

DESCRIPTION OF THE SPECIES.

ASCIDIÆ SIMPLICES.

The Ascidiæ Simplicis, in which I include the Clavelinidæ, may be defined as solitary or social, fixed or free, but never free-swimming, Ascidians, which may reproduce by gemmation so as to form societies of Ascidiozooids united by a common vascular system, but in which each has a distinct test, and is not imbedded along with the other Ascidiozooids in a common investing mass.

This suborder, then, includes those Ascidians which are never free-swimming and are never imbedded in a common colonial mass. They are usually solitary, and reproduce only in a sexual manner. In at least one family, however, reproduction takes place also by gemmation, which results in the formation of small colonies or "societies," but in these the different ascidiozooids are perfectly distinct, and their tests are not united into a common investing mass, as in the Ascidiæ Compositæ. They are merely joined by their posterior ends, usually by the intervention of a creeping stolon containing blood-vessels, so that the different members are connected by a colonial circulatory system.

This family, the Clavelinidæ, has usually been considered as a distinct suborder (Ascidiæ Sociales), of equal rank with, and intermediate between, the Ascidiæ Simplicis and the Ascidiæ Compositæ; while it has sometimes been united with the last-named group to form the suborder Synascidiæ. I have already, in the Preliminary Report,¹ given in detail my reasons for placing the Clavelinidæ in the Ascidiæ Simplicis.

The Ascidiæ Simplicis may be divided into four families—the Molgulidæ, the Cynthiidæ, the Ascidiidæ, and the Clavelinidæ. In the last of these, gemmation and the formation of a colony take place; while in the others, although the apparatus for budding—the "blood-vessels" of the test—is present, and may even be developed into stolon-like processes, so far as is known buds are never formed. In this property, the power of reproducing by gemmation, the Clavelinidæ differ from the other Ascidiæ Simplicis; otherwise they closely resemble the Ascidiidæ, such genera as *Ecteinascidia*, *Ciona* and *Rhopalæa* forming a passage from the one family to the other.

The Cynthiidæ and the Molgulidæ are more nearly allied to each other than to the Ascidiidæ, which family is less highly developed and less complex in organisation than the two former. The Molgulidæ are probably the most highly differentiated and most elaborately complete in all their parts, while the Clavelinidæ may be considered as the

¹ Proc. Roy. Soc. Edin., 1879-80, p. 714.