TRANSACTIONS

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At the ORDINARY MONTHLY MEETING of the Members of the Society, held on Tuesday, the 28th May, 1878, in the Literary and Philosophical Society Rooms, George Street, Manchester;

JOSEPH DICKINSON, Esq., F.G.S., President, in the Chair.

REMARKS ON SOME FENESTELLIDAE.

BY ARTHUR WM. WATERS, F.G.S.

When I first met with Actinosoma, which is clearly one of the Fenestellidae, the stellate nature of the aperture seemed so different from any Bryozoa structure that I thought it must belong to some other group.* Although I do not now hold so definite an opinion, it may be well to see if there is sufficient evidence to justify the Fenestellidae being placed with the Bryozoa. With this object I examined the aperture of some Fenestellidae in my possession through the kindness of Dr. G. D. Brown. In a Polypora, which is common in the Carboniferous shales of Lanarkshire, the aperture is nearly closed by a thin

* Prof. and Mr. Young have expressed a doubt as to whether these fossils should be classified as Bryozoa.

calcareous covering, with a very minute opening in the centre, as seen in Fig. 5. This has been mentioned by Dr. Young and Mr. Young in the Geological Magazine, Vol. I., new series, 1874. A similar structure obtains in a species which is almost the same as Fig. 3, and is something like Fenestella carinata; but in the species figured as No. 3, I always found the aperture open.

In Glanconome, Fig. 6, the aperture is open, and as this and Fig. 3 have the aperture so well preserved, it allows us to conclude that no calcareous portion has been removed.

It will be seen that the opening in the centre of the diaphragm is exceedingly minute, and may well lead us to ask whether this was the cell of a Bryozoan polypide or some other animal. It should not be forgotten that the cells of Fenestellidae are all very small for Bryozoa.

The other points which the figures are meant to represent are, that there are fine tubes passing through the shell, though not as distinct as in Fig. 4, which is a transparent section of Polypora, Fig. 5.

These tubes cause the ornamentation which is seen on many specimens, as for instance in Fig. 2, which represents the reverse of an Actinosma. As is well known, there are tubes passing through the shell of Bryozoa.

I wish to call particular attention to Fig. 7, which is from a section I made of a species of Fenestellidae, which may be carinata, where in each cell there are two denticles, which I am unable to explain. If anything of the kind is found in different positions and in other species, some light may be thrown on its signification.

The Fenestellidae were at one time thought to belong to the Reteporidae, on account of their growing in a reticulate manner, but this mode of growth is not confined to Reteporidae, and there was no sufficient reason for such a position being assigned.

In the sub-order, Cheilostomata, to which Retepora belongs, the cells are closed by a lid or operculum, and the opening is, I think, never central; on the other hand, the Cyclostomata consist of tubes in which are the polypides, and there seems as much or more resemblance with this order. In the Cyclostomata the cells are often after a time closed by a diaphragm, in most cases some little distance down the tube; but the calcareous covering in Fig. 5 is so constant in all well preserved specimens that have come under my notice, that I am doubtful if a comparison can be made with this, though certainly, from the observation of Prof. and Mr. Young, it would appear that this cover was deposited after the shell.

In Mesenteripora meandrina, a form fossil in the Pliocene, and which now lives in the Mediterranean, the tubes project and frequently are nearly closed at the end with a plate, which has a long minute tubular projection in the centre. This tube is sometimes two or three times the length of the diameter of the zooecial tube. This cover has been thought to be homologous with the diaphragm, which closes the tubes of many Cyclostomata; and this view must be accepted, though in some specimens dredged at Naples, where the zooecial tubes are not abraded, this fine tube is always present; and I am led to believe that the study of the polypide of this species may throw some light on the structure.

I should further like to point out that the ridge, or keel, seen in Fig. 1, 3, 6, from the limited number examined, seems characteristic of the Fenestellidae. Although nothing of the kind is shown in the small fragment from the growing end of Polypora, Fig. 5, there is usually a protuberance in about the length of every two cells, so that normally there should be two in the portion drawn.

On the keel mentioned there are protuberances as in

Fig. 1, 3, 6, 8, but what signification these have is not known; but clearly in classification the greatest importance should be attached to their number and position. These may have had spines or organs analogous to vibraculae, or even zooids, but that must at present remain a subject for further research.

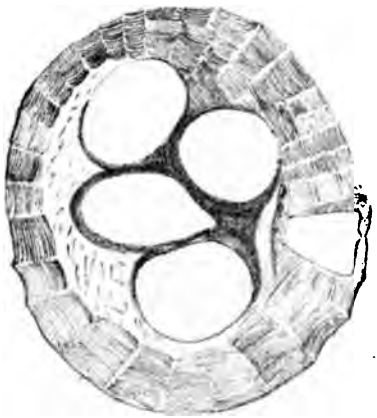
From the slight acquaintance I have with the subject and its literature, it seems that the classification of the Fenestellidae requires considerable revision, as more attention should be given to minute characters, and not so much to the number of cells between the dissepiments.

As I have no intention at present, at any rate, of diverging from the study of younger deposits to make a detail examination of this group, I point out the above in the hope of inducing someone more competent, to examine and see if we are justified in retaining the Fenestellidae among the Bryozoa; and to make my meaning clearer, have appended drawings, but feel that an excuse is necessary for the shortcomings of this first attempt at lithography, and hope if again I have occasion to illustrate any remarks to the Society that they may be more worthy of a place in the Proceedings.

EXPLANATION OF FIGURES.

1. Actinosoma.
2. Reverse of Actinosoma (not the same species as Fig. 1).
3. Fenestella.
4. Transverse section of Polypora.
5. Polypera (young branch, in the fully grown, the zoocia are more numerous).
6. Glanconome, probably flexicarinata, Dr. J. Young and Mr. J. Young.
7. Transparent section Fenestella, perhaps carinata. This section is horizontal, D is one of the dissepiments and O is an Osculum.
8. Section of same Fenestella at right angles to the direction of growth, cutting through two branchlets joined by a dissepiment.
9. Pore of Actinosoma, magnified 200 times, all the rest are magnified 85 times, as is also the scale attached.

4.



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