

research, and availability of a key investigator to prepare the contribution.

Lately an ever-increasing number of books dealing with all aspects of plant "tissue culture" are being published. Most of these are written by the same group of well-known contributors. This is reflected in the fact that often chapters in different books are almost identical and contribute little that is new. In this book (as well as in the other volumes) the editors tried to introduce several novel approaches. Besides a special essay on hybridization, past and present, by E. C. Cocking, the first section is composed of three overviews. The first two, on plant germplasm resources and underexploited crops, although well written and interesting, have no direct relationship to the book's content, except that these resources can serve eventually as both source material for cell-culture programs and as a repository for the plants these programs generate. The third overview, on development of new varieties via another culture, written by H. Hu and J. Z. Zeng, offers a detailed account of the subject, with the special merit of drawing heavily on Chinese contributions, usually difficult to come by.

The centerpiece for this volume, as for the entire series, is practical methodology. A brief review of the history and economic importance of each crop plant is presented, followed by a discussion of the most important breeding and propagation problems, areas in which cell cultures may be particularly applied. A review of the pertinent literature precedes the protocols. These are very precise and sufficiently detailed to permit their application. In most chapters protocols are also offered on such subjects as clonal propagation, meristem culture, and somatic embryogenesis; thus the title, referring only to cell culture, does not express correctly the scope of the book. Comments on future prospects and a good "up-to-date" reference list, usually conveniently subdivided into key references and others, complete each chapter.

The species index is twice as long as the subject index. The latter, four pages in length, is very concise and may be inconvenient because of the large number of citations frequently placed under a heading. Several illustrations, schematic representations, and tables summarizing details of results from the literature, complete the text. The standard format ensures a clear and continuous presentation. The statement of the editors, that their goal was to provide a comprehensive and practical publication for students, scientists, academicians and businessmen, useful in both understanding current strategies and extending scientific frontiers, has been definitely achieved in this attractively finished book.

LUDWIG E. MÜLLER, *Tissue Culture Laboratory, CATIE (Tropical Agricultural Research and Training Center), Turrialba, Costa Rica*

THE CHEMISTRY OF ALLELOPATHY. *Biochemical Interactions among Plants. Based on a symposium sponsored by the Division of Pesticide Chemistry at the 187th Meeting of the American Chemical Society, St. Louis, Missouri, April, 1984. ACS Symposium Series, Volume 268.*

Edited by Alonzo C. Thompson. American Chemical Society, Washington, D. C. \$79.95. x + 470 p.; ill.; author and subject indexes. 1985.

Among the manifold effects of soil organic material on vegetation, allelopathy is certainly the most controversial. Allelopathy, though broadly defined, in practice refers to how plants inhibit one another through secondary chemicals. The opening chapters of this volume exemplify the controversy over the importance of allelopathy: "Allelopathy produces marked impacts in diverse terrestrial and aquatic ecosystems. . . . Allelopathy research offers unlimited opportunities to solve practical agricultural problems . . ." (Putnam, p. 1), vs. ". . . it cannot be said with confidence that allelopathy has any significance for agriculture" (Elmore, p. 29).

This volume primarily focuses on the chemistry of allelopathy in weed control and agriculture, however, and controversies over allelopathy's importance are usually avoided. The characterization and bioassay of allelochemicals are emphasized, and other topics include mechanisms, biosynthesis and laboratory synthesis, and interactions between allelochemicals and microorganisms. Perhaps the most attractive feature of this work is its diversity; its 31 reports from 61 authors discuss a variety of interesting problems in this complex field. This diversity has a down side, however, because the narrow focus of the papers and their journal format will make most of this book tedious for workers outside the field. This volume uses camera-ready copy with its attendant virtues and drawbacks: it postdates the ACS Symposium by less than a year, making it as current as most journals, but the quality of illustrations and editing is uneven, and the index is very incomplete.

NELSON D. JOHNSON, *Ecology & Evolution, State University of New York, Stony Brook, New York*

HOW FLOWERS WORK: A GUIDE TO PLANT BIOLOGY.

By Bob Gibbons; drawings by Vanessa Luff. Blandford Press, Poole, Dorset (UK); distributed by Sterling Publishing, New York. \$15.95. 160 p.; ill.; index. 1984.

