converted into an "ovarian capsule" (fig. 15) the mouth of the hydrotheca narrowing into and being "organically connected" with the capsule, and at other times gives origin to the capsule from the sides of the hydrotheca! (fig. 12-14). The only thing that I know at all comparable to this extraordinary structure is the "ovisac" which is thus so strangely related to the parent, which Dr. Nicholson tells us is a corneous gonophore that becomes a free swimming zooid!

WM. CARRUTHERS.

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NOTE.—PROF. HARKNESS requests that the following corrections may be made in his letter, which appeared in our last Number at p. 286. In the heading to his letter for "Upper" read "Lower Llan-doverly," and in the fifth line, for "about" read "above the position."