

The composite ocellar organ with reflector consists of three distinct layers; an outer layer of pigment, an inner coating of light-reflecting threads or spicules, and a transparent soft mass in the interior.

The pigment layer encloses the proximal portion and also extends distally with undiminished thickness to the margin of the cup (compare Pl. LXX. figs. 17-24; and Pl. LXXII. fig. 44). It consists of dark brown or black pigment-granules closely packed in the connective tissue.

The reflecting layer, which is perforated and traversed by bloodvessels and nerves leading into the interior of the organ, is very thick and hard. In some cases pigment-granules are found in the course of the bloodvessels and nerves in the perforations through this layer. Such are figured by Emery,¹ and have also been found by me in some cases, and Leydig² records them in the case of *Scopelus*.

The light-reflecting layer is composed of calcareous spicules which vary exceedingly in size. They are generally very thin, and may be very long and filiform, or shorter, only about fifteen times as long as thick and abruptly pointed at each end, as in *Argyropelecus*. They are closely packed, generally parallel, and are disposed longitudinally, extending from the base of the cup to the margin in meridional lines. The spicules are not round, cylindrical, but prismatic, with plane surfaces and accurately apposed to one another, there being hardly room for any substance between them. This intervening substance forming the thin sheaths of the spicules appears as connective tissue. The optical effect of this structure is very remarkable, its lustre being very brilliant in consequence of the flatness of the surfaces of the spicules.

The structure which occupies the interior of these organs, however, demands our special attention. In the proximal sacs of the complex and the solitary organs, and also in the large ventral canal of *Sternoptyx*, a glandular structure is met with. This consists of tubes which extend more or less longitudinally throughout the ventral canal of *Sternoptyx* (Pl. LXX. fig. 20), and which appear radially situated in the other cases mentioned above. In these (Pl. LXX. fig. 23) the gland-tubes are conical, attached to the wall of the sac by their broad base, and opening at the narrow end which lies just below the mouth of the sac.

These tubes are formed of a fine membrane into which bloodvessels and nerves extend, and are lined by a single layer of highly granular gland-cells, which appear about as broad as high. The lumen is generally occupied by a granular substance which may be stained very readily, and which appears to be mucus, precipitated by the action of spirit. The gland-tubes in the ventral canal of *Sternoptyx* seem to open below the bases of the cups in the corresponding position. These gland-tubes do not occupy the whole of the sac, there being an empty space just below the mouth of the sac into which

¹ E. Emery, *Mittheil. aus d. zool. Station zu Neapel*, Bd. v.

² F. Leydig, *Die augenähnlichen Organe der Fische*, pl. x. fig. 60.