

Canal-System in Placina.—The simplest type of folding producing the simplest type of canal-system is that already described by Schulze as occurring in *Oscarella lobularis*, O. Schmidt, and *Placina monolopha*, F. E. S. The term folding as used here and by Schulze is not altogether free from objections, and in many cases the process might be better described as evagination or invagination; thus the folds of *Placina* may be described as vertical tubular outgrowths or evaginations of the spongophore; such evaginations remind one of the radial tubes of the Sycones, which Haeckel regards as produced by gemmation; fundamentally evagination and gemmation are much the same thing, and the question is chiefly one of terms.

Canal-System in Sponges with plate-like Walls.—In no other known Tetractinellid sponge is such a simple canal-system as the preceding met with; the nearest approach to it—*longo intervallo*—is made by *Epallax callocyathus*, a vasiform sponge with a lamellar wall. As in most other plate-like sponges, the oscules are distributed in a fairly regular manner on the concave side of the plate, the pores in sieves on the convex or outer side; a transverse section reveals two, apparently ectosomal, layers, one forming the oscular and the other the poriferous face of the sponge; between these two layers is a regularly folded sponge plate (Pl. X. figs. 10, 11); its folds, however, have not the simple structure of *Placina*, but are themselves folded, the flagellated chambers opening into the sinuses of the secondary folds; further, they are only apparently folds, tangential sections showing in this case, as in *Placina*, that the apparent folds are really tubular evaginations with a circular lumen. Simple as this structure undoubtedly is, yet in the absence of embryological evidence it is by no means an easy task to derive it from the original Rhagon. Our first step will be to determine the homology of the two superficial layers; that forming the poriferous face is evidently ectosomal, that forming the oscular face probably not. What is the nature of the epithelium of the oscular face? Is it ectodermal or endodermal? If endodermal, then the cavity of the vase forming the sponge must be paragastral. The vase-like form however is not essential, and in other plate-like sponges seldom exists except as a secondarily acquired character; if then we seek to explain the more general case of a flat plate-like sponge on the assumption that the epithelium of the oscular face is endodermal, we shall have to imagine that it originated from the Rhagon by an opening out of the latter, the oscule of the Rhagon expanding till its margin became the margin of the plate, and its paragastral surface flattening till it became the oscular face; this is a possible explanation, and, adopting it in an article on Sponges published elsewhere,¹ I have called the superficial layer of the oscular face an endosome. Another explanation, however, may be advanced. Let us regard the epithelium as ectodermal, the superficial layer of the oscular face will then consist of an outer ectodermal, an inner endodermal, and a middle mesodermal layer, in other words it is not an endosome but a hypophore. We may thus compare

¹ *Encyclopedia Britannica*, 9th ed., art. Sponges, p. 415.