from two to seven in number; a single actine of a tetrad form measures about 0·0158 by 0·004 mm.

5. *Chiaster* (Pl. XII. figs. 6, 14, 15), varying considerably in size and general character; a small form with a comparatively large centrum and numerous short actines, about 0·008 mm. in diameter, and a larger form, with a smaller centrum and longer actines, 0·012 to 0·0158 mm. in diameter. In both the actines are abruptly terminated, hair-like rods, sometimes conical and pointed, scarcely if ever tylote.

Colour.—Yellowish-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. Dredged.

Remarks.—Ten specimens of this sponge were dredged; the largest does not exceed 14 mm. in diameter, with an oscule 1·5 mm. wide. The smallest is 10 mm. in maximum width, with an oscule 0·5 mm. in diameter.

The oscule (Pl. XII. fig. 23) leads obliquely into a small cloaca, into which the excurrent canals open by sphinctrate apertures. The perforated muscular membrane, thus tympanising the ends of the excurrent canals, may be regarded as a highly developed velum. Velar diaphragms occur at intervals throughout the whole extent of both incurrent and excurrent canals. The excurrent canals diverge from the cloaca on all sides towards the exterior, branching as they go, and interdigitating with the incurrent canals. The flagellated chambers (Pl. XII. fig. 28) vary from about 0·028 to 0·032 mm. in width, and 0·0197 to 0·024 in length; the prosopyle varies from about 0·007 to 0·01 mm. in diameter, and communicates with incurrent canal by a short prosodus. The apopyle is from 0·008 to 0·016 mm. in diameter, and is continued into an aphodus from 0·010 to 0·028 mm. long. The choanocytes are very sharply defined; a small but evident nucleus is seen within the rounded body, which is about 0·004 mm. in diameter; the collum is defined by a sharp outline on each side, and passes into the collar, which is continued into the common fenestrated membrane. Notwithstanding the clearness with which the foregoing characters are displayed, no trace of cilia is to be discovered.

The ectosome (Pl. XII. figs. 23–27) has the characters usual in the genus; its inner surface next the choanosome is not defined by any special fibrous layer, but exteriorly, beneath the outer epithelium, fusiform cells are abundantly present in the collenchyma of which it is constituted. Quite as numerous as the collencytes are the rounded clusters of bacteria which are strewn through this tissue (Pl. XII. fig. 25). The subdermal cavities may be regarded as a system of irregularly winding and branching superficial canals, crossed by numerous vela, and separated by the collenchyma of the ectosome, through which the spicular pillars proceed (Pl. XII. figs. 26, 27). The pores are collected in sieves overlying small canals, which descend directly into the subdermal cavities, and open into them freely or through a velar diaphragm; in some cases these pore-canals are