I have found no typographical or spelling errors, although I have made no special effort to search them out.

Roberts has generally followed the family taxonomy of the larger floras, but has not strictly adhered to either the Munz or <u>The Jepson Manual</u> conventions. For example, his treatment of the Liliaceae and allied families is more similar to Munz's than to <u>The Jepson Manual</u>'s, but he places the onions in Alliaceae rather than Amaryllidaceae. Roberts has used his own judgement with lower level taxonomy rather than adhering rigidly to earlier works. For example, Roberts retains the genera *Microseris, Brassica*, and *Stipa* (cf. Munz 1974) rather than follow <u>The Jepson Manual</u>, which splits each into three genera. On the other hand, Roberts has not simply held to tradition for its own sake. He accepts the splitting of *Haplopappus* into its segregate genera, and the lumping of two shrubby *Mimulus* species into *M. aurantiacus*. Appendix 3 cross-references names, enabling the reader to quickly find a species, even where Roberts has used an unfamiliar name in the body of the checklist. I generally prefer Roberts' taxonomic judgements to those seen in the larger floras.

The current checklist includes 1193 species (increased by 36 from the 1989 edition). With few exceptions, it includes only species represented by a voucher specimen in a recognized herbarium, although it does not name these vouchers by collector and number. The lists of "excluded taxa" (Appendix 1) and extirpated or long-uncollected taxa (Appendix 2) total about 130 species. Some of these undoubtedly still occur in the county (e.g., *Rorippa curvisiliqua, Loeflingia squarrosa, and Opuntia basilaris*). These 130 taxa serve to remind us of the surprisingly poor state of floristic documentation, even in an area as heavily populated as Orange County.

I find the Checklist to be a useful desk reference for Orange County and adjacent cismontane southern California. Due to the absence of keys and descriptions, the Checklist will not be useful as a field reference, except to botanists already experienced and well-familiar with the plants. In the introduction, Roberts lets us know that a more complete flora is in the works, and I look forward to its publication.

- Scott D. White, Scott White Biological Consulting, 99 East C St., No. 206 Upland, California 91786

*Conifers of California* by Ronald M. Lanner. 1999. 274 pp. Softcover \$24.95 (ISBN 0-9628505-3-5); hardcover \$36.95 (ISBN 0-9628505-4-3). SCB members can receive a 10% discount by ordering (sorry, no credit cards) directly from the publisher; Cachuma Press, P.O. Box 560, Los Olivos, California 93341, telephone 805 688-0413 or email cachuma@silcom.com

Most of my friends know that I have always planned to write a book on the conifers of California. I have been known to travel to remote locations such as the Warner Mountains, the New York Mountains, or to Cone Peak in the Santa Lucia Mountains for the sole purpose of photographing and communing with a rare species of conifer. I even approached John Evarts of Cachuma Press with the idea of doing such a book. Wisely, John did not encourage me in this regard. Apparently, Ronald M. Lanner had beaten me to the punch, and he has done such a superior job that I am envious and humbled.

California is a focal point for the evolution of conifers. There are more taxa for this group in California than for any other region of similar size in the world. Simply stated, California would not be blessed with much of its spectacular scenery, were it not for its conifers. With this new volume on conifers by Ronald Lanner, Cachuma Press has produced a fine companion to its superb book on oaks (*Oaks of California* by Pavlik et al. 1991).

Accompanied by beautiful color photographs, many of which are the images of famous photographers, and the watercolor art of the late Otto Walter Murman, this book stands as one of the truly significant contributions to the literature about California plants. Of particular interest about the watercolors is that Murman died in 1962. The original renderings were archived in the

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biomedical library at UCLA, and many are published here for the first time. Even if the illustrations were not so beautiful, the text alone would make it a worthwhile contribution. Clearly, this is a "must own" volume for botanists and layman interested in California's distinctive flora.

One of the attractive features of this book is that it is not cluttered with taxonomy, yet where it is relevant, the controversies over classification are addressed. Technical aspects of the taxonomy, including a checklist and keys to genera based on cone morphology and characteristics of foliage are included in appendices at the back of the book.

Ronald Lanner is "lumper." He avoids unnecessary splitting of species, but he does not ignore variation. His philosophy, of which I approve, is revealed in the following quotation from the section on White Fir. He writes, "The name *Abies concolor* was first applied to members of what is now regarded as the Rocky Mountain variety of white fir, and that variety is called *Abies concolor* var. *concolor*, referred to as the 'typical' variety. The other variety, whose perceived distinctness triggered this splitting asunder of a species, is the California white fir, *Abies concolor* var. *lowiana*. Some plant scientists think the two are different enough to warrant being considered separate species.... Others think the differences are too slight even to differentiate varieties, and they lump all these firs together simply as *Abies concolor*."

Unlike many books of this type where a reader tends to turn to his favorite species and reads no further, this volume is so loaded with interesting bits of natural history that it begs to be read in its entirety. In the section on Jeffrey Pine we learn which chemical gives the bark its distinctive odor, and how present-day distribution is influenced by episodes of drought, periodic fires, and the activities of various animals that feed upon and cache the seeds.

Regarding the role of fire, Lanner repeatedly emphasizes the beneficial aspects of periodic fires, and he is critical of the well-known policies of fire suppression, as practiced by various public agencies. This is an interesting attitude, especially when one considers that he was once employed by the U.S. Forest Service in California. By the way, it also seems out of character that a man who spent 28 years teaching at Utah State University should write a book about California trees.

If I have a criticism of the book, it is that I would prefer to see more about biogeography. While paleoecology is discussed frequently, Lanner seems not to enjoy the luxury of conjecture about how the trees got where they are. I was particularly anxious to find out if he had any new theories about the peculiar distribution of insular populations of Bishop pine, Monterey Pine, and Torrey pine on the offshore islands of southern and Baja California.

Similarly, many authorities have been curious about the interesting distribution and controversy over classification of various pinyon pines. Lanner previously described a new species (*Pinus juarezensis*) from the Sierra Juarez of northern Baja California, and reduced the Parry pinyon (*Pinus quadrifolia*) to the status of a hybrid between the Sierra Juarez taxon and singleleaf pinyon (*Pinus monophylla*). In this respect, he behaves like a splitter. On the other hand, acting like a lumper, he downplays the work of Stephen Langer who described the southern populations of singleleaf pinyon as *Pinus californiarum*, and further described both single-needle and two-needle subspecies in the New York Mountains of the eastern Mojave.

All of this notwithstanding, I love the book, and consider it to be one of the finest books of its kind ever published. I heartily recommend that everyone who loves California purchase this book, and read it from cover to cover.

— Allan A. Schoenherr, Professor of Ecology, Fullerton College, Fullerton, California author of A Natural History of California (Univ. Calif. Press 1992); lead author of Natural History of the Islands of California (Univ. Calif. Press 1999)



Schoenherr, Allan A. 1999. "Conifers of California, by Ronald M. Lanner [Review]." *Crossosoma* 25(1), 30–31.

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