

the pallial cavity of the Bulloidea also exhibits a pallial gland (*Bulla*, Pl. II. fig. 3, *d*; *Scaphander*, &c.). This pallial gland of the Bulloidea presents different degrees of development; and in *Actæon* (Pl. I. fig. 6, *a*), where it is rather large, it is quite identical both in form and position with the shield of Limacinidæ (Pl. I. fig. 5, *a*). The situation of this pallial gland in the Bulloidea close to the gill shows that it (and consequently also the "shield" of the Thecosomata) is nothing else than the hypobranchial gland of the Gastropods, which has become asymmetrical in the adult straight Thecosomata in consequence of an adaptive return to the primitive external symmetry.¹

The margin of the mantle in the Bulloidea is continued on the right side by a large lobe (Pl. II. fig. 3, *f*) which corresponds to the right lobe of the mantle in the Limacinidæ, often called the "balancer" (Pl. I. fig. 1, *g*).

The Digestive Tract. 1. *Radula*.—In the Tectibranchia systematists distinguish marginal and lateral teeth. In reality all the teeth of the same transverse row (except the central tooth) are similar in form, and pass insensibly from the innermost to the outermost by diminishing in size and the gradual loss of the marginal denticulations.

In the Bulloidea, properly so called, there are only a small number of teeth on either side of the central one, for example in *Cylichna* and in some species of *Tornatina* (*Tornatina truncatula* = *Cylichna truncata*²); Fischer³ is wrong in denying a radula to the Tornatinidæ; the outer teeth are here very much reduced in size (these are the so-called "marginal" teeth), whilst the inner ("lateral") tooth on either side of the median one remain well developed, thus exhibiting a formula which, by degeneration and loss of the marginal teeth, comes into agreement with that of the Thecosomata;⁴ this formula (1-1-1) is in fact exhibited by some of the Bulloidea—*Scaphander* (Sars),⁵ *Amphisphyræ* (Lovén),⁶ *Runcina*.⁷

The form of the teeth in the Bulloidea is the same as that in the Thecosomata, especially the most primitive ones, the Limacinidæ.

2. *Salivary Glands*.—In *Scaphander*⁸ these have precisely the form and structure of those of the Thecosomata, short, ovoid, and with no differentiated duct.

¹ Schiemenz (Ueber die Wasseraufnahme bei Lamellibranchiaten und Gastropoden, *Mitth. Zool. Stat. Neapel*, Bd. v. p. 527) has already recognised the relations between the "shield" and the "mucous" (hypobranchial) gland of Gastropoda, but he identifies it also with the ink-bag of the Cephalopoda. This homology does not hold, for the hypobranchial gland exists in the Cephalopoda, and as there are two gills so there are two hypobranchial glands, which have been long known under the name of spleen ("Milz"). Joubin, who has studied these organs (Structure et développement de la branchie de quelques Céphalopodes des Côtes de France, *Arch. d. Zool. Expér. sér. 2*, t. iii. pp. 115-119), has not recognised their homology for want of comparison.

² Formula—4-1-1-1-4; see Forbes and Hanley, *History of the British Mollusca and their Shells*, pl. vv. fig. 4a.

³ Manuel de Conchyliologie, p. 555.

⁴ In the genus *Cylichna*, also, the reduction of the number of "marginal" teeth is clearly visible. See Sars, *Mollusca regionis arcticæ Norvegiæ*, pl. xi. figs. 3 (*Cylichna alba*, Brown, 5-1-1-1-5), 4 (*Cylichna cylindracea*, Penn., 3-1-1-1-3), 5 (*Cylichna propinqua*, M. Sars, 2-1-1-1-2).

⁵ *Loc. cit.*, pl. xi. figs. 13, 14.

⁶ Malacozoologi, *Öfversigt k. Vetensk.-Akad. Förhandl.*, 1847, pl. iii.; Forbes and Hanley, *loc. cit.*, pl. UU, fig. 2, c.

⁷ Gray, *Guide to the Systematic Distribution of the Mollusca in the British Museum*, part i. (1857), fig. 114, p. 205.

⁸ Vayssière, *Recherches anatomiques sur la famille des Bullidés*, *loc. cit.*, pl. x. fig. 87.