

this latter is branched and bears numerous clustered gonodendra, each of which is again composed of a gonopalpon, a large female gonophore, and a variable number of smaller male gonophores. The Nectophysidæ, on the other hand (Pl. XXIII.), have loose cormidia (similar to those of the Halistemmidæ); the gonostyles are not attached to the trunk at the basal insertion of the siphons, but separated from them on the internodes; sometimes a single gonodendron in the middle between each two siphons (*Nectophysa*, &c.), at other times two to four or more gonodendra.

*Pneumatophore* (Pl. XXIII. figs. 1-4, *p*; Pl. XXIV. figs. 1-7, *p*).—The float filled with air is in all Rhizophysidæ relatively large, much larger than in the Physonectæ; its form is variable, usually ovate, ellipsoidal or pyriform. Its central axis is sometimes vertical, usually more or less inclined, at other times almost horizontal. The pneumatocodon, or the outer wall of the float (*p*), is separated from the pneumatosaccus, or the inner wall, by a wide cavity, which often occupies nearly the half of the pneumatophore, or even more. This pericystic cavity is closed above (where the two walls of the float are connected on its top), and opens below into the axial canal of the trunk; its greater part is filled up by clusters of large branched villi, the radial apophyses of the pneumadenia.

*Pneumatossaccus*.—The invaginated part of the exoderm, which we call pneumatosac, hangs freely in the pericystic cavity, and is not connected with it by radial septa (as in most Physonectæ). It is connected with the pneumatocodon only at its top, where it opens by the apical stigma (*po*). The simple wall of the young pneumatosac (comparable to the invaginated entoderm of a gastrula) is divided in the adult Rhizophysidæ into five different parts, viz.:—(1) A mitra ocellaris or an apical pigment-cap; (2) the pericystic sac, enclosing the air-flask; (3) the hypocystic funnel; (4) the hypocystic radial bunches of villi arising from the funnel; and (5) the endocystic tapetum ("secondary exoderm"). This latter lines the greater part of the inside of the chitinous pneumatocyst.

*Pneumatocyst*.—The chitinous air-flask or pneumatocyst is originally the cuticle of the young pneumatosac. It is ovate, spindle-shaped or cylindrical, and opens at both poles of its longitudinal axis; the inferior opening is the pylorus infundibuli, which leads into the funnel-cavity of the pneumadenia; the superior opening is the apical stigma, through which the air may be emitted at will from the cavity of the pneumatocyst (Pl. XXIII. fig. 3, *x*). This stigma, or the apical opening of the float (Pl. XXIV. figs. 4, 5, *po*), may be opened by a corona of radial muscles (*pn*) and closed by a sphincter composed of ring-muscles (*pm*).

*Mitra ocellaris*.—The pigment-cap of the float, or the mitra ocellaris (Pl. XXIII. fig. 3, *pp*; Pl. XXIV. figs. 4, 5, *pp*), occupies sometimes nearly the upper half, at other times only the uppermost third or fourth of the pneumatosac, and is composed of elegant polygonal pigment-cells, separated by colourless intervals. The colour is usually red or