

as upon the histology of the Calcarea in general, having been already refuted by the investigations of F. E. Schulze,¹ Metschnikoff,² and Vosmaer.³ Everybody feels now convinced that all the Calcarea, like other sponges, possess an ectoderm, mesoderm, and endoderm, and that what Hæckel calls "exoderm" is ectoderm and mesoderm together. I would only call attention to one histological peculiarity stated by Hæckel to be present in some Ascones, viz., to the presence in certain varieties of *Ascetta primordialis*, *Ascetta clathrus*, *Ascaltis canariensis*, and *Ascaltis lamarckii*, of several layers of endodermic cells.⁴ Some more precise statements on this point are very desirable.

There remains a good deal more to be said about the organisation of Sycones and Leucones, particularly of the latter. The pages of the Monograph dedicated to the canal system of the Leucones (Bd. i. pp. 224-237) are among the weakest portions of the whole work. Prof. Hæckel did not succeed in making out the real features of their organisation. This, however, might have been expected. A true and clear exposition of the anatomical structure of the sponge, in its chief modifications, being the merit of Prof. F. E. Schulze exclusively, is an acquisition of the last ten years. Everyone is a son of his time, and now, though we find many of Prof. Hæckel's conceptions to be erroneous, we must not forget that, compared with the very imperfect ideas of Bowerbank, O. Schmidt, and others upon the same subject, they represented in their time a considerable advance, and rendered subsequent investigations possible. There were, besides, some other causes whose retarding influence must be noticed. I speak of Prof. Hæckel's phylogenetic hypothesis with respect to the derivation of Sycones and Leucones from Ascones: the Sycones by means of strobiloid gemmation, the Leucones by means of the thickening of walls and the ramification of the canals.⁵

I turn firstly to the Sycones. Having adopted the idea that every radial tube of a Sycon represents an Ascon, Hæckel naturally sought after a homologue to the osculum; he believes it to be found in the large "dermal ostium" on the tubes of *Sycetta primitiva*, *Sycaltis perforata*, and some other species of Sycones⁶ and lays stress upon their morphological significance, ascribing to them also an important physiological function. According to him, these conjectural "dermal ostia" are in some cases the only openings through which water runs into the interior of the radial tubes. Such was the way in which Hæckel was led to his statement as to the existence of "intercanalless Sycones," under which category he described the following forms:—*Sycetta stauridia*, *Sycilla cyathiscus*, *Sycilla cylindrus*, *Sycilla urna*, *Sycilla chrysalis*, *Sycyssa huxleyi*, *Sycaltis glacialis*, *Sycaltis testipara*, *Sycaltis ovipara*, *Sycaltis perforata*, *Sycortis lævigata*, *Syculmis synapta*,

¹ Ueber d. Bau u. d. Entwickel. v. *Sycandra raphanus*, *Zeitschr. f. wiss. Zool.*, Bd. xxv. Suppl. p. 247, 1875; *Die Metamorph. v. Sycandra raphanus*, *ibid.*, Bd. xxxi. p. 290, 1878.

² Spongiologische Studien, *ibid.*, Bd. xxxii. p. 349, 1879.

³ Ueber *Leucandra aspera*, &c., *Tijdschr. d. Ned. Dierk. Vereen.*, DL v. p. 144, 1881.

⁴ *Kalkschwämme*, Bd. i. p. 144.

⁵ *Loc. cit.*, p. 340.

⁶ *Loc. cit.*, p. 260.