

to be divided, and scattered, partly among plants, in the class of Algæ, and partly among animals, in the classes of Acephala, (Vorticellæ,) of Worms, (Paramecium and Opalina,) and of Crustacea (Rotifera); Vorticellæ being genuine Bryozoa and therefore Acephalous Mollusks, while the beautiful investigations of Dana and Leydig have proved the Rotifera to be genuine Crustacea, and not Worms.

The great type of Radiata, taking its leading features only, was first recognized by Cuvier, though he associated with it many animals which do not properly belong to it. This arose partly from the imperfect knowledge of those animals at the time, but partly also from the fact that he allowed himself, in this instance, to deviate from his own principle of classification, according to which types are founded upon special plans of structure. With reference to Radiata, he departed, indeed, from this view, so far as to admit, besides the consideration of their peculiar plan, the element of simplicity of their structure as an essential feature in the typical character of these animals, in consequence of which he introduced five classes among Radiata: the Echinoderms, Intestinal Worms, Acalephs, Polypi, and Infusoria. In opposition to this unnatural association, I need not repeat here, what I have already stated of the Infusoria, when considering the case of Protozoa; neither is it necessary to urge again the propriety of removing the Worms from among Radiata, and connecting them with Articulata. There would thus remain only three classes among Radiates,—Polypi, Acalephs, and Echinoderms,—which, in my opinion, constitute really three natural classes in this great division, inasmuch as they exhibit the three different ways in which the characteristic plan of the type, radiation, is carried out, in distinct structures.

Since it can be shown that Echinoderms are, in a general way, homologous in their structure with Acalephs and Polypi, it must be admitted that these classes belong to one and the same great type, and that they are the only representatives of the branch of Radiata, assuming of course that Bryozoa, Corallinæ, Sponges, and all other foreign admixtures have been removed from among Polyps. Now, it is this Cuvierian type of Radiata, thus freed of all its heterogeneous elements, which Leuckart undertakes to divide into two branches, each of which he considers coequal with Worms, Articulates, Mollusks, and Vertebrates. He was undoubtedly led to this exaggeration of the difference existing between Echinoderms on one side and Acalephs and Polypi on the other, by the apparently greater resemblance of Medusæ and Polypi,¹ and perhaps still more by the fact, that so many genuine Acalephs, such as the Hydroids, including Tubularia, Sertularia, Campanularia, etc., are still comprised by most zoölogists in the class of Polypi.

¹ We see here clearly how the consideration of anatomical differences which characterize classes has

overridden the primary feature of branches, their plan, to exalt a class to the rank of a branch.