

condition of the polypidoms of the third section, which contain no lime, or very little of it, but are formed of a condensed gelatinous membrane, which resembles horn in every essential property.*

These diversities in their chemical composition appear to be of little value, either in a physiological or systematical point of view, for in every order of polypiferous zoophytes, we find calcareous and horny polypidoms. A curious species of *Actinia* secretes a horny basis, the first rudiment of a madreporæ;† but all other madreporæ are calcareous: the axis of the *Astroidea* is sometimes of lime, sometimes of horn, and sometimes of membrane: the polypidoms of the *Hydroidea* are flexible and horny without perhaps any exception; but there is no hesitation in asserting, that the ascidian tribes fabricate productions, some of which are referable to every class that the chemist could devise.

The reader who is not already familiar with the outward forms of our native polypidoms, will most easily obtain a correct idea of them, by examining the figures which illustrate this work. The very few and insignificant madreporæ, or helianthoid polypidoms, which inhabit the British shores, form either short cylinders or reversed cones, having the apex cupped and starred with lamellæ, which radiate from the depressed centre to the circumference. In the major part of the *Astroidea*, or corticiferous polypidoms, there is a central calcareous or horny axis, which may be compared to the wood of a tree, and which is formed by the successive deposition of layer over layer: this is coated or barked round with a living irritable flesh or jelly, thickened with calcareous matter, which has usually crystallized in the form of spicula. The cells of the polypes are excavated in this soft bark, on the surface of which they open by an aperture, which is always cut into eight rays disposed in a starred fashion, and corresponding to the number of the polype's tentacula; and this aperture can be opened and shut at the pleasure of the inmates. In *Alcyonium*, although an asteroid, there is no solid axis, but

* See Additional Note.

† It has been doubted whether this horny base is formed by the *Actinia*, but I quite agree with Dr Coldstream, that "it is secreted by its base, and that it is as much part of the animal, in fact its skeleton, as are the calcareous axes of *Caryophyllæa*, *Fungia*, &c., between which and the true *Actinia*, it seems to form a well-marked link."—See the *Edin. New Phil. Journ.* ix. p. 238.