Othmer, H.G., Adler, F.R., Lewis, M.A., Dallon, J.C. (ed.): **Case Studies in Mathematical Modeling - Ecology, Physiology, and Cell Biology.** - Prentice Hall, London - Sydney - Toronto - Mexico - New Delhi - Tokyo - Singapore - Rio de Janeiro 1997. ISBN 0-13-574039-8. 411 pp., USD 38.95.

This volume represents the outcome of lectures presented during the special educational program "A Special Year in Mathematical Biology" organized at the University of Utah during the academic year 1995-1996. The text is divided into Part I: Ecology and Evolution (pp. 1-96), Part II: Cell Biology (pp. 97-218), and Part III: Physiology (pp. 219-386) preceded by Contents and Preface. Three Appendices should help readers acquire or improve their knowledge of mathematics needed for the understanding of the text: A: Age-structured Models (pp. 353-356), B: Qualitative Theory of Ordinary Differential Equations (pp. 357-380), and C: An Introduction to Partial Differential Equations (pp. 381-386). The book ends with the Author and the Subject Indexes, List of Contributors, and Colophon. While the four editors are all affiliated with The University of Utah, out of the total 26 authors, 18 are from the USA, 3 from Canada, 2 from the Netherlands and UK, and 1 from Hungary. Because of the very broad area covered by the individual contributions, I find it useful to enumerate their titles as follows: You bet your life: Life-history strategies in fluctuating environments. The evolution of species' niches: A population dynamic perspective. Reflections on models of epidemics triggered by the case of Phocine distemper virus among seals. Simple representations of biomass dynamics in structured populations. Ancestral inference from DNA sequence data. Signal transduction and second messenger systems. The eukaryotic cell cycle: Molecules, mechanisms, and mathematical models. Mathematical models of hematopoietic cell replication and control. Oscillations and multistability in delayed feedback control. Calcium and membrane potential oscillations in pancreatic β-cells. Mathematical modeling of muscle crossbridge mechanics. The topology of phase resetting and the entrainment of limit cycles. Modeling the interaction of cardiac muscle with strong electric fields. Fluid dynamics of the heart and its valves. Bioconvection.

As may be deduced from the titles, most papers deal with animal and human physiology. The term "photo" appears in the Subject Index only twice, namely in connection with phototaxis and bioconvection. Although the mathematical models of photosynthesis from its molecular up to ecological levels are frequent, no example of them has been included. However, as very often, some of the readers of Photosynthetica could be interested in some original and typical case studies in mathematical modeling of biological processes. "The goal is to motivate and explain biological problems and their mathematical solution" (Preface), and the authors propose three primary uses for this book: (*1*) supplementary text for courses of mathematical biology, (*2*) primary text for intensive mathematical courses, and (*3*) reference volume. For understanding the text, a good background in ordinary and partial differential equations is needed.

In my opinion, mathematics is being introduced into biology for many reasons. I would like to use some quotations from the book in order to better illustrate its philosophy and to express my own believe, too. "Powerful new techniques...are making biology more quantitative...Mathematical methods are needed both to analyze increasing volumes of data, and to forge connections between data shedding light on common problems from different angles" (Preface). "The machinery (of the cell division cycle)...is quite complex, and it is impossible to comprehend how all the pieces interrelate by casual verbal arguments...without the guidance of comprehensive mathematical models, molecular biologists will soon be overwhelmed by their own success" (p. 127). Not all the readers of this journal will agree with the message contained in the quotations and in the book, of course. But some readers may well understand or at least feel and perceive the importance and role of mathematics in biology, hence also in photosynthesis. For those who are familiar and comfortable with advanced mathematics, the book will be of value and interest.

L. NÁTR (*Praha*)