

REVIEW : Historical roots and current status of plant physiology

Physiologie der Pflanzen. Sensible Gewächse in Aktion, by Ulrich Kutschera, Berlin, LIT-Verlag, 712 pp., 314 Figs., 15 Tables, color images, 59.90 € (hardcover), ISBN 978-3-643-14226-9

Abstract

Most biology students are more interested in animals than in plants or algae, and among the general public, it is fair to say that “Plant Blindness” is widespread. Sessile green organisms are regarded as a kind of background-vegetation, with little value to humans, except, probably ornaments and crops. They may be ancient living beings, but clearly not “higher organisms”, so the popular argument goes. Accordingly, during the first half of the 19th century, even many biologists believed in the occurrence of “vital forces” in plants. It was the German biologist Julius Sachs (1832–1897), who rejected this metaphysical idea and replaced it by a purely naturalistic concept based on chemistry and physics. Moreover, Sachs fully elucidated the “aliveness” of plants.

In a new textbook, the German biologist Ulrich Kutschera traces the roots of all branches of the experimental plant sciences to the work of Julius Sachs. [...]

In Chapter 20 general conclusions and an outlook is provided. First, Kutschera explains to the general reader why Sachs was a genius of biology. Then he reproduces a number of unpublished aphorisms taken from the notebooks of Sachs. Then, a comparison between research in medicine and plant physiology is provided, with reference to a forgotten paper of Sachs (1859), wherein he clearly pointed out that we can only feed a growing world population based on plant science. Duckweeds as source for food are described, and the question discussed whether or not it would be possible to feed the world based on organic farming. The text ends with a description of transgenic plants (GMOs) and golden rice.

The book is dedicated to the memory of one of Sachs’ successors of the chair of botany at the University of Freiburg i. Br. (Germany), where the 1868-book was written: Hans Mohr (1930–2016). Accordingly, at the end of the book, the author juxtaposes philosophical insights published by Sachs on the “art of logical thinking” with those of Hans Mohr. Taking these aspects into account, it is fair to say that this textbook also should be of interest to general readers interested in the philosophy of science. Kutschera’s Magnum Opus is supplemented by 314 high-quality Figures, inclusive of many color images. Unfortunately, comparatively few non-German biologists read German. Therefore, a translation of this book in English is highly recommended.

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