

the primitive paragastral canal, and subsequently from the margins of the apertures of the derivative canals.

*Canal-System of the Siphonia type.*—This remarkable type of canal-system is met with in such widely differing sponges as the fossil Lithistid *Siphonia*,<sup>1</sup> which is represented in the Challenger collection by the recent species *Eusiphonia superstes*; a Monaxonid sponge, *Petrosia* (*Siphonia*) *typa*, Blainville,<sup>2</sup> which from the remarkable resemblance of its canal-system to that of *Siphonia* was mistakenly identified by Blainville with that sponge, and in *Taxoploca* (*Emploca*) *ovata*<sup>3</sup> a fossil Hexactinellid sponge. In these and similar sponges the form is more or less ovate or cylindrical, and the main excurrent canals radiate from an axial cloaca, which opens in an apical oscule; those that proceed from the base of the cloaca continue its direction downwards, those from the sides extend outwards and downwards in curves which become more parallel to the surface the nearer they approach it; these longitudinal curved canals have all originated at the surface of the sponge, and those now lying deep within it serve to indicate its lines of growth; since they have originated along meridians of the surface of the sponge these canals may be termed “meridional.” They are of the same nature as those discussed in the last paragraph, *i.e.*, paragastral; whether they are formed as an evagination of a sponge-plate or simply of the endoderm, is not certain, but that they are either one or the other follows from the following considerations,—in the first place if the skeleton of a fossil *Siphonia*, or of a recent *Neosiphonia*, be examined it will be found that the most superficial canals are incomplete on the outer side, forming mere grooves which extend from the margin of the oscule over the adjacent surface, those lying a little deeper are converted into complete canals adjacent to the oscule, into which they open by completely circumscribed apertures, but come to the surface further away from it as grooves, and so terminate; from these observations it follows that the meridional canals originate near the margin of the oscule and subsequently extend towards the antoscular pole. If next a spirit specimen of a Lithistid presenting this type of canal-system be examined, it will be found that the most superficial excurrent canals proceed from the oscule as subdermal cavities, bounded below by choanosome and externally by ectosome, and are unprovided with corresponding incurrent sinuses; it is difficult to explain them as foldings, and in all probability they are outgrowths of the endoderm. That the deeper-lying canals were originally superficial is shown by breaking up a specimen of a recent *Neosiphonia* or *Petrosia*, when it will be found that successive concentric layers can be peeled from these sponges, each layer as it is removed exposing a previously existing surface; the meridional excurrent canals are exposed at the same time, and they are always found to lie conformably with the surface on which they appear.

<sup>1</sup> Sollas, *Quart. Journ. Geol. Soc.*, vol. xxxiii. p. 805, pl. xxv., 1877.

<sup>2</sup> Sollas, *tom. cit.*, p. 795.

<sup>3</sup> Sollas, *op. cit.*, vol. xxxix. p. 541; as I find that the name *Emploca* was preoccupied at the time I adopted it, I take this opportunity to substitute for it another—*Taxoploca*.