

they pour their secretion. Here large and conspicuous spherical bodies (nuclei?) which very readily become stained are found, surrounded by the secretion of the gland-tubes (Pl. LXX. fig. 23, c).

It appears from this that these structures are very similar to those described above from the proximal sac of the regular, vertical, composite organs without reflector.

The structure of the substance which occupies the distal portion of the organ or the cup, is very different and complicated.

The bloodvessels and nerves which pass through the spicule-layer extend perpendicularly to the surface. They are straight and sometimes supported by a slender cartilaginous rod, and end just below the outer surface (Pl. LXXII. fig. 44). Leydig¹ and Emery² describe and figure these vessels as irregularly curved and branched, but in all the specimens examined by me they were quite straight. From these vertical columns slender cells radiate, which are about half as long as the vertical bloodvessels are apart. They extend tangentially from their lower portion and radiate from the upper end in every direction, and since they are closely packed they surround the vertical vessels on all sides. In this way cylindrical or prismatic structures, rounded at their distal ends, are produced, which measure about 0.2 mm. in diameter and are 0.8 mm. high. These cylinders do not occupy the whole of the space, and do not touch each other, but appear to be separated by a substance which forms narrow partitions between the cylinders and which covers their rounded distal ends. This substance is granular and contains round nuclei which stain very readily. Outside there are one or more layers of very flat epithelial cells covering the whole organ.

The elements which compose the cylinders are of particular interest (Pl. LXXII. figs. 43, 44). There are two kinds of cells in the radiating mass which surrounds the vertical pillars, the greater number being faintly visible and indifferently spindle-shaped or cylindrical (Pl. LXXII. fig. 43, a). Other very peculiar club-shaped elements are found between them (Pl. LXXII. fig. 43, b), these widen towards the distal end and taper proximally to form a very long and comparatively slender peduncle which is about one-fourth as thick as the club-shaped end. In the latter an oval highly refracting body (Pl. LXXII. fig. 43, c) is situated, which apparently consists of a cavity, with a very fine wall, containing fluid. This vesicle occupies the greater part of the club-shaped end of the cell and is surrounded by a thin film of protoplasm only. Just below it the oval nucleus is situated. The protoplasm of these cells as well as the nucleus stains very readily.

The appearance of thin sections renders it probable that the proximal peduncles of these cells are in direct connection with the nerves, which extend upwards in the central pillars of the cylinders.

¹ F. Leydig, *Die augenähnlichen Organe der Fische*, pl. x. fig. 60.

² E. Emery, *Mittheil. aus d. zool. Station zu Neapel*, Bd. v.