

There is no surface network of canals present in the superficial layer of mesoderm directly beneath the ectoderm, such as exists in *Heliopora*.

The large canals in the stem of *Sarcophyton*, which are in reality long drawn out prolongations of the body cavities of the autozooids, may be considered as corresponding to K  lliker's "sinus;" the vertical and transverse canal systems to the "canales nutriti majores;" the network in connection more directly with the vertical systems to the "vasa nutrita minora." Apparently there are no vessels corresponding to the "vasa capillaria," their place being occupied by the network formed by the small ramified corpuscles in the sarcosome.

The transverse and vertical canal systems anastomose with one another frequently, but only here and there. Occasionally, but rarely, the canals from the bottoms of the siphonozooid cavities join directly the transverse canals. The canals have a wall of fibrous tissue directly continuous with the fibrous layers of the siphonozooid and autozooid cavities, and are lined internally by endodermal cells (Pl. II. fig. 3, C). Sac-like enlargements or swellings are constantly to be seen on the canals of *Sarcophyton*, both near the surface and in the deep tissue. In one such swelling was found a parasitical cyst of oval form and with greenish contents; its nature could not be determined.

Disposition of the Dorsal and Ventral Aspects of the Zooids.—The autozooids in *Sarcophyton* are so disposed that they have the dorsal intermesenterial spaces directed towards the centre of the pileus, and at the verge of the pileus these spaces uppermost. At least this disposition was observed to hold good in three opposed radial directions from the centre of the pileus. A whole specimen was not available for examination.

As in *Heliopora* the autozooids are not disposed with perfect regularity in this manner, so that radial lines from the centre of the pileus would pass directly through their longer diameters. Many of them are rotated more or less on their axes, so as to be inclined to the radial lines. They are most regular in disposition at the margin of the pileus. The siphonozooids, though preserving a general uniformity of arrangement, which proves their single pair of mesenterial filaments to be the dorsal ones, are still more irregular in disposition.

GENERAL REMARKS.

Affinities of Heliopora.—*Heliopora* is most undoubtedly an Alcyonarian. The number of its mesenteries, and the distribution with regard to them of the retractor muscles, the form and number of its tentacles, are decisive evidence in the matter; and this evidence is borne out by almost every item of histological structure. In the peculiar manner in which the retraction of the tentacles takes place, viz., by introversion, *Heliopora*