

on the whole transverse, is exceedingly irregular in detail, as shown by the illustration (Pl. IX. fig. 26). The ectosome is not clearly defined from the choanosome; on the incurrent face, where it includes the subdermal cavities, it may attain a thickness of 0.64 mm., but this is often reduced to 0.24 mm. or less by the presence of flagellated chambers in the pillars, which unite the roof of the subdermal cavities with the floor. The collenchyme of the ectosome is continuous with that which forms the walls of the larger canals, and, of course, no line of demarcation between the ectosomal and choanosomal collenchyme exists.

The thick collenchymatous layer which lies beneath the epithelium of most of the large canals forms a large, perhaps the larger part, of the tissue of the sponge. Its distribution appears to be capricious; in the case of some of the larger canals it is almost absent. So far as I can make out, these canals are incurrent, but it is not as a rule absent from the incurrent canals; about many of them it exists as a thick wall.

The collencytes of the collenchyme are usually so disposed that the majority of their slender processes lie at right angles to the nearest epithelial surface; thus they are radiately arranged in the walls of the canals. Frequently one sees a more or less fusiform collencyte running at right angles to the epithelium, in which at one end it terminates, while the other end extends inwards and unites with a process of a stellate collencyte, which is in continuity also with other similarly situated fusiform collencytes, and with more deeply seated stellate or other forms. Eventually the collencytes are brought into continuity with the choanocytes (Pl. IX. figs. 25, 27), and thus the epithelium of the canal walls as well as of the exterior is in protoplasmic continuity with the choanocytes of flagellated chambers.

In addition to collencytes, the collenchyme contains two other kinds of cells; the one (Pl. IX. fig. 29) very numerous, deeply stained, more or less oval in outline, and about 0.025 mm. in diameter, consists of minute spherical bodies, about 0.004 mm. in diameter, having in optical section the appearance of double contoured rings surrounding a clear central space. These cells, abundantly scattered through the collenchyme, and particularly abundant on the margins of the regions occupied by flagellated chambers, are perhaps the most conspicuous elements in the sponge. They are not modified collencytes, but may possibly be symbiotic Algæ, or perhaps pigment cells.

The other kind (Pl. IX. fig. 25) is far from uncommon, though less abundant than the preceding; it is chiefly found in the neighbourhood of the flagellated chambers, frequently occupying a distinct cavity in the collenchyme lined by epithelium; in some cases this cavity appears to be that of a canal. These cells are oval or irregular masses of protoplasm, coarsely granular and darkly stained, about 0.03 mm. in diameter, produced at the periphery into long, thick, branching, pseudopodia-like processes, which burrow between the flagellated chambers, amidst which we lose sight of them. Within the cell is situated a large, oval, clear vesicle or nucleus, about 0.012 mm. in diameter,