

## I. HISTORICAL INTRODUCTION.

Before entering into the results of this research it may be advantageous to bring to the recollection of the reader the investigations on this subject published by other authors. In doing so I shall strictly confine myself to the papers on the Histology of these organs.

The first who paid special attention to the histology of these organs was R. Leuckart,<sup>1</sup> who called them "accessorische Augen."

Afterwards, Ussow<sup>2</sup> published a short account of these organs. He examined *Chauliodus*, *Stomias*, *Scopelus*, and *Argyropelecus*, and came to the conclusion that in these genera the organs in question were, as Leuckart had assumed, accessory and segmentally grouped eyes. Their structure is compared with that of the so-called composite organs with a simple cornea.

Ussow compares them directly with the ocellar segmentally distributed accessory eyes of *Euphausia*.<sup>3</sup>

Afterwards, Ussow studied these structures in some other species, and published a very detailed account<sup>4</sup> of his researches, which were made on the organs of the following species:—

*Astronesthes martensii*.

*Stomias anguilliformis*.

*Stomias barbatus*.

*Chauliodus sloani*.

*Chauliodus setinotus*.

*Scopelus rissoi*.

*Maurolicus amethystina-punctatus*.

*Gonostoma denudatum*.

*Argyropelecus hemigymnus*.

It appears that he only examined those organs which are designated ocellar organs in this Report. He did not extend his investigations to those found chiefly on the head, which I call glandular organs. He comes to the conclusion that those which are more simple in their structure are glandular in function, although they have no external opening. I can endorse Ussow's descriptions and figures of these organs.

The more complicated organs, which are incised near the middle, and which are designated below as "composite ocellar," are considered by Ussow as eyes.

His descriptions and figures of these are not in accordance with the results obtained by Leydig and myself.

<sup>1</sup> R. Leuckart, Ueber muthmassliche Nebenaugen bei einem Fische, *Bericht ü. d. Versamml. deutsch. Naturf.*, 1864.

<sup>2</sup> M. Ussow, *Arbeiten d. Gesellsch. d. Naturf. St. Petersburg*, Bl. v. p. 70, 1874.

<sup>3</sup> According to G. O. Sars (Report on the Schizopoda collected by H.M.S. Challenger, Zool. Chall. Exp., part xxxvii.) these are not eyes but phosphorescent organs.

<sup>4</sup> M. Ussow, Ueber den Bau der sogenannten augenähnlichen Flecken einiger Knochenfische, *Bull. Soc. imp. des Nat. Moscou*, t. liv. No. 1, p. 79, 1879.