This book is an introductory treatment of basic topics in plant biology. The Preface does not indicate what audience the book is designed for, but my guess is that it would be suitable for high-school biology students, university undergraduates not specializing in botany, as well as the interested amateur naturalist or horticulturalist. The title of the book and its frontispiece are misleading, since they suggest a work on floral biology

and pollination rather than an elementary textbook covering a wide range of topics in botany. The writing style is straightforward, although at times explanations are oversimplified and rather teleological. This allows the text to flow more freely, but it gives the impression that plant biologists understand more about the ultimate causes of many plant characteristics (e.g., dormancy, clonal growth, self-pollination) than is true. The absence of any references in the text also restricts readers from following up on particular topics that may spark their interest.

The book is well produced and reasonably priced, with good quality line drawings and excellent color photographs. Apart from the incorrect placement and misidentification of the frontispiece caption, an inverted photograph (p. 83), and misspelling of *Vallisneria* (p. 89) the work is relatively free of errors.

The book is composed of eight chapters. The first covers the evolution and classification of plants, as well as a brief treatment of the salient features of the major groups of land plants. The next two chapters cover basic plant morphology and physiology. Chapter 4 is an overview of reproduction and covers pollination mechanisms, breeding systems, and clonal propagation. This is followed by a chapter on the biology of seeds (e.g., fruit and seed development, dispersal, dormancy); the final three chapters deal with life cycles, plant communities and economic botany. Throughout, the author uses traditional examples, mostly involving European plants, and there is little flavor of the great diversity of plant adaptations from tropical regions or deserts. This may restrict the use of the book. However, for the European and North American market the work is suitable as a reasonably priced and brief entrée to the botanical world.

SPENCER C. H. BARRETT, *Botany, University of Toronto, Toronto, Ontario, Canada*

LIGHT AND THE FLOWERING PROCESS. *Proceedings of the 3rd International Symposium of the British Photobiology Society held at Glasshouse Crops Research Institute, Littlehampton, England, September 7-9, 1983. Academic Press Rapid Manuscript Reproduction.*

Edited by Daphne Vince-Prue, Bryan Thomas, and K. E. Cockshull. Academic Press, London and Orlando (Florida). \$27.50. xxii + 301 p.; ill.; subject index. 1984.

It has been rumored that research on the physiology of flowering is in limbo. This may well be true in the United States, where only a handful of botanists are concerning themselves with the topic, but this book suggests that much is being done in other parts of the world, and that considerable depth of understanding has developed during

the past decade or so. Each author was apparently limited in this book to about 15 final typed pages, so only the most salient points are presented and discussed. (Many of the 19 chapters could easily be expanded to book length.) The editors did an excellent job of unifying and polishing what must have been many diverse documents.

How plants initiate and develop flowers has been a difficult and refractory problem, and this is reflected in many chapters; perhaps only a specialist in the field will follow some of the intricate and circuitous arguments and experimental protocols. Yet the symposium organizers did a commendable job of representing the many diverse subfields—including some that might not have been thought of by many researchers. Thus, there may well be something for just about anyone in the plant sciences. If you are interested in such core topics as the general responses of day-neutral, short-day, and long-day plants, the role of phytochrome, the biological clock, vernalization, flowering hormones (both florigens and antiflorigens), and the response of the shoot apex to such hormones, they are well handled by experts. But you can also read the latest ideas on the possible role of assimilates in induction, how genetics might make it possible to characterize DNA sequences in flowering genes (as applied to wheat), how light in general and photoperiod in particular affect flower opening or development or fruit abscission, and how photosynthesis and floral induction might interact. Of course, you can also savor a good introductory chapter as well as a final summary (the latter somewhat colored with the biases of its author). The book is an excellent summary for the specialist and a good starting place for the beginner.

FRANK B. SALISBURY, *Plant Science Department, Utah State University, Logan, Utah*

BLUE LIGHT EFFECTS IN BIOLOGICAL SYSTEMS. *Based on the 2nd International Conference on The Effect of Blue Light in Plants and Microorganisms, July, 1984. Proceedings in Life Sciences.*

Edited by H. Senger. Springer-Verlag, Berlin and New York. \$55.50. xvi + 538 p.; ill.; organism and subject indexes. 1984.

This is a collection of short reports of original research, 56 in number. The unifying theme is of course some action of blue wavelengths, but there is no attempt to define "blue light effects" other than in this general way. The organisms considered range from *Halobacterium* through ciliates, algae and fungi to higher plants. Although publication time was commendably short, the papers do not seem to have been reviewed very critically. They contain mistakes in English as well as typographical errors and the figure legends are in-