Tentacles (Branchial Filaments).

The tentacles have been already referred to, and their position at the posterior end of the branchial siphon described (fig. 3, *tn.*, p. 32). They are hollow processes, not of the involuted test but of the wall of the alimentary canal, and of the mantle, as these two are in contact in that region, the peribranchial space not extending so far forward. The epithelium covering the tentacles is continuous with that of the præbranchial zone, while the connective tissue underneath, usually containing muscle bands, is in connection with that of the mantle. Blood sinuses from the latter are also prolonged up the centre of the tentacles, so that the blood circulates in their interior.

They vary greatly in size and shape in different genera and species, and very frequently they are of different sizes, arranged symmetrically. In a few cases (*e.g.*, *Culeolus wyville-thomsoni* and *Molgula pedunculata*) one of the tentacles is very much larger than any of the others.

In the Molgulidæ the tentacles are always compound, and are usually much branched, in some of the larger species (*e.g.*, *Molgula gigantea*) forming huge complicated arborescent masses. Their number in the Molgulidæ is never very great. A not uncommon arrangement is for seven or eight large tentacles to alternate with the same number of smaller ones.

In the Cynthiidæ we find a great variety of tentacles. Two of the sub-families, the Bolteninæ and the Cynthinæ, have compound tentacles very similar to those of the Molgulidæ, but usually more numerous, while the third sub-family, the Styelinæ, has simple unbranched tentacles like those of the Ascidiidæ, but frequently wider at the base, and having a more inflated appearance.

In both the Ascidiidæ and the Clavelinidæ they are also simple, and present the form of long tapering processes, usually distinctly triangular in cross section, and placed with a flat surface anteriorly, and a ridge posteriorly. Among the Ascidiidæ we frequently meet with complex arrangements. The tentacles may be of different sizes, two, three, or more orders being placed alternately.

In the Ascidiæ Compositæ the tentacles are invariably simple, and few in number. They are usually all of the same length, although in some cases (*e.g.*, *Botryllus*, where there are four larger alternating with four smaller) two orders occur.

In the Appendiculariidæ, the Pyrosomidæ, and the Thaliacea the tentacles seem to be entirely absent.

Nervous System.

A single large nerve ganglion is found in all Tunicata placed between the branchial and atrial siphons, and is usually considered as indicating the dorsal surface of the