

## III. THE CEMENT APPARATUS.

The cement apparatus and the genital organs of the Cirripedia are in general tolerably well known; in detail, however, our knowledge often proves to be very insufficient. Darwin has the merit of having discovered the presence of the cement-apparatus, but he failed to understand its organisation, partly because he confounded its elements with those of the female genital apparatus.

Krohn<sup>1</sup> gives a much more accurate description of the cement apparatus of *Lepas anatifera* and *Conchoderma virgatum*. He was the first to observe the true cement-glands. In *Lepas anatifera* they are, according to him, situated in the most superior part of the peduncle, and scattered through the connective tissue which envelops the ovary; they are very numerous, and they have the shape of long oval, vesicular little bodies, which are attached to very delicate and richly ramified canals in the same way as berries to their stems. These canals open, before the inferior extremity of the ovary is reached, into the two cement-ducts, the commencements of which are swollen into ampullæ. These cement-ducts have been already observed by Darwin; they run downwards at a considerable distance from one another, one at the right, the other at the left hand side of the peduncle, and they are situated close to the innermost layer of longitudinal muscle-fibres. Finally they penetrate into the chitinous wall of the peduncle near the place where it is attached; they pass through this wall, becoming narrower and narrower, and are then lost sight of. In the deeper layers of the chitinous wall of the peduncle the cement-ducts are invested with rounded swellings of different sizes, which are hollow and which are doubtless in open communication with the ducts; these swellings act as reservoirs to retain the cement before it is evacuated. In *Conchoderma virgatum* the cement-apparatus differs from that of *Lepas anatifera* in the cement-glands being for the greater part placed in the parenchymatous tissue of the mantle and for a very small part only in the superior extremity of the peduncle. The two cement-ducts with their swollen ampullæ reach very close up to the place where the capitulum communicates with the peduncle. The two ampullæ in this genus communicate with one another by means of a transverse and tortuous canal.

I studied the cement apparatus in *Lepas*, *Conchoderma*, and *Scalpellum*. As regards the histological structure of the apparatus my researches are far from satisfactory, the condition of the material at my disposal being, in part at least, the cause of this. The peduncle of the Cirripedia is very difficult to preserve; even in specimens freshly sent over by the Direction of the Zoological Station at Naples, the condition of the tissue has suffered much.

The little bodies which were considered by Krohn as the true cement-glands must

<sup>1</sup> A. Krohn, Beobachtungen über den Cementapparat und die weiblichen Zeugungsorgane einiger Cirripeden, *Archiv f. Naturgesch.* Jahrg. xxv. Bd. i. pp. 355-364, 1859.