

Some species undergo multiplication by budding. This process can be studied extremely well in *Polylophus philippinensis*, where the same specimen frequently exhibits numerous stages in the development of buds, from small papilla-like elevations to adult individuals ready to be separated off (Pl. LIV. fig. 1). After the numerous conical protuberances of the lateral surface, which are apically equipped with a tuft of slightly divergent needles, have grown out to a greater length, and have been drawn out into nipple-like structures, they become constricted, and the outer portion expands into a pear-like form. The bud continues to grow gradually larger, expanding especially on its free terminal portion; a roundish opening is formed at the distal pole, while on the lateral surface a number of conical projecting tufts of needles appear irregularly disposed. The portion connecting the bud with the mother Sponge becomes longer, and at the same time thinner; finally the union between the two is wholly severed, and the bud thus separated is attached only by a weak bundle of siliceous needles. Strain and friction soon effect complete separation, and the bud at length falls to the ground, where it becomes independently attached by its own tuft of spicules (Pl. LIV. fig. 1).

When, in such a process of gemmation, the undeveloped individuals remain attached by an elongated stalk, ramified colonies with terminal individuals result, as for example in *Sympagella nux* (Pl. XXII. fig. 4).

These young buds are in their young stages admirably suited for investigation, affording a convenient view of the whole organisation of the form in question. This may be illustrated by glancing at fig. 2 on Pl. LIII., where a longitudinal section through *Polylophus philippinensis* is represented. The relation of the entire chamber layer to the general canal system and water stream becomes at once distinct. It may be clearly seen that, however much the layer of chambers is folded, it always forms a continuous intermediate layer between the afferent and efferent lacunæ or canals, forms in fact a filtering layer, through the pores of which the stream of water has to pass.

The above gemmation which results from proliferations of the sponge-wall, must be of course distinguished from a formation of colonies very frequent among Dictyonina, which occurs, however, as the result of the folding of the exuberant margin of a cup or tube-like rudiment. The dichotomous or more complex tubes, which frequently exhibit lateral branches, in *Farrea*, *Eurete*, *Periphragella*, *Myliusia*, &c., result wholly from the folds of the growing portion becoming gradually closed into complete tubes (Pl. LXXII. fig. 3; Pl. CIII. figs. 1, 2) as may be readily demonstrated from a careful comparison of the different stages in the development of the colony.

In some cases, as for example in the young specimens of *Lanuginella pupa* (Pl. LIII. figs. 4, 5) which were found isolated, I was of the opinion that I had before me very young forms developed from the ovum. I inferred that chiefly from the fact that both the youngest, simply spherical specimen (2.3 mm. in diameter) (Pl. LIII. fig. 4), and a