

equatorially situated canals the currents setting equatorially are strengthened, and thus the sponge as a whole is benefited, since water lying on the surface of the sea-floor is skimmed off over a greater area than would otherwise be the case.

Canal-Systems possessing Radiate Symmetry.—In some few sponges the larger canal-folds are formed on a symmetrical plan, which is constant for the species. Thus in the youngest known examples of *Disyringa dissimilis*, we meet with four symmetrically arranged longitudinal excurrent canals, and four incurrent canals regularly alternating with them (p. 170, Pl. XLI. fig. 4). This points to a folding of the choanosome in the manner shown in the diagram (Fig. VIII. 1). Subsequent to the folding we may suppose that the sinuses of the folds became converted into canals by concrecence at their roots (Fig. VIII. 2).

It would appear as though the folding in this case were brought about by four invaginations of the ectoderm, commencing in one situated at the antoscular pole, whence they proceeded, burrowing beneath the ectosome, in a meridional direction to-

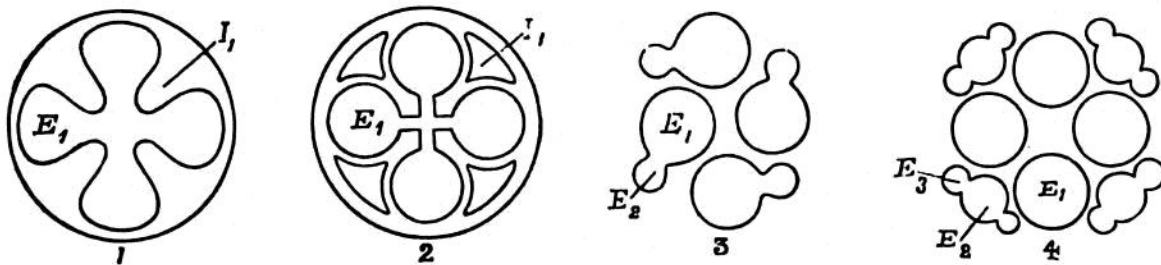


FIG. VIII. Diagram in explanation of the origin of the symmetrically arranged canals in *Disyringa dissimilis*. 1. Primitive folding of the choanosome, produced by the invagination of four incurrent canals (I), and leading to the formation of four primitive excurrent sinuses (E). 2. Stage in which the sinuses have been converted into canals (E₁) (1 and 2 are imaginary sections taken through the body of the sponge). 3. Stage in which secondary excurrent canals (E₂) occur as outgrowths of the primary. 4. Stage in which tertiary excurrent canals (E₃) are budded off from the secondary (3 and 4 are imaginary sections taken across the cloacal tube).

wards the oscule. With increased growth additional excurrent canals appear, and these are symmetrically arranged with respect to the four primitive canals, lying in the cloacal tube in the angles between them; how they are directed in the body of the sponge we do not know, since of this stage only the cloacal tube is known. In *Siphonia* we have already had reason to suppose that additional excurrent canals arise by a kind of budding from the endoderm of the cloaca, and the origin of the additional canals in the sponge under consideration may be similarly explained (Fig. VIII. 3).

Finally, eight additional excurrent canals appear, and these may be explained as paired outgrowths of the secondary ones (Fig. VIII. 4).

The symmetrical arrangement of the canals in *Disyringa*, or rather in the closely related sponge, *Agiardiella schultzei*, has been adduced by Marshall in support of the hypothesis that the sponges are degraded Coelentera. These sponges are, however, somewhat highly specialised members of the Stellettidæ, a family by no means primitive itself and one which in no other instance displays any tendency towards special