

myself described and figured the same connection in *Actinometra parvicirra*;¹ and I have since seen it so frequently in the different species which I have studied, that I read the following statement of Perrier's with some little surprise. Speaking of the plexiform gland of *Antedon rosacea*, he says,² "Les vaisseaux qui paraissent en partir ne sont autre chose que les ramifications de la glande, se terminant d'ordinaire par des renflements ayant l'aspect de culs-de-sac. Ces ramifications courent au milieu des innombrables trabécules du tissu conjonctif de la cavité générale, qui peuvent eux mêmes parfois prendre l'apparence des vaisseaux." I cannot gather from this passage whether Perrier means to deny the existence of intervisceral vessels altogether, or merely the connection of this system with the plexiform gland. I have good reason to believe, as pointed out elsewhere,³ that his statements refer solely to *Antedon rosacea*; but even in this unfavourable type I have had no difficulty in confirming Ludwig's observations respecting the relations of this organ to the blood-vessels. If the latter be ramifications of the gland, as Perrier asserts, one would expect that they should have the same structure as it; whereas their nature is the same as that of the intervisceral blood-vessels, which are lined by a layer of pavement-epithelium (Pl. LVII. fig. 5); while their apparent blindness is simply due to the impossibility of any single section showing more than a very small portion of their winding course. A careful study of a good dissection, or of a moderately thick transparent section, especially with a binocular, or an accurate plotting out on paper of a series of thin sections by means of a camera, will reveal much that is totally unrecognisable in other ways. [See Appendix, Note E.]

I have studied the intervisceral blood-vessels principally in *Antedon eschrichti*, *Pentacrinus decorus*, and *Actinometra parvicirra*. In the *Pentacrinus*, with its body-cavity reduced by the presence of much calcareous tissue, the visceral blood-vessels are less abundant within the simple coils of the digestive tube than on its outer surface, where they may be excellently seen in tangential sections of the visceral mass, as shown in Pl. LVII. fig. 5, *ib*.

But in *Antedon eschrichti* and *Actinometra*, which have a more complex digestive tube, the intervisceral blood-vessels are more largely developed. The connection of one of them with the plexiform gland of *Promachocrinus kerguelensis* is shown in horizontal section in Pl. LVIII. fig. 6, while Pl. LVII. fig. 2 represents a portion of one of several vertical sections of *Pentacrinus decorus* in which the same point is visible, the plexiform gland itself unfortunately having no recognisable structure.

The blood-vessels may be readily distinguished from connective tissue, especially in *Pentacrinus*; for nearly all the visceral connective tissue of this type is regularly calcified,

¹ The Minute Anatomy of the Brachiote Echinoderms, *Quart. Journ. Micr. Sci.*, N. S., vol. xxi., 1881, p. 185, pl. xii. figs. 14, 15.

² *Comptes rendus*, t. xcvii. p. 188.

³ Notes on Echinoderm Morphology, No. VI.; On the Anatomical Relations of the Vascular System, *Quart. Journ. Micr. Sci.*, 1883, vol. xxiii. p. 610.