

the mouth encircled with roughish filiform tentacula ; stomach without proper parietes ; intestine 0 ; anus 0 ; reproductive gemmules pullulating from the body and naked, or contained in external vesicles. *Polypidoms* horny, fistular, more or less phytoidal, fixed, external. Marine, excepting *Hydra*, which is lacustrine.

Order II. ASTEROIDA. *Polypes* compound, the mouth encircled with 8 fringed tentacula ; stomach membranous, with dependant vasculiform appendages ; intestine 0 ; anus 0 ; reproductive gemmules produced interiorly. *Polype-mass* variable in form, free or permanently attached, carnose, generally strengthened with a horny or calcareous *axis* enveloped with the gelatinous or creto-gelatinous crust in which the polype-cells are immersed, and which open on the surface in a starred fashion with eight rays. Marine.

Order III. HELIANTHOIDA. *Polypes* single, free or permanently attached, fleshy, naked or encrusted with a calcareous *Polypidom*, the upper surface of which is crossed with radiating lamellæ ; mouth encircled with tubulous tentacula ; stomach membranous, plaited ; intestine 0 ; anus 0 ; oviparous, the ovaries internal. Marine.

Sub-Class II. MOLLUSCAN ZOOPHYTES.

Body non-contractile, and non-symmetrical ; mouth and anus separate ; gemmiparous and oviparous.

Order IV. ASCIDIOIDA. *Polypes* aggregate, the mouth encircled with filiform ciliated retractile tentacula ; a distinct stomach, with a curved intestine terminating in an anus near the mouth ; ova internal. *Polypidoms* very variable,—either horny, fistular and con-fervoid, or calcareous, membranous, or fibro-gelatinous, formed of cells connected and arranged in a determinate and usually quincuncial manner. Marine and lacustrine.

ADDITIONAL NOTE.

The only extensive series of experiments we have on the composition of *Polypidoms* are those of Mr Hatchett, published in the Philosophical Transactions for 1800, and the subsequent progress of zoological and chemical science requires a new investigation of the subject. The general results of Mr Hatchett's experiments are, "that the Madrepores and Millepores are formed of a gelatinous or membranaceous substance, hardened by carbonate of lime, the difference consisting only in the mode in which these materials are combined : that in the *Tubipora*, *Flustra* and *Corallina*, some phosphate of lime is mixed with the carbonate of lime : that in the *Isis* the basis is a regularly organized membranaceous, cartilaginous and horny substance, hardened by carbonate of lime, one species only (the *Isis ochracea*) yielding also a small proportion of phosphate of lime. That the hardening substance of the *Gorgonia nobilis* is likewise the carbonate of lime, with a small portion of phosphate ; but that the matter forming the membranaceous basis consists of two parts, the interior being