

edge, leaving a wide prebranchial zone between its anterior end and the bases of the tentacles.

The œsophagus commences at the posterior end of the dorsal edge of the branchial sac and runs directly backwards (Pl. XXII. fig. 4). It is a long and narrow tube with moderately thick walls slightly corrugated in parts. The stomach is a large ovate organ with its long axis placed antero-posteriorly, and with the narrower end forwards. The walls, which are only moderately thick, are folded longitudinally (Pl. XXII. fig. 4). The intestine, after leaving the posterior end of the stomach, from which it is separated by a marked constriction, runs for a short distance backwards, and then turns round dorsally and anteriorly to continue its course forwards, as the rectum, lying at first alongside the stomach and œsophagus, and then running up the dorsal edge of the branchial sac to the anus, which is placed far forwards in the peribranchial chamber close to the atrial aperture. The intestine where it leaves the stomach is rather thick-walled and narrow, not much wider than the œsophagus, but while curving round at the posterior end it becomes rapidly wider and its wall is greatly reduced in thickness. The rectum is nearly as wide as the stomach (Pl. XXII. fig. 4), and its wall is so thin as to be almost transparent. The fæces are of a brownish colour, and are composed mainly of Diatoms.

The reproductive organs forming the post-abdomen vary greatly in size, but in nearly all the Ascidiozooids examined they consist merely of spermatie vesicles and their ducts. Large ova, of an opaque orange colour, and embryos in various stages of development are common, however, in the peribranchial cavity, which is in some cases greatly distended with them. Possibly the ova are only produced at a certain season of the year, but I think it much more probable that they are formed at a certain period in the life of the Ascidiozooid. Ova in various stages were found in one or two of the younger and smaller Ascidiozooids, but certainly all the large specimens which I examined were male. Probably the ova are formed first, and pass up into the peribranchial cavity when the testes begin to develop.

Figure 14 in Plate XXII. represents a diagrammatic transverse section through the post-abdomen of a young Ascidiozooid. It is formed of an outer coating of ectoderm (*ec.*), inside which is a layer of connective tissue with muscle bands (*m.b.*). This is the mantle, and it encloses a mass of mesoderm tissue traversed by branching tubes (*g.t.*) containing germinal cells. Around these reproductive tubes are blood-sinuses (*b.s.*) containing blood-corpuscles. Figures 15 and 16 show a small part of a section of a young post-abdomen where the germinal cells are seen in various stages of development into ova. Figure 17 gives a similar view of part of the post-abdomen of a larger and older Ascidiozooid, where the reproductive tubes have their branches much dilated at the ends to form spherical or ovate bulbs more or less filled with developing spermatozoa. The mantle and the blood-sinuses remain unchanged. Evidently the young