

XXIV.—On the Occurrence of Recent Heteropora.

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(Read 14th May, 1879.)

PLATE XV.

In looking through some of the British Museum recent Bryozoa, I several times came across portions of round branches from the neighbourhood of Japan, and upon examination some were seen to be *Myrionozoum*; but the structure of others, similar in form, was upon first sight a puzzle, for broken sections seemed to show transverse markings like septa, so that I was in doubt as to what this might be, and it was necessary to make transparent sections before the appearance was explained, but then the tubular cyclostomatous nature was quite clear, and it was interesting to find a Cheilostomatous (*Myrionozoum subgracile* d'Orb.) and a Cyclostomatous Bryozoon from the same locality, so similar in habit that they were placed together as the same species, not in one case only, but in several.

As is the case in all Cyclostomata, the shell-walls are perforated by small holes, and the shell thickening between these holes gives sometimes a beaded appearance (Fig. 4) to a section of a cell-wall; and it is to the irregular thickening of the shell causing well-like depressions round these holes that the peculiar appearance of transverse lines is due.

Mr. Busk, in the 'Crag Polyzoa,' page 122, speaks of partial transverse nearly equidistant septa in Heteropora, and Mr. J. Haime figures most distinct septa in his *H. pustulosa*.* These

EXPLANATION OF PLATE XV.

FIG. 1.—*Heteropora pelliculata*, natural size. (The upper branches are drawn slightly too long.)

FIG. 2.—Longitudinal section of ditto, $\times 25$. (This is drawn with the growing end downwards, and the structure is perhaps shown better in consequence.)

FIG. 3.—Transverse section of ditto, $\times 25$.

FIG. 4.—Portion of same, magnified fifty times.

FIG. 5.—Operculum of *Myrionozoum subgracile* d'Orb., $\times 85$.

FIG. 6.—Operculum of *Cellepora* (Fig. 8), $\times 85$.

FIG. 7.—Surface of *Heteropora pelliculata*; *b*, portion with the thin covering removed.

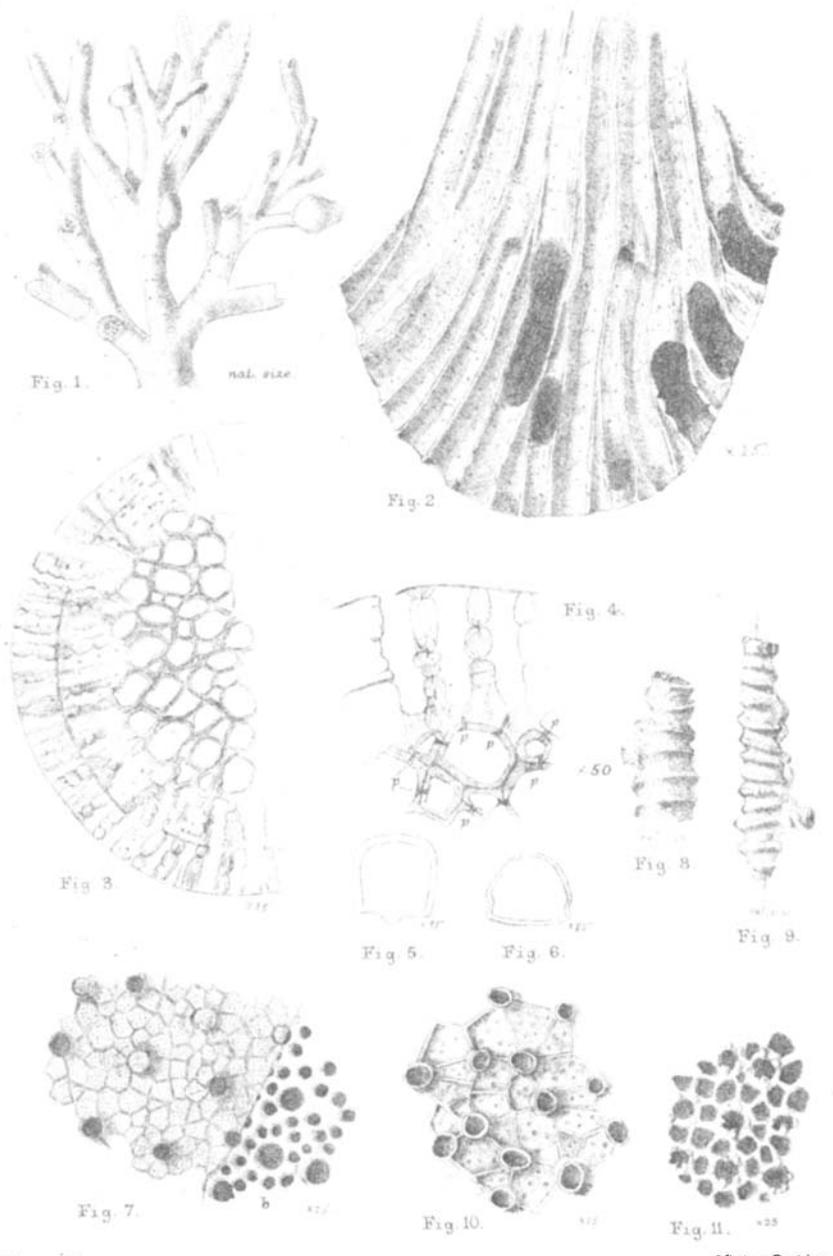
FIG. 8.—*Cellepora* from Australia.

