

strongly refracting germinal spot, both circular in outline. The vitellus is coarsely granular. Externally the whole is enveloped in a cellular coating, the follicle, which is composed of rounded or nearly quadrangular nucleated cells. When seen from the surface they are hexagonal or diamond-shaped in outline. A very delicately walled tube, which may be the oviduct, seems to run upwards to the atrium alongside the intestine, and to terminate close to the anus; on the other hand it may possibly be merely a fold of the mantle (see Pl. VII. fig. 7).

Among the smaller ova there may be seen some still smaller triangular or pear-shaped masses of protoplasm with no nuclei, but coarsely granular in texture, which stain strongly with carmine (Pl. VII. fig. 9). It is possible that these may be small spermatic vesicles, and such I believe them to be. If, however, they be merely young ova, then no trace of a testis has been discovered. Probably dichogamy exists here as in some other Compound Ascidiæ, and the colonies investigated were in their first sexual condition (protogynous), the testes being still in a rudimentary state.

Incubatory Pouch.—This curious organ (Pl. VII. figs. 7 and 12–14) is an appendage to the mantle, in connection with which the structure of its walls have already been described. It is merely an enormous diverticulum of the peribranchial or atrial cavity, in which the embryos lie during their development. It joins the atrium on its dorsal edge (Pl. VII. fig. 7) close to the anus and the termination of the oviduct (?). It has a very narrow neck, barely wide enough to let a mature ovum pass in, and far too small to allow any of the embryos found in the pouch to go back again to the atrium. The problem then is, how do the fully developed larvæ escape? Two methods suggest themselves as possible:—Either (1) they burst their way through the outer wall of the colony, which is not very thick, when the larvæ are fully developed and the incubatory pouch distended to its utmost, or (2) the entire pouch with its contained larvæ remains intact till in the natural course of events, as will be seen shortly (p. 93), it reaches the summit of the colony and is cast off. The larvæ may then be set at liberty by bursting the wall of the pouch or by its decay.

Another curious point in regard to the incubatory pouch is that the embryos at its far end are always the youngest, while those near the neck are generally completely formed tailed larvæ. Now if the ova, as they passed up into the peribranchial cavity, were deposited successively in the pouch, those at the far end would be the most advanced in development, and mature ova or very young embryos only would be found at the neck of the pouch. Thus the observed arrangement is the reverse of what would be naturally expected.¹ If, however, the ova are fertilized successively as they reach the peribranchial cavity, and then remain there for some time—until, in fact, they

¹ The greater part of this account of the structure, &c., of *Cololla* was written some years ago. Della Valle has since observed a similar condition of the incubatory pouch and its contained embryos and larvæ in the genus *Distaplia* (*Arch. ital. d. Biol.*, vol. i. p. 193).