

*Desmoscyphus pectinatus*, n. sp. (Pl. XXXIV. figs. 1, 1a, 1b).

*Trophosome*.—Main stem monosiphonic, simple, carrying alternate pinnately disposed ramuli along nearly its entire length. Hydrothecæ of pinnæ exactly opposite, those of each pair closely approximate but not connate, adnate to the internode for somewhat more than half their height, and diverging towards their summits at a low angle; those of the stem alternate, distichous, adnate to the internode for nearly their entire height; all the hydrothecæ tapering towards the summit, where they terminate in a two-lipped orifice.

*Gonosome* not present.

*Locality*.—Station 162, off East Moncœur Island, Bass Strait; depth, 38 to 40 fathoms.

Also off Bahia.

This is a small but elegant species. The largest of the examples contained in the collection had a height of about two inches. The hydrothecæ are carried both by the stem and pinnæ. While those of the pinnæ are opposite and closely approximate by their opposed sides, those of the stem are alternate and widely separate. The orifice is cloven so as to present two lips, an anterior smaller and a posterior larger. The interval between the lips would seem capable of being closed in the living state by two valve-like membranes of extreme tenuity, some shreds of which were occasionally retained in the specimens.

The joints of the pinnæ are usually distinct between each pair of hydrothecæ. In some specimens, however, they were here and there nearly or quite obliterated.

The stem is divided by well-marked equidistant joints into regular internodes, each internode carrying one, or in some cases two, pinnæ. Three hydrothecæ occupy the interval between every two pinnæ on each side.

The hydrothecæ of the pinnæ, though all brought to one side of their supporting internodes and closely approximate, are not exactly connate. This slight departure, however, from absolute coalescence affords no grounds for regarding the species as other than a true *Desmoscyphus*. The close approximation of the hydrothecæ, and the fact of their being all brought to one side of the internode, are decisive in favour of its allocation in the genus *Desmoscyphus*.

*Desmoscyphus pectinatus* was obtained from two widely separated localities, Bass Strait and the region off Bahia.

*Desmoscyphus gracilis*, n. sp. (Pl. XXXIV. figs. 2, 2a, 2b, 2c).

*Trophosome*.—Stem monosiphonic, not divided into branches, springing at intervals from a creeping, filiform stolon, gently undulated, sending off regular, pinnately disposed,