

Characters of the Family HELIOPORIDÆ.

A compact corallum present, composed of a fibro-crystalline calcareous tissue as in Madreporaria. Corallum consisting of an abundant tubular cœnenchym, and with calicles having an irregular number of lateral ridges resembling septa. Calicles and cœnenchymal tubes closed below by a succession of transverse partitions. Polyps completely retractile, with tentacles when in retraction introverted. Mouths of the sacs lining the cœnenchymal tubes closed with a layer of soft tissue, but communicating with one another and with the calicular cavities by a system of transverse canals of soft tissue.

Tubular Cœnenchym of Heliopora and its Homologies.—The structure of the cœnenchym of the Helioporidæ is entirely unique amongst Anthozoa; no other forms have a cœnenchym composed thus of a series of long tubes packed side by side, and lying parallel to the calicular tubes and at right angles to the surface. It is to be remarked that the tubes are like the calicles in being open above, that they have walls composed in exactly the same manner as those of the calicles, and that they are closed below at intervals in the same way by exactly similar tabulæ. Further, the soft tissues lining the cavities of the cœnenchymal tubes are identical in structure with those lining the calicular cavities, and the same transverse system of canals connects the summits of the tubes with one another, and with the summits of the calicular cavities.

It seems by no means improbable that the cœnenchym here is composed of the tubes of aborted zooids (siphonozoids) which have lost the rudimentary organs, which they still possess in such a form as *Sarcophyton*, and have become mere tubular cavities, the openings of which to the exterior even have been obliterated; it seems impossible otherwise to account for the presence of the succession of tabulæ in the cœnenchymal tubes.

Fossil Allies of the Helioporidæ.—The foregoing considerations are suggested by the circumstance that a series of fossil corals, grouped by Milne-Edwards under the Tabulata, appear most probably to have been Alcyonarians as well as *Heliopora*. The genus *Chætetes* was considered by Keyserling to have belonged to the Alcyonarians, because of the absence of septa and the mode in which its polyps are grouped; but Milne-Edwards retains it amongst the Zoantharians, because of its close resemblance to the Favositidæ, in which the presence of septa is regarded as conclusive in deciding against Alcyonarian affinity. The presence of calcareous septa, however, must now be considered a character of less importance than it formerly was. As is seen in the case of *Heliopora* pseudo-septa may exist, which do not necessarily correspond in any way, in disposition or number, with the membranous mesenteries. In the Favositidæ the septa seem to have been no more perfect than they