

of a middle layer of myocytes, having collencytes associated with them, as in the oscular tube, and superficial layers of collenchyma containing similar cellular elements to those which occur below the epithelium of the oscular tube, excepting the subepithelial columnar and fusiform cells, which are here only to be observed rarely and as isolated examples. The muscle-fibres may be distinguished as main fibres and their branches, the former surrounding the larger oval or polygonal areas of the wall, the latter subdividing them into still smaller areas. In the centre of the smallest areas is a circular pore or short tube, which opens freely into the surrounding sinuses of the excurrent canals. Each pore is surrounded by concentrically arranged myocytes, which are crossed by fusiform cells running radiately (Pl. XXXIX. fig. 4). The outer ends of these cells unite with the epithelium, the constituent cells of which are very clearly indicated by the outward dome-like bulging over the nucleus, or they may apparently sometimes project beyond, though I could by no means be sure of this, in a fine short bristle-like process. From the nucleus to its outer extremity, or about half the length of the cell, is a distance of 0.04 mm., as seen in portions of the wall viewed *en face* mounted in glycerine. In transverse sections these cells are not often seen, as they are not numerous, from ten to twenty to each pore, when visible their inner ends can be traced into apparent continuity with adjacent collencytes. Trichodal protriænes in dense bundles lie within the walls of the chambers, running longitudinally and obliquely, so that their cladomes project into the cavity of the chamber, bristling around the pores (Pl. XXXIX. fig. 2).

*The Cortex* (Pl. III. fig. 10).—The thickness of the cortex in full-grown specimens varies from about 1.25 to 1.5 mm., the outer part (Pl. III. figs. 11, 12) from 0.2 to 0.4 mm., below the epithelium consists of collenchyma with fusiform cells and granule cells strewn through it; the rest is mainly composed of fusiform cells variously orientated in planes parallel to the surface. The sigmaspires occur chiefly just below the epithelium; the oxeas crowd the exterior half, so that between the main spicular fibres, the lower part, for a thickness of 0.6 mm., is devoid of spicules.

*The Choanosome* (Pl. III. fig. 13).—The mesoderm is a collenchyma, which is finely granular about the flagellated chambers, but of the usual character when it accompanies the spicular fibres. The flagellated chambers have an average diameter of about 0.0395 to 0.043 mm.

*The Young Sponge* (Pl. III. figs. 2, 3, 9).—In the smallest specimen of the collection (under 3 mm. in diameter), the cortex is from 0.08 to 0.16 mm. thick, and the oscular tubes and cloacal chambers are not yet completely differentiated. The latter are represented by a part of the cortex, which is thinner here than elsewhere (0.016 mm. thick), perforated by numerous pores, and curved inwards below the general level of the sponge. Thus in their inception the cloacal chambers are simply poriferous areas of the cortex. The pores open into sinuses (they can hardly be called canals), left by the folding of the choanosome. The oscular tube is represented simply by the margin of the general