general thickness. In the measurements of an Ascidiozooid, the length is the entire antero-posterior extent from the branchial aperture to the posterior end of the body, exclusive of the vascular appendage when present, the breadth is the greatest dorso-ventral extent, and the thickness is the distance from the right to the left hand side of the body.

ASCIDIÆ COMPOSITÆ.

The Ascidiæ Compositæ, from which I exclude the family Clavelinidæ, may be defined as fixed Ascidians which reproduce by gemmation so as to form colonies in which the Ascidiozooids are imbedded in a common test or investing mass.

This suborder, then, is readily distinguished from the Thaliacea and the Larvacea, and from the Ascidiæ Salpiformes, all of which are free swimming; but although a typical Compound Ascidian may readily be separated by well-marked characteristics from a typical Simple Ascidian, it is very difficult if not impossible to frame a definition which will hold good for all the Ascidiæ Compositæ, while excluding all the Ascidiæ Simplices.

There are series of forms which bridge over, I believe, every gap which has been pointed out as existing between the two groups, and at the present time I find myself unable to fix upon a single satisfactory character by which to distinguish the Compound from the Simple Ascidians. This is not to be wondered at, however, when we consider the great amount of individual variation, and the difficulty of defining the limits of allied species and genera in the Tunicata; and it even seems perfectly natural when we investigate the course of the phylogeny of the group, and find that in all probability the Compound Ascidians are polyphyletic, having been derived from several distinct groups of ancestral Simple Ascidians (see further on in this Report under Summary). They are thus a semi-artificial assemblage, consisting of those fixed [1] Ascidians which have retained or acquired the power of reproducing by gemmation, so as to form colonies, and in which the Ascidiozooids have become so intimately united that their tests form a common colonial mass.

Savigny in 1815 [2] first rescued the Compound Ascidians from the Alcyonaria with which they had previously been associated, and demonstrated their affinity with the other Tunicata. In the Tableau Systématique, Savigny gives no formal statement of the characters by which he distinguished the Simple from the Compound Ascidians, but it is evident from some passages in his 3e Mémoire that he relied chiefly, if not entirely, for their separation upon the arrangement of the Ascidiozooids of the Compound forms around a central cloaca, a character which he declared was visible even in the young embryo. In this latter point he was mistaken, and it seems rather singular that he should have laid such stress upon the union of the atrial apertures when we find that he

[1] *Cœlocormus huxleyi* seems to be unattached, but is probably not free-swimming.

[2] Observations sur les Alcyons gélatineux à six tentacles simples.