

Advances in Photosynthesis and Respiration, volume 20 (Series Editor: Govindjee). ISBN 1-4020-3323-0. Springer, 2005. 1215 pages, hardcover. 295.00 (Euros)

Discoveries in Photosynthesis is a new edited volume out of the "Advances in Photosynthesis and Respiration" series that draws its inspiration from the phrase that "life is bottled sunshine" ascribed to Wynwood Reade in his 1924 *Martyrdom of Man*. It is the first comprehensive scholarly attempt to gather original materials in order to understand the long and complex history of photosynthesis research. Edited by a distinguished set of researchers in the area on the occasion of the new millennium, the volume is every inch as impressive as its important subject demands. At 1262 pages of text (the book stands at 1304 pages in total), it includes 111 papers, by 132 researchers, from no less than 19 countries. Its coverage and perspectives are equally vast, including not only historical overviews, timelines and biographical tributes, but also detailed "mini-reviews" on critical processes, techniques and applications, institutional sites and laboratories, and comparative national perspectives. It is chock-full of historically important photographs, most never published, along with relevant illustrations, figures, and graphs (some in beautiful color), appropriate to each subject. It is, in short, a monumental effort.

The book begins with a suite of papers by the editors in a section titled "editorials." Here the editors, Govindjee, J. T. Beatty, H. Gest, J. F. Allen offer useful historical highlights of photosynthesis research. This is followed by a section titled "overviews and timelines," that includes further contributions by some of the editors and other authors and a brief section on "tributes" to major contributors like Robert Hill, James Franck, Hans Gaffron, and Samuel Ruben. This is followed by five more technical sections on "excitation energy transfer," "reaction centers," "oxygen evolution," "light-harvesting and pigment-protein complexes," and "electron transport and ATP synthesis" usually written by scientific experts in each area. This is followed by the next set of sections on "techniques and applications," "biogenesis and membrane architecture," "reductive and assimilatory processes," and "transport, regulation and adaptation." Two further sections are dedicated to larger themes in "genetics" and "evolution," which leads to a section dedicated exclusively to institutional and national sites. These include "the Laboratory of Photosynthesis" and its successors in Gif-sur-Yvette, in France, the Charles F. Kettering Research Laboratory, and three papers on the history of photosynthesis research in Russia and the Soviet Union. The volume closes with a series of retrospective contributions.

Taken as a whole, the volume is an impressive collection of historical perspectives on photosynthesis research by some of the leading researchers in the area. My own favorite contribution is modest in ambition, scope, and length, but is nonetheless one of the most important in the volume. Written by H. Gest, the article is titled "History of the word *photosynthesis* and evolution of its definition." It explores the etymology and historical use of the term "photosynthesis." According to Gest, before 1893 or so, the term "assimilation" had been used to describe anabolic metabolism in both plants and animals. The term "photosynthesis" as well as "photosyntax" was first introduced by Charles Reid Barnes at the Madison, Wisconsin meeting of the *American Association for the Advancement of Science*. Gest rightly gives credit to Charles Reid Barnes for introducing the more accurate terminology that gained currency. Science is very much about the importance of definitions, which Gest acknowledges with an appropriate reminder from the great chemist, Antoine Lavoisier who substituted the concept of "oxygen" for the bankrupt notion of "phlogiston." Here, there is one small point that I would add to Gest's historical reconstruction. It was at that same meeting that Charles Reid Barnes was instrumental to drafting the "minority report" that would go on to create the *Botanical Society of America*, earning for himself the designation of "founding father of the new society." In simultaneously serving as the inventor and promoter of the term "photosynthesis" and in founding the new botanical society, Barnes reminds us that even though some present-day botanists, plant biologists and plant scientists may see themselves as engaged in very different projects, all share a common point of origin.

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