

SECTION II.

SPECIAL HOMOLOGIES OF THE CLASSES.

This may give a general idea of the plan of structure of Radiates in general. The three classes of this type differ only in the mode of execution of this plan; and if I succeed in showing that the whole structure of Echinoderms is strictly homological to that of the Acalephs and Polyps, I shall have proved that these three classes belong to one and the same branch, and that it is unnatural to separate the Echinoderms as a distinct type. The structure of the Polyps, as a class, is characterized by the great uniformity of their spheromeres, which may be considered as hollow, spherical wedges, on the actinal side of which the cavity is prolonged externally into a tentacle. The wide cavity of their spheromeres represents the ambulacral system of the Echinoderms, and the radiating partitions the interambulacral system. The ambulacra of the Polyps differ only in being open along the vertical axis, to form the main cavity of the body; but the peripheric part of this system is even more complicated in some Polyps than in Synapta. In Actinia, for instance, we have a row of distinct pores, opening into the chambers, which extend from the tentacles to the foot, and frequently assume the form of distinct papillæ or rudimentary tentacles; while the genital organs hang from the free margin of the radiating partitions. The distinctive character of the Polyps consists, therefore, in the great width of their open ambulacral system, and the narrow interambulacra, projecting as partitions into the main cavity of the body. The number of these spheromeres, the form and number of their tentacles, the presence or absence of solid deposits in their tissues, the mode of branching of the compound communities, affect in no way these homologies. But there are two points in the structure of the Polyps which are of special interest with reference to their homologies: the stomach and the small holes on the actinal side of the radiating partitions, through which adjoining chambers communicate with one another. These holes are homologous to the marginal circular tube of the Acalephs, and are actually to be considered as short tubes through narrow walls, leading into wide radiating chambers; as in Acalephs, they are comparatively long tubes through thick walls, leading into narrow radiating tubes. The manner in which the radiating tubes of the *Æquoridæ* open into the main cavity proves that we have here homological organs. The so-called stomach of the Polyps in no way corresponds to the digestive cavity of the Acalephs; it is strictly homologous to the so-called arms of the Jelly-fishes, only that instead of projecting