

## California Flora

**The Jepson Manual.** Higher Plants of California. JAMES C. HICKMAN, Ed. University of California Press, Berkeley, 1993. xviii, 1400 pp., illus. \$65 or £50.

Willis Linn Jepson can be considered one of the founding fathers of the study of the flora of California. Born in central California in 1867, he developed an early appreciation of the plant life of his surroundings. As waves of settlers began to arrive in California from the East, he came to believe that the flora of the state deserved not only serious study but also protection from destruction. In 1915 he founded the California Botanical Society, which sponsored field trips to various parts of the state. He also helped form both the Sierra Club and the Save-the-Redwoods League, conservation organizations that are still active today.

Among Jepson's many contributions to California botany is his 1925 *Manual of the Flowering Plants of California*, the first single-volume guide to all of the flowering plants that were known to grow wild in the state (information on ferns and gymnosperms is also included). When Jepson died in 1946, an endowment, the Jepson Research Fund, was left to the University of California at Berkeley to fund further work on his unfinished multivolume *Flora of California* as well as assure continued publication and periodic updating of his *Manual*. It was Lawrence R. Heckard (1923–1991) who convinced James C. Hickman (1941–1993) that updating the 1925 volume was feasible; he went on to spearhead the project with him. The product of a comprehensive 10-year effort by hundreds of people, the new *Jepson Manual* reflects what is currently known about 5862 species of higher plants found in California. In contrast to the 1925 *Manual*, which was written almost entirely by Jepson himself with acknowledged contributions from just eight other botanists, the present volume contains contributions from 189 botanists from across North America and beyond.

*The Jepson Manual* is both traditional and revolutionary. It has all the features—plant descriptions, dichotomous identification keys, detailed illustrations—that one would expect to find in a work of its type. Yet its underlying rationale (the same as that of Jepson's original *Manual*) sets it apart from many other contemporary floristic manuals: "The Jepson Manual Project



*Calochortus pulchellus*. [From *The Jepson Manual*; photograph by Jo-Ann Ordano]

was based on a virtually revolutionary premise: a single work of this magnitude can be simultaneously accessible to dedicated beginners and indispensable to professional botanists." A 26-member horticultural council contributed information about the use of native California species in gardens and devised a system for indicating care requirements and climate zones in which individual species are likely to flourish. Although the inclusion of this horticultural information within the individual plant descriptions is clearly a radical departure from floristic manual tradition, it succeeds in making the volume useful to a wider audience.

Botanists accustomed to using floristic manuals often skip over the prefatory material, going straight to the keys and plant descriptions, but I urge all users of *The Jepson Manual* to first read the exceptionally clear introduction, in which the underlying philosophy is set out and the many conventions that were used in crafting the plant descriptions are explained. Not only does it provide instruction on how to use the book, it emphasizes limitations to keep in mind. The illustrated glossary, resembling those typically found in introductory systematics textbooks, was designed to accommodate the diverse backgrounds of users. There is also an informative chapter explaining the geological history of the state in relation to

the extant flora and another on the geographical subdivisions of California. Each of the plant descriptions that, together with keys, form the bulk of the book includes a brief range statement that uses abbreviations for one or more of the 50 geographical subdivisions to indicate where the plant is found—a system that may confuse readers expecting county maps. Line drawings illustrate the diagnostic features of over 4000 taxa.

As interest in conserving native biodiversity increases, it seems appropriate that botanists and plant enthusiasts should be able to refer to a common information source, one that is clear and accessible to amateur and professional alike. The occurrence of an extremely diverse flora (including approximately one-quarter of the species of higher plants known to exist in North America) within the most populous of the United States makes California the ideal place to test such a marriage.

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## Planetary Systems

**Protostars and Planets III.** EUGENE H. LEVY and JONATHAN I. LUNINE, Eds. University of Arizona Press, Tucson, 1993. xiv, 1596 pp., illus. \$90. Space Science Series.

Nothing in the fundamental laws of physics and chemistry logically entails the formation of a star and planetary system. Yet humankind is decidedly a planetary phenomenon; thus the study of the origins of our species must begin with the formation of the sun and the coeval accretion of the planets, including the Earth, from the residual debris of that process. *Protostars and Planets III*, following *Protostars and Planets I* (1978) and *Protostars and Planets II* (1985), is a most ambitious and successful summary of the present state of our understanding of these events.

Planetary systems are the long-lived remnants of the birth of both stars and planets. Several decades of investigation have now produced a consensus within the scientific community that the formation of the solar system is but one example of a process that occurs frequently in nature and, moreover, one that is probably a natural consequence of the formation of stars. Stars form from what is essentially a