

symmetry. Since this is the case we may, with great probability, regard the symmetry in these exceptional cases as of secondary origin, as it is indeed in the Cœlentera themselves.

Symmetrically arranged canals occur, however, in simpler sponges than the Stellettidæ; in the genus *Tetilla* two instances are known of it—in *Tetilla radiata*, Selenka, and *Tetilla japonica*, Lampe; but the symmetry is not constant within the genus nor in *Tetilla radiata* even within the species; thus Selenka states that, although eight canals are usually present in this sponge, yet that seven and nine also occur; in *Tetilla japonica* there are, according to Lampe, six symmetrically arranged chief canals, but no statement is made as to the number of specimens in which this obtains.

A remarkable parallelism exists between the radiate symmetry of the sponges and the Cœlentera; a symmetrically folded *Tetilla* bearing very much the same relations to an Ascon or a Rhagon as an Actinozoon to a Hydrozoon. The ultimate cause of folding in both is probably to be found in a relatively more rapid growth of the best-fed layer: the endoderm primitively in both, in special cases, at all events among the sponges, the ectoderm also; the symmetry of the folding probably depends on mechanical conditions at present obscure, but possibly related to a symmetrical distribution of lines of weakness dependent on the form of the organism.

THE OSCULE.

The Paragastrula, as first shown by Metschnikoff¹ and Carter,² attaches itself by the oral pole and the primitive mouth or blastopore then becomes obliterated. Subsequently the oscule appears at the aboral extremity of the Rhagon as a secondary opening.

The relations of the primitive oscule of the Rhagon to that of the adult sponge are at present involved in obscurity, as also is the mode of formation of additional oscules in those sponges that possess more than one. The latter subject has indeed not even been alluded to, probably on account of the difficulties with which it is surrounded; the homology of the oscule has received much more attention, most recent writers treating of it, though generally rather by implication than as a matter for separate investigation. The most usual view appears to be that the persistent oscule is seldom directly descended from that of the Rhagon, at all events not in those cases where it forms the mouth of a cloaca. The evidence on which this view is founded appears to me to be very insufficient.

In very young spherical sponges of the species *Stelletta phrissens* (see woodcut, Fig. VI. p. xxiii), the folding of the choanosomal plate gives rise to several excurrent canals which open into the remains of the paragaster, and this communicates with the exterior through the original oscule. This arrangement is so similar to that

¹ Metschnikoff, *Zeitschr. f. wiss. Zool.*, Bd. xxiv. p. 2, pl. i., 1874.

² Carter, *Ann. and Mag. Nat. Hist.*, ser. 4, vol. xiv. p. 14, pl. xxii. fig. 28 (sep. copy), 1874.