

3. *Anatriæne* (Pl. II. fig. 4). Rhabdome cylindrical, tapering to a filiform end, cladi conical recurved, axial fibre continued past the cladal origin into the cladome, which is sometimes rounded, sometimes pointed in front; rhabdome 5.3 by 0.0158 mm.; cladi 0.0474 by 0.0118 mm.

II. Microsclere. 4. *Sigmaspire*, 0.0118 mm. long.

*Colour*.—Cream-white.

*Habitat*.—Station 163A, off Twofold Bay, Australia, April 4, 1874; lat. 36° 59' S., long. 150° 20' E.; depth, 150 fathoms; bottom, green mud.

*Remarks*.—Four specimens of this sponge were dredged, the largest, of an irregular ellipsoidal form, measures 21 by 18 by 15 mm., the smallest is subspherical, and about 9 mm. in diameter. The sponge is soft to the touch, with a velvet-like surface. The oscules are very small, from 0.5 to 2 mm. in diameter, in one specimen none were seen, and a series of sections failed to reveal any.

The cortex (Pl. II. figs. 1, 2) 0.4 mm thick, is a collenchyma, vesicular just below the outer epithelium and cavernous further in, the lowest layer of the cortex, one-quarter the thickness of the whole, is markedly fibrous, the fusiform cells running tangentially. Spicules disposed some tangentially, and others crossing these obliquely, are irregularly scattered through the inner layer of the cortex. The subdermal cavities excavate the cortex between the radiating spicular pillars, they are about 0.2 to 0.3 mm. high, and the thin roof which covers them is perforated by numerous pores.

The floor of the subdermal cavities is furnished by the fibrous layer of the cortex, through this they communicate with the incurrent canals by passages surrounded by concentrically arranged myocytes.

The mesoderm of the choanosome is a granular collenchyma or early form of sarcenchyma. The flagellated chambers differ considerably in size, measuring from 0.035 to 0.048 mm. in diameter. The incurrent canals communicate with them directly, the prosopyle measuring from 0.0158 to 0.0276 in diameter; they are sometimes eurypylous, sometimes aphodal, the apopyle is about 0.0118 mm. in diameter; an aphodal canal in one very clear instance measured 0.02 mm. in length, its diameter being that of the apopyle. A choanocyte with collum extended measured 0.0118 mm. in length, and 0.0035 mm. in diameter at the base.

Sperm clusters occur but rarely, one oval mass, 0.05 mm. in diameter, was met with; the spermatozoa were seen as spherical granules without tails, they measured 0.0015 to 0.002 mm. in diameter.

The skeleton consists of radiating spicular fibres, crossed by a great number of loosely scattered oxeas, which lie tangentially and obliquely; the skeleton of the cortex is produced simply by the extension of this skeleton into it.

The radiating spicules emerge from the surface without forming conules; the pro-