

manner. The arrangement will be seen in Plate I. fig. 4. In the membrane lining the calicles, in transverse sections, a peculiar structure (shown Pl. I. fig. 3) is to be constantly observed. Stout offsets from the median connective tissue layer pierce the outer layer of connective tissue cells, and hang loose externally as flattened tags, which appear as if broken off, and are often somewhat curled up. I have been unable to determine the connection of these tags of tissue with the calicular wall (Pl. I. fig. 3). Exactly similar structures occur in *Tubipora*, being specially developed around the lower part of the polyps. Beneath the uppermost tabulæ scarcely any organic lining remains to the tubes, if any at all, and the deeper central parts of the corallum are, in the specimen of *Heliopora* which I have examined, almost entirely filled with the tubes of the boring annelids (*Leucodora* sp.). Thus when a mass of *Heliopora*, after being hardened, is decalcified, the whole of the deeper parts are removed, and a thin layer of soft tissue only remains behind, which above presents a similar appearance to that of the surface of the undecalcified coral, but beneath is seen to be composed of a series of villous processes derived from the tubes with the bottoms of the calicular sacs appearing as tubercles amongst them. Since the tubes of the cœnenchym and calicles have no lateral connections with one another except close to the surface of the corallum, in decalcified preparations they are, excepting at their very upper extremities, entirely separated from one another; hence it is extremely difficult to prepare fine transverse sections in the deeper regions, since the structures afford no support to one another.

*Canal Systems.*—The summits of the cavities of the sacs of soft tissue lining the cœnenchymal tubes communicate freely with one another and with the cavities of the polyps by means of a system of short transverse canals, which cross over the margins of the walls of the calcareous tubes at the lower parts of their mouths, as already described, p. 104, and shown in Plate II. fig. 7. These canals are mostly very short; they are circular in section, and have the same three layers in their walls as which compose the sacs within the tubes. In older parts of the coral, where the calcareous tubercles on the surface are much developed and the mouths of the cœnenchymal tubes are consequently contracted, a series of open channels are to be observed in the corallum running at the bases of the tubercles, when the coral is looked at with a hand magnifier. It is in these channels that the system of transverse canals runs. This canal system I have termed the "deep canal system," to distinguish it from the system of smaller canals lying superficially to it. The tube cavities communicate with the polyp cavities by means of the deep canal system, through a system of large apertures shown in Plate II. fig. 2. These apertures open in the intermesenterial spaces all around the summit of the calicle at its periphery, a single aperture being situate in the space formed by each externally projecting fold of the calicular wall.

The superficial canal system consists of a series of small canals and sinus, which take