

II. Microsclere. 4. *Chiaster*, slender, hair-like actines, abruptly terminated, but not tylote, proceeding from a minute globular centre; diameter 0.006 to 0.011 mm.

*Colour*.—Purplish on the surface, yellowish-white within.

*Habitat*.—Reefs off Tahiti; depth, 30 to 70 fathoms.

*Remarks*.—The single specimen obtained of this sponge measures 59 mm. in width and breadth, and 32 mm. in height. Two oscules were visible, of which the largest measures 3 by 4 mm. in diameter.

*Ectosome*.—The cortex (Pl. XXXVIII. fig. 25), on an average 1 mm. in thickness, is composed of fusiform cells, collected together in variable number, sometimes as many as twenty side by side, into fibres which cross each other chiefly in tangential planes, but sometimes, especially in the outer two-thirds, in a curved radial direction. Immediately beneath the investing epithelium is the usual thin layer of vesicles, about 0.004 by 0.007 mm. in length and breadth, with their contained protoplasm deeply stained. At intervals also in this position occur oval or round clusters of granule-cells, about 0.045 to 0.1 mm. in diameter. These are well shown, as seen from above, in the figure of a tangential slice taken from the exterior of the cortex (Pl. XXXVIII. fig. 24). In this figure are also seen the pore-sieves and diverging cladi of the triænes.

At the edge of the oscule the outer layer of the cortex is extended to form a membranous oscular margin about 0.03 to 0.25 mm. in thickness. It consists of a readily staining matrix, bounded by epithelium, and containing granular cells in the middle, and on each side of these occasional fusiform cells of small size. These are directed towards the nearest epithelial surface, with which their distal extremities come in contact.

The oscular or cloacal cavity, as it descends through the cortex (Pl. XXXVIII. figs. 26, 27), is lined by a very evident epithelium, the constituent cells of which bulge outwards like a succession of small vesicles; within them a nucleus is clearly discernible. Below the epithelium is a pale layer about 0.04 mm. in thickness, contrasting strongly with the dark hue of the fibrous tissue of the cortex which bounds it on the inner side. Under a low power (Pl. XXXVIII. fig. 26), the epithelial edge of this lining layer appears transversely striated, and when viewed under higher magnification (Pl. XXXVIII. fig. 27), this is found to result from the presence of deeply stained elongate cells, which are of two slightly different forms, though otherwise similar; the one presents a more or less cylindrical portion, 0.0078 mm. long by 0.0055 mm. broad, in which the nucleus is situated, it ends by a broad base against the epithelium on the one hand, and at the opposite extremity is produced into one or two fine fibres which are directed towards the fibrous tissue of the cortex. The other is fusiform in shape, and ends against the epithelium in a rounded conical end, which in some cases appears to be produced into a fine hair-like process, though I could not make sure whether this was not the torn margin of an epithelial cell.