

the whole of the remaining representatives of the order present it in a more or less modified condition, while they have in almost every instance become variously complicated by the formation of hollow buds, whose cavity is continuous with that of the primary Hydroid, with which most of them remain in permanent union. Many of these buds become elongated into branches, and thus give rise to complicated colonies, which often present luxuriant tree-like growths, and repeat with wonderful fidelity the most elaborate ramification of the vegetable kingdom (Pls. II., IV., IX., &c.).

Even in *Hydra*, however, this complication by budding, and the consequent formation of dendritic colonies, is foreshadowed by the emission of buds, but here the buds, after attaining maturity, detach themselves, and leave the parent simple as before.

It will be hereafter shown (page xxviii) that even the generative buds which have become detached under the form of Medusæ or "jelly-fish," in order to spend henceforth a free life in the open sea, may be referred to the same fundamental type of form. It must accordingly be borne in mind that not only the polyp-form as shown in *Hydra*, but the Medusa-form as shown in the Craspedotæ or Hydro-Medusæ (see below, page xxv, note), must be included under the common order, Hydroida.

## II. DISPOSITION OF THE FUNDAMENTAL LAYERS.

The parts which enter into the composition of the Hydroid body are disposed in two fundamental cellular layers, separated from one another by a thin, structureless, excreted membrane, while the whole is for a greater or less extent, in the great majority of cases, surrounded by another structureless membrane, also the product of excretion.

Of the two cellular layers the more internal one lines the body-cavity and its offsets, and forms the *endoderm*; the more external, which is exactly coextensive with this, is the *ectoderm*, while the thin, structureless membrane which everywhere intervenes between endoderm and ectoderm is the *mesosarc*,<sup>1</sup> and the structureless coat which in almost every case surrounds and protects the soft parts in the stems and branches is the *perisarc*.

A Hydroid colony, then, such as we meet with in the great majority of instances, presents a ramified growth whose stems and branches are elongated, intercommunicating tubes, the common cavity of which forms the nutritive cavity of the colony, and whose walls are composed of endoderm and ectoderm, separated from one another by the mesosarc, and protected externally by the investing perisarc. The living nutritive tube which lies within the perisarc and is the common basis from which all the buds are emitted is known as the *cænosarc*.

<sup>1</sup> This is the "Stützlamelle" of Reichert, who was the first to call attention to it. It must not be confounded with the "mesoderm" or middle germinal layer of the embryo, a layer which does not occur in the embryonal development of the Hydroida.