never take a vertical course leading from the depths of the coral to the surface. A free vertical communication is, however, established by the smaller vessels (Pl. XIII. fig. 5). In the thin films of *Millepora alcicornis* the trabeculæ of hard tissue run with remarkable uniformity in straight lines parallel to one another, whilst the main canals cross them with a serpentine course.

Histology of the Cœnosteum.—In histological structure the hard tissue composing the cœnosteum of *Millepora* seems to resemble closely that of the coralla of *Heliopora* and most Anthozoa. It is composed of lamellæ of fibro-crystalline calcareous matter (Pl. XIII. fig. 8), the fibres of the superposed lamellæ crossing one another at all angles in the mass. In some places, in thin sections of the cœnosteum, the appearance shown at *a* (Pl. XIII. fig. 8) is clearly to be seen. The calcareous fibres of the hard tissue terminate towards a cavity in the cœnosteum as a series of short points, seeming to show a composition of the hard tissue out of definite rod-like elements. Such an appearance is only to be met with sparingly, and possibly occurs at spots where the cœnosteum was in active growth. The hard tissue is bored in all directions by parasitic vegetable organisms (Pl. XIII. figs. 6 and 8).

Chemical Composition of the Cœnosteum.—Although the animals forming the cœnosteum of *Millepora* differ so widely from those by which all other corals except the Stylasteridæ are secreted, their cœnostea appear to agree in chemical composition with those of other corals as closely as they do in histological structure. Analyses of the cœnostea of two species of *Millepora* are given by Professor Dana. One is an analysis of *Millepora tortuosa* from the Fijis, by Mr Silliman, Jun.[1] The composition was found to be as follows :—

Carbonate of lime	94·226
Phosphates and fluorides . . .	1·200
Organic matter	4·574

Mr S. P. Sharples[2] found the cœnosteum of *Millepora alcicornis* to consist of—

Carbonate of lime	97·46
Phosphate of lime	0·27
Water and organic matter . . .	2·4

There is no marked difference between these results and those obtained from Anthozoan corals.

[1] Structure and Classification of Zoophytes, by J. D. Dana, A.M., Philadelphia, Lea and Blanchard, 1846, Appendix, p. 130.

[2] Corals and Coral Islands, by J. D. Dana, London, 1872, p. 105.