

mirabile which proceeds from the dorsal vessel in the Aspidochirotae and Molpadidae, and comes into relation with the left respiratory tree. In immediate relation to and seemingly grown together with the water-vascular ring is the annular plexus of the pseudohæmal vessels, which communicates by a larger branch with the reproductive organ. By means of injections I have not only succeeded in distinguishing most plainly the large main-vessels and their branches which are often most conspicuous in *Oneirophanta*, &c. (Pl. XL. fig. 2), but also a delicate plexus of very fine vessels inside the walls of the digestive tract (Pl. XL. fig. 1 and Pl. XXXVI. figs. 1, 2).

One or more transverse commissural vessels may always be found. *Oneirophanta mutabilis* possesses two such vessels, which connect the first descending and the ascending portions of the ventral main vessel with one another; one of these commissural vessels (Pl. XL. fig. 2, *e*) is comparatively long and crosses the other which is much shorter (Pl. XL. fig. 2, *f*), and which divides at both ends into several minute branches. In *Deima validum* the dorsal as well as the ventral stems carry commissural branches, the former one, and the latter two. The dorsal branch connects the first descending portion of the dorsal main vessel,—with which it is in communication by numerous small branches,—with the ascending portion of the same vessel. One of the ventral commissural branches runs out from the ventral vessel not far from the annular plexus and extends to the ascending portion of this vessel, while the shorter and thicker branch, proceeding a little behind the joint of the former, passes into the anterior curve of the ventral main vessel. Judging from what I have been able to observe in numerous species, a great variety seems to exist with regard to the size and position of these commissural vessels. The walls of the pseudohæmal system being often strengthened by numerous calcareous bodies of varying shape, the vessels themselves often become hard and brittle, as, for instance, in *Deima fastosum*; in this species these deposits have the form of large, close-lying, perforated plates of a highly variable appearance, which attain a length of from 0.60 mm. to 0.70 mm. (Pl. XXXV. figs. 7, 8). In *Lætmogone wyville-thomsoni*, &c., the vessels are on the contrary supported by scattered, spinose, branched or simple spicules (Pl. XXXVI. fig. 3).

THE AMBULACRAL SYSTEM.

The general presence of a more or less complicated system of ambulacral vessels is one of the most marked peculiarities of the Echinoderm type, and every contribution to the knowledge of that system of vessels ought to be of the greatest interest and value. The deep-sea Holothurids present an abundance of peculiarities, and their water-vascular system, remarkable in more than one respect, departs in many ways from what is supposed to characterise this class of animals.

The general characters of the water-vascular system of the Elaspoda do not differ