

and Heteropoda), and unites them closely with the Euthyneura (Opisthobranchia and Pulmonata), which de Blainville had previously designated as the "Paracéphalophores monoïques," including indeed the Pteropoda among them.<sup>1</sup> The Euthyneura differ much more from the Streptoneura than from the Pteropoda. These latter must then be placed in the group Euthyneura as was formerly done by de Blainville and more recently by Spengel.<sup>2</sup>

On the other hand, among the Euthyneura the Pteropoda present such resemblances to the "Opisthobranchia" that they are much more closely related to them (by the respiratory, circulatory, and generative organs) than these latter are to the Pulmonata. The Pteropoda must, therefore, be incorporated among the Opisthobranchia.

Now, as regards the two groups of the Opisthobranchia, Nudibranchs and Tectibranchs, the characters of the digestive tract (gastric armature), of the undivided genital duct, and of the spermatic groove, separate the Pteropoda much less from the Tectibranchs than these differ from the Nudibranchs. Hence the Pteropoda are, as regards their anatomical characters, Tectibranchia.

Among these, too, they have undoubtedly much more affinity for the forms which have been called in recent classifications<sup>3</sup> Cephalaspidea and Anaspidea (that is to say, the Bulloidea and Aplysioidea respectively) than for the group known as Notaspidea (that is the Pleurobranchoidea), and the former of these groups differs in its organisation much less from the Pteropoda than from the Pleurobranchs.

We shall now inquire what are the special affinities which the two subdivisions (Thecosomata and Gymnosomata) have respectively for those Tectibranchia which are their nearest relations among the Gastropoda.

#### IV. SPECIAL AFFINITIES OF THE THECOSOMATA AND GYMNOSOMATA.

We have just seen (1) that the Pteropoda are Gastropods; (2) that they belong to the group Euthyneura; (3) that they must be classed among the "Opisthobranchia"; (4) that they must be placed with the Tectibranchia, and more particularly in the group formed by the Cephalaspidea and Anaspidea (Bulloidea and Aplysioidea).

These conclusions, however, were reached by reasoning on the basis of those characters which are common to the two groups, Thecosomata and Gymnosomata. If now we

<sup>1</sup> Manuel de Malacologie, pp. 447, 480. H. Milne-Edwards (Note sur la Classification naturelle des Mollusques Gastéropodes, *Ann. d. Sci. Nat. (Zool.)*, sér. 3, t. iv. p. 112) criticises de Blainville's classification of the Gastropoda, because it is based only on the generative organs, whilst the "natural" classification which he proposes is based only on the respiratory organs; besides it unites the Opisthobranchia and the Prosobranchia in a group opposed to the Pulmonata, which is much less natural than de Blainville's classification. As regards the name "Opisthobranchia," von Jhering has already proposed to abandon it because it is inaccurate. It is true that several animals of this group have not the auricle behind the ventricle but on the same level (as for example in *Gastropteron*); in *Actæon* the auricle is actually in front of the ventricle, as in *Limacina*. However, seeing that a new name might in its turn prove to be inaccurate, I preserve the term "Opisthobranchia," the group to which it is applied being quite a natural one.

<sup>2</sup> Die Geruchsorgane und das Nervensystem der Mollusken, *Zeitschr. f. wiss. Zool.*, Bd. xxxv. p. 373.

<sup>3</sup> Fischer Manuel de Conchyliologie, p. 550.