

In this specimen the pileus is about 5 cm. in diameter, being somewhat oval in outline; the height from the bottom of the stem to the summit of the pileus is also about 5 cm.; the diameter is about 1.5 cm. The colony is of a uniform brown colour.

On examination the *Sarcophyton* was found to present many points of interest, especially in comparison with *Heliopora*; a short description of its anatomy will therefore be given.

*Terms.*—As in Pennatulids, two kinds of individuals, sexual and asexual, compose the *Sarcophyton* colony. Such individuals have been termed by Kölliker polyps and zooids, the latter term denoting the sexless or partly aborted polyps, which act mainly as pores for the regulation of the water supply of the colonies. I propose to term in the case of Alcyonarians, in which there are two kinds of zooids, the sexual forms "autozooids," and the aborted polyps (zooids of Kölliker) "siphonozoids."

*Structure of the Zooids.*—The stem of *Sarcophyton* consists of a series of tubular canals running parallel to one another vertically, and bound together by abundant transparent connective tissue, in which are closely packed, numerous, stout, calcareous spicules of the common elongate cylindrical form, pointed at both ends, and covered with small lateral tubercles. The canals are prolongations of the autozoid cavities from above. The surface of the stem and under-surface of the pileus are covered with an even coat of epidermis, and entirely free from zooids of both kinds. On the upper aspect of the pileus the surface is covered all over with autozooids and siphonozoids. Over the general upper surface the autozooids are pretty evenly distributed at intervals, the interspaces being filled by numerous siphonozoids; but at the margin of the pileus, where its edge is turned down and slightly recurved, is a narrow zone all round, occupied by thickly set autozooids with very few siphonozoids. In a vertical section through the central axis of the whole colony, the autozoid tubes are seen to be arranged with great regularity, converging in curved or vertical lines, according to position, towards the stem. The circular areas occupied by the retracted autozooids measure 1.4 mm. in diameter, those occupied by the siphonozoids .42 mm. in diameter—the difference in dimensions being here much less than in deeper regions of the colony, where the autozoid cavities widen and the siphonozoid cavities contract. There are narrow intervals between the circular areas, in which there project the thickly set tips of spicules, which show through the epidermis (Pl. II. fig. 3) and form stiff supports to the walls of the cavities.

*Autozooids.*—The structure and relations of the autozooids and siphonozoids are seen in Plate I. fig. 2. The autozooids present no remarkable features; they have numerous fine spicules in their tentacles, which are, as is usual, simply retracted, and are provided with protractor and retractor muscles. Of the protractor muscles (PM in Pl. I. fig. 2) part of the fibres appear to be inserted into the wall of the autozoid cavity, whilst others are continued on the inner borders of the mesenteries.