

one hand, however, is clearly marked, since in many genera of the latter the condition of the septa, especially at their extreme peripheral portion, is closely similar to that which is normal throughout the whole internal structure of the Cystiphyllidæ; while on the other hand doubtful representatives of the family present distinctly Alcyonarian features in their opercular characters.

The Stauridæ, among which is included the genus *Holocystis*, which has been placed by Professor Duncan in the Astræidæ, in their typical form differ from the more typical of the Astræidæ, as here limited, simply in the distinctly tetrameral arrangement of their septa. Very little value can be given to the absence of a columella or of costæ in *Stauria*, for not only are these structures well developed in the genus *Holocystis*, but they are among the characters of Astræida some of the most variable in development. A variability in the distinctness of the tetrameral arrangement of the septa, even in the Stauridæ, however, is clearly indicated in *Metriophyllum*, where, instead of the distinct and strong Maltese cross characteristic of *Stauria*, are found the four bundles of septa which present a transitional character between this family and the Cyathophyllidæ, a transitional character originally pointed out by Milne-Edwards and Haime (Cor., iii. p. 328).

It is difficult to draw any clear line of demarcation between the families Astræidæ and Cyathophyllidæ, the more especially that certain genera of the one are clearly related to genera of the other possessing nearly identical characteristics. The usually accepted grouping of the two families seems to be based more essentially on their distribution in time than on any constant structural characteristics of real classificatory value. With a view more perfectly to grasp the essential characteristics tending on the one hand to relate and on the other to separate them, it will be instructive to examine, if only briefly, the main features which are supposed so to distinguish the forms commonly known as the Rugosa as to entitle them to the rank of a distinct order or suborder.

While confessedly, in its most essential respects, the corallum of a typical Rugose Coral is quite identical with that of a typical Aporose Madreporian, it has been contended that the following more striking points of difference in the Rugose Coral are sufficient to give it ordinal or subordinal rank.

1. The septa appear to be primitively developed in four systems instead of six.
2. The septa are rendered more or less irregular in their arrangement by the presence of a curious vacant space (sometimes three or four), which is known as the fossula, and which appears to take the place of one of the primitive four septa.
3. When the septa are well developed, they generally present themselves in the adult as of two sizes only, a larger and a smaller.
4. Tabulæ are usually present, in conjunction with the septa.