

III. DIVERSITY OF FORM AND FUNCTION IN THE BUDS.

But it is not simply in the form of elongated branches that the buds become developed. At the extremities of the stem and branches, or on offsets which bud forth from definite points on their sides, the cœnosarc frees itself from its close perisarc coat and undergoes a remarkable and characteristic development, being here transformed into a more or less club-shaped body, which throws out tentacles from its sides and becomes perforated by a terminal mouth. This remarkable body, which thus repeats in all essential features the structure and form of a solitary or primordial Hydroid, is known as the *hydranth* (Pl. II. fig. 2; Pl. VII. fig. 2; Pl. XII. fig. 1a). Within its cavity, which communicates with that of the general cavity of the colony, the most active digestive processes are carried on. It is the element on which the nutrition of the Hydroid specially devolves, and that which gives to the living colony its most characteristic physiognomy, its circlet of tentacles, radiating round a central point, conferring on it that singular resemblance to an expanded flower which had from a remote period arrested the attention of every observer of these animals in their living state.¹

But, besides these flower-like nutritive buds, there are others which make their appearance at certain seasons, and whose function is not that of procuring and elaborating nutriment for the colony. These are also budded forth from various parts of the colony, and are either in the form of fixed sac-like bodies (Pl. I. figs. 1, 2; Pl. III. fig. 3; Pl. VII. fig. 4, *b*, &c.), in which a suppressed medusoid conformation may in many instances be detected, or in that of completely developed Craspedote Medusæ, which after a time become detached from the colony, and lead henceforth an independent life. The function of these, whether they be fixed sacs or free-swimming Medusæ, is that of protecting the generative elements—ova or spermatozoa—and in some cases giving origin to them. They are known as *gonophores*.

It will be thus seen that a typical Hydroid colony consists of an assemblage of buds, each endowed—whether permanently attached to the colony or free—with a more or less independent life. To these buds different functions have been assigned, and the whole are associated into a community by a common living basis—the cœnosarc. Their independent life entitles them to be distinguished from mere organs, and they may be appropriately designated “zooids,” as originally proposed by Huxley. They are the “personæ” in the terminology of Haeckel.

¹ Weismann (*Die Entstehung der Sexualzellen bei den Hydromedusen*) does not confine his conception of the hydranth to this club-shaped body with its mouth and tentacles, and proper stomach cavity, but extends it in the case of the tree-like Tubularian and Campanularian Hydroids to the whole of that portion of the stem which lies between the hydranth as here limited and the first lateral branch. To this portion of the stem he gives the name of hydranth-stalk (*Hydranthenstiel*), while he designates the proper hydranth as the hydranth-head (*Hydranthenkopf*), and he justifies this recognition of the stalk as an integral part of the hydranth by the conclusion to which he has been led, that on it, and only on it, in dendritically branched colonies is the “budding zone” or place where a new hydranth bud may be formed.