II. Microscleres. 4. *Microxea* (Pl. XXXII. fig. 10), fusiform, sharply pointed, surface minutely roughened, 0·05 by 0·004 mm.

5. *Microstrongyle* (Pl. XXXI. fig. 11), ellipsoidal or cylindrical, with rounded ends and minutely roughened surface, 0·012 to 0·016 by 0·004 mm.

Colour.—Yellowish-white.

Habitat.—Port Jackson, June 3, 1874; depth, 30 to 35 fathoms.

Remarks.—This specimen presents a broad, thick pedicel, terminating in two shallow cups; the growth has not been vertical, but oblique, so that when the sponge is placed with its flat base on a horizontal surface, the margins of the cups are nearly vertical. The total width of the sponge across the cups is 97 mm., the major and minor axes of the margin of one cup measure 56 and 41 mm., the base measures 51 by 42 mm. The sponge is completely overgrown, save for one small patch near the base, by an incrusting Desmacidine sponge, which appears to have commenced its growth at a time when the Lithistid was alive throughout, since beneath the parasite the discotriænes of the ectosome are still preserved; while had the superficial portion of the host been dead before the growth of the parasite, these would have probably dropped off. The discotriænes are also in a quite fresh state, showing no signs of solution, and this also suggests that they have not long been dead.

With the growth of the Desmacidine over the pores of the Lithistid, the latter became starved and stifled, and in consequence began slowly to die away, till at the time it was dredged all that remained alive was a small central patch, 15 by 6 mm. in area when cut open, and a small portion near the base which had escaped the general covering up. With the decease of the Lithistid the Desmacidine extended its growth inwards, coating the Lithistid skeleton with its own choanosome for a distance of about 2 mm. inwards from the surface (Pl. XXXII. fig. 2). The small portion of the Lithistid which remained alive in the centre of the sponge was examined by means of thin slices. It consists of sarcenchyma, which stains very faintly with hæmatoxylin, traversed by small excurrent and incurrent canals, which communicate with flagellated chambers in a diplodal fashion (Pl. XXXII. fig. 3). The chambers measure 0·018 mm. in breadth, and 0·015 mm. in length. That this tissue does not belong to the Desmacidine is evident from its character, since in the latter the flagellated chambers are eurypylous and the mesoderm collenchymatous; that it does belong to the *Discodermia* is conclusively proved by the occurrence of microstrongyles and microxeas within it.

The oscules are beyond the reach of observation, the Desmacidine having completely covered them over. The pores are well shown on the surface of the exposed basal patch: they are single apertures bounded by ectosomal discotriænes and phyllotriænes, and lined by epithelium and its associated microstrongles. They are oval or circular in outline, and from 0·045 to 0·065 mm. in diameter.