

frequently it is a stalked club-shaped mass, the upper swollen part of which may be short and globular (as in *Colella gaimardi*), or long and cylindrical (as in *Colella thomsoni*). In some cases systems with common cloacal openings are formed, while in others the Ascidiozooids are not arranged regularly, and each one has an atrial aperture communicating separately with the exterior. In the latter case the atrial aperture is six-lobed, in the former it has a large atrial languet. The branchial aperture is always six-lobed. The test varies greatly in its condition. It may be only moderately thick and remain soft and gelatinous, or it may become greatly thickened, forming a peduncle or a very massive colony, and it may be very dense and cartilaginous, or may even develop calcareous spicules (as in the genus *Cystodytes*).

The Ascidiozooids are always of the *Distoma* type, and would have been considered by Milne-Edwards as "Didemniens." They have a thorax or branchial region, and an abdomen or intestinal region; usually the two are separated by a deep constriction (see Pl. XIV. fig. 5). There are generally vascular appendages or ectodermal processes, which, springing from the posterior ends of the Ascidiozooids, penetrate the test for considerable distances (Pl. V. fig. 13, and Pl. XIV. fig. 12, *v.ap.*), and may even branch to form networks like those met with in some Botryllidæ (see Pl. II. fig. 1, and Pl. XVIII. fig. 9).

The branchial sac varies greatly in size and number of stigmata. In *Distoma mucosa*, von Drasche, there are only three rows of stigmata, while in *Distoma adriaticum*, von Drasche, there may be as many as twenty-four. In some cases (*e.g.*, *Colella pedunculata*, Quoy and Gaimard) the stigmata may be very long and narrow, and more like those of some Simple Ascidians than of a Compound Ascidian. In *Symplegma* there are internal longitudinal bars, but in all other forms they are absent.

The alimentary canal also presents various conditions in the family. It may be short and thick, or it may form a long loop upon which the stomach is always a conspicuous organ. The wall of the stomach may be smooth or longitudinally folded or thickened irregularly.

There are usually a large number of spermatic vesicles, which all communicate by small ducts with a large vas deferens. The ova form a mass placed upon the intestinal loop and usually projecting beyond it. In some cases (*Distaplia* and *Colella*) the embryos undergo their development in a special prolongation of the peribranchial cavity, the incubatory pouch. The mature ova and the embryos are often of very great size (Pl. VII. figs. 7, 14, &c.). Gemmation takes place mainly, I believe, if not entirely, in connection with the vascular appendages. In some cases larval budding occurs.

The various genera in this family may be shortly distinguished by the following diagnostic characters :—