

the third on the right posterior quadrant of the pneumatocyst, each at the base of a radial chamber (fig. 8, *pe'* anterior, *pe''* posterior stigma).

*Tracheæ* (fig. 9, *pt*).—The concave inferior face of the pneumatocyst, which is in close contact with the superior convex face of the centradenia, gives off eight small bunches of tracheæ, each composed of two to four. These are simple undivided tubules, which arise from the periphery of the eight radial chambers of the pneumatocyst, and enter into the centradenia, where they end in its exodermal parenchyma.

*Centradenia* (figs. 3, 4, *uc*, in profile; fig. 5, *uc*, in vertical transverse section; figs. 6 and 7 in horizontal section, fig. 6 through the inferior, fig. 7 through the superior part).—The central gland, or the so-called "liver," has the form of a flat cone, strongly compressed from the two lateral sides, or of a thick vertical triangular lamella, which is somewhat sigmoidal, or slightly bent in an S-form. Its upper face is completely covered by the campanulate pneumatocyst; its lower face is in contact with the gastrobasal plate of the central siphon (fig. 5, *st*), and the surrounding corona of sexual siphons.

The glandular parenchyma of the centradenia is composed in the superior half more of entodermal canals, in the inferior half more of exodermal cells and cnidoblasts. The vascular reticulum of the superior face exhibits a star of eight radial main vessels; two of these, opposite in the longitudinal axis of the disc, are longer and stronger than the six others, which are disposed symmetrically on both sides of the former, three on the right, three on the left; the middle of these, or the frontal canal, is the shortest, whilst the two diagonal canals of each side are longer than the latter, shorter than the sagittal canals.<sup>1</sup> The numerous smaller vessels, which arise from these eight superior hepatic vessels, form an irregular network, which is rather dense in the superior half of the centradenia, loose in its inferior half; the axial part of the latter is chiefly composed of exoderm-cells.

The descending superficial canals of the centradenia pass over at its basal periphery into four different groups of canals:—(1) The numerous radial canals of the free mantle border (or pallial canals, fig. 10, *ce*); (2) the canals of the tentacles (fig. 5, *t*); (3) the canals of the gonostyles (*gs*); (4) the eight innermost canals which open into the base of the central siphon.

The pallial canals (fig. 10, *ce*), which run nearly horizontally from the periphery of the base of the liver to the edge of the mantle border, are very numerous, and so densely attached one to another, that their intervals are smaller than their lumen. Their distal ends, which open into the annular elliptical marginal canal (*cc*), are partly simple, partly forked; usually a simple and a forked vessel regularly alternating.

*Central Siphon* (fig. 2, *so*; fig. 3, *sα*; fig. 5, *sα*, in longitudinal section).—The large central polypite is a slender inverted cone, strongly compressed from both sides. Its elliptical basal plate is in contact with the basal face of the centradenia, and separated from it by the strong fulcrum of the gastrobasal plate (fig. 5, *st*). The periphery of this is

<sup>1</sup> Compare the figure of Bedot, 59, pl. ix. fig. 1.