

of the Ascidiozoid which has been already described in the case of *Leptoclinum moseleyi* (see p. 273), where it has resulted in the abdomen having come to lie at right angles to the thorax in place of being in the same straight line with it. In other cases the Ascidiozooids have remained unflexed, but have become scattered irregularly in the test inclined at various angles to the surface of the colony.

In the ancestral Diplosomidæ the reproductive organs have remained in a more primitive condition than in the Didemnidæ, and the vas deferens has become straightened. The testes are usually two in number, and are therefore in an intermediate state 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* (see p. 309), but have completely 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 at the same time so increased as to greatly reduce the relative amount of test present in the colony (see p. 308). *Diplosomoides* is less modified than *Diplosoma* (see fig. 13, p. 393), and is more nearly related to the Didemnidæ.

In order to trace the evolution of the remaining Compound Ascidiæ, it is necessary to return to the ancestral Ascidian allied to *Ecteinascidia* (B. in fig. 11, p. 388). This form was the common ancestor of the various groups of Simple Ascidiæ, and it is described in the first part of this Report (vol. vi., 1882, p. 285). It gave rise to an ancestral series which, after losing the power of reproducing by gemmation and undergoing a certain amount of modification, led to *Ciona* and the other genera of the Ascidiidæ.¹ From the ancestral Ascidiidæ an important branch leads to a great series of forms in which the body has become shortened antero-posteriorly by the alimentary canal being placed alongside the branchial sac instead of extending behind it, while the branchial sac has become more highly developed and has had its surface greatly increased by being thrown into a series of longitudinal folds. Before this last change took place, however, the branch probably divided (at J. in fig. 11, p. 388) into two ancestral series, one leading to the family Botryllidæ and the other to the primitive Cynthiidæ (see fig. 11, J.).

In the long line of descent leading from the point J. to the family Botryllidæ the lost property of reproducing by gemmation was regained, and as a result colonies were once more produced. The Ascidiozooids in these primitive Botryllidæ were completely imbedded in a common test, and they became arranged in systems as in the case of the Polyclinidæ, and finally in each system all the atrial apertures came to open into a

¹ For the phylogeny of the Simple Ascidiæ see Part I. of this Report in vol. vi., 1882, Summary, p. 285. The subject will be discussed more in detail in Part III. of this Report, where the relationships between the various groups of the Tunicata will be fully considered.