

One result of this flattening of the colony in the more modified Leptoclinids is that there being no longer room for the Ascidiozooids to lie with their long axes at right angles to the upper surface of the colony, they have become modified in one of two ways. In some cases they have simply come to lie irregularly in the colony, being inclined at various angles to the surface; but in other cases an interesting change has taken place, the antero-posterior axis of the thorax has remained vertical, the primitive position, but the abdomen has become bent upon the thorax so as to point dorsally.¹ Such a change in the body of the Ascidiozoid would doubtless allow the thorax, and therefore the branchial sac, to remain of large size, while the colony was becoming gradually thinner and thinner; and in some species (*e.g.* *Leptoclinum moseleyi*), the flexure has gone to such an extent that the abdomen does not extend behind the thorax, but projects at right angles dorsally from its posterior end. Any further bending after this condition had been reached would be useless. It may be noted that this modification produces an arrangement of the Ascidiozoid which shows a superficial resemblance to that seen in the Botryllidæ when the abdomen seems to lie alongside the thorax. The two cases are really, however, entirely different, as there has been no flexure of the body in the Botryllidæ, and there is no included test or double fold of mantle in the angle between the thorax and the abdomen, as there is in the case of the modified Leptoclinids.

In the ancestral Diplosomidæ the reproductive organs have remained in a more primitive condition than in the Didemnidæ, and the vas deferens has become straight. The testes are usually two in number, and are therefore in an intermediate condition between the numerous spermatic vesicles of the ancestral Distomidæ and the single large testis of the Didemnidæ. The property of producing calcareous spicules in the test has become gradually lost in the Diplosomidæ. Spicules are still found in the upper layer of the colony in *Diplosomoides*,² but have disappeared in the genus *Diplosoma*. As a result the test has become softer and more transparent, and the system of canals and cavities in connection with the common cloacal apertures has become so increased as to greatly reduce the amount of test in the colony. *Diplosomoides* is less modified than *Diplosoma*, and may be represented by a side branch from the ancestral Diplosomidæ.

The line L. (table, p. 150), which diverged from the common ancestors (K.) of the Didemnidæ and Diplosomidæ, retained the ancestral condition of the male reproductive organs found in the Distomidæ along with the partially coiled arrangement of the vas deferens which became emphasised in the Didemnidæ. At the same time the colony apparently became detached, and its upper surface sank in so as to produce an axial cavity, the lining of which is really morphologically a part of the

¹ See this Report, Part II., pl. xxxvii. fig. 10.

² This Report, Part II. p. 309.