

after the emission of gas through the apical pore, it represented a depressed spheroid of 3 to 4 mm. only. The pneumatocodon, or the outer wall of the pneumatophore (fig. 7, *pu*), is separated from the inner wall, or the pneumatosaccus (fig. 7, *ps*), by a wide cavity (*pc*). This pericystic cavity opens below into the stem-cavity of the siphosome (*at*), whilst it is closed above, surrounding like a ring the apical pore (*po*) where both walls are connected. The distal or inferior half of the pericystic cavity is filled by the numerous finger-shaped hypocystic villi (*pv*), arising in eight radial bunches from the air-funnel (*pi*).

*Pneumatocyst* (figs. 6–8, *pf*).—The chitinous air-flask is an ovate bladder, suspended from the apex of the surrounding pneumatophore, and hanging down freely into its cavity. Its cuticular wall has two opposite openings on the poles of its axis. The superior or proximal opening is the apical stigma (*po*) serving for the emission of gas when the animal wishes to sink down; it may be closed by the sphincter stigmatis, a strong ring-muscle, the antagonist of which is a corona of radial muscles, opening the stigma. The inferior or distal opening of the air-flask is the pylorus infundibuli (*py*), by which its cavity communicates with the subjacent air-funnel (*pi*). The convex outside of the pneumatocyst is covered by the simple exodermal epithelium of the pneumatosac (*ps*), and in the upper third by the mitra ocellaris, a purple hemispherical cap composed of elegant polygonal pigment-cells (*pp*). The concave inside of the air-flask is naked in the upper third (covered by the ocellar mitra, *pp*); it is lined in the two lower thirds by the endocystic tapetum (*pd*), a stratified glandular epithelium composed of the same yellowish-green exoderm cells as line the cavity of the subjacent spheroidal air-funnel (infundibulum, *pi*). The greenish glandular epithelium is the important pneumadenia and secretes the gas.

*Hypocystic Villi*.—The air-funnel (infundibulum or pneumatochone, *pi*), which forms the blind distal portion of the air-sac, is surrounded by a regular corona of eight radial clusters, composed of numerous branched hypocystic villi. Each villus is composed of a few colossal giant-cells of the exoderm (arising from the outside of the pneumadenia) and covered by a vibratile epithelium of small ciliated entoderm-cells (Pl. XXIV. fig. 6). The diameter of the vesicular giant-cells is 1 to 2 mm., and their nuclei, when stained by carmine, are visible to the naked eye. The further structure and the physiological function of these parts are the same as in the Rhizophysidæ, (described above, pp. 310, 320).

*Siphons* (fig. 6, *s*).—The large feeding polypites are 10 to 15 mm. long, very movable spindle-shaped tubes with a thick muscular wall. The short basal pedicle bears the tentacle on its dorsal side. The largest part is the dilated stomach, covered inside with numerous yellow hepatic villi. The distal proboscis is very muscular; its mouth-opening may be expanded in the form of a circular suctorial disc, the margin of which is divided into sixteen lobes.