

test, an upper and a lower, between which the bodies of the Ascidiozooids are suspended, and they emphasize this peculiarity as one distinguishing these colonies from those of other Compound Ascidiæ; but in all the specimens of Diplosomidæ which I have examined, the relation between the test and the Ascidiozooids of the colony is essentially the same as that found in all other Ascidiæ Compositæ. The only difference is that the test is usually extremely soft and gelatinous, and that it is considerably broken up by the presence of numerous large spaces and canals which are prolongations of the common cloacal cavities, and serve to place the atrial apertures of the Ascidiozooids in communication with the exterior. This is of course a condition which is found to a greater or less degree in most Compound Ascidian colonies, and although the result of its considerable development in the Diplosomidæ is doubtless, as described by former authors, to reduce very greatly the amount of test in the centre of the colony, and leave only the surface layers as continuous and conspicuous expansions, still it is no novel arrangement, but merely a slight modification, and the test must be regarded as a true investing mass surrounding the Ascidiozooids on all sides, just as it does in the other Ascidiæ Compositæ.

The test is usually exceedingly transparent, but in some species it contains conspicuous pigment cells. Calcareous spicules are rarely present, and are confined to the superficial layer of the test. Giard was of opinion that they were never present, and made the absence of spicules the character by means of which he distinguished the Diplosomidæ from the Didemnidæ.¹ As a general rule, it is a good distinctive feature, but it will not hold good universally, as von Drasche has described two members of the Didemnidæ, *Didemnum inarmatum* and *Didemnum tortuosum*, in which the test has no calcareous spicules, and I have added a third species, *Didemnum inerme*, which is in the same condition; while, on the other hand, von Drasche found one of the Diplosomidæ, *Diplosoma pseudoleptoclinum*, in which calcareous spicules were present in the upper layer of the test, and in a small clump on each side of the thorax of the Ascidiozooids, and in one of the species to be described below, *Diplosomoides molle*, calcareous spicules are also present. Consequently, this character breaks down as an infallible diagnostic.

The general shape and structure of the Ascidiozooid is very much like that which prevails in the Didemnidæ. The thorax is usually longer than the abdomen, and the atrial aperture is very inconspicuous. The branchial sac is of large size, and the stigmata are well developed.

The stomach is ellipsoidal, and has no folds in its wall. Its long axis generally runs dorso-ventrally, and the intestine forms rather a wide loop.

The testis is usually in the form of two large spermatic vesicles, opening into a vas deferens which is not spirally coiled. This is an important point of distinction between

¹ Recherches sur les Synascidies, &c., p. 608. Jourdain, writing quite recently (*Comptes rendus*, June 15, 1885), has returned to this incorrect view that the absence of spicules is the chief distinguishing feature of the Diplosomidæ.