

the posterior gill being generally simplified, but formed, however, on the same plan as in *Pneumonoderma*.

Notobranchæa has also lost the lateral gill; the posterior crest of the terminal gill has also disappeared, and there only remains a gill formed of three radiating crests.

Lastly, *Clione* has lost every vestige of gill, as in *Halopsyche*.

A form closely resembling some very specialised *Dexiobranchæa*,¹ with atrophied median buccal appendage, and with the posterior ciliated ring converted into a respiratory ring, might give rise:—

1. To *Spongiobranchæa*, by the lateral gill becoming rudimentary.

2. To *Pneumonoderma*, by specialisation of the posterior gill, and the development of radiating crests on the annular crest.²

Pneumonoderma, by the disappearance of the lateral gill and buccal appendages, and by the atrophy of the posterior lobe of the foot, gave rise to *Clionopsis*.

A form allied to *Pneumonoderma*, in which the lateral gill has disappeared as well as the quadrangular crest of the posterior gill, and in which the latter bears only three radiating crests, might lead to *Notobranchæa*.

This last genus certainly represents the forms from which *Clione* has been derived, by the total disappearance of the branchial apparatus.

¹ The evolution of the buccal appendages in *Dexiobranchæa* illustrates the evolution of the genus. The first specialisation was the production of suckers on the proboscis (ventrally and on the two lateral sides); this state is shown in *Dexiobranchæa simplex*. The ventral suckers then united their peduncles into a single median appendage, as seen in *Dexiobranchæa paucidens*. The number of the lateral suckers then increased, and they were arranged in two rows, as in *Dexiobranchæa minuta*, and *Dexiobranchæa polycotyla*. Lastly, the ventral appendage became atrophied, and, on the other hand, the lateral suckers became more developed, and they were borne on projecting crests of the proboscis, the first indication of the lateral appendages of the following genera, *Spongiobranchæa* and *Pneumonoderma*. This last state is shown in *Dexiobranchæa ciliata*. Therefore the living species of *Dexiobranchæa* must be phylogenetically arranged as follows:—

1. *Dexiobranchæa simplex*.
2. *Dexiobranchæa paucidens*.
3. *Dexiobranchæa minuta*.
4. *Dexiobranchæa polycotyla*.
5. *Dexiobranchæa ciliata*.

² In the *Pneumonodermata*, the evolution is chiefly shown in the branchial apparatus. In the most primitive species the lateral gill is still long as in some *Dexiobranchæa*, and the fringes on both lateral and posterior gill are hardly developed. *Pneumonoderma souleyeti* corresponds to this stage. The branchial fringes then became more developed, but the lateral gill continued long—*Pneumonoderma pacificum*. The lateral gill became shorter, and the fringes more distinct, but not yet subdivided—*Pneumonoderma boasi*. The fringes became subdivided—*Pneumonoderma violaceum*. Then, by specialisation of the buccal appendages the other species arose—by increase of the number of suckers, *Pneumonoderma peroni*; by decrease, *Pneumonoderma mediterraneum*. The living species of *Pneumonoderma* must therefore be phylogenetically arranged as follows:—

1. *Pneumonoderma souleyeti*.
2. *Pneumonoderma pacificum*.
3. *Pneumonoderma boasi*.
4. *Pneumonoderma violaceum*.
5. *Pneumonoderma peroni*.
6. *Pneumonoderma mediterraneum*.