

none. The testimony which that gentleman volunteers is, however, of value as confirming the only inference possible from the statements and figures, that the specimens of *Heterophyllia* are variously preserved, and that Mr. De Wilde has not seen all the varieties.

I am unaware, of course, of your reasons for adopting a somewhat unusual style of comment on Mr. Young's paper. He does not, however, as you say, "object to a discovery because it is an anomaly." He thinks the appearances may be otherwise interpreted, and that so unexpected a phenomenon as articulated spines on a coral requires more evidence in its support than has been adduced. Anomalies in other groups of animals furnish no argument in support of this particular one. Mr. Young thinks his specimens justify him in taking exception to Dr. Duncan's paper on two grounds, 1st, that *H. Lyelli* and *H. mirabilis* are not distinct species, 2nd, that neither possessed articulated spines. The criticism of published species is neither an unusual nor a hurtful proceeding, and I should have been unwilling to interfere in the matter which rests entirely between Dr. Duncan and Mr. Young, but that, having seen the specimens, I am satisfied that the difference of opinion, at least on the second of Mr. Young's criticisms, is due to difference in the state of preservation of the fossils.

JOHN YOUNG, M.D.

HUNTERIAN MUSEUM, GLASGOW, 18th November, 1868.

[ERRATUM.—In the heading to Mr. J. Young's paper on *Heterophyllia* (p. 448) in our October Number, we styled him "Curator of the Hunterian Museum, Glasgow." We find we were in error. Professor John Young, M.D., is Keeper of the Museum, and Mr. J. Young is Assistant-Keeper.—EDIT.]

HETEROPHYLLIA MIRABILIS, DUNCAN.

SIR,—Having read, in the November number of the GEOLOGICAL MAGAZINE, the observations of Messrs. De Wilde, Fielding, and yourself, upon the so-called articulation of the hooklets on *Heterophyllia mirabilis*, I now beg to state that the specimens of this coral which I sent to you, and which are referred to in Mr. Fielding's remarks, are of a mixed character, and were intended to illustrate the various conditions in which it is found, such as the various diameters the coral assumes, and the variation in form of the horizontal section. Others show the rounding of the bases of the spines when worn, presenting then the appearance of rounded tubercles; while others show the spines lying in position in the shale, or with their fractured bases projecting irregularly from the stem of the corallum.

The remarks which I formerly made were based partly upon these and other longer specimens in my possession, and I am satisfied, after a further examination of all the best preserved specimens I can find, that what I have stated in my paper is correct, viz., that the hooklets were not articulated upon tubercles, and the mere rounding of the base of the spines, so as to resemble tubercles, seen upon some specimens, stands for nothing in the face of the important fact which numerous others go to prove, viz., that these tubercles are not rounded in the better preserved specimens, and that they are in fact only the fractured bases of the spines or hooklets.

Mr. De Wilde states that if the hooklets were solid appendages attached to the stem, he would not expect them to break away so regularly as they seem to have done, because he says the hooklets are stoutest at their base. But he must remember that although this be their thickest part, yet it is their weakest point in their relation to the stem. As points in illustration—twigs torn from the stem of a plant, naturally break close to their attachment with the stem, yet this is also their thickest point; and the spines of the *Productæ* found in our soft shales, are seen in most cases to be fractured close to their attachment to the shell, owing to the pressure they have sustained. But this fracturing of the spines by pressure is not always regular in its distance from the organism, either in the *Productæ* or the coral in question, as some of my specimens in your possession clearly show. There are several other considerations that might be urged against the supposed articulation of the hooklets upon tubercles, but the fear of encroaching too far upon your space forbids me from entering upon them at present.

JOHN YOUNG.

HUNTERIAN MUSEUM, GLASGOW,
November 5, 1868.

ON *HETEROPHYLLIA*.

SIR,—I have read Mr. J. Young's communication to the GEOL. MAG. concerning *Heterophyllia* and Mr. De Wilde's letter also. Mr. Fielding's note must be satisfactory to the able artist who drew from nature the tubercles and spines of *Heterophyllia mirabilis*, nobis for the Phil. Trans. (not for the Proceedings, as Mr. J. Young asserts), but really the slightest possible examination of the specimens proves that the appearance of irregular fracture of the spines is the exception, and that which I have described is the rule. The irregular fracture has been produced by pressure, which has acted more upon the base of the tubercles than upon the junction of the hooklets with the tubercles. Probably some ankylosis had occurred and the joint had been destroyed.

I am content to abide by the decision I came to whilst the *Heterophyllia* in the Hunterian Museum of Glasgow were still called *Serpula*, and to consider *H. Lyelli* and *H. mirabilis* very interestingly separate species. It is very remarkable that Mr. J. Young did not favour science with an elaborate essay upon these very peculiar corals long before their importance became manifest to his able fellow geologist, Mr. J. Thomson, and to me. Perhaps the enormous amount of work still required to be undergone amongst the comparatively unknown fossils of the Scottish Coal Field has frightened the worthy sub-curator. I would beg of him to cheer up and to try just "a wee" of original palæontological research. When he has described one species, his criticisms upon the works of those who are hard at work at Scotch fossils will be more appreciated. At present his criticisms are long but not strong.—P. MARTIN DUNCAN.