spheric air, taken in by the stigmata of the exumbrella; (3) this air is conducted through the respiratory tracheæ to the different appendices of the subumbrella (central siphon and gonostyles); (4) the distal or lower ends of the tracheæ are closed.

The observations which I have myself been able to make on the structure and function of the pneumatophore in the different groups of Disconectæ have conducted me to quite opposite views, viz.,—(1) The Disconectæ are (all or partly) capable of sinking under water, by muscular compression of the pneumatocyst, and expulsion of air by the stigmata of the exumbrella. (2) The air contained in the pneumatocyst is not atmospheric air taken in by the stigmata, but a gas produced by the exodermal cells of the great "central pneumadenia" (the so-called "liver" or central organ). (3) This gas, therefore, has not respiratory, but hydrostatic functions (like the gas in the swimming-bladder of the fishes). (4) The distal or lower ends of the tracheæ are not closed by a chitinous plate, but open into the glandular, gas-secreting, exodermal tissue of the centradenia; they are comparable to the "pylorus infundibuli" of the Siphonanthæ.

Central Siphon.—The large central polypite, which is placed in the centre of the subumbrella in all Disconectæ, is the original manubrium of the primary medusiform larva (Disconula); its terminal mouth is the permanent primary mouth of the latter. The central siphon is the only organ of feeding and digesting in the monogastric family Discalidæ, whilst in the other two families of the order, the polygastric Porpitidæ and Velellidæ, this function is also executed by the numerous peripheral gonostyles, which are here developed in the form of mouth-bearing siphons or secondary polypites. But also in the young monogastric larvæ of these latter, the primary central siphon is alone provided with a mouth. Its size is very variable in the different Disconectæ; generally it is comparatively large in the small Discalidæ, and in the smaller forms of Porpitidæ and Velellidæ, which possess few secondary siphons; on the other hand, it is relatively small in the larger forms of the two latter families, which possess a great number of feeding peripheral polypites.

The form of the central siphon in the Discalidæ and Porpitidæ is inversely conical, with circular transverse section; whereas in the Velellidæ the inverted cone is strongly compressed from both sides, so as to be elliptical or lanceolate in transverse section. The wider proximal or upper part, or the true stomach, passes without a sharp boundary into the cylindrical, very contractile, distal or lower part, the proboscis. The latter, as well as its distal opening, the mouth, is very variable in size and form, according to its state of contraction.

The surface of the central siphon exhibits in many Disconectæ a number of longitudinal or radial folds, visible partly outside, partly inside; usually there are eight or sixteen, sometimes more. The distal mouth correspondingly often exhibits eight or sixteen lobes, sometimes also four larger lobes; at other times it is simply circular, or