

made out, usually as a thin membrane dotted with nuclei; but sometimes, though very exceptionally, and then only on the surface of the water canals, it is possible to make out the outlines of its constituent polygonal cells (Pl. XXX. figs. 15, 16).

Ectosome.—The ectosome, about 0·725 mm. in thickness, consists of a collenchyma, the matrix of which takes a well-marked stain with hæmatoxylin, it contains numerous fusiform cells which, near the outer epithelium, are arranged tangentially, forming a thin layer two to four cells deep. In Pl. XXX. fig. 6, these cells are represented in the neighbourhood of a pore. The pores, from 0·011 to 0·032 mm. in diameter, lie in pore-sieves and open each into a small dome-like cavity, and these again into a larger dome, which forms the outer end of a cylindrical canal, freely open below into the subdermal cavity (Pl. XXX. fig. 5). This arrangement recalls that described in the Stellettid genus *Myriastræ* (p. 114), and in *Anthastræ*, e.g., *Anthastræ communis* (Pl. XII. fig. 24).

Choanosome.—The mesoderm is mainly a sarcenchyma, but it includes other forms of tissue; thus the lining of the chief canals and their main branches consists of a thick layer of cavernous collenchyma (Pl. XXX. figs. 9–11). The desmas of the sponge, with their associated sarcenchyma, cease at a fairly uniform distance around the canal, thus bounding a tubular space devoid of megascleres; the cavity of the canal occupies the central one-third or one-half of this tube, and is limited by an epithelial layer. Between the epithelium and the skeleton there is thus an annular space, and this is occupied by the collenchyma, the cavities of which are elongated radially to the axis of the canal (Pl. XXX. fig. 10). The partitions between the cavities are mere films of collenchyma traversed by a network of collencytes, most of which are elongated radially; fusiform cells directed radially are also present. The presence of some such tissue I had assumed to exist before I had seen a specimen of a Lithistid with the flesh on, in explanation of certain peculiarities observed in fossil Lithistids. Although not of anatomical significance, these peculiarities, from their problematical character, had excited some interest, and I venture, therefore, to quote here my previously given account of them.¹

“The smaller canals of the sponge [*Emploca ovata*, Soll.], both incurrent and excurrent, are generally traversed axially by a thin thread of calcite, the rest of the canal being filled up with consolidated calcareous mud. [Quenstedt describes similar threads in the superficial canals, now exposed as shallow grooves in *Siphonia radiata*, vide Petre-fact. Deutschlands, part i. Bd. v. p. 251, pl. cxxvi. figs. 60z.] In describing the *Siphonia* of the Blackdown greensand, I mentioned a similar thread (Quart. Journ. Geol. Soc., vol. xxxiii. p. 814), but in that case consisting of silica, and separated by an empty space from the adjoining skeleton. It was conjectured that this thread had been produced from colloidal silica, which originally filled the whole of the canal from side to side, but subsequently on undergoing silicification shrank to its present dimensions. Since, however, in other sponges we now find precisely similar threads, but consisting of

¹ *Quart. Journ. Geol. Soc.*, vol. xxxix. p. 543, 1883.