

## NECTOSOME AND SIPHOSOME.

In all Siphonophoræ, without exception, both in the *monogastric* and *polygastric* forms, the developed corm may be distinguished, both from a morphological and from a physiological point of view, into two main portions, the nectosome and siphosome. The *nectosome* or the swimming body forms in the Siphonophoræ which swim quietly on the surface of the sea, the upper, anterior or proximal portion of the stock; the *siphosome* or nutritive body the lower, posterior or distal portion. Physiologically the former is the organ of locomotion (and often also of respiration), the latter, on the other hand, the organ of nutrition and reproduction. If one compares the Siphonophoral stock with the simple medusoid person, then the *nectosome* in general represents the *umbrella*, and the *siphosome* of the corm the *manubrium* of the Medusa. In the polygastric Siphonanthæ the two portions pass through an independent course of development, separated from one another, with distinct points of growth. In those Siphonanthæ where the stem is spirally coiled, the spiral twisting is usually opposite in the two portions; the nectosome has usually a left-handed ("Lambda"), the siphosome a right-handed ("Delta"), spiral.

## NECTOSOMES OF THE FIVE ORDERS.

The swimming apparatus of the Siphonophoræ is formed of two essentially different organs, the swimming-bell (*nectophore*) and the swimming-bladder (*pneumatophore*). The nectophore is the umbrella of a Hydromedusa, in which both the annular muscular layer of the velum and of the subumbrella, and the primary canal-system (four radial canals united by a marginal circular canal) are perfectly developed. The pneumatophore, on the other hand, is an invaginated and much modified umbrella, in the surface of which (by apical or lateral invagination of a gas-gland) a chitinous gas-filled "air-flask" or pneumatocyst is formed. The definition of the five Siphonophoral orders is in the first place determined by the different formation of the swimming apparatus.

I. The Calyconectæ or Calycophoridæ possess only one, two, or more swimming-bells, but no pneumatophore.

II. The Cystonectæ or Pneumatophoridæ bear only a simple large pneumatophore, but no swimming-bells.

III. The Disconectæ or Chondrophoridæ possess an octoradial pneumatophore, usually composed of concentric annular chambers, but no swimming-bells.

IV. The Physonectæ or Physophoridæ bear on the apex of the stem a simple pneumatophore, and under that a biserial or multiserial column of swimming-bells; sometimes instead of these a corona of numerous bracts.

V. The Auronectæ or Auroporidæ (a new and hitherto quite unknown group of very remarkable deep-sea forms) possess on the apex of the stem a colossal pneumato-