

which persists in such adult spherical sponges as *Myriastr* *clavosa*, and in comparatively large but not fully grown specimens of *Geodia barretti*, that one can scarcely refrain from regarding them as comparable. That other observers have taken a different view is due to the remarkable structural similarity of the wall of the cloaca and the cortex; this similarity has been taken for identity, and the cloaca consequently regarded as of secondary origin produced by an invagination of the cortex. The similarity does not however amount to identity, and another explanation is possible; for if we refer to the young examples of *Stelletta phrissens* just mentioned we shall see how by a very natural process a cloacal wall similar to that of a cortex will arise by modification of the roots of the choanosomal folds, for these like the rest of the primitive folds will with the growth of the sponge suffer a metamorphosis, by which the flagellated chambers will disappear from them, and the mesoderm, increasing in volume, become converted partly into collenchyma and partly into fibrous tissue. Vela which appear generally throughout the excurrent canals will also arise about their terminations in the undivided remains of the paragastric cavity, which thus will become surrounded by a distinct wall, the complexity of which may be increased by the addition of a second series of vela behind those first formed (Pl. XII. figs. 23, 40); in this way a structure remarkably like that of a cortex will result. The cloaca in this case will represent the remains of the original paragastric cavity, and thus the subsequent formation of meridional excurrent canals, as in *Siphonia*, by an outgrowth from the cloaca becomes intelligible.

In fully grown specimens of *Geodia barretti* what appear to be the oscules of the sponge form a group over a scarcely depressed area, which is surrounded by a very distinct raised marginal ring; the appearance is such as to naturally lead to the suggestion, which has been made, that we have here a case of commencing invagination of the cortex, the marginal ring representing the future margin of the commencing cloaca; the history of the sponge shows, however, that so far from this being the case the exact opposite is true, the marginal ring is directly descended from the margin of the oscule of a previous stage and the apparent oscules are the openings of excurrent canals which originally discharged into a tubular cloaca; so far from being a cloaca in process of formation this structure is a disappearing cloaca,—a cloaca which by lateral expansion has become converted into a shallow depression.

In conclusion, it would appear that in most cases the oscules of such sponges as possess only one of these openings are directly descended from that of the Rhagon, as the cloaca is the direct descendant of the original paragastric cavity. As instances I may cite the following:—*Tetilla sandalina* (Pl. I.), all the species of *Thenea* and of *Myriastr*, *Theonella swinhoei* (Pl. XXIX.), *Siphonia*, and *Neosiphonia superstes* (Pl. XXXI. fig. 7). In the case of sponges like *Jerea*, which differs from *Siphonia* in not possessing a cloaca, we must suppose that the original cloaca has disappeared, or is only represented by the