

has a rounded opaque mass of the circulating fluid, surmounted in many by a granular band, as if from a fine wall, it is possible that it represents the vessel (or at least a division or septum) with its contents. Proceeding distally, both sets of channels (in the double rows) become complete, and the hypoderm covers both the outer and inner edges of each—the somewhat spongy vascular tissue having disappeared. Then each row becomes more individualised, having a thin layer of hypoderm on the inner or concave edge, and a prominent pennate mass (in section)—several times thicker—on the outer. The rings are bound together only by a little connective-tissue in the middle, and they soon become free (Pl. I. figs. 7 and 8—in transverse section), the outer layer of hypoderm still remaining thicker, while that on the sides (where the densest portion of the chitinous ring exists) is less developed. When viewed longitudinally, this peculiar wall of basement-tissue has a series of very bold and rather regular transverse folds or wrinkles; and an included vessel and its contents are apparent. The presence of but a single well-marked vessel is of moment in connection with Professor Allman's remark that the blood-stream returned by the same vessel in the tentacle, though it entered the vein at the bottom.

A special arrangement of the branchial apparatus occurs at the mouth (Pl. III. fig. 3). The oral surface of the region being formed of a continuous web at the base of the branchiæ presents a great contrast to the anal, which has a large median hiatus between the two fans. The second whorl on the oral side, however, is formed of two halves, with a median slit, each half springing from a free edge with short tentacles. If the animal be placed with the anal hiatus between the fans uppermost, then the left whorl, with its short tentacles and sense-organ, is in front, the right free edge with its tentacles being behind the former.

The skeletal elements in the branchial apparatus of this form thus show a further development of the homologous tissue in *Cephalodiscus* and *Rhabdopleura*. The most elementary type is observed in the latter, in which no vascular spaces occur in connection with the bases of the lophophoral plumes. *Cephalodiscus* again is further differentiated, very considerable vascular channels being present at the base of the apparatus, and the central region of each plume having apparently reticulate tissue capable of transmitting fluid. The degree of specialisation, however, attained by *Phoronis* in this respect much exceeds that in *Cephalodiscus*, for special vessels pass along the whole length of the tentacular processes, and the contained fluid is richly corpusculated.

The bases of the whorls show a thickened plate of hypoderm, which probably performs special functions in connection with the movement of the water (by ciliary action), and perhaps also with sensation.

The arrangement of the tentacles in the forms described by Wright, Allman, and Dyster seems to differ considerably from that in the present species. In the former the