and all belonging to those of our present seas. The clay is very pure, almost free from gravel or sand, and leaving little residue when washed, with the exception of the debris of the eroded cellular bone, which, I presume, came chiefly from that scraped off the skull. There can be little doubt that the evidence, so far as I have seen, shows that the animal belonged to a period posterior to the prevalence of a more general Arctic or glacial fauna in our seas." The whole of the excavated bones are now at the mansion-house of Meiklewood, where they have been examined by numerous visitors, amongst others by Professor Turner, of Edinburgh. The excavations have, however, been put a stop to, the hole filled up, and the field sowed, or about to be sowed, with winter wheat, so that a long time may elapse before an opportunity occurs for renewing the search for further portions of this cetacean skeleton.

IX.—On RETIOLITES. By JAMES DAIRON, V.P.

[Read 6th December, 1877.]

THE genus *Retiolites* was founded by Barrande, who described one species, *R. Geinitzianus*, which he obtained from the upper Silurian rocks of Central Bohemia, and figured in his valuable Memoir upon the Graptolites of that country, published in 1850. This genus is one of the most interesting of those belonging to the Graptolitic group, but unfortunately our knowledge of its structure is but limited, and must, I think, remain so until a suitable collection of specimens, in a more perfect condition than hitherto attainable, has been formed and carefully studied. In its general outward appearance the genus *Retiolites* resembles those of *Diplograpsus* and *Olimacograpsus*, in having a central stipe or solid axis, to which is attached a double row of cells or hydrothecæ, giving it a rather leaf-like appearance, but widely differing from these forms in its internal structure. It may be remembered that about four years ago I brought forward a specimen, which I named *Retiolites branchiatus*, and which was a beautiful example of the genus, from the lower Graptolitic shales of Dobb's Linn, near Moffat. Being in that neighbourhood again during the past summer, I was fortunate enough to obtain a number of various forms, including a new species of *Retiolites*, differing entirely from anything I had hitherto got at Dobb's Linn. It was found in the upper shales, show-

ing that the genus had lived through the whole range of strata as represented in the Moffat beds. Amongst the many examples before you is one form to which I wish specially to direct your attention. You will easily perceive how widely it differs in its internal structure from some of the other species. The length of the fronds seems to vary from 3 to 4 inches, while their greatest breadth near the centre is $\frac{1}{4}$ of an inch. They have a long, slender stipe or solid axis in the centre, continuing beyond the distal extremity. To this stipe are attached, at an angle of about 30 degrees, the cellules, which are beautifully ornamented with a kind of lace or network, and this is placed around the cells from the outer margin to about half way on each side of the solid axis; the other two halves on the two sides of the stipe being filled in with a kind of hairy, irregular network; the solid axis at its distal extremity appearing to show a sort of double appearance. The cells at the outer edge are of a finely-rounded or convex shape, numbering about twenty-six to an inch, and are alternate on opposite sides of the frond, while they gradually diminish from three-quarters of its length to a lancet-shaped point. A question naturally arises as to the use of the framework around the cells. The cellules are circular, that form being probably the best suited for the requirements of their inhabitants, and the way in which they are arranged round in alternate segments of a circle makes it evident that there could be no better method adopted to secure their shape and appearance. I will defer any farther remarks upon this interesting species until I have devoted more time to its examination than I have yet been able to do. *R. branchiatus* possesses quite a different arrangement, but the specimens do not, unfortunately, show the cells, as they have been worn away, and nothing is left but the fibrous skeleton. It clearly, however, possesses a solid axis, with alternate strong fibres, set apart at intervals of about 3-16ths of an inch, the spaces being filled in by a delicate hairy network. In this species the cells may perhaps have been of a quadrangular shape, as is the case in the typical form of Barrande already quoted. It seems that he did not believe in the existence of a solid axis in *Retiolites*, but thought that the appearance shown in his specimen of *R. Geinitzianus* was merely a part of the framework. Geinitz and Hall both believe that there is a solid axis, and Professor Nicholson is of the same opinion, while I think my specimens show there is little doubt on the subject.