

regard to the posterior gill, de Blainville<sup>1</sup> gives it as only formed of three sides (the right side of the quadrangular crest wanting). Several writers have figured fringes on the four sides of this crest; in this respect the figure of Rang<sup>2</sup> is much more exact, but the one given by d'Orbigny,<sup>3</sup> and republished by so many modern authors,<sup>4</sup> is quite erroneous, and makes this gill resemble fins. As for the lateral gill, it is generally forgotten or figured in a shapeless manner. Lastly, in regard to the structure of these gills, there is no figure, not even those of Souleyet,<sup>5</sup> which are by far the best and most exact, that shows the true conformation of the fringes.

These fringes are differently formed in the different species. Those of *Pneumonoderma souleyeti* are very little developed, and only form simple undulations at the base of the crests. Those of *Pneumonoderma pacificum* form well-marked and regular undulations, those of one side alternating with those of the other, and resembling the fringes of the gill of *Clionopsis grandis*. In *Pneumonoderma boasi* there are a few fringes more distinct, shrunk at their base, but markedly separate. Lastly, in the group including *Pneumonoderma violaceum*, *Pneumonoderma peroni*, and *Pneumonoderma mediterraneum*, the fringes of the gills show their greatest specialisation; they are numerous, nearly contiguous, and subdivided into parallel ramifications, very close to one another, directed from the base of the fringe to its distal extremity (fig. 3, 3). The conformation of the gills is very useful for the distinction of the species.

Huxley,<sup>6</sup> and several others after him, as Woodward<sup>7</sup> and Fischer,<sup>8</sup> have said that *Pneumonoderma* possesses a "small anomalous shell." I have examined a great many specimens of *Pneumonoderma* of all sizes, and even old larvæ, and I can assert that like all the other Gymnosomata, *Pneumonoderma* is absolutely devoid of mantle skin and shell. It is quite probable on the other hand, whatever Lankester may say,<sup>9</sup> that the larvæ of *Pneumonoderma* bear a larval shell in the beginning of their development, as in *Clione*.<sup>10</sup>

The discrimination of the species of *Pneumonoderma* is certainly the most laborious part of the systematic treatment of the Gymnosomata. A considerable number of species have been described, but for the most part the descriptions are imperfect and insufficient, and the type specimens have been lost.

A comparative and synthetical study of all the specific forms of this genus has not yet been made, and with the materials now available, it might not even yet give

<sup>1</sup> Manuel de Malacologie et de Conchyliologie, pl. xliii. figs. 4, 4b.

<sup>2</sup> Histoire Naturelle des Mollusques Ptéropodes, pl. ix. fig. 5.

<sup>3</sup> Voyage dans l'Amérique méridionale, t. v., pl. ix. fig. 11.

<sup>4</sup> Bronn's Thierreich, Claus' Text-book, Lankester's Mollusca, in Encyclopædia Britannica.

<sup>5</sup> Voyage de la Bonite, Zoologie, pl. xv. figs. 40-42.

<sup>6</sup> On the Morphology of the Cephalous Mollusca, *Phil. Trans.*, 1853, p. 40.

<sup>7</sup> A Manual of the Mollusca, p. 208.

<sup>8</sup> Manuel de Conchyliologie, p. 423.

<sup>9</sup> Mollusca; Encyclopædia Britannica, ed. 9, vol. xvi. p. 666.

<sup>10</sup> Fol, Sur le développement des Ptéropodes, *Archives d. Zool. expér.*, sér. 1, t. iv., pl. x. figs. 6, 7.