

surround the gullet, but is attached to it by a great many filaments (Pl. XLIII. fig. 1), an interval being thus constituted, which connects the œsophageal sinus with the peritoneal cavity; when this communication exists as, for instance, in *Oneirophanta*, *Deima*, &c., the openings between the five main canals never appear closed, consequently, even here the sinus communicates with the peritoneal cavity. In *Benthodytes sanguinolenta*, *Lætmogone*, and many other forms where such a circular interval is present between the gullet and the circular water-vessel, the œsophageal sinus is closed by a very thin membrane which not only unites the five main vessels with one another, but is continued as a circular band lying close behind the circular vessel connecting this with the œsophagus (Pl. XL. fig. 5, *m*). Sometimes as in *Ilyodæmon maculatus*, &c., the circular water-vessel carries a great many very small cæcal sacs, the function of which is unknown. Most of the Elasipoda are provided with a single Polian vesicle, but in *Parelpidia elongata*, *Parelpidia cylindrica*, *Elpidia incerta*, *Elpidia willemoësi*, *Peniagone horrifer* and *Peniagone vitrea*, a couple of such cæcal prolongations of the circular water-vessel may be observed. These vesicles are always ventral in position, and when only one is present it lies to the left. In the family Elpidiidæ the Polian vesicle has a rounded form, and does not attain any considerable size, while in the two other families it is more elongated, almost cylindrical and often remarkably large. Its size varies most strikingly in different members of the same species, this being most apparent in *Oneirophanta*; one individual of this form dredged at Station 244 is remarkable for possessing a Polian vesicle, which measures about 134 mm. and is almost as long as the animal itself. Even *Orphnurgus asper* is distinguished by a Polian vesicle of unusual size. As a matter of fact, the number of Polian vesicles varies in a remarkable manner in the Pedata, but above all in the Apoda, though it must be remembered that even in these orders many forms have only a single one.

The tubular prolongations of the circular water-vessel, which are termed the madreporic canal, always single in the Elasipoda, run in the medio-dorsal line, and are intimately attached to the interradiial dorsal mesentery (Pl. XLIII. fig. 4, *a*, and fig. 6, *a*). It is very well known that in the other Holothurioidea, if, even as a rule, a single dorsal madreporic canal with a single terminal madreporic tubercle is present, many exceptions are to be found, which having been fully described in the splendid memoirs of Semper and Selenka do not require repetition here. For a long time it was considered as characteristic of all the Holothurioidea that the madreporic tubercle was always internally placed, consequently the interior of the ambulacral system could not communicate with the exterior, but only with the peritoneal cavity. As will be presently pointed out, many of the deep-sea Holothurids form exceptions in having the stone canal piercing the perisoma in the medio-dorsal line at greater or smaller distances from the crown of tentacles, thus bringing the water-vascular system in communication with the exterior as is the case in other Echinoderms. In Elasipoda two kinds of madreporic canals are