

The ectosome appears in these as a continuous outer investment, not in the least folded, but as even in its curvature as the shell of an egg. The choanosome on the contrary is folded within it in a complex manner, so that the excurrent and incurrent canals, or rather cavities, are already produced in various orders of size, the smallest in communication with the flagellated chambers. The collenchymatous mesoderm is very poorly developed either in choanosome or ectosome; it is thickest where the folds of the former, bulging outwards, become continuous with the latter, producing the earliest formed pillars of the subdermal cavities, which are represented at this stage by the incurrent cavities or sinuses left between the ectosome and the choanosome by the folding inwards of the latter. These cavities also represent the rudiments of the incurrent canals, so that we can hardly yet speak of the subdermal cavities as differentiated from the incurrent canals. The folding of the choanosome evidently takes place in complete independence of the ectosome, and for its accomplishment we must either suppose a rapid ingrowth of epithelium from the pores of the latter following the retreating folds of the former, or we must suppose a genuine cleavage to occur between the two layers, and at present we have no evidence to decide this point. Appearances are in favour of cleavage, which, judging from general embryological data, we might regard as a substitute for the invagination which we know to occur in other forms of sponges.

Spicules are already present in the young sponge, anatriænes were not seen, but otherwise all the spicules characteristic of the adult were observed; of course they are very diminutive.

The species of *Thenea* are so liable to variation that it is often difficult to find good characters for them, or to feel sure in all cases whether one is dealing with a species or a variety. I rank *Thenea schmidtii* as a species because the characters which distinguish it are constant throughout a series of specimens, which in other respects, such as external form, are very variable, and which were obtained from several different localities. The same is true of the other North Atlantic species, *Thenea muricata*, but it will possibly require the examination of many more specimens than have come under my observation before the distinction of *Thenea schmidtii* and *Thenea muricata* can be regarded as fully established.

The following is a summary of the characters in which they differ:—

1. *Plesiaster*.—This spicule is larger and much more abundant in *Thenea schmidtii* than in *Thenea muricata*. In the latter its numbers sink into insignificance beside those of the spirasters, in the former it is as numerous as those spicules or more so, and plays quite as important a part in the skeleton of the sponge as the tetrad spicules do in *Dercitus* and its allies. This relative abundance characterises specimens of very different size and external form.

2. *Mesoderm*.—This is richly developed in *Thenea muricata* (Pl. VII. fig. 3), forming a thick wall about all the canals, and converting them by its velar extensions into