a considerable amount of this luminosity of the abyssal depths; but the various degrees of differentiation of the luminous organs, as well as their location on very different parts of the fish, prove that the production of light is dependent on a variety of circumstances and subserves different purposes.

1. Light may be produced by the luminous organ to enable its possessor to see. In fishes which secrete merely a large quantity of luminous mucus without specially developed organs (Macruridæ), or in which innumerable minute organs are disseminated over the greater part of the body, the luminosity proceeds from the general surface of the fish whenever the animal is active, and probably ceases whilst it is asleep or at rest. But in those fishes in which the organs are highly developed and specialised, the production of light is evidently subject to the will of the fish. Only thus can the luminous apparatus be of advantage to the fish; if the production of light were constant, or could not be suppressed instantaneously, the fish would be a most conspicuous object and fall a ready prey to its enemies. The high degree of development of the luminous organs on the side of the head, in close proximity to the eye, as it is found in *Anomalops* and the Stomiatidæ, can be accounted for only by assuming that these fishes are able at will to shoot rays of light in the direction which they want to explore for the purpose of discovering their prey, or for some other object. In fact these organs are used by them as we would use a "bulls-eye." The circumstance that some of the organs are lodged below membranes or even in the cavities of the gills or within the mouth, cannot be regarded as an objection to this explanation of their function, as the membranes as well as the bones are semi-transparent, and would not much interfere with the effect. No doubt the intensity of light produced by the various organs is not the same, and it is probably least in those least specialised: perhaps no more than the glimmer produced by a number of minute particles of phosphorus; but the light which issues from the large pearly organs of the Scopelidæ, the infraorbital organs of the Stomiatidæ, and from the lenticular organs of the Halosauridæ, must be intense and penetrate to a considerable distance.

2. The luminous organs which are placed on barbels, filamentous fin-rays, or tentacles have evidently the function of attracting other animals and of serving as lures. It is a matter of common observation that aquatic animals are in the dark attracted by a light; and therefore these appendages will prove most efficient lures in the abyssal darkness, when, with one or several bright phosphorescent spots at the end of the tentacle, they are played about by the fish. Thus, whilst the appendages retain the original function which they have to perform in surface fishes like *Lophius*, *Antennarius*, etc., in which they simulate a worm or other similar creature, the means by which the final end is attained is changed in accordance with abyssal conditions. Their luminous property could not be of any other use to these fishes, many of which, as, for instance, the deep-sea Pediculates, have their eye in a most rudimentary condition.