II. THE DIVERSITY OF THE PHOSPHORESCENT ORGANS.

The following species were examined by me :—

Opostomias micripnus.
Echiostoma barbatum.
Pachystomias microdon.
Malacosteus indicus.
Astronesthes niger.
Argyropelecus hemigymnus.
Sternoptyx diaphana.
Scopelus benoiti.
Xenodermichthys nodulosus.
Halosaurus macrochir.
Halosaurus rostratus.

In these fishes a great many different kinds of phosphorescent organs are met with, and all the various forms described by Ussow, Leydig and Emery, are represented in one or more of them.

I distinguish twelve different kinds of phosphorescent organs in these fishes, which may be divided into two main groups.

Scattered more or less regularly in segmental distribution over the ventral side or the whole of the body, small, regular, bulbous organs sunk into the body are met with, which have been designated by Ussow as "augenähnliche Organe" and by Leydig as "augenähnliche" and "glasperlenähnliche" organs.

I term these "regular ocellar phosphorescent organs." They may be "simple" or "compound." The former correspond to those organs which are described as glandular by Ussow and partly also to the "augenähnlichen Organe" of Leydig. The latter, the compound regular ocellar phosphorescent organs, are particularly the ones considered as "augenähnliche" and "glasperlenähnliche" organs by the authors mentioned.

The simple ocellar organ is more or less spherical, closed on all sides and generally partly invested by a pigment coat; its internal structure appears radial.

The composite ocellar organ is divided into two parts, an interior closed spherical portion divided by an annular incision from the cup-shaped external portion. Sometimes several of these composite organs stand close together, and then their spherical basal portions may coalesce so as to form a canal or tube, to one side of which the cup-shaped outer portions of the joined organs are attached.

The simple ocellar organs may or may not have a pigment coat.

The composite organs always have a pigment coat, but they may or may not be provided with a layer of threads or spicules, which shine like silver, refract the light strongly, and act as reflectors. The composite ocellar organs with reflectors are identical with Leydig's "glasperlenähnliche" organs. They are always very oblique to the surface, whilst those which are destitute of a light-reflecting layer appear generally more or less perpendicular to the outer surface.