

exactly corresponds to the pedal and brachial ganglia of the Dibranchia; it innervates the funnel and all the appendages.

It is inaccurate to state, as does Grobben,¹ that there are nerves to the appendages which arise from the cerebral ganglia above the optic nerve. The three nerves figured in this position by von Jhering² are the nerves which pass to the cavity situated at the posterior extremity of the cephalic cartilage, and which were regarded by Valenciennes³ as auditory nerves.

(2) If, on the other hand, we seek in the ontogenetic development for some light on the morphological value of the arms of the Cephalopoda, we see that, the embryo resting with its ventral face on the surface of the vitellus, the arms appear on either side of the mantle against the vitellus, advance successively towards the anterior extremity, and finally meet in front of the mouth (compare the lucid figures of Kölliker⁴).

From what has been said above, we may conclude:—

1. The arms of the Cephalopoda are pedal in origin;
2. The buccal appendages of the Gymnosomata and the arms of the Cephalopoda are not homologous structures.

Ray Lankester⁵ has insisted on the fact that in the Pteropoda a part of the foot comes to surround the cephalic region, and it is principally on this that he relies in support of his opinion that the Pteropoda should be classed along with the Cephalopoda.

As regards the Gymnosomata we have already done full justice to this argument by showing that their cephalic appendages have absolutely nothing in common with the foot. But as regards the Thecosomata it is true that a certain portion of the foot (the two fins) comes from either side to surround the head and advances as far as its dorsal aspect, in a manner analogous to that in which the arms of the Cephalopoda (whose pedal nature we have just demonstrated) envelop the head.

Here we have a resemblance which I should not think of disputing, and which Ray Lankester only weakens when he compares the fins of the Pteropods, not to the arms of the Cephalopods, but to their funnel. If, however, we rely upon this solitary resemblance (which is true only of the Thecosomata) to unite the Pteropoda and Cephalopoda, we frame an artificial classification.

A single resemblance, based upon an adaptive modification of a single organ, the foot, which is true only of the Thecosomata among the Pteropoda, cannot invalidate the numerous proofs drawn from all points in the organisation of the entire group, both

¹ Zur Kenntniss der Morphologie, &c., *Arb. Zool. Inst. Wien*, Bd. vii. p. 68.

² *Loc. cit.*, fig. 14, p. 262.

³ Nouveau mémoire sur le Nautilé flambé, *Archives Mus. Hist. Nat. Paris*, t. ii. pl. viii. fig. 2, 3.

⁴ *Entwicklungsgeschichte der Cephalopoden*, pl. ii. figs. 17–27.

⁵ *Mollusca*, *Encyclopædia Britannica*, 9th ed., p. 664, fig. 75.