

not explain the origin of the endoderm tissues of the resulting Ascidiozoid, and after a careful examination I am unable to find any other elements in the young bud besides those mentioned, and yet at an early stage an inner endodermal sac is formed which afterwards develops into the branchial sac and the remainder of the alimentary canal. This endoderm layer has no connection with the wall of the vessel, and is certainly not formed from the young ova, but it is, I am convinced, derived from the blood-corpuscles. These cells, which are still primitive and undifferentiated, are usually regarded as mesodermal, but E. van Beneden¹ has shown that in the Ascidian embryo the mesoblast is formed from the primitive endoderm as two laterally placed masses of cells, some of which become blood-corpuscles. It is possible that some of these (or their descendants) may retain their endodermal characters to such an extent that when they pass into a young bud as blood-corpuscles they are still able to act as endoderm cells and form the enteron of the future Ascidiozoid. If this view be correct, then the bud is formed by cells derived, as we should expect, from all three primary layers of the body of the parent. If, on the other hand, the blood-corpuscles cannot be regarded as contributing an endodermal element, then it is by no means obvious what the endoderm tissues of the bud are derived from.

The irregular arrangement of the Ascidiozooids in *Sarcobotrylloides wyvillii*, which is rather puzzling as seen from the surface, is not so striking when viewed from the interior after the upper layer of the colony has been dissected off. Then the systems can in most places be traced, and if the top layer of test be examined from its inner surface, the places where the Ascidiozooids were placed, and their arrangement in systems more or less like those which are usually found in *Botrylloides*, can be readily made out (Pl. IV. fig. 15). In the figure the central area is formed by a thin layer of test, and has no common cloacal aperture, while the irregularly rounded projections surrounding it are parts of the regions occupied by Ascidiozooids, and have each a somewhat thickened margin formed by the test, and in some cases an adhering lining of mantle.

The mantle is much like that of the genus *Botrylloides*, but is rather more muscular. The branchial sphincter is moderately strong.

The transverse vessels of the branchial sac are rather wide, and have each a few muscle fibres. The stigmata are large and regularly arranged (Pl. IV. fig. 14, *sg.*). The endostyle is wide and thick. The tentacles are larger than is usual in the genus *Botrylloides*.

The infundibulum leading from the aperture of the dorsal tubercle, and its continuation the neural duct, are unusually distinct. The funnel is proportionally rather longer than in *Botrylloides fulgurale* (Pl. III. fig. 8), but otherwise the relations are the same. The neural gland extends for some distance beyond the opaque ovate nerve ganglion posteriorly.

The stomach is large, and is strongly ribbed on the exterior. In the young

¹ Existe-t-il un Coelome chez les Ascidies? *Zool. Anzeiger*, 1881, No. 88, p. 376.