Usually the embryos undergo their entire development in the body of the parent, either in the peribranchial cavity or in a special incubatory pouch, and do not pass into the outer world until they have become completely developed tailed larvæ.

Gemmation.

The budding of Compound Ascidians is a very important process—(1) because it is a very common method of reproduction with most species, and (2) because it has a most important bearing upon the characteristics of the colony.

Reproduction by gemmation takes place in a number of different ways amongst the Ascidiæ Compositæ, in fact nearly every species in which the process has been carefully examined has been found to have a method more or less peculiar to itself. Most of these methods, however, fall into one or other of a few main types of budding, and in all cases the process may be considered as consisting of the giving off from the parent Ascidiozooid of a number of cells containing representatives of the three primary layers of its body, ectoderm, mesoderm, and endoderm.

Giard in 1872[1] recognised four distinct methods of budding which he called stolonial, pallial, ovarian, and pyloric, and as these names are useful in indicating the positions of the buds, they may be retained with advantage.

Stolonial is the process seen typically in the Clavelinidæ amongst Simple Ascidians, but found also sometimes in the Botryllidæ (see p. 59). Here the bud is formed from the enlarged knobs upon the so-called "vessels" or stolons, which are really prolongations of the ectoderm and mantle of the posterior part of the body, and contain prolongations of the vascular sinuses of the mantle (see fig. 2, p. 14).

Pallial budding is seen also in the Botryllidæ, as was shown long ago by Krohn and by Metschnikoff, and it is by this process that the systems in the colony are mainly formed. The bud is produced as a lateral outgrowth from the body of the parent Ascidiozooid.

Ovarian budding is found in the Polyclinidæ, where the reproductive organs extend behind the alimentary canal to form what is called the post-abdomen. This region of the body gives rise to buds either by breaking up into a number of pieces or by giving off processes. This method of budding is really the same as the stolonial. In the first place there are several cases known which seem to be intermediate between the two, and where it is impossible to say definitely which process is followed; and secondly, the post-abdomen is simply a vascular appendage or stolon which has become in great part filled up by the large reproductive organs of the Polyclinidæ, and the process given off from the post-abdomen has exactly the same structure as the knob upon one of the vessels of the Botryllidæ.

[1] Recherches sur les Synascidies, *Archives d. Zool. expér.*, vol. i. p. 570.