

times cylindrical ; it is more or less variable, and may be changed by the contraction of its muscular walls. The apex of the float is usually coloured by pigment (red or brown) ; sometimes this forms a regular octoradial star, with a colourless centre.

*Pneumatossaccus*.—Since the float is developed by an invagination of the original exumbrella,—comparable to a simple air-secreting gland of the exoderm (p. 12),—the central air-flask or pneumatocyst, filled with gas, is always surrounded by a double wall ; the inner or invaginated wall (comparable to the entoderm of a gastrula) is the pneumatossaccus (or “Luftsack”), which secretes the structureless thin chitin-plate of the pneumatocyst ; the outer or non-invaginated wall (comparable to the exoderm of a gastrula) is the pneumatocodon (or “Luftschirm”). The cavity between the two walls (cavum pneumatophoræ) is everywhere closed and filled with the nutritive fluid of the axial trunk, with which it communicates at its distal or basal end. This cavity is usually divided by a number of equidistant vertical septa into radial pouches, which correspond to those in the umbrella of a Medusa (e.g., *Ægina*, *Cunina*). I find constantly eight radial pouches, regularly disposed around the pneumatossac, in the great majority of the Physonectæ ; the number, however, is not quite constant ; single individuals have seven or nine, instead of eight ; some species (*Halistemma*, *Nectalia*) possess only four, other species twelve or sixteen. Sometimes the radial septa divide the whole cavity of the pneumatophore into chambers, at other times only its basal or inferior part ; this remains simple in the Athoridæ and Apolemidæ, where no septa are developed.

*Pneumatocyst*.—The delicate chitinous air-flask, which is produced (as a cuticle) and immediately surrounded by the exodermal invaginated pneumatossac, seems to be closed in all Physonectæ at the apex (or the upper pole of its vertical axis) ; it is open at its thickened annular base (or the lower pole). This opening is the circular pneumatopyle or funnel aperture (“Trichterpforte,” Chun, 48, p. 512). It corresponds to an annular constriction of the surrounding pneumatossac, by which this is divided into two portions ; the larger superior (or apical) portion alone secretes the chitinous plate of the flask ; the smaller inferior (or basal) portion secretes no chitinous cuticle, and has a stratified exodermal epithelium of a peculiar shape and a yellowish or greenish colour ; this is the important pneumadenia or the “air-funnel,” which secretes the gas (“Lufttrichter,” Chun, 48, p. 512). The glandular epithelium of the pneumadenia often passes, owing to a secondary growth and further expansion, through the pneumatopyle into the cavity of the pneumatocyst and lines its basal portion—usually only one-fourth or one-third of its inner face (“secondary exoderm,” Chun, 48). The pneumadenia is then divided by the thickened chitinous ring of the pneumatopyle into a superior (endocystal) and an inferior (hypocystal) portion. At other times the pneumadenia gives off peripheral branches or lateral solid cord-shaped apophyses which enter into the septa and were formerly described as peculiar cæcal canals by Claus (74, p. 22) and Korotneff (50, p. 272). This is the case in the Discolabidæ (Family XVI.) ; in these, and perhaps also in other Physonectæ, the