In the simplest sponges with an aphodal chamber-system, such as *Myriastra* (Pl. XII. figs. 24–27) among the Stellettidæ, the ectosome does not markedly differ from that already described, but in genera only slightly removed from this, such as *Pilochrota*, it exhibits in different species a surprising diversity of structural detail. The first advance appears to consist in a growth of the mesoderm, leading to a thickening of the pillars of the subdermal cavities, and to the extension inwards of processes from the dermal membrane. In this way the greater part of the subdermal cavity may become obliterated, special interspaces or canals being left, through which the pores communicate with the incurrent canals. The growth of the mesoderm is accompanied by structural differentiation; additional fusiform cells make their appearance, especially in the lower layer of the ectosome, *i.e.*, that next the choanosome, and these increase in number till they form dense fibrous bundles, which cross each other in all directions, chiefly parallel to the surface, and so produce a thick fibrous felt. The ectosome is thus differentiated into two regions or layers, an outer chiefly collenchymatous, and an inner chiefly fibrous. As in the dermal membrane of *Tetilla pedifera*, a thin layer of fusiform cells, probably myocytes, is present immediately beneath the outer epithelium of the surface of the sponge.

In this and further stages of development the ectosome is known as a cortex.

In some species of *Pilochrota* (*Pilochrota pachydermata*, *Pilochrota gigas*), the development of fusiform cells continues till the cortex becomes entirely fibrous throughout (Pl. XXXVIII. fig. 25). Striking as is the difference in general appearance of a wholly fibrous cortex and one in which the outer moiety consists chiefly of collenchyma, it is a character of no special significance, at all events in classification; thus in the Monaxon genus *Tethya*, closely allied, almost identical, species may present, the one a cortex consisting of an outer collenchymatous and inner fibrous layer (*Tethya seychellensis*, Pl. XLIV. fig. 4), and the other a cortex fibrous throughout (*Tethya ingalli*, Pl. XLIV. fig. 16). This difference in the cortex is not, however, without its effect on the character of the intercortical cavities; in the last named or entirely fibrous cortex these cavities are usually simple cylindrical tubes extending directly across the cortex from the pores or pore-sieves to the incurrent canals of the choanosome (Pl. XLIV. fig. 14); in cortices with an outer collenchymatous layer, on the other hand, the cavities remain simply tubular within the fibrous region only, but within the collenchyma extend laterally parallel to the surface, burrowing through it as branching canals (Pl. XL. fig. 8), or widely excavating it as continuous chambers (Pl. XL. fig. 3).

In sponges with a well-developed cortex, the intercortical canals are usually of a very definite character (Pl. XL. figs. 3, 8; Pl. XXI. figs. 9, 29), and at their inner end, where they communicate with or pass into the incurrent canals, they are usually provided with a muscular sphincter, which represents an over-developed velum. They have been called "chones," and distinguished into an outer part which extends from the