side of the elongated pore-areas, but are often obliquely placed and often branched. Judging from their relation to the surrounding parts we have little hesitation in pronouncing them to be muscular in function.

Immediately below the dermal membrane thus constituted, we find, except of course where the subdermal cavities are situate, the gelatinous tissue which makes up all the rest of the ectosome. This is very loose indeed, and appears to be composed of a framework of stellate cells, each with a very small round nucleus; amongst which are scattered numerous other cells of a very different kind. These (Pl. XLVIII. fig. 2*c*, *c*.) are large, averaging about 0·015 mm. in diameter, irregular in outline and usually granular, though not very distinctly so. They stain very deeply with borax-carmine and are especially abundant around the ends of the inhalent canals. It is very difficult to decide under which of the five heads above mentioned these elements should be classed, probably with the amœboid cells. Another important constituent in the ectosome of *Esperella murrayi* is furnished by very numerous, irregularly scattered trichodragmata (Pl. XLVIII. fig. 2*c*, *t*); it seems very probable that in this and similar cases the trichodragmata, like straw in mortar, serve to bind together the loose, gelatinous tissue in which they lie.

In *Esperella lapidiformis* we have found, embedded in the gelatinous ectosome, numerous very young ova, each consisting of a rounded, granular cell, commonly about 0·02 mm. in diameter, with a small, but very distinct, central nucleus; while in the deeper parts of the sponge (choanosome) there are numerous developing embryos as well as young ova.

When, instead of being gelatinous, the ectosome is firm and tough, and contains a large proportion of fibrous tissue, we have a true cortex, such as may be studied to the best advantage in the Suberitidæ. Although the general direction of the fibres is usually more or less parallel with the surface, we commonly find also bands of fibrous tissue irregularly surrounding the subdermal cavities, as, for example, in *Stylocordyla stipitata*, var. *globosa* (Pl. L. fig. 1*a*, *f.t.*), and *Suberites perfectus* (Pl. L. fig. 2, *f.t.*). In *Suberites perfectus* also, as we have already noted, the fibrous tissue dips into the choanosome and ensheaths the skeleton-fibres.

In *Tentorium semisuberites* (Pl. L. figs. 3, 3*a*) the ectosome on the upper surface of the sponge is more than usually fibrous and is divisible into three distinct layers. There is (1) an *external* layer (Pl. L. fig. 3*a*, *a*) about 0·05 mm. thick, wherein the fibres are mostly placed parallel with the surface; (2) a much thicker, but less dense, *intermediate* layer (Pl. L. fig. 3*a*, *b*), which is honeycombed by the very numerous, elongated subdermal cavities (*s.c.*), and in which the fibres are mainly placed vertically to the surface; and (3) a dense *internal* layer (Pl. L. fig. 3*a*, *c*.), rather thicker than the external layer and, like it, with the fibres mostly arranged parallel to the surface. We know that this species has a remarkable power of contraction, which chiefly affects the upper, pore-