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Plant Life of the Quaternary Cold Stages: Evidence from the British Isles

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Book Reviews

PLANT LIFE OF THE QUATERNARY COLD STAGES: EVIDENCE FROM THE BRITISH ISLES. By Richard G. West. Cambridge: Cambridge University Press, 2000. 320 pp. + CD-ROM. $110.00. ISBN 0-521-59397-2.

"It is essential to understand the habitat variety in cold stage environments . . ., especially since it makes for great difficulties in interpreting the make-up of the vegetation." Though this sentence begins the second paragraph in chapter 10 of this volume, it could be easily the signature quotation for the work as a whole.

When an illustrious scientist with a record for productivity and insight like Professor West's sets his or her sights on producing a synthesis volume, it can be overwhelming to the reader in the scope of what ultimately gets covered. But in this work, the full-glacial vegetation of the British Isles (including both the UK and Ireland) is documented in both depth and breadth in a smooth and easily understood writing style. This is a volume that will serve for many years as an "anchor" to provide background for further studies of full-glacial vegetation of not only the British Isles but also the rest of Western Europe, whether one considers environments dating to the Devensian/Würm/Weichselian/Wisconsinan or older. Justifiably, Prof. West has not restricted himself to the latest Pleistocene cold stage but has also considered all previous cold stages for which adequate data were available at the time of his writing.

This wealth of existing data for full-glacial environments in the British Isles is in major part a reflection of the willingness of scientists in that part of the world to work with natural exposures of nonlacustrine sediments rather than searching for the ideal lake or bog coring site. Some 94 individual sites are brought together in this synthesis, which includes data from 720 pollen samples and 386 plant macrofossil samples—all the data that were available through 1995. Sites of questionable or debatable age were excluded from the synthesis.

Right at the outset of the volume (Chapters 2 and 3), attention is paid to geologic setting and issues of taphonomy in the assemblages, including the potential problems of reworking from older deposits. Most of these assemblages are derived from organic-bearing lenses occurring in exposures of floodplain gravels, many of which themselves have been exposed in commercial sand and gravel pits (typical site stratigraphies illustrated in six color photos). Thus, the greater percentage of the assemblages represent allochthonous accumulations at least in part, which makes for more difficult interpretations but also yields vastly greater information about regional environments. Attention is also focused on the basics of bedrock geology and how it relates to the distribution of sites (which are concentrated mainly in the southern and eastern portions of the UK).

Chapter 4 is a descriptive presentation of the types of data included in the numerous tables readable on the CD-ROM (details of sites, specific location data including latitude and longitude, pollen and macrofossil data, etc.). Chapter 5 is an overview of the sites included, while Chapters 6 and 7 cover the flora represented in the deposits in some detail and in taxonomic order (Chapter 7). Chapters 8–10 cover the fossil flora and the difficulties in its identification as well as the biological aspects and habitats of that flora. In Chapter 11, the modern distribution habitats of the fossil taxa are covered in a general fashion (augmented by six pages of color plates showing modern arctic plant communities in northern Alaska and Canada).

The remainder of the volume (Chapters 12–16) covers the broader climatic and environmental interpretations that can be gleaned from the flora as well as observations on the longevity of cold-stage plants in the landscape. Consideration is paid to the "arctic-steppe" seeming paradox of North America and how many of the cold-stage flora in the British Isles also seem to be grass-dominated, although lack of species-level identification for many grass remains complicates the job of accurately reconstructing communities. The stage was set early in the book for the complexity discussed here: "Within a cold stage there can be no assumption that a uniform climate prevailed" (p. 20). Clearly, this caveat applies also to the flora and the vegetational communities that it forms—a continually shifting mosaic on a landscape itself nonuniform.

Of particular value to future researchers will be the extensive references and Appendix II, which is a complete catalog of the taxa recorded in all cold-stage British Isle sites, in *Flora Europaea* order.

A reader could always find things to quibble about. Reference to the Quaternary Era may grate on some geoscientists, who know the Quaternary as a Period in the Cenozoic Era; "land bridges" between the British Isles and mainland are mentioned in a few places, though in reality the islands and mainland have probably been connected for much of the past 2 million years or more. Also, the decision to use the base of the Praetiglian (ca. 2.3 million yr) as the Plio-Pleistocene boundary may be practical from the perspective of the paleobotanist but doesn't change the fact that the actual boundary *is* (as Professor West recognizes) internationally set higher in the stratigraphic record so that the first of the cold-stage floras are in fact late Pliocene rather than Pleistocene in age.

I had a little trouble opening the tables in the CD-ROM, since most American PCs don't run ASCII. (I tried both on a PC and a Macintosh.) However, they are readily converted into Microsoft Excel spreadsheets. I then found it necessary to go to the text (Chapter 4) to decode everything in the tables and to enter column headings. However, I'd be at a loss as to how to do it any differently if one is trying to ensure that everyone in the English-speaking world has access to the data.

In sum, this is an outstanding volume, synthesizing over a half-century of work by one of the senior statesmen of Quaternary paleobotany and others, most of whom were influenced in one way or another by Professor West and his work. This book should definitely should be on the shelf of every serious research library as well as in the personal collection of anyone seriously interested in glacial-age floras in the northern hemisphere.

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LICHENS OF ANTARCTICA AND SOUTH GEORGIA: A GUIDE TO THEIR IDENTIFICATION AND ECOLOGY. By D. O. Øvstedal and R. I. Lewis Smith. Cambridge: Cambridge University Press, 2001. 424 pp. $100.00. ISBN 0-521-66241-9.

It is probably fair to say that lichens are the most conspicuous and ecologically most important living things on the Antarctic continent. While the surrounding oceans are brimming with life, the dry land itself supports two species of higher plants and very few, mostly microscopic or nearly microscopic animals. For biologists working on

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the continent, lichens are of great significance. Yet until now there was practically no source available that would offer adequate, reliable, and accessible information about antarctic lichens. The idiosyncratic monograph of Dodge published in 1973 is not only outdated but, for its users, more a source of frustration than information. Now we are fortunate to have the handy and excellent book by Øvstedal and Lewis Smith on the lichens of Antarctica and nearby South Georgia.

The book provides good descriptions of over four hundred antarctic lichen species, with useful notes on ecology and distribution for each taxon as well as a dichotomous key. The identification of lichens is not easy for the uninitiated and requires the use of thin-layer and even high-performance liquid chromatography. Although this book is not for the absolute beginner, determined readers with some basic familiarity with lichens and with the help of the glossary of terms, as well as the 105 color and 50 black-and-white illustrations, will be able to use the book. The introductory part offers detailed and useful information on environment, ecology, and distribution of antarctic lichens, with many valuable data conveniently arranged in tabular form.

This is a useful and beautifully produced book that can be highly recommended.

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