

The family Physalidæ was established in 1835 by Brandt (25, p. 36). He first distinguished two different subgenera in the genus *Physalia*, viz., (1) *Salacia* (or *Physalia* proper), with a chambered dorsal crest of the float; and (2) *Alophota*, without crest. This distinction, although not accepted by later authors, is very important, since the crestless state of the pneumatophore, regarded from a phylogenetic point of view, must necessarily precede the crested state. There still exist also to-day small Physalidæ which reach sexual maturity in the crestless state. We establish for these the subfamily Alophotidæ, and oppose it to the crest-bearing subfamily Caravellidæ. Among the small Alophotidæ, as well as among the large Caravellidæ, occur two different forms which may be distinguished as genera; one of these (*Alophota* and *Physalia*) bears only a single large main tentacle, besides numerous small accessory tentacles; the other group (*Arethusa* and *Caravella*) bears numerous large main tentacles of nearly equal size (besides the small accessory tentacles).

The distinction of species in these four genera of Physalidæ is a very difficult task, since the entire family is transformistic, and all the so-called "good species" are connected by Darwinian intermediate forms. Nevertheless there exist a number of "geographical species" as local forms in the different seas. In the majority of the numerous descriptions the species of Physalidæ are founded upon slight differences in the variable coloration, or different states of contraction of the very variable pneumatophore and other parts (compare Huxley, 9, p. 99, and Chun, 83, p. 557). A better and more natural distinction of "relatively good species" will be got when the future observers carefully regard the following anatomical structures:—(1) the grouping and composition of the monogastric or polygastric cormidia; (2) the relation of the basal protosiphon (at the distal end of the float) to the secondary siphons (or metasiphons) on its ventral face; (3) the difference in structure and form of the pneumatophore, mainly at its apical and basal poles; (4) the structure of the crest, the number of its chambers, &c.

*Cystonula-Larvæ*.—The organisation of the large adult Physalidæ, with their complicated structure and composition of hundreds of polymorphous parts, is so difficult to conceive, and seems to be so widely different from that of other Siphonophoræ, that it has led most authors to many erroneous opinions. To arrive at its true understanding, it is indispensable to regard carefully and compare critically the smallest and simplest forms of this peculiar family, and especially the youngest larvæ with a very simple structure (*Cystonula*, Pl. XXVI. figs. 1, 2). The first larvæ of a very young stage were described in 1859 by Huxley (9, p. 102, pl. x. figs. 1, 2). I myself had in 1866, in Lanzerote, the opportunity of observing living a number of similar larvæ and of comparing them with the simplest and oldest genus of the family, *Alophota* (Pl. XXVI. fig 3), and with the more highly developed *Arethusa* (figs. 4–8). Recently Chun has published some interesting notes on young Physalidæ (83, p. 558).

The smallest and youngest *Cystonula*, which I observed in December 1866, is figured