

rium material from 11 listed herbaria and some unlisted private collections. Maps were prepared by the author's daughter, Ann, and the clerical work performed by his wife, Beverly, so the series is becoming a family affair.

Following the species descriptions, there is a list of "Species Excluded," mostly misidentifications, and then a numerical summary of taxa treated, a glossary, literature cited, and finally an index.

The key to the species of *Celtis* in Illinois deserves some attention. There are three species in Illinois, *C. occidentalis*, *C. laevigata*, and *C. tenuifolia*. Because the key employs leaf features, *C. occidentalis* comes out three times in the first four choices. *C. laevigata* and *C. tenuifolia* come out twice each. There are seven couplets. Visually it looks very odd indeed. Then, there are additional keys to separate the three varieties of both *C. occidentalis* and *C. laevigata*, and to separate the two varieties of *C. tenuifolia*. If these species seemingly intergrade as the author contends, then perhaps it

would have been better to employ a comparative table, as done with Red and White Mulberry on page 88 and the hops on page 99. Incidentally, the same three species come out very easily in the key by Gleason & Cronquist (*Manual of vascular plants of northeastern United States and adjacent Canada*. Van Nostrand, 1963.) which uses leaf characters only.

Beyond my adverse reaction to the *Celtis* key, I have nothing but praise for this volume. Undoubtedly, the author's early decision to illustrate every species was an excellent one. Good illustrations of every species ensure the success of a flora; no matter how well a text is written, a picture is worth a thousand words.

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## The Cacti of the United States and Canada

By L. Benson. 1982. Stanford University Press, Stanford, California. 1044 pp., illus., plus distribution maps. U.S. \$85.00.

Although only four of some 152 cacti species which occur north of the Mexican border are found as native species in Canada, this book is of great interest.

The Cactus family has attracted much attention because of its many remarkable growth forms. Some species are tree-like in aspect; numerous others are small and can readily be grown indoors in our northern regions. In more southern climates, fascinating displays can be found on rocky slopes in gardens, to say nothing of native habitats, where such species as the Organ Pipe Cactus, Barrel Cactus, Saguaro and Teddy Bear Chollas occur.

This book, written by the foremost student of North American cacti, is more than just keys and descriptions of cacti. It contains a wealth of information in its two parts. The first (about one-quarter of the book) includes chapters on the structure, physiology and chemical characters of cacti; a discussion of the origin and relationships of taxa within the family Cactaceae; a discussion of the nature of species, varieties, and hybrids; the author's policy in developing his classification of the North American cacti; herbarium and field methodologies, including techniques of specimen gathering and notes required; geographic distributions and environments in which cacti are found, including the relationship of floras and vegetation to world climate; the floras and floristic

associations of North America; the uses of cacti; and the conservation of cacti. All are well illustrated.

The second part is a detailed treatment of the 18 genera of cacti found in North America, with keys, detailed descriptions of the genera and species, ecology, distribution, special comments, line drawings, photographs, and distribution maps. The maps present some difficulty to one not too familiar with the geography of the United States because there are no place names and they depict only state and county borders. This is softened somewhat by the inclusion of a series of general reference maps near the end of the book which name all the counties in the various states where the family has its main range. A section on documentation gives bibliographic references, synonymy, and citation of types and selected specimens.

Reference matter in the form of a glossary, references cited, the general reference maps, an index, and two fascicles of absolutely beautiful colour photographs complete the work.

This is a magnificent book which should be on the shelf of anyone interested in cacti. In addition, the introductory chapters will serve any introductory course in botany as a most useful text.

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