

the hypothesis one step further, it will be seen that the Antipathidæ would thus need to be regarded as very primitive forms, which have not lost their bilateral symmetry, but which, in other respects, have gradually become specialised in one direction leading to dimorphism. *Edwardsia*, *Cerianthus*, *Zoanthus*, *Madracis*, &c., would also represent types in which the bilateral symmetry of parts is preserved, and the fact that *Edwardsia* is generally regarded as a very primitive form tends further to support this view.

The general plan of development may be stated as follows:—The mesenteries have a radiate arrangement in forms with a round stomodæum; this arrangement becomes bilateral by an elongation of the stomodæum in one axis, the sagittal. In this case the anterior and posterior pairs (directives) come to consist of adjoining mesenteries, whilst the intermediate pairs consist of opposite mesenteries. New mesenteries are added between any or all of the lateral pairs, the space between two existing mesenteries being divided in two on the formation of a new one. So long as the folds of the body-wall give rise to only one mesentery each, the simple bilateral arrangement of parts is retained, as in Cerianthidæ. In case the mesenterial rudiments give rise (after the formation of the first twelve mesenteries) to two mesenteries instead of one, the Hexactinian type is reached. In certain Madreporaria (e.g., *Lophohelia*, *Mussa*, and *Euphyllia*) the radiate arrangement appears never to be lost.

The different position of the retractor muscles in Alcyonaria and *Edwardsia* requires explanation; their intraseptal situation in the lateral pairs of Hexactiniæ is more easily understood. The fact that in Antipathidæ, Cerianthidæ, and Zoanthidæ the septal musculature is more or less rudimentary may indicate that the special differentiation in other types is of later origin.

A further discussion of the subject must be deferred until I have been enabled to study the whole of the material at my disposal.

COMPLETE AND INCOMPLETE MESENTERIES.

A comparison of the relations of the mesenteries in *Leiopathes* with the structure of a typical Actinian will show an important point of divergence. In *Leiopathes* and other Antipathidæ, in which the number of mesenteries in the oral cone is greater than in the lower section of the cœlenteron, the following points have an important bearing on their origin. The mesenteries, which have for convenience been termed "secondary," are those which do not reach the lower section of the cœlenteron, and which in certain genera appear not to be developed at all. The behaviour of these mesenteries is most interesting. In the upper portion of the oral cone they constitute short partitions, stretching from the stomodæum to the outer wall. A little lower down they lose their connection with the oral cone, and persist for some time as mesogloæal processes, clothed with entoderm, which project from the cœlenteric surface of the stomodæum. The mesogloæa of the projection