

sented in the latter (for example, the pores in the cell membrane in Fig. 2-7). The treatment of general sensory endings has been expanded to a full chapter, with many new photographs. None of these figures deals with the fine structure of receptors.

Limited space precludes a detailed review of this book. The author is to be commended for his attempt to reach the student in many ways, but particularly for his use of straightforward terminology in dealing with the cranial nuclear columns (somatic, branchial, visceral motor; somatic and visceral sensory) and for his interesting explanations of the meaning and derivation of the colorful but cumbersome words of neuroanatomy.

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## Applied Botany

**Vistas in Botany.** vol. 2, *Applied Botany*. W. B. Turrill, Ed. Pergamon, London; Macmillan, New York, 1963. xiv + 380 pp. Illus. \$15.

As Turrill points out, the articles in this volume do not cover all aspects of applied botany. There is, however, a wide range of subjects, including fruit, cereals, and grasses, with vistas in the plant disciplines of taxonomy, anatomy, pathology, and ecology. In all, the volume contains ten chapters written by different authors, and its diversity is illustrated by the opening chapter on botanical aspects of wood science and the closing one on uses of seaweeds.

The chapter on wood science is a succinct, accurate, and ably written digest of current studies in the field of wood anatomy. The author does not purport to cover the entire field, but he provides an excellent review of his specialized topic.

G. H. M. Lawrence's well-written essay on the taxonomy of cultivated plants contains an implicit plea that applied scientists recognize the need with respect to the nomenclature of plants and cultivars and begin recording their work not just in tables and graphs, but also in properly documented dried plant specimens or vouchers which provide more accurate and detailed information than the best written records.

In considering recent grassland re-

search, the author briefly reviews the research without discussing many aspects of plant breeding in this broad field. Some phases of the nutritional problems of grassland are covered, including digestibility trials as a major nutritive value factor. On the whole, the subject is well treated, and the author's clear, concise style makes interesting and informative reading on grassland agriculture.

Recent research on fruit crops is discussed in two essays—"Some aspects of commercial fruit growing in Great Britain" and "Pests and diseases of fruits and their control." The first deals broadly with production of new varieties, cultural practices, propagation, and storage. The second is concerned with a brief description of the principal insect pests and diseases of fruits, and with their control.

The chapter on cereal breeding deals extensively with improvement in wheat, oats, and barley. In general, it is an excellent chapter which covers the most important points as circumscribed by well-proven chemical methods and techniques. There are notable omissions—for example, neither the importance of maintaining gene sources nor the value and use of male sterile genes for building large crosses and for maintaining back populations in a "crossable" state are discussed. No attempt was made to discuss the implications of more recent breakthroughs in genetics. Some techniques, such as those used in the United States, are not included. In general the examples are mainly tied to what has happened in Great Britain. But it would be difficult to review the world literature on cereal grains in one chapter.

There is an interesting treatment of the origins of horticultural plants. Gene mutations, the role of polyploidy, and cytological analysis are discussed in relation to horticultural crops. It is pointed out that the use of these tools in determining the origins of horticultural plants may be at odds with more classical interpretations.

A full discussion of economic plant products would probably require an entire book. The material selected for consideration here was obviously based on the recent literature, but more emphasis could have been placed on the fact that we have only begun to inventory the world's plant resources.

In the chapter on some aspects of applied plant ecology, the late W. B. Turrill, the editor of the volume, presents a concise summary of economic

ecology, which is documented with specific examples.

The final chapter, a very interesting, well-illustrated one, gives a good historical account of the various species of algae, their geographical distribution, their use as human food and in commercial products, and their value in medicine.

In general, the editor's objective—that of providing a broader vista of applied botany for teachers and students—has been accomplished. Since the volume contains a number of articles on widely different aspects of botany, I have consulted specialists in the Crops Research Division (U.S. Department of Agriculture) and have incorporated their comments in this review.

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## Uralic and Altaic Series

**Peoples of Central Asia.** Lawrence Krader. Indiana University Press, Bloomington; Mouton, The Hague, Netherlands, 1963. xiv + 319 pp.

This general survey of the geography, ecology, history, and ethnography of Central Asia is clearly the result of long and diligent labor. It can only be welcomed as a major contribution to the English-language literature on these subjects. An immense mass of material has been digested and presented in, on the whole, clear and excellently organized form.

Many of the specific issues of fact and interpretation raised by Krader are beyond my competence. Where this is not the case, we disagree only on relatively minor matters of emphasis or phrasing—for example, in the section on Central Asian shamanism (p. 130), where the concept itself seems rather too broadly defined.

The only serious criticism that might be made of this book relates to a possible conflict between the synchronic and diachronic methods. Krader defines his purpose as primarily that of describing "the indigenous peoples of the area and their traditional culture," and secondarily, that of describing "the changes brought about during the period of Tsarist and Soviet rule" (p. v). In view of this dual intention, it is not always clear to which period or set of circum-