

edge, show plainly a layer next the cavities of the zooids consisting of well differentiated fibres disposed transversely to the lengths of the cavities.

The sclerites or spicules are imbedded in the thick layers of the sarcosome intervening between the autozoid and siphonozoid cavities and between the tubes composing the stem, and also occur in the tentacles of the autozooids. The growing tips of the spicules project amongst the ectodermal cells (Pl. II. fig. 3), carrying with them their investment of connective tissue. When the spicules are removed by acid, corresponding cavities are left in the mesoderm. A transparent membrane can be distinctly seen investing closely each spicule; no fibrillar or cellular structure, however, could be seen in the membrane.

The autozoid and siphonozoid cavities, and the whole of the canal system, are invested as usual by an endodermal layer, consisting of spherical cells with yellow contents exactly like those of *Heliopora*. In the siphonozoid cavities, at their summits, around the top of the stomach, masses of these cells were always observed to be accumulated. Possibly the accumulation of these in this situation is consequent on action taking place on the death and contraction of the colony when placed in spirits.

*Vascular System.*—*Sarcophyton* is an extremely favourable subject for the examination of the vascular system. In sections from alcoholic specimens preserved in glycerine jelly the whole ramifications of the vessels are most clearly displayed. Owing to the pigmentation of their lining endoderm, the canals show out dark and defined in the perfectly transparent connective tissue. The arrangement of the canals is shown in Plate I. fig. 2.

Two systems of canals are to be distinguished—the transverse and vertical systems. The transverse canals run parallel to the surface of the colony and to one another in each interspace between the autozoid cavities. They take the most direct courses to connect the cavities of the autozooids with those of the surrounding siphonozoids and with those of the adjacent autozooids. They commence to be given off laterally from the autozoid cavities at their very summits, forming there communications with the siphonozoid cavities. They continue to be given off at tolerably regular intervals, crossing now to a closely situate siphonozoid, now to a distant one. Deeper down in the colony the canals make long stretches to join the next adjacent autozoid cavity, and become shorter and shorter as the autozoid cavities converge below. Similar short canals connect the siphonozoid cavities with one another. Running in a general vertical direction between these transverse canals are the vertical ones, distinguished by their more undulatory course. The chief stems of this system of canals are the direct prolongations of the siphonozoid cavities. In connection with these canals is an irregular meshwork by which the whole deep connective tissue is permeated, and through the meshes of which the transverse canals pass. Offsets of the vertical canal system pass between the siphonozoid and autozoid cavities and give off transverse connecting branches.