

FISH IN THE OLD RED SANDSTONE.

To the Editor of the GEOLOGICAL MAGAZINE.

SIR.—Mr. Pengelly's answer is clear and definite. Such good authorities on fish remains give one the strongest reason to believe that this Upper Old Red fish really does occur in what we believe to be Lower Devonian.

On the Irishman's principle of coming for aid to-day, because he was relieved yesterday, I must ask three or four more questions. First, is it sure that the locality, Meadsfoot Bay, is the same age as the Meadsfoot Sands, which are certainly Lower Devonian, by their fossils. The country is awfully faulted; and as the Barnstaple beds (=Upper Old Red, as I have proved by their fossils) are everywhere likely to be unconformable, on the Middle and Lower beds, I think it is possible we may get patches of it here and there, and should like to know (it is years since I saw Meadsfoot) if the beds can be continuously traced.

Next, I should like to ask whether *Pleurodictyum problematicum* Goldf., one of the most characteristic of the Lower Devonian corals in S. Devon, and in the Rhine country, really ever does occur in the Barnstaple group, or the Coombola grits of the south of Ireland? It has been frequently quoted of late years (I believe by Professor Jukes). Will my friend Mr. Baily re-examine his specimens; and any others who may possess this fossil make sure of it?

There is a *Dictyophyllia*, a Lower Carboniferous coral, allied to *Pleurodictyum*, common enough at Barnstaple, but not, I think, the same species as the Mountain Limestone fossil. This I have seen from various localities in the Uppermost Devonian. Is it possible that it may have been mistaken for the *Pleurodictyum*?

Again, has any one ever seen, in Mountain Limestone rocks, *Stringocephalus*, *Calceola*, *Pentamerus*, *Atrypa*, *Uncites*, *Strophalosia*, the various species of *Acerularia*, *Cystiphyllum*, *Smithia* (or *Streptastrea*), *Heliolites*; the forms of *Favosites*, allied to *F. cristata* and *F. cervicornis*, the Devonian types of *Hexacrinus*, *Sphaerocrinus*, *Stylocrinus* (*Cupressocrinus* is rarely found, I know, in Carboniferous Limestone, but is characteristically Devonian for all that), the elongated forms of *Pentremites*, *Phacops*, *Proetus*, *Harpes*, *Cyphaspis*, *Homalonotus*, *Bronteus*, *Cheirurus*, etc.

If none, or next to none, of these genera occur in Mountain Limestone localities: if *Productus* is everywhere common in the last, and absent in the first: and if the corals, crinoids, shells, trilobites, and fish, which characterize the Devonian, are absent in the overlying Carboniferous—and *vice versa*, what is the use of trying to make the one the equivalent in time of the other?

Yours truly,

J. W. SALTER.

P.S.—Since I wrote the above, Mr. Pengelly has brought up his specimens to London. The *Phyllolepis* from Meadsfoot is indeed like that genus. The fish-defences (*Ctenacanthus*?) are equally unquestionable; they are from Looe Island. There is nothing like asking questions to get at truth. Here have been some valuable data long buried;

and now my friend consents to have them figured and described by our best authorities. So I must invite geologists, if not Mr. Pengelly himself, to find for us what shells, corals, etc., occur *with* these actual specimens. They do indeed *appear* to lie in the lowest beds; but there is the possibility; I have above hinted at, of the Upper beds overlapping unconformably round the south coast, where hitherto we have not known them. Near Teignmouth, indeed, we have the Upper Devonian beds; and my note-book tells me there is a fault (one out of many in this district) between the Meadsfoot sandstones with Lower Devonian shells, and the pile of grey rocks which hold this fish-scale; and unconformity and faults will do *anything* but mix the fossils in the bed itself, especially in S. Devon.

But Looe Island with the fish, is not Looe with its Lower Devonian shells; and Meadsfoot fish-bed has not *yet* been proved to be the same beds as those which hold the trilobites and shells. Here is work for the local geologist; and as asking about the fish has produced so much, I hope asking about the geology will do more. We want now to know what are the exact relations of the beds which hold these fish: for fish they are—the only ones (the N. Devon one was a mistake) known in British Devonian rocks.—J. W. S.

BALA AND HIRNANT LIMESTONE.

To the Editor of the GEOLOGICAL MAGAZINE.

SIR,—There is a point of much interest to be worked out in North Wales: viz., the exact relation and age of the upper or Hirnant limestone of Bala.

Some of the fossils in this remarkable band are known. It is the only example (so far as I know), in rocks below the Wenlock limestone, of a pisolitic structure; very marked in the neighbourhood of Bala. But beyond Bala, etc., it is not at present known.

I beg to suggest an excellent piece of work for one of the Clubs this year (unless Mr. Davies, of Oswestry, means to do it single handed). It is to work out *thoroughly* the geology of one mountain, close to Llangollen, and therefore easily accessible. If they would examine Mynydd-Fron-Frys, which is not a lofty one, and has good roads all round, it will be much better service than making what is called a section or a traverse. There are two beds of limestone there:—the Bala limestone, and an upper one, probably, the "Hirnant" limestone; and from this locality some of the very rarest of our Bala fossils have been obtained.

There is a huge *Loxonema* there, six or seven inches long; a fine *Lituites*, viz., *L. anguiformis*,—the only specimen known in Britain, yet, is that in the Woodwardian Museum. Then, again, there is a species, probably new, of *Bumastus* to be found; and such a crowd of Corals, *Bryozoa*, and other choice things, that it is like working in a museum; I had but two hours for it all.

Now what we want to know is the exact contents of each of these bands of limestone; for one is probably very different from the other. And if the above rare fossils are from quarries in the upper