other foreign bodies, so as to form a continuous, more or less solid, protecting, and concealing coat. This property is characteristic of the Molgulidæ, but we find it more rarely, though just as well developed, in other families, as, for example, in the case of *Polycarpa molguloides* (Pl. XXII. fig. 5) in the Cynthiidæ, and *Ascidia conchilega* in the Ascidiidæ.

In other cases, again, we find the protective covering of sand adhering directly to the test, no hair-like processes having been developed. Under these circumstances, the coating is usually more or less imperfect, and rarely attains any great thickness; in *Polycarpa tinctor* (Pl. XXI. figs. 1–3), however, there is a complete layer of sand over the outer surface of the test.

Calcareous spicules are present in the internal tissues of two genera of Simple Ascidians, viz., *Culeolus* and *Cynthia*, and in each case they are found in several species of the genus. They are, however, very different in their character in the two genera, being irregularly branched, and with smooth surfaces in *Culeolus* (Plates VIII. to XIII.), while they are simply rod-shaped or fusiform in *Cynthia*, but have their surfaces minutely echinated (Plate XVII.).

In *Culeolus* they are present in all the species except *Culeolus perlucidus*, chiefly in the walls of the endostyle and the branchial sac, but also in the tentacles, the dorsal lamina, and other organs. But though varying in details, such as size, stoutness, number, and length of branches, &c., according to the species and organ, still they have throughout the genus, wherever found, a very great similarity. They have a characteristic appearance which is difficult to describe, but which seems to depend upon their irregular, but rather graceful, mode of branching, their invariably rounded angles and curved ends, and lastly, upon the system of concentric markings, like contour lines, in their interior (Pl. VIII. fig. 6).

In the genus *Cynthia*, on the other hand, the calcareous spicules have a totally different appearance. They have been found in three species, namely, *Cynthia pallida*, Heller, where they were first discovered, *Cynthia complanata*, Herdman, and *Cynthia papietensis*, n. sp., and they occur in the test and the mantle, but especially in the vessels of the branchial sac.

Just as in the case of the spicules of *Culeolus*, so also in *Cynthia*, the spicules, though differing in various details according to the species and the part of the body in which they are found, still have throughout a very characteristic appearance. They are always elongated in shape, sometimes cylindrical, often more or less fusiform, but they are never branched (Pl. XVII. figs. 3, 8, 13, 15, and 19). The outer surface is always ornamented with usually closely-placed transverse rows of very minute spine-like processes, which give a most characteristic appearance to the spicule, and render it very easily recognisable in any tissue (Pl. XVII. figs. 5, 6, and 20).

In all cases, in both *Culeolus* and *Cynthia*, these spicules appear to be formed in the