

Synthecium alternans, n. sp. (Pl. XXXVII. figs. 2, 2a).

Trophosome.—Stem unbranched, fascicled towards the base, set with pinnately disposed, equidistant, alternate ramuli; ramuli divided into equal internodes, each of which carries a hydrotheca near its distal end. Hydrothecæ alternate, tubular, deep, adnate to the internode for about half their height, then diverging at a high angle and terminating in a circular and entire orifice.

Gonosome.—Gonangia oval, compressed, destitute of annulation, and with a terminal, scarcely elevated orifice.

Locality.—Off Port Jackson; depth, 30 to 35 fathoms.

The present species is of great interest as affording an instance of the characteristic synthecial structure, with an alternate disposition, of the hydrothecæ. It is a strong, rather rigid form, with the stem fascicled towards the base, but becoming monosiphonic distally, and attaining a height of between two and three inches.

The gonangia are compressed so as to present a lenticular form, more convex on one side than on the other, the more convex side being that which is turned towards the supporting pinna. They are entirely destitute of all trace of annulation and have their walls perfectly smooth. The male gonangium is smaller than the female, but otherwise differs but little from it in shape.

This highly interesting species was obtained along with *Synthecium campylocarpum*, from a depth of between 30 and 35 fathoms, off Port Jackson.

Thecocladium, Allman.

Thecocladium, Allman, Journ. Linn. Soc. Lond. (Zool.), vol. xix. p. 149, pl. xix. figs. 4, 5.

Generic Character. *Trophosome*.—Branching stems set with disjunct hydrothecæ and jointed at distant and uncertain intervals. Branches having their origin within the hydrothecæ.

Gonosome.—Gonangia ovate vesicles borne along the stems and branches and destitute of marsupium.

The genus *Thecocladium* agrees with *Thuiaria* in the absence of internodes of definite length. It differs from it, however, in the very remarkable origin of the branches, which invariably spring from within the hydrothecæ, passing out through the orifice, and then extending themselves externally.

The proximal end of the branch in *Thecocladium* can be traced through the axis of a hydrotheca whose cavity it completely fills, while its cœnosarc is continuous through the floor of the hydrotheca with the cœnosarc of the stem or branch from which it springs.