

CLASS II. *Hydrocoralla*.

A.²—Stomach partially separated from body-cavity.

(i)—Oro-anal orifice with eight fringed tentacles :

CLASS III. *Alcyonaria* or *Crossocoralla*.

(ii)—Oro-anal orifice with numerous simple tentacles. Corallum essentially non-tabulated, but with distinct septa :

CLASS IV. *Zoantharia* or *Anthocoralla*.

B.—With natatory cilia :

CLASS V. *Ctenophora*.

The present communication refers essentially to the second of the above named classes—that of the HYDROCORALLA. This includes the *Hydro-Corallinae* of Moseley, together with the so-called *Tabulata* and *Rugosa* of other classifications. In the present state of our knowledge it is necessarily to some extent a group of convenience, connecting the *Hydrozoa* with the typical corals. The *Tabulata* in many classifications are widely separated from the *Rugosa*, and placed with the ordinary "Hexamerous Corals;" although, from the absence or rudimentary character of septa in many of these forms it is not possible to tell whether the tentacles of the living animal were hexamerous or otherwise. The *Rugosa* are also for the greater part essentially tabulated forms; and although, commonly separated from the *Tabulata* under the name of Tetracoralla, the actual number of septa in many cases is either indeterminable or exceedingly variable. As examples of variation in the number of septa in both the *Tabulata* and *Rugosa*, the genera *Stylina*, Lamarck, *Stylocenia*, Edwards and Haime; *Heterophyllia*, McCoy; *Duncanella*, Nicholson, and many others, may be cited. The descriptions of many Canadian species by the late Mr. Billings, a most minute and trustworthy observer, also substantiate this point, and prove that, although very convenient on paper, the distinction (except in certain well marked cases) is virtually of impossible application. And again, we have no certainty that the number of septa or septal markings really indicate the number of the tentacles possessed by the living animal. In the living *Millepora*, for example, the researches of Moseley have shown the presence of eight tentacles, as in the Alcyonarians. If therefore, as commonly assumed, the fossil *Heliolites* be regarded as a closely related type, its twelve septa or "pseudo-septa" are entirely misleading.

Many of the forms placed under this subdivision in the present synopsis—especially those of the three first sections given below—may very probably belong to the *Alcyonaria* or to the *Bryozoa*; but this view is entirely conjectural, and cannot at present be either proved or disproved. On the other hand, the strikingly tabulated structure, so characteristic of the great majority of these forms, serves to unite them conveniently, and, in the absence of negative evidence, naturally also, into a common group.

The class HYDROCORALLA, as here adopted, may therefore be defined as follows:—*Hydrozoa* or closely allied types with calcareous corallum. The cells of the latter either