

the roof (superior or dorsal wall) of the buccal cavity of an armature of rather strong and somewhat recurved hooks (Pl. IV. fig. 5).<sup>1</sup> I have satisfied myself of the existence of this armature in *Notarchus punctatus* and *Dolabella neapolitana*.<sup>2</sup>

On comparing this armature, not with the hook-sacs of *Pneumoderma*, which present the most highly specialised form of these organs, but rather with those of *Dexiobranchæa* (Pl. IV. fig. 6), which actually present the primitive condition, it is easy to understand that it is not a great step from the dorsal buccal wall, covered with hooks, to the small depressions filled with hooks found in *Dexiobranchæa*.

What, however, is the morphological value of this armature of hooks in *Notarchus* and *Dolabella* and of the hook-sacs of the Gymnosomata?

The comparative study of the horny buccal pieces other than the radula is attended with peculiar difficulties, for these pieces have never been the subjects of systematic investigation as has the radula. The knowledge of these organs which we possess is then very fragmentary, and there are scarcely any synthetic documents relating to them.

The only attempt to treat these pieces systematically was made by Mørch more than twenty years ago.<sup>3</sup> But this author, besides including among the extra-radular pieces organs which have no place there (*e.g.*, the pickaxe-like organs of *Conus*, which correspond morphologically to the radula), multiplies the number of different species which, according to him, may be distinguished among these organs, so that he by no means facilitates the systematisation and homologisation of these extra-radular pieces.

These horny extra-radular pieces are wanting in certain Gastropod Mollusca—*Toxoglossa* (*Conus*, *Pleurotoma*, &c.), Pyramidellidæ, Eulimidæ, many Trochidæ, Heteropoda, *Gadinia*, *Amphibola*, Testacellidæ, many Nudibranchs (*Doridopsis*, *Hermæa*, *Tethys*), *Phyllidia*, Pellibranchia, certain Tectibranchs (*Actæon*, *Utriculus*, *Scaphander*, *Doridium*, *Lobiger*). But the great majority of the Mollusca called "Odontophora" possess horny buccal pieces other than the radula.

As regards the relative position of these organs, we may state in the first place that the radula is always situated posteriorly to every other horny

<sup>1</sup> *Ibid.*, pl. iv. fig. 90.

<sup>2</sup> *Dolabella neapolitana*, delle Chiaje, seems to me to be identical with *Aplysia petalifera*, Rang, *Aplysia webbia*, van Beneden, *Aplysia depressa*, Cantraine, and *Dollabella ornata*, Deshayes; on the other hand, however, it appears to constitute a genus (*Aplysiella*) distinct from *Aplysia* and *Dolabella*. It will probably be necessary therefore to call this species *Aplysiella petalifera* (Rang).

<sup>3</sup> On the Homology of the Buccal Parts of the Mollusca, *Ann. and Mag. Nat. Hist.*, ser. 3, vol. xvi. p. 73.