

of the triangular lobe bear fringes at their bases; these fringes generally are continued on the lateral somatic crests. The median crest of the gill never bears fringes.

The Posterior Gill is formed of a quadrangular projecting crest, thin, membranous and transparent, which surrounds the posterior end of the body. There arises from each corner of this principal crest, a longitudinal one directed forwards (the two crests arising on the right side, that is, on the side of the lateral gill, are always shorter than the two crests of the left side). The four radiating crests and the two anterior and posterior sides of the quadrangular one have fringes or foldings at their bases.

The posterior gill of *Pneumonoderma* is an adaptive one (whereas the lateral gill morphologically corresponds with that of the Tectibranchiate Opisthobranchs, such as *Aplysia*, for example); it is but a modification of a part of the cutaneous envelope, which must assist the lateral gill in its breathing function. The formation of crests, the development of fringes at the base of these, and the subdivision of these fringes, are successive adaptations, favourable to the aëration of the blood by increasing the surface in contact with the water.

It is difficult to understand how such a good observer as Gegenbaur,¹ followed in this respect by Bronn,² thinking to correct Cuvier, van Beneden, and Souleyet, has stated that the posterior gill of *Pneumonoderma* only shows three radiating crests. Is his observation based on monstrous or rather on specimens deformed from bad preservation?

Buccal Appendages.—Two symmetrical appendages, latero-ventrally inserted on the proboscis (Pl. II. fig. 5) and having the form of flattened ribbons, more or less wide and long. They bear pedunculated suckers,³ on one side only, the median one during the extension of the appendages.

Proboscis shorter than in *Spongiobranchæa*, and showing, in all (?) the species,⁴ the same median abdominal papilla as in *Spongiobranchæa australis*, placed in front of the acetabuliferous appendages when the proboscis is protruded.

Radula, never with a median tooth in the adult (this tooth exists in the larvæ); the number of the lateral teeth never varies much in the different species from four to six.

Hook-sacs cylindrical and very long; they contain a great many slightly bent hooks, scattered over the whole wall of the sac, the longest at the extremity and the shortest at the base (during the evagination of the sac).

The gills of this genus have nearly always been insufficiently described (as in the defective descriptions of Gegenbaur and Bronn), and still more often badly figured. In

¹ Untersuchungen über Pteropoden, &c., p. 85.

² Die Klassen und Ordnungen des Thierreichs, Bd. iii. p. 607.

³ The structure of these suckers was studied by Niemiec (Recherches morphologiques sur les ventouses dans le règne animal, *Recueil Zool. Suisse*, t. ii., 1885), and by me (The Cephalic Appendages of the Pteropoda, *Quart. Journ. Micr. Sci.*, 1885).

⁴ I found this papilla on *Pneumonoderma violaceum*, *Pneumonoderma pacificum* (Pl. II. fig. 5) and *Pneumonoderma souleyeti* (Pl. II. fig. 6).