

II. ARE THE PTEROPODA CEPHALOPODA ?

In the organisation of the Pteropoda certain points may be seen which indicate a resemblance to the Cephalopoda.

1. The ventral position of the pallial cavity of *certain* Thecosomata (Cavoliniidæ and Cymbuliidæ).

2. The "ventral" flexure of the alimentary canal in the same groups.

3. The presence of acetabuliferous appendages in some Gymnosomata (Pneumodermatidæ).

It is impossible, however, to show, as Hyatt¹ maintains, that "the general aspect, the arrangement and position of the oral region, and *the disposition of the internal organisation* are similar in both" (Pteropods and Cephalopods). This is, indeed, a heresy, and one must never have dissected a Pteropod to be able to make such an assertion.

It has been said that there are three points in which resemblance may be traced between the Cephalopoda and Pteropoda. We shall soon see how much foundation these resemblances have; but in the meantime it may be remarked that in *not a single point of their organisation* can a true resemblance be found which would justify the assertions which have been made regarding the affinities of the two groups, nor even explain the position which has been assigned to the Pteropods in the neighbourhood of the Cephalopods.

A. *The digestive tract* and its appendages may be first examined:—

a. *Retractile Proboscis*.—This organ, so well developed in the Gymnosomata, does not exist in the Cephalopoda.

b. *Radula*.—Woodward,² speaking of the Cephalopoda, remarks—"The odontophore somewhat resembles that of the Pteropods"—a statement which, though quite incorrect, has been copied into other text-books of Conchology.

As a matter of fact this radula of the Cephalopoda is characterised by its uniformity; it always has the formula 3-1-3, or more accurately 1-2-1-2-1, that is to say, there is a central tooth, and, on either side, two lateral teeth and a marginal tooth; this last differs from the two lateral teeth by its general form and by its narrower basilar piece. The only exceptions known to this formula, 3-1-3, are *Gonatus* (belonging to the family Onychii) and *Nautilus*. The former has no

¹ On the parallelism between the individual and orders in Tetrabranchiate Cephalopoda, *Mem. Boston Soc. Nat. Hist.*, vol. i. pt. ii. p. 208.

² A Manual of the Mollusca, p. 448, 1856.