FIG. 9.—*Heteropora cervicornis* d'Orb.

FIG. 10.—Surface of ditto.

FIG. 11.—Ditto, with covering removed.

* 'Mém de la Soc. Géol. de France,' ser. 2^me, vol. v. pl. xi. The name *H. pustulosa* was employed by Haime five years previous to the publication of the 'Crag Polyzoa,' and therefore the same name given by Mr. Busk as a new species will require to be changed. Haime's specific name *pustulosa* had been employed by Michelin and d'Orbigny for his species, though the generic name they used was *Ceriopora*.



A W Waters lith.

Mivster Bros imp.

1. 2. 3. 4 & 7. *Heteropora pelliculata*.
5. Operculum of *Myriozoum subgracile*.
6. Operculum of *Cellepora*. 8. *Cellepora*, sp.
9. 10. 11. *Heteropora cervicornis*, d'Orb.

Mr. Busk explains by considering the septa to represent the remains of hymen-like lids, which have been left behind at successive stages of growth. I have not found this to be the case in this species or fossil ones examined, but suppose it must occur in other species.

The pore-tubes can be seen in the transverse sections, Figs. 3 and 4; in Fig. 4, they are shown passing through the zooecial walls; this structure is the same as we find in all Cyclostomata, and the inner portion of Fig. 4 would represent equally well *Idmonea*, *Hornera*, &c., for in all of this sub-order numerous minute pores occur in the walls, as is also shown in the longitudinal section, Fig. 2, which may also be considered as a characteristic section of the shell structure of the group. In the Cheilostomata, on the other hand, numerous perforations are exceptional, but in the cell-walls of most are comparatively large disks, called rosette-plates, having one or numerous apparent perforations. In *H. pelliculata* the interior of the zooecial tubes has delicate longitudinal markings, with occasional faint transverse lines of growth (see Fig. 2).

The external surface can best be studied with a calcined fragment. In a piece thus prepared, the calcareous base of a thin pellicle is seen to cover nearly all the surface. The zooecial apertures are nearly equidistant and have sometimes a thin cover, as is the case with most of the Cyclostomata; * surrounding each cell are about eight cancelli, covered, as already pointed out, and in these coverings are several perforations round which the white calcareous film is thicker, thus giving the appearance of raised warts, and, in fact, until the organic matter is removed this structure cannot be correctly appreciated. The openings of the cancelli are usually much smaller than the zooecial apertures, though in some cases they are nearly as large.

I have been unable to identify it with any fossil form, and therefore call it

Heteropora pelliculata, nov.

