of Pteropods and Cephalopods. We might find numerous instances of very dissimilar animals, in which a homologous organ is modified in an analogous manner without proposing to unite them on that account, if the sum total of their organisation showed them to be distinct. In this way we ought to deal with the Cephalopoda and Pteropoda.

On the other hand, a natural classification based upon a comparative examination of the whole organisation of the two groups must show, as we have demonstrated in the preceding pages, that there is no direct relation between the Pteropoda and Cephalopoda, and that they have nothing in common except inasmuch as they belong to the same Molluscan phylum.

The high position which has been accorded to the Pteropoda arises rather from their external form than from their structure, as has already been pointed out by Garner.[1] The adaptation to pelagic life has brought about in these animals a symmetrical exterior[2] in order to insure the perfection of natation. But this symmetry has proceeded no further; and what clearly separates the two groups is the complete asymmetry of the organisation of the Pteropoda as opposed to the perfect symmetry of the Cephalopoda.

III. ARE THE PTEROPODA GASTROPODA?

In the Pteropoda as in the asymmetrical Gastropoda—

1. The jaws are paired and lateral.

2. The flexure of the intestine is lateral, what has been improperly called dorsal or hæmal in the Gastropoda, for the intestine does not bend dorsally in a sagittal median plane in the same way as it curves ventrally in the Cephalopoda.

3. The heart is lateral and has only one auricle; the kidney is unpaired and lateral.

4. The unpaired genital gland has only one asymmetrical unpaired genital duct.

5. The nervous system is asymmetrical as regards the ganglionic masses of the visceral commissure and the nerves which spring from it; the osphradium (olfactory organ of Spengel) is unpaired and lateral.

6. A consideration of the development of the Pteropoda shows that as in the asymmetrical Gastropoda the pallial cavity of the Thecosomata is formed to the right of the anus,[3] and that the Pteropoda like the Gastropoda are asymmetrical even in the larval condition.[4] The first stages of the embryo show the primitive symmetry of all Mollusca; this is soon followed by asymmetry, and in the adult animal, though only as regards the external form, there is an adaptive return to the former symmetry, necessitated by pelagic habits.

[1] Malacological Notes, *Ann. and Mag. Nat. Hist.*, ser. 4, vol. xix. p. 373.

[2] Grobben (Morphologische Studien, &c., *Arb. Zool. Inst. Wien*, Bd. v. p. 240) also interprets the symmetry of the Pteropoda in the same way.

[3] Fol, Sur le développement des Ptéropodes, *Arch. d. Zool. Expér.*, sér. 1, t. iv. p. 198.

[4] Fol, *ibid.*, p. 197.