

the control of the animal, and may singly or in groups emit light apparently at the will of the *Phylliroë*.

A still higher form of phosphorescent organ is met with in *Pyrosoma*.¹ Here we find groups of cells which are spherical and destitute of nuclei (?). These groups of cells are in connection with a stout nerve and are glandular, secreting a fatty substance which, under the influence of nervous stimulation, is burnt, and emits a brilliant light. It is obvious that these organs of *Pyrosoma* are in every respect similar to the "simple ocellar phosphorescent organs" described above from *Opostomias micripnus*.

Further stages in the development of phosphorescent organs are found in fishes, where also their development reaches to the highest point among aquatic animals.

The ocellar phosphorescent organs are comparable to the elements in *Euphausia* which have been considered as accessory eyes by Claus,² but which according to Sars³ are not sense-organs at all, but phosphorescent. They are spherical, and divided by a stout ring situated in the surface tangentially in the outer third, into two portions, an outer and an inner one. The outer is occupied by a transparent cellular structure, and covered by a watch-glass-shaped cuticle. The lower portion is surrounded by a layer of red pigment, and filled with roundish cells similar to those in the phosphorescent organ of *Pyrosoma*. In the centre of the proximal portion a bundle of vertical threads is found, and a lens is situated between the two portions.

No organs comparable to the highly differentiated phosphorescent apparatus with reflectors in fishes have been found in other animals.

The phosphorescent organs of insects are not comparable in any way to those of fishes.

The mode of development of the phosphorescent organs in aquatic animals, as represented by those of living adult forms, is shown in the annexed scheme.

¹ Paolo Panceri, Gli organi luminosi e la luce dei Pirosoni e delle Foladi, *Atti Accad. Sci. Fis. e Mat.*, vol. v. No. 13, 3 pls.; also Panceri, Gli organi luminosi e la luce dei Pirosoni, *Rendiconti Accad. fis. e math.*, xi, fasc. 2, 1872, p. 43.

² C. Claus, Ueber einige Schizopoden und niedrige Malacostraken, *Zeitschr. f. wiss. Zool.*, Bd. xiii. p. 446.

³ G. O. Sars, Report on the Schizopoda of the Challenger Expedition, *Zool. Chall. Exp.*, pt. xxxvii. p. 70, pl. xi.