

## DISTRIBUTION OF CEPHALASPIS AND PTERASPIS.

*(Geol. vol. IV., p. 102 ; Ibid., p. 140)*

SIR,—Before I trouble you with a few remarks in elucidation of the *apparent* difference between the views of Mr. Lightbody and my own, permit me to express the pleasure I feel at seeing his name so prominently in your columns. No man has studied with such untiring zeal the range and sequence of those interesting deposits which make up the Ludlow promontory; and I am glad to find that my own investigations, carried on independently of his, and at a distance from the field of work, have provoked so slight a bill of exceptions, and a few interesting notes, which I am sure every reader of "The Geologist" would be glad to see continued.

The head and front of my offending, as I learn it from my friend's comments is this:—I have called the "Passage-beds" Lower Tilestones; and out of this some confusion has arisen in minds which associate the word "tilestones," upper or lower, with those originally so-called, but known by Sir Roderick Murchison now as the Downton-beds. To make the position of Mr. Lightbody and myself quite clear to your readers, I will refer them to my section on p. 104. They will see that *above* the "Downton Sandstones" lies a zone which I have called "Lower Tilestones," and which is marked out by the number and variety of its fish-fossils. These beds are the "Passage-shales" of Murchison, which have been so industriously worked in their exposures in the Ludlow district (the chief of which are in the railway cutting near the station, and at the Tin Mill, about a mile distant) by my valued friend, Lightbody.

But now followeth my reason for not, in my humble sketch of ancient ichthyic life, retaining a name which has such high sanction. I rejected the term because it appeared to me to have less value as a designation for a special zone of deposit than the one I employed. The horizon of a "Passage-bed" must necessarily, from the character of the powers employed to deposit it, be a shifting one. True, that no name or term of designation we can apply to any rock, or zone of deposit, will be cosmopolitan in its value; but "Passage-beds" so called, have more troublesome equivalents than deposits nearer to the centre of a system, and in any endeavour to sketch out the range of life-remains, the term seemed to me peculiarly inappropriate. Upon this view of the case, I included all the beds beneath the "Upper Tilestones" of Trimpley—and as I still think of the Downton Hall drive quarry—under one name, as Lower Tilestones, representing them as resting upon the Downton series of sandy and "tiley" rocks. One good characteristic of the "Upper Tilestones" is their possession of an intercalated plant-bed, with good evidences of terrestrial vegetation. This, it must be remembered, is quite a distinct thing from the Downton plant-bed, which contains the *earliest* land-plants. The

“neutral ground between the Downton and the (Upper) Tilestones” would have been clearly understood, had I introduced the bracketed word.

As regards the littoral evidence given by star-fishes, it certainly is not so strong as it was prior to the discovery of certain forms in the deep-sea; but the whole facies of the life-remains from the Lower Ludlow beds is indicative of a shallow sea-zone. The *Pterygotus* with its great succulent body, whose remains are met with above and below the Starfish-bed, could not have been a deep-sea creature: and other, but smaller, shrimp-like forms are met with associated with Bryozoans, and what appear to me to be true Fuci.

These are matters of much interest; and I am pleased to find that the torch of search I have kindled in the pages of “The GEOLOGIST,” to explore the dim haunts of Cephalaspis, and his kinsman Pteraspis, is not likely to be soon put out. Chiefly will it be kept alight by contributions from men, like my friend Lightbody, who are familiar alike with the creatures themselves and the far-off kingdoms they inhabited.—I am, Sir, yours very truly, GEORGE E. ROBERTS.

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## ON NEW BRACHIOPODA, AND ON THE DEVELOPMENT OF THE LOOP IN TEREBRATELLA.

BY CHARLES MOORE, F.G.S.

(Continued from vol. iii., page 445.)

In addition to the Brachiopoda noticed in this paper, I am possessed of various minute specimens, which differ from any described species. Some of these may be the young of Brachiopoda that occur in the beds in which they are found; but until their passages into adult shells can be satisfactorily recognized, it will be undesirable to figure or describe them. Three examples of well marked and persistent forms are provisionally named and given below.

*Spirifera minima*. Moore. Pl. ii., figs. 19, 20.

Shell microscopic, often one sided or unsymmetrical, slightly rugose; valves moderately convex; deltidium triangular; area broad and flattened; hinge-line broad; front of shell rounded. In some specimens the shell presents a uniformly flattened surface, whilst in the majority the outer surface of the smaller valve possesses mesial folds, and in the larger valve a central sinus.

*Obs.*—This shell is not uncommon in the Inferior Oolite of Dundry. Although no internal characters have yet been noticed, there seems little doubt the shell must be referred to the genus *Spirifera*. It is perfectly distinct from a little shell found with it, described by me in the Somersetshire Proceedings for 1854. We have thus evidence of