

the biology of selenium, but these are loaded with information and are well documented. They encompass nutrition, assimilation, metabolism, toxicity, human biology, and therapeutic applications. The chapters are readable and could well serve as a short course in the biology of selenium as well as a convenient guide to the original papers and to older reviews.

Since the chapters in the volume were written, selenium has been identified as an integral part of the enzyme glutathione peroxidase (J. T. Rotruck, A. L. Pope, H. E. Ganther, A. B. Swanson, D. G. Hafeman, W. G. Hoekstra, *Science* **179**, 588 [1973]). This finding has already given research on selenium a new direction, as well as new intensity. Present and future researchers will need to know as much basic chemistry of organoselenium compounds as possible, and that is what this volume is all about.

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## Saline Ecosystems

**Ecology of Halophytes.** Papers from a symposium, Minneapolis, Minn., Aug. 1972. ROBERT J. REIMOLD and WILLIAM H. QUEEN, Eds. Academic Press, New York, 1974. xiv, 606 pp., illus. \$19.50.

Most of the potentially arable soil remaining unfarmed in the world is saline to some degree, and water available for its irrigation is also saline. Consequently it has become increasingly important that the ecology and physiology of plants able to tolerate soils containing extraneous salts be better understood and that procedures for better utilization of saline waters for irrigation be devised. Moreover, the difficulties encountered in the utilization of coastal salt marshes have been of sufficient magnitude that many of these areas have not been significantly altered and constitute some of the few remaining pristine ecosystems, inviting the attention of many ecologists. Thus it is timely that the proceedings of this symposium be published.

The book is not offered as a compendium of research from all the diverse fields encompassed by the title, but is rather a collection of papers presented by authors concerned with various aspects of halophyte ecosystems. Many of the papers are comprehensive reviews, and some are reports of current

research, but there is little attempt to evaluate current knowledge, generalize, or formulate new concepts. There are, however, numerous instances where need for intensive research is pointed out. The emphasis is mostly on the halophytes of the United States, with only one of the authors being from outside of the country.

This book will be a good introduction to newcomers in halophyte research and a good review for scientists already in the field. There are over 2000 references, and much of the information on halophytes in the United States is brought together for the first time. The topics considered are diverse, and although most of the important disciplines are represented the representation is uneven. Eighty percent of the book is about coastal marshes and mangroves, with only 20 percent dedicated to desert halophytes, perhaps because most of the authors are from the eastern seaboard or gulf coast states.

The book is divided into four parts as follows:

1) A brief introductory overview by V. J. Chapman summarizing ecological literature on halophytes over the past ten years.

2) Halophytes of the United States: Distribution, Ecology, Anatomy and Physiology. The chapters on distribution are primarily extensive reviews of the literature with only brief consideration of community relationships or factors influencing distribution. An exception is the chapter on mangroves (Gerald E. Walsh), which is an excellent and comprehensive ecological survey comparing the mangroves of the world. The two chapters on the physiology of halophytes are also excellent reviews, including some evaluation of available information.

3) Habitat Associations of Halophytes. This portion of the book consists of several brief research reports followed by reviews on the roles of animals in salt marsh ecosystems. These reviews add considerably to the book, broadening the ecological scope to include both vertebrates and invertebrates and their role in the ecosystem.

4) Applied Research Related to Halophytes. What man has done and might do to salt marsh vegetation is considered in chapters on the effects of herbicides, fertilizer, and reclamation of disturbed areas. P. J. Mudie, in an excellent summary, reviews the extent of halophyte habitats, discusses their potential economic value, and proposes several important avenues of research. The final

chapter, by E. P. Odum, emphasizes the unique energy relationships of coastal marshes, wherein halophytes expend considerable energy to survive under salt stress but take advantage of tidal irrigation to balance the energy demand.

This book is a valuable reference. Typographical errors, misspelling of simple words and author's names, and the omission of references from bibliographies are too abundant and will be detractive to many readers. An introduction or epilogue summarizing the major problems and principles would have added considerably to the book.

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## Cytogenetics

**Somatic Cell Hybridization.** Proceedings of a conference, Winter Park, Fla., Mar. 1973. RICHARD L. DAVIDSON and FELIX F. DE LA CRUZ, Eds. Raven, New York, 1974. xviii, 296 pp., illus. \$19.75.

Of the 33 contributions to this volume 27 are short papers of the sort given at large meetings, two (by Krooth and Ephrussi) are brief commentaries, and four are reviews of moderate length. The reviews deal with the uses of somatic cell hybrids in human gene mapping (Ruddle); in studies of virus-cell interactions, immune functions, and antigenic determinants (Koprowski and Knowles); in studies of the expression of differentiated functions (Davidson); and in the analysis of gene expression and nuclear function in binucleated heterokaryons (Ringertz).

Taken together, the reviews and the experimental papers present practically every type of experiment that has been attempted with somatic cell hybrids. Such experiments fall into two categories: those performed directly on heterokaryons within the first few hours after fusion has occurred, and those performed on the synkaryon hybrids which grow out as clones following the rare event of nuclear fusion. The former type of experiment, which requires direct cytochemical observation, can produce dramatic and unequivocal results—as exemplified by the beautiful experiments on nuclear-cytoplasmic interactions reviewed in this volume by Ringertz. The latter type, in which clones can be grown to any size for genetic and biochemical experimentation, suffers from considerable uncertainties concerning, among other things, the