

In a transverse section of the head three zones may be distinguished (Pl. X. fig. 5). The external one is formed by the transparent outer part of the investing mass in which are imbedded the light grey thoracic regions of the Ascidiozooids. The next or middle zone is composed of the transversely cut abdominal regions of a couple of rows of Ascidiozooids with very little matrix around them. The third or central zone has matrix alone (Pl. X. fig. 5), it is rather opaque, and its texture is spongy on account of the vascular appendages which traverse it.

In a vertical section (Pl. X. fig. 7) the same three zones are recognised. The inclined position of the Ascidiozooids which causes the overlapping is well seen, and it is noticeable that the abdomen is usually more nearly vertically placed than the thorax, thus accounting for the fact that more cut ends of the former than of the latter are seen in a transverse section (Pl. X. fig. 5). In a vertical section (Pl. X. fig. 6) the diminution in the size of the Ascidiozooids as they approach the base is very evident, but nothing resembling buds is visible in the stalk below. At the very base of the head, however, and seen in a vertical section as a sort of incomplete cap or funnel-shaped collar surrounding the top of the stalk where it becomes continuous with the central part of the head, is a narrow zone of buds or very young Ascidiozooids lying internal and posterior to the lowest row of adults (Pl. X. fig. 7), and evidently destined shortly to reach the periphery and appear as young but fully developed Ascidiozooids.

HISTOLOGY.

Investing Mass or Test.—The matrix of the head, it has been seen, presents itself apparently under two different forms; in the outer thoracic zone it is gelatinous, but solid, homogeneous and transparent, while in the centre of the colony it seems firmer, but is spongy and irregular, being sometimes reduced to a reticulum, and is more opaque, having usually a bluish hyaline appearance. These two parts are, however, identical in structure, the difference in their appearance being due to the presence of the vascular appendages in the inner region of the investing mass.

Comparatively little structure is visible in this test. No bladder cells are present in any part of the colony, and the other cell elements are comparatively few, the great mass of the tissue being homogeneous apparently structureless matrix. The usual fusiform and stellate, and many smaller, nearly circular, test cells are present (Pl. XI. fig. 1, *t.c.*), while here and there another form occurs which may be considered intermediate between the branched test cell and a bladder cell. These are larger than the stellate cells, and are more or less globular or ovate in form; they have a delicate outline from which a few faint hair-like processes radiate outwards like the branches of the stellate cells; the protoplasm does not fill the cell, and it is generally accumulated