

SECTION II.

THE DIFFERENT ANIMALS REFERRED TO THE TYPE OF RADIATA.

I shall presently show that all the true Polyps and all the true Acalephs may naturally be grouped with the two characteristic representatives of their respective classes, alluded to in the preceding section; and that, in connection with the Echinoderms, they constitute one of the four great types of the animal kingdom, characterized by a peculiar plan of their structure, founded upon the idea of radiation; and that the anatomical differences exhibited by the Echinoderms do not justify us in considering them as a distinct type.¹ The latter are, in reality, only another class of Radiata, as a comparison of any of the flat Echinoids, such as the Echinarrachnius, with an ordinary Medusa, say the Aurelia, readily shows; Echinus being, as it were, a Medusa, the soft disk of which is charged with limestone particles. But before proceeding to demonstrate these propositions, it is proper to take a glance singly at all the different beings which, at different times, have been associated with or removed from the Radiata.

Whether considered as a distinct type, or simply as a class of the Radiata, the Echinoderms, as a natural group, are now very generally circumscribed within the same limits by all naturalists. The question, long agitated among zoölogists, whether the Sipunculoids should be associated with the true Echinoderms or referred to the class of Worms, has finally been settled in favor of their complete removal, by the investigations of the late lamented J. Müller.² We may henceforth consider as Echinoderms all the radiated animals provided with an ambulacral system, and need not for the present enter into a farther consideration of their structure and general affinities, but leave them out of consideration until we attempt to trace the general homologies, which, in connection with their mode of development, bind these animals indissolubly with the Acalephs and Polyps as a separate class of the type of Radiata.

The natural limits of the class of Acalephs cannot be considered as settled,

¹ The separation of the Echinoderms from the other Radiates, as a distinct type, was first proposed by Leuckart in the work quoted on the preceding page. This distinction has been adopted by Kölliker, and by Gegenbauer in his recent excellent text-book of Comparative Anatomy. To me, however, such a division of the Radiates into two

types seems unjustifiable, since the consideration of the complication of their structure is surely a feature subordinate to the idea of their plan of structure; and the mode of execution of a plan should not be confounded with the plan itself.

² Ueber den Bau der Echinodermen, Ak. d. Wiss. Berlin, 1854.