

APPENDIX B.

REPORT on the STRUCTURE of the PHOSPHORESCENT ORGANS of FISHES. By R. VON LENDENFELD, Ph.D., F.L.S., Assistant and Demonstrator in the Biological Laboratory of University College, London.

P R E F A C E.

Most of the deep-sea fishes and also some pelagic surface fishes of nocturnal habits collected during the voyage of H.M.S. Challenger, possess certain organs which appear to have the function of producing light—in the case of deep-sea forms—to illuminate the eternally dark abysses of the ocean.

Dr. Günther, whilst engaged in the examination of the fishes collected by H.M.S. Challenger, intrusted me with the histological investigation of these organs in such specimens as could be spared for this object, and the results of these researches will be found in the following pages. It is my pleasant duty here to express my thanks to Dr. Günther for his great kindness in assisting me to bring these studies to a successful issue.

Although the specimens examined by me are for the most part remarkably well preserved, still the most minute histological details would have remained doubtful on some points, if I had not had other material, specially preserved for histological purposes, to compare with the Challenger specimens. Where it was necessary I have embodied in this Report the descriptions of the structure of the phosphorescent organs in such specimens. I must express my thanks to Professor Ray Lankester who placed some excellent material for this work at my disposal, and in whose laboratory the necessary series of sections were prepared.

The phosphorescent organs were studied principally by means of series of sections, cut in the usual manner after embedding in paraffin; they were stained with Kleinenberg's hæmatoxylin, borax-carmin, alum-carmin, or picrocarmin. The last named produced the best results.