

of a distinction into primary fibres, taking their origin from the upper end of the stem in order to assume a radial direction, as can be seen on pl. xiii. of Esper's *Pflanzen-thiere*, ii., and into secondary fibres uniting the primary ones with one another both perpendicularly and parallel to the surfaces of the sponge. Both the surfaces are uneven, and this is due to the circumstance that the secondary fibres, which are nothing but lateral branches of the primary ones, interlacing amongst themselves, form prominent irregular networks. The last-named are most fully developed near the upper end of the stem, growing gradually lower towards the edge of the leaf-like part of the animal. The external surface of this stem is comparatively smooth; its skeleton admits of no distinction into primary and secondary fibres, the whole presenting a very compact and solid network, with meshes of smaller diameter than those of the leaf-like extension (Pl. II. fig. 3). The fibres themselves, as is well known, are heterogeneous and, on the whole, to be classed as thick walled. The microscopical structure of the central pith-substance does not differ from that of *Aplysina*, as described by F. E. Schulze¹ in the case of *Aplysina aërophoba*, nor do the walls surrounding this central differentiation, and presenting, as is always the case, many layers of concentrically disposed horny laminæ, with the sole distinction that between these latter true cells are to be found in abundance. As to the histological properties of these interlaminar elements, I refer the reader to Dr. Flemming's² paper on *Ianthella*, for I can confirm all his statements except as to the ends of the fibres being, as he suggests, devoid of cells. For my own part, I could always discern them even on the youngest fibres, viz., on the fibres with only a very thin horny envelope, and am able to state that they are absent only at the ends of developing fibres, represented by pith-substance surrounded immediately by spongoblasts. That the cells enclosed in the walls are nothing but transformed spongoblasts is beyond doubt, but of course this will be actually proved only when direct observations on the actual process of development of the fibres in question have been made. For myself, amongst the elongated spongoblasts, as I have drawn them on Pl. II. fig. 5, I have very often seen cells of a more massive and also compressed form, and I believe these to be intermediate stages between the typical spongoblasts and the interlaminar cells. But I have not figured them, because their deviating appearance may yet be ascribed to the influence of the preserving fluid. Around the "mantle of spongoblasts" of young fibres I always found aggregations of mesodermic cells, though by no means always disposed parallel to the developing fibre as drawn and described by v. Lendenfeld³ in his *Dendrilla rosea* and *Dendrilla aërophoba*. Around old fibres I have missed them completely. According to Flemming, the colour of the fibres of *Ianthella basta*, so far as the horny substance of their laminæ is concerned, is yellow, that of the enclosed cells deep violet. I have found in most cases the colour of the laminæ also to be violet. I am, however, inclined to ascribe this merely to the

¹ *Zeitschr. f. wiss. Zool.*, Bd. xxx. p. 401, pl. xxii. fig. 11.

² *Würzburg Verhandl.*, N. F., Bd. ii.

³ *Zeitschr. f. wiss. Zool.*, Bd. xxxviii. p. 286; pl. xiii. figs. 25, 28, 29.