

him to the formation of the body-cavity in the Cœlomata. Coincidentally with the cleavage, the choanosome folds within the ectosome, the cleavage cavity enlarging into the incurrent sinuses (Fig. VI.), while the places where the choanosome and ectosome remain coherent mark the position of the ends of the excurrent lobes.

I have been careful to say that it appears as though the subdermal cavities arise by fission, for, on the face of it, if this apparent method of formation be the true one, it introduces great difficulties in the interpretation of the structure of the sponge on the germ-layer theory; for instance, in sponges where the supposed fission occurs, the epithelium would not be formed from the ectoderm as in *Placina*, but as an endothelium derived from the mesoderm, unless—and the supposition is improbable—an invagination of ectoderm occurs coincidentally with the progress of cleavage. On the other hand a rapid invagination of ectoderm might readily be mistaken for cleavage, and the facts presented by a larval form of *Stelletta phrissens* seem to point to such an explanation. In this larva, not more than 0.65 mm. in diameter, the ectosome is already differentiated as a separate layer from the choanosome, but some of the subdermal cavities have an almost spherical form, no wider than high, and might very well result from invagination of the ectoderm; this given, the rest becomes clear; we have only to suppose that these cavities increase with the continued folding of the choanosome and the wide incurrent sinuses will be produced with of course an ectodermal lining.

In sponges next higher in the scale to *Tetilla pedifera* and *Thenea delicata*, such for instance as *Thenea muricata* and *Tetilla grandis*, the choanosome¹ is not only intricately folded again and again, but structurally modified in certain regions by the increased development and differentiation of the mesoderm and the suppression of the flagellated chambers. Thus the main excurrent sinuses or canals no longer directly communicate with flagellated chambers situated in their walls, for these chambers have become restricted to the smaller secondary or tertiary sinuses of the smaller or secondary folds, and an abundant development of mesoderm about the main sinuses has converted them into thick-walled canals.

From the walls of these canals, transverse outgrowths are developed at close but irregular intervals, and extend as thin diaphragms for a greater or less distance across the lumen; sometimes converting a canal into a succession of vesicles. These velar diaphragms, or vela as we shall briefly term them, consist of an extension of the epithelium of the canal, ectodermal or endodermal according as the canal is incurrent or excurrent, with a thin intervening layer of mesoderm. In the centre of the velum is an aperture (more rarely two) which can be enlarged or diminished by the action of fusiform muscle-cells (myocytes), which are arranged partly concentrically and partly radiately about it.

The flagellated chambers still communicate directly with those excurrent canals about which they are situated; so that the chamber-system is still eurypylous.

¹ It will be recollected that the spongophore is now differentiated into an ectosomal and choanosomal region.