

of their lowest order; and we have just seen that the Tabulata occupy an inferior position in that lowest order.

Assuming that Rugosa are Hydroids also, the question of their standing in their order is not difficult to determine, if we take into consideration the general character of the class, and its relations both to the class of Polyps and to that of Echinoderms. I have already alluded to the analogy between the Hydroids and the Polyps, and to that between the Ctenophoræ and Echinoderms. Starting from this fact, let us see what are the elements of superiority and inferiority among the Radiates, at the two ends of the type. In Polyps we distinguish two orders, the Actinoids and the Halcyonoids. Taking their whole structure into consideration, the Actinoids with their simple tentacles and the indefinite repetition of similar parts in most of them, are, unquestionably, inferior to the Halcyonoids with their eight-lobed tentacles and invariable eight spheromeres. Now, among Halcyonoids there are no simple individuals: all the types of this order consist of compound communities, while among the Actinoids we have both simple individuals and compound communities. But here again it is among the compound communities that we find the higher organic combinations: for certainly the Madreporæ, with their twelve tentacles, alternately larger and smaller, are superior to the Astræoids, and these again superior to the Actinoids; and that these latter are the lowest will hardly be doubted, if we consider the absence of solid deposits in them, and the equally characteristic absence of horizontal floors between their radiating partitions. It will be conceded also that the Fungidæ stand next above them, since they have a large number of tentacles, like the Actiniæ, and only transverse beams extending from one radiating partition to the other, instead of continuous floors as in the Astræoids, which stand above them on that account, as well as on account of their limited number of tentacles. The Madreporæ, unquestionably, are the highest among the Actinoids, since they not only present a limited number of tentacles, but a number which is always constant, and, in addition to this, another higher combination of structural features, arising from an alternation of larger and smaller tentacles and a marked one-sidedness of their calyces.

It is thus plain that the gradation among Actinoids,—that is, the higher and higher rank they occupy when compared with one another,—stands in direct ratio to their complication and to their combination into communities, and in an inverse ratio to their individual independence. The simple Polyps, such as Actiniæ, are the lowest; the Fungidæ, among which there are simple types, such as the genus *Fungia* proper, are next in rank; the Astræoids and allied families, which form always compound communities, with a reduced but more definite number of tentacles, come next; and the Madreporæ, forming among the Actinoids the most complicated communities, stand highest.