

phosphorescence" resembles the stars in a clear sky, myriads of minute nearly invisible points emitting a scintillating light, now increasing, now decreasing, in intensity. The "fish-phosphorescence" appears like great dull bubbles of light which suddenly flare up, as if a dull electric lamp had been turned on and then extinguished, and is produced by large animals, fishes or squids, rushing through the water, sometimes, by the impetus of their movements, causing all the minute phosphorescent organisms to flare up intensely in response to the irritation produced. That the "dead phosphorescence" is also caused by living organisms has been recognised since time immemorial by fishermen and others who haul ropes or nets through the water at night. Very often small phosphorescent creatures, especially minute crustaceans, are captured and furnish proof that the light is not emitted by the water itself. But scientific men have not always recognised this, for Franklin believed that the phosphorescence of the sea was due to electric sparks caused by friction among the salts of sea-water. According to Steuer, the abbot Dicquemare is supposed to have filtered the sea-water and in this way proved that the water emitted no light. Later on microscopic examination of the minute organisms of the sea has finally proved that the emission of light is inseparable from living substance, and that it is restricted to certain organs built for the sole purpose of this peculiar function of life.

The power of emitting light is found in most groups of marine animals and plants, beginning with the bacteria. Among plants the peridineans and the remarkable ball-shaped flagellates, *Noctiluca miliaris* and *Pyrocystis noctiluca*, are noted for their power of emitting light. In animals this power is always attributed to certain structures, which may be said to represent all conceivable forms of glandular development, from simple epithelial membranes to more or less complicated tubular or lobular glands. These organs secrete a slimy luminous substance. As a rule a layer of black pigment is arranged around the gland, acting as a reflector. Very often the light is projected through a transparent lens-shaped organ. The light-organs thus very often resemble minute eyes, and were previously supposed to perform the function of perceiving instead of emitting light. As we reach the more highly organised groups in the animal kingdom the structure of light-organs exhibits an increasing complexity. In minute crustaceans (see Fig. 492) we very often find only a