

# Luminous Creatures

Reviewed by Darrin Schultz [5](#)

Although scholars have been documenting and studying the production of light by living things since the time of the ancient Greeks, the word “bioluminescence” still elicits a sense of mystery and wonderment for the natural world. Despite its title, Michel Ancil’s book *Luminous Creatures* does not focus solely on bioluminescent organisms but instead reveals these creatures through colorful stories of the men and women who have studied them.

The book carefully leads the reader back to antiquity and shows how human knowledge of bioluminescence was intertwined with the development of the scientific method and technologies over the millennia. For example, bioluminescent animals and fungi were the test subjects that revealed that oxygen was the essential gas for biological processes in experiments conducted in the 17th and 18th centuries. The invention of the bathysphere, a spherical deep-sea submersible developed in the 1920s, was driven by a researcher’s desire to observe bioluminescence in situ. The earliest use of research submersibles and remotely operated underwater vehicles (ROVs) was to observe and collect bioluminescent animals.



John Woodland Hastings reportedly paid children a penny apiece to collect fireflies for his research. PHOTO: PHIL DEGGINGER/ALAMY STOCK PHOTO

Even more important, *Luminous Creatures* provides an unparalleled holistic narrative of the development of oceanography as a scientific practice, the characters that drove the efforts, and the animals that they studied. Records from oceanographic expeditions in the 19th century are full of stories about living specimens bioluminescing aboard ships, for example, and Ancil explains how these organisms fueled many questions about evolution. “Why is it that both luminous and non-luminous species belong to the same genus?,” wondered the French zoologist Henri Gadeau de Kerville, for example, and “Why is it that the number of non-luminous organisms far exceeds the number of luminous organisms and that marine luminous species far outnumber those of terrestrial ones?”

Bioluminescence research expanded after World War II as the field of biochemistry matured. Accordingly, *Luminous Creatures* breaks from a chronological format in its discussion of the 20th century and beyond, relying on character sketches and brief, single-topic passages to explore more recent achievements in bioluminescence.

One weakness of Ancil’s account is that it is heavily focused on Western science. True, he devotes a chapter to Yata Haneda, an early-20th-century scientist who is considered the “grandfather” of bioluminescence research in Japan, but the contributions of contemporary Japanese scientists such as Nobuyoshi Ohba, Yoshihiro Ohmiya, Yuichi Oba, and the Nobel-winning Osamu Shimomura are skipped or only briefly mentioned.

In addition, the book omits much of the important research conducted by researchers such as Brazilian biochemist Vadim Viviani and American biochemist Bruce Branchini, who helped to determine the molecular structures of luciferins and the biochemical mechanism of bioluminescence. For a more comprehensive contemporary view of bioluminescence research in the 20th century, readers may wish to check out the more technical *Bioluminescence: Chemical Principles and Methods*.

Despite these shortcomings, *Luminous Creatures* is profoundly well researched, is scientifically accurate (except for the upsidedown ctenophore on the cover page), and provides a unique view into the lives of bioluminescence scientists through the ages. Take time, if you can, to step away from the bright laboratory lights and dive into the enchanting world of living light.

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**Luminous Creatures: The History and Science of Light Production in Living Organisms**, Michel Ancil, McGill-Queen’s University Press, 2018. 488 pp.