

Medusa state, is so strictly homologous to that of all other naked-eyed Medusæ, that, even if it were ascertained that it undergoes a direct metamorphosis from the egg to the perfect Medusa, I would not hesitate to consider it as a member of the order of Hydroids, since it has simple radiating chymiferous tubes, a circular tube, and marginal tentacles closely connected with it, and provided with mere pigment specks upon their base.

It will require a more extensive knowledge than we now possess of the development of all Hydroids, before the relative standing of their various types can definitely be ascertained. As far as our information goes, the rank of Hydroids among themselves does not seem to be determined primarily by the production of free Medusæ, since Campanulariæ produce free Medusæ; while among Tubulariæ we have those which bring forth free Medusæ, and others which do not. The distinctness of the medusoid and hydroid elements, without reference to the liberation of the Medusæ, seems more significant; for, unquestionably, a Physalia with its extraordinary polymorphism has an organization inferior to that of a Sarsia born from a Coryne. In the first case we have a very complicated community, it is true, but it consists chiefly of low, heterogeneous elements variously combined, and the Medusæ buds themselves are of the simplest kind, and without tentacles; while in the second case the hydroid and medusoid elements are quite distinct, and the Medusæ arising from the simple Hydrarium are as perfect as any other naked-eyed Medusæ. The same may be said of Lizzia, Hippocerene, and Hybocodon, all of which have a limited and definite number of radiating chymiferous tubes, a limited and definite number of tentacles or bunches of tentacles, all characters which seem to assign to them a marked superiority over Tiaropsis and Thaumantias with their numerous marginal tentacles which arise from Campanulariæ, that is, from Hydroids exhibiting already signs of polymorphism, while the Hydraria from which Sarsia, Lizzia, etc., arise, consist only of one kind of Hydræ.

It would thus appear that the distinctness of the hydroid and medusoid elements in this order is inverse to the polymorphism of their communities. The Medusæ buds of most Siphonophoræ play a rather indifferent part in their economy; and yet their prominence coincides with the degree of complication of the hydroid and medusoid elements of their communities. Verella, the community of which consists only of two kinds of Hydræ, produces distinct free Medusæ; while the Diphyidæ and the Physophoridæ, in which the hydroid and medusoid elements are most completely mixed, are also those which are most remote from the true type of Discophoræ, and resemble most, in their mode of living, the free locomotive Polyp communities. But even as compound communities consisting of heterogeneous elements, it is remarkable that those in which the medusoid elements prevail are also the most active, while those in which the hydroid elements are predominant, are more