

The most important work on this subject has been published by Leydig,<sup>1</sup> who examined the following species:—

*Gonostoma denudatum.*

*Ichthyococcus ovatus.*

*Ichthyococcus palmeria.*

*Argyrolepecus hemigymnus.*

*Scopelus rissoi.*

*Scopelus humboldtii.*

*Scopelus benoiti.*

*Scopelus bonapartii.*

*Scopelus rafinesquii.*

*Scopelus metopoclampus.*

Leydig divides the organs examined by him and described by previous authors into three groups:—"Augenähnliche Organe," "Glasperlenähnliche Organe," and "Leuchtorgane."

The meaning of these terms as compared with those used by Ussow and myself will be explained below.

The description given of the microscopic structure of these organs I am able to endorse; but minute details are not described, and most of the material at Leydig's disposal was not in very good condition.

Leydig considers these organs as "electric or pseudoelectric." This positive statement appears rather vague, but his negative assertions, however, are very decisive. He combats the view held by Ussow (*loc. cit.*) particularly, that these organs are accessory eyes, and he decides with equal emphasis that they are not glandular.

He acknowledges that they may emit light, but he thinks that this is not their primary or principal function. He considers them as pseudoelectric apparatus which may in some cases emit light.

From this it appears that the physiological results are not at all in proportion to the excellence and extent of the facts and observations on the subject hitherto ascertained.

Emery<sup>2</sup> has published a description of the minute structure of the phosphorescent organs of *Scopelus*. He gives a correct figure, but has failed to observe the cells described below, which appear so very peculiar, and which, being found in all these organs, may be considered as their principal constituents.

He considers the reflector at the back of the organ to be an inverted scale, and says that the organ is covered by another scale, which has been converted into a lens. He considers these organs to be phosphorescent.

I shall now enter on the results of my own studies on this subject, postponing the consideration of their physiological and general results to the end of this Report.

Although these organs appear to be of uniform histological structure in different groups of fishes, they nevertheless present such differences in shape, distribution, and origin in the different groups that it appears advantageous to dwell on the different forms separately.

<sup>1</sup> F. Leydig, *Die augenähnlichen Organe der Fische*, 10 pls., Bonn (E. Strauss), 1881.

<sup>2</sup> E. Emery, *Mittheil. d. zool. Station zu Neapel*, Bd. v.