

organ itself, and is only lower and flatter in proportion. This space is not altogether "empty" as the expression "empty space" might imply, for it appears filled by a finely granular mass, evidently the secretion of the tubes containing the granular cells; it is, however, destitute of cells. Above this space, very narrow, slender and long cells are situated which are perpendicular to the outer convex surface of the organ, and extend between it and the central cavity, above referred to. These cells are spindle-shaped, tapering to fine points at each end, and have elongated, oval nuclei, and in consequence of their shape and position give to this part of the organ a radially striped appearance. Just below the outer surface there is a granular zone about 0.01 mm. wide, with spherical nuclei, but in this zone the radial structure is rather obscured by the granules. The whole structure is exceedingly transparent and possesses—in spirit—that peculiar white colour which is so characteristic of all these organs.

c. *Innervation.*

The medullary nerves found in the walls of the pyramidal tubes originate from fibres which extend along the lower surface of the organ; the latter form a kind of plexus in that locality, which is connected with nerves belonging to the system of the spinal nerves. The plexus and the branches which connect it with the spinal system are modified dermal nerves.

d. *Function.*

From these facts we may conclude that these organs are composed of a gland, consisting of closely packed and therefore flattened and polygonal tubes, on the lower side, and a special phosphorescent apparatus above, which produces light at the volition of the fish by using up or burning the secretion supplied by the gland and stored in the space below. This phosphorescent apparatus is innervated from above, where a layer of ganglion cells—the granular layer with the spherical nuclei—is found.

The state of preservation of these organs is not sufficiently good to allow of a more detailed description, but the whole structure is so similar to that of some other organs to be described, which I was able to study by means of excellent material, that I consider myself justified in referring for further details to the descriptions of the phosphorescent apparatus in the suborbital organs of *Opostomias micripnus*, and the composite ocellar organs in *Scopelus benoiti*.

At the first glance these organs, scattered in dense crowds over the fish, remind one of the chromatophores of Cephalopods, and they are in all probability defensive arrangements to frighten away fish of prey, which may attack them from above. Probably the fish, by simultaneously exciting certain groups of these organs, is able to emit light from these areas. As the organs in different regions of the surface are successively incited to