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***Plant biology of the Basin and Range* by C. B. Osmond, L. F. Pitelka, and G. M. Hidy**

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BOOK REVIEW

Plant biology of the Basin and Range. C. B. Osmond, L. F. Pitelka, and G. M. Hidy. Springer-Verlag, Berlin, 1990. 375 pp. \$69.50.

This intriguing volume will be of interest to many people for a variety of reasons. It was written to honor W. Dwight Billings, who began his distinguished career in what is now called physiological ecology at the University of Nevada at Reno. Although he moved to Duke University in 1952, his heart, and considerable research, remained in Nevada. Twenty-seven authors contributed the nine chapters of the book. While that is generally enough to make one move on to something else, in this case it would be a mistake. Although the book was not what I expected, I was pleasantly surprised. The chapters are very uneven and range from the broad and general to the narrow and highly technical. The contributors are first rate and the chapters well written. I suggest that the reader browse, first reading whatever appeals and then perhaps returning to some of the other areas.

The strangest chapter in the book is the first one. It is a nice introduction but in spite of its title is neither about anthropology or botany. The dynamics of climate in the Basin is the subject of the next chapter. Brief but interesting, it is clearly written for the nonclimatologist. The heart of the book is the 40-page chapter by Billings himself on mountain forests of North America. It clearly extends beyond the Great Basin but should be required reading of every student of plant ecology. Here is the master giving us the distilled wisdom of decades of research and thinking. We then move on to high-elevation forests in an excellent chapter on the difficult problems imposed on living things by the harsh conditions associated with altitude. There are high mountains not only surrounding

but running through the Basin in a north-south direction. Edaphic factors and their influence on water and nutrient availability and subsequent plant distribution are next considered. There are islands of very disjunct soils throughout the Basin.

Chapter 6 examines what most of us think of in the Great Basin—the lowland plants. The emphasis is on ecophysiology, and broad patterns are the theme. Martyn Caldwell and his co-workers have spent many years studying the root systems of desert plants. This summary of their work is well worth careful study. However, I was surprised to find only a cursory mention of the role of mycorrhizae. Chapter 8 deals with isotopes and vegetation changes. That sounds narrow and well focused but the chapter was not. It is an overview of the potential use of carbon isotopes in physiological ecology. The last chapter deals briefly with climatic change in the Great Basin. The past has been very dynamic and exciting. What may we expect in the future?

While I was disappointed by some of the things the title seemed to promise and did not deliver, I did like the book and recommend it highly. As in many books with contributed chapters, the lack of continuity or transition between chapters left an overall impression of a disjointed and uneven approach. In spite of this, we can be grateful for what was delivered: well-written text that was fascinating and stimulating in places, nice illustrations, good index. Physiological ecologists interested in the Great Basin should spend some time with this volume.

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