

at the base near their junction with the olfactory lobes. The optic lobe is of the usual size. On the lower surface on each side, between the bases of the Nervus Opticus and Trigemini, a special lobe, not found in ordinary fishes, is met with (*m*). From this lobe a very stout nerve (*g*), which is thicker than any other cerebral nerve, originates, and extending downwards and slightly backwards and outwards, divides into two equally stout branches, which are bent abruptly on entering the orbital cavity and which pass backwards. Ramifications of these nerves supply the two suborbital organs. I name this nerve Nervus phosphorius, and the lobe from which it originates Lobus phosphorius. Morphologically, this nerve is to be considered as a highly developed, modified anterior branch of the Trigemini, and it thus appears homologous with the electric nerve of *Torpedo*.

d. Function.

The spicule-layer of these organs and their general structure establish their phosphorescent nature with sufficient certainty. It is an extraordinary and remarkable fact, that the light-reflecting spicule layer is found surrounding the immersed proximal portions of these organs only, and does not extend so as to form a reflector also for the superficial portion. It has been suggested by Dr. Günther, that the suborbital organs can be projected partially, and that they then extend far beyond the surface of the fish. There is no reason why this should not be possible; but it has not been observed in any of the specimens at my disposal. The light, which is presumably emitted from these organs, is thrown in such a direction, that it illuminates the field of vision of the fish; they thus enable the fish to see, and must be considered as aggressive organs.

e. Development.

The structure and position of the organs indicate that they, like those described above, have been developed from a portion of the slime-canal system.

CONCLUSION.

a. COMPARISON OF THE DIFFERENT PHOSPHORESCENT ORGANS OF FISHES.

All the organs which have been described above, have, however different they may be in other respects, one thing in common, namely, that either the whole of the organ or part of it is glandular. In the latter case the glandular portion is always proximally situated and other structures of a special nature are added to it, which are always found in the distal part of the organ. We may, therefore, assume that the original form of the phos-