

elements coincided in number but alternated in position with the cover-plates, and therefore also with the floor-plates. This suture, then, is essentially a zigzag suture between two sets of alternating plates. In consequence of this arrangement one would expect to see along the edges of the groove, when the cover-plates are removed, a series of depressions or facets for the reception of the cover-plates. Unfortunately the edges have in nearly every case been worn enough to remove all trace of these very faint depressions . . . . (1914, p. 200).

This rather lengthy quotation has been made to show that besides the cover-plates and floor-plates we have present in *Steganoblastus* a third series of morphological elements belonging to the food-groove. One must at once question if these are not likely to be homologous with the outer side-pieces of *Blastoidea*, and to function as do the latter in assisting in the support of brachioles.

We should note that the question as to how these five closely or immovably covered rays secured an adequate food supply is not the only question raised by a study of the form and surface of *Steganoblastus*. How did it perform the very essential function of respiration, is another and very serious question. We find ample provision in *Blastoidocrinus* and the *Blastoids* in elaborate hydrospire systems. *Steganoblastus* must also have possessed such a system, and the presence of hydrospires is strongly suggested in Bather's figures 2 and 3 (1914, plate XV), where the floor-plates have been lost. A system of this kind however, presupposes the possession of brachioles.

In *Edrioaster* the branch channels which end in pores (Bather, 1914, p. 118) are bordered by double ridges, the innermost of which are regularly broken transversely. This structure, shown by Bather, 1914, plate XIV, fig. 3, while not so elaborate as that shown by Hambach in his "Revision of the *Blastoidea*," plate II, fig. 5, is yet suggestive of the latter, and is an indication of structure associated with the segregation of the more solid contents of the food stream from the water accompanying it. Bather seeks to derive the *Asterozoa* from the *Edrioasteroidea* (an exceedingly probable derivation), but in doing so injures his case by interpreting the pores of *Edrioaster* as podial openings—going so far as to sketch outlines of an ampulla and base of a podium, in 1900, p. 197, fig. 4. Primitive sea-stars possess no podial openings between the floor-plates. This fact is now emphasized by Spencer in his "Monograph of the British Paleozoic *Asterozoa*," part I. (1914).

Under the heading "Relations of *Steganoblastus*," Bather says: "The absence of brachioles, inferred from the lack of brachiole-facets and the presence of large cover-plates, proves