

cortex approach and unite, forming a single thin layer, which is continued forwards along with the investing epithelium on to the cloacal tube, furnishing the tissue of the skeletal wall. From the lower fibrous layer of the cortex a thin layer of tissue is continued inwards over the base of the tube and another over the adjacent choanosome of the sponge-body, thus furnishing the walls of the lacunar spaces. These layers of tissue are more collenchymatous in character than that from which they are derived. The interior of the base of the cloacal tube is occupied by a mass of collenchyma channelled by numerous excurrent canals.

*Development of the Skeleton.*—It has already been stated that the cladomes of the orthodiænes become more and more closely crowded together as they are traced towards the base of the cloacal tube. This approximation is continued as the tube enters the sponge, and is accompanied by a decrease in size, till only very small and early forms are reached. These small spicules lie within the collenchyma of the base of the tube arranged in vertical radial planes, one behind the other, the youngest situated most externally, and successively older forms occurring towards the interior. This is well shown in transverse sections made at the proper level through the sponge (Pl. XVII. fig. 14). The spicules cross the wall of the tube from within outwards obliquely, the cladomes cropping out at its surface one above another, the lowest lying being the youngest. Looked at from the outside the cladomes and cladal ends of the rhabdomes form a structure over the base of the tube like finely woven basket-work (Pl. XVII. fig. 11). Evidently these spicular series are modified radial fibres, adapted to the sides of the cloacal tubes.

The chief interest in these spicules is centred in their mode of development. Weltner has enquired whether they are to be regarded as primitive forms or reduced triænes, and the following observations furnish a conclusive answer to that question. The earliest form of spicule, as shown both by its characters and position, is a minute oxea, 0·071 mm. long by less than 0·002 mm. in width; the distal end appears to be less sharply pointed than the other. In the next stage observed we meet with an oxytylote, already developing minute cladi; the rhabdome, finely pointed at the oxeate end, measures 0·142 by 0·002 mm.; at the tylote end it is thickened into a small bulb 0·004 mm. long by 0·003 mm. in width, from which at the border of the summit minute conical spines extend outwards and forwards. The number of spines could not be ascertained, owing to the position of the spicule. In the next stage, one more frequently observed, the rhabdome has attained a length of 0·275 mm. by 0·0025 mm. in diameter. It tapers to a finely pointed oxeate end, beyond which the axial fibre protrudes, bare of its siliceous investment, apparently into the surrounding collenchyma, but in reality more probably into the scleroblast. The tylote thickening is about 0·004 mm. in diameter, and three small cladi, two of which are about 0·0118 mm. in length, project from it. A spicule in this stage is represented in the figure (Pl. XVII. fig. 12). A stage later and the tylus