

with the Malpighian vessels of insects is accepted. Mayer maintains that these structures which lie on the borders of the mid- and hind-gut belong morphologically to the former, the mid-gut and the caecal appendages being sharply distinguished from the hind-gut by an interruption of the epithelium, and by the absence from the former of the chitinous intima. He agrees with Nebeski that, whatever their function, they cannot be morphologically compared with the Malpighian vessels of insects. In addition to the other appendages, in *Goplana polonica* Wrzeński finds a previously undescribed gland, which lies in the telson, and has a round opening in the terminal part of the hind-gut just before the anus. This he calls the anal gland (Afterdrüse).

A description is given (p. 537) of the windings of the antennary gland in *Goplana polonica*, and of the structure of its tissues. A very accurate account follows of the circulation of the blood, mostly already published in 1877. For a summary of the results see Note on Delage, 1881. Wrzeński justly gives de la Valette the credit of having observed the three pairs of venous ostia of the heart in the second, third and fourth segments of the pereon respectively, with their oblique direction, on the right side from above and in front downwards and backwards, and on the left side from behind and above forwards and downwards, so that in each pair the slits cross one another at an acute angle. The heart extends from within the hinder limit of the head to the middle of the sixth pereon-segment in *Goplana polonica*, to nearly the end of the fifth in *Pallasea cancellus*. In each segment of the pereon it is fastened to the back by a pair of upper, and to the sides of the body by a pair of lower, wing-shaped muscles; the front end in the head has only the upper pair.

The arterial ostia, one in the hindermost part of the head, the other in the fifth or sixth pereon-segment, are provided with a complicated valve-apparatus. In each a membrane-like diaphragm is extended, with a simple slit in the centre. The edges of the slit are provided with a sphincter-like muscle, and in the whole surface of the diaphragm the author thought he could perceive annular, very delicate muscle-threads. From the edges of the diaphragm on either side ascends a muscular membrane, finding attachment to the dorsal wall of the heart. During the systole the lateral muscular membranes contract energetically, opening the slit in the diaphragm; in the diastole they relax, while the muscle-threads of the diaphragm contract, and act as sphincters to close the slit, so that the cavity of the heart is now completely shut off from that of each aorta. To prevent the valves bulging in into the cavity of the heart, a pair of trabeculae are fastened, on one side to the rims of the diaphragm-slit, on the other to the ventral wall of the heart. The lateral, venous ostia have each an inwardly projecting valve, with its outer and inner lips provided with sphincter-like muscles. The sphincter of the outer lip is formed by muscles of the wall of the heart, which at the lower angle of the slit separate, to re-unite at the upper angle. The inner lips are provided with a separate sphincter. At the systole first the inner and then the outer slit of the ostium closes.

Lateral arteries are not found in the Gammaridæ, so far as observed by Wrzeński, Claus, [and Delage], although in the Hyperina two or three pairs have been found by Claus. The anterior aorta clings to the upper wall of the stomach, bends sharply down over its front upper edge, descends the front wall of the oesophagus and ends abruptly close to the floor of the head. During this course, in *Goplana polonica*, three branches are given off on either side. The uppermost branch originates just in front of the geniculate bend of the aorta, and provides for the upper antennæ. The middle branch goes down from the bend of the aorta and runs to the eye, where it appears to end. The lowest branch separates from the main stem close to its termination, and provides for the lower antennæ. [In *Talitrus locusta*, Delage describes three arteries proceeding from the anterior extremity of the heart, centrally the upper aorta with a valve, on either side facial arteries, in which he could not discover valves, though for all that they might exist. The facial arteries run at first upwards and