

the accompanying diagram (fig. 11) by the line stretching from the splitting point of the Proto-Tunicata to the most recent common ancestor of Simple and Compound Ascidiæ (A. in diagram).

This latter form was probably something like a *Clavelina* without a peduncle. It was attached by the posterior end of the body, and was elongated antero-posteriorly. The branchial aperture was at the upper end, and the atrial far forward on the dorsal edge, and both were circular and without lobes. The branchial sac was not very large, and consequently the greater part of the alimentary canal lay posterior to it. No folds were present in the branchial sac, and the stigmata were straight. The tentacles were simple. Finally, by reproducing by gemmation, small colonies were produced. The buds were probably formed as simple outgrowths (containing some cells derived from the endoderm of the parent covered by a prolongation of the body-wall) from the posterior end of the body.

From this form (A. in diagram, fig. 11) several lines diverged. One led to the genus *Clavelina*, in which little change has taken place. The body has become elongated, and more or less pedunculated, while the buds have come to be produced on stolons which are prolongations of the body-wall of the parent Ascidiozoid covered by a layer of test and containing blood sinuses. A second line of descent, starting from A., has produced the genus *Perophora*, in which the body has become shortened antero-posteriorly, so that the alimentary canal has come to lie alongside the branchial sac. The third diverging line from A. is that representing the ancestors of the remaining Simple and Compound Ascidiæ. In these forms the branchial sac became complicated by the addition of internal longitudinal bars which were not previously present. The genus *Ecteinascidia*¹ is closely related to these ancestral forms.

At about this point (B. in fig. 11) the line split into two great series, the one leading to the more typical Compound Ascidiæ (the Polyclinidæ, the Distomidæ, &c.) and to *Pyrosoma*, and the other giving rise to the typical Simple Ascidiæ, and to the Botryllidæ and the Polystyelidæ. The first of these two important branches soon divided (at C. in fig. 11) into two lines of descent; the one leading to the Polyclinidæ, and the other through the Distomidæ to the Didemnidæ, the Diplosomidæ, the Cœlocormidæ, and finally the Pyrosomidæ. In both of these lines, and in their common ancestors from the point B. onwards, the power of reproducing by gemmation was retained and even increased, and the members of the resulting colonies became more closely united with one another than is the case in *Clavelina* and allied forms.

The line which leads from C. to the existing Polyclinidæ must have been occupied by a series of forms in which the body of the Ascidiozoid became more and more elongated antero-posteriorly, and finally divided more or less distinctly into three regions, the

¹ See Part I. of this Report (vol. vi., 1882), p. 239; and Sluiter, Ueber einige einfachen Ascidiæ, &c., Naturkund. Tijdsch. v. Nederland. Indie, Bd. xlv. p. 160, 1885.