Zooarium erect, branches cylindrical, frequently dividing dichotomously, ends of branches sometimes taper, at others swelling out into a subglobular termination. Zooecia; parallel tubes, perforated with minute depressed pores. Zooecial orifices circular, interstitial orifices subcircular, disposed round the zooecial orifices. Surface covered with a thin calcareous and organic pellicle, cover of cancelli numerously perforated.

Hab.—The Gulf of Tartary and the neighbourhood of the island of Saghalien and Japan, between the latitudes 41°–46° N.,

* Such covers of the Cyclostomatous Bryozoa are specially worthy of note, for in *Polypora* and other Carboniferous fossils belonging to the *Fenestellidæ* similar closures have been pointed out by Mr. John Young.

and longitudes 141°-143° E., in from fourteen to thirty-seven fathoms.*

The next instance of the occurrence of *Heteropora* is interesting, as being found under somewhat parallel circumstances.

In the Australian seas there is a *Cellepora*, probably common, as I have seen it in several collections. It grows round the stalks of seaweeds, &c., and is raised into ridges irregularly encircling the zoarium (Fig. 8), with zooecia on each face of the ridge, so that it may be said to have in part a biserial growth, and this is known in *Mesenteripora*, *Reticulipora*, *Eschara*, *Flustra*, *Biflustra*, &c.

I have not been able yet † to identify it with any described species, and in my own collection distinguish it as *C. repleta* (thus in part retaining the meaning of the generic name *Plethopora*).

It is not, however, with this we have now to deal, but with a Bryozoon (Fig. 9) of quite similar mode of growth, found in a small boxful of the *Celleporæ*, just mentioned, which my sister picked up on the Semaphore near Adelaide; however, as soon as it is put under the Microscope, it is seen to be a Cyclostomatous Bryozoon, and I do not at present see any reason for placing it in any other genus than *Heteropora*.

The zooecial apertures (Fig. 10) are more irregularly placed than in the last species, in which the region of the aperture was only slightly raised; but here it is elevated in a tubular form, and the walls of the cancelli are also elevated. The perforations of the cancelli covers are larger, with the white rim round each hole very distinct. Where this film is removed (Fig. 11) there are spinous protuberances round the aperture.

This is apparently the *Plethopora cervicornis* d'Orb., 'Pal. Fr.,' pl. 799, figs. 4, 5, found in the Sénonien, and which is placed by him among the Cyclostomatous forms, but until I discovered this recent one I had always supposed the figure represented a worn specimen of *Cellepora*, similar to the one already mentioned.

Heteropora cervicornis d'Orb.

Plethopora cervicornis d'Orb., 'Pal. Fr.,' vol. v. p. 1045, pl. 799, figs. 4, 5.

Zoarium incrusting stalk of seaweed, raised into irregular ridges. Zooecial aperture crateriform; cancelli, mostly one series round the zoecium, covers perforated with few large holes.

* There are from the same locality stems of varying sizes, some not more than half the diameter figured, but whether they are all the same species I cannot say with certainty. If the material had been my own, I should have chipped fragments off all and made detail examination, but this could hardly be allowed in a national collection, and I have to thank the Museum authorities for allowing me to make sections of a broken fragment.

† I take this opportunity of saying I hope shortly to carefully study the Australian recent and tertiary Bryozoa, and shall be glad of any assistance that naturalists can give me.

Hab.—Chalk. Environs de Tours (d'Orb.). Recent. Adelaide.
The genus *Heteropora* has been found in the Jurassic of England and France, and the external appearance of *H. lepida* Novak,* is much the same as that of the recent species. The genus was also frequent in the Maestricht chalk. *Heteropora dichotoma* and two other species are mentioned by Reuss and Manzoni, from the Miocene of Austria and Hungary. Busk mentions several species from the Crag, and the American tertiaries have also yielded it, but it does not appear to have been previously found recent.

Besides the interest of the genus occurring recent, the striking similarity in shape of *H. pelliculata* and *cervicornis* to *Cheilostomata* taken in the same hauls is a most curious fact.

* "Beit. z. Kennt. der Bry. der böhm. Kreid.," 'Denk. k. k. Ak. Wissensch. Wien,' 1877, vol. xxxvii.
