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Book Review

Eucalyptus leaf oils: use, chemistry, distillation and marketing, edited by D. J. Boland, J. J. Brophy and A. P. N. House, ACIAR/CSIRO Inkata Press, Melbourne, Sydney, 1991, 252 pp., price A$ 65.00.

This timely update comes thirty years after the last comprehensive work on the chemistry and utilisation of *The Eucalypts* (Penfold and Willis [1]). Division into three two-chapter parts separates discussion on the history and biology of oil production (Part I) from reference lists of eucalyptus oil constituents (Part II) and commercial aspects of distillation and marketing (Part III).

The history of eucalyptus oil research and development in Australia in the context of the current world market situation is outlined in Chapter 1. Chapter 2 begins with a summary of oil uses and then discusses the biology and biochemistry of eucalyptus oil formation. High-quality, informative photographs of leaf surfaces and oil glands along with a summary of current thinking on the role of constituents make this a highly readable chapter. Some definitive conclusions about progeny trials are reached but generally the need for more basic research and more carefully controlled experiments is stated. Chapters 3 and 4 are useful reference sections suggesting alternative sources of cineole and list eucalyptus as a source of compounds such as nerolidol, tasmanone, methyl cinnamate, benzaldehyde, geranyl acetate, jensenone etc. (see also Appendix 4). Half of the bulk of the book is contained in Chapter 3 which lists 111 eucalypts using a one-page-per-taxa format with tree description, range of leaf oil constituents, record of oil yield and use along with a species distribution map. The following chapter constitutes a table updating Penfold and Willis's 1961 data with the Chapter 3 data and information from the literature. This compilation of 300 taxa (over 400 entries) now supersedes all earlier lists (Penfold and Morrison [2], Penfold and Willis [1] and becomes the authoritative eucalyptus oil constituent reference collection. Australian distillation procedures provide an excellent basis for Chapter 5 which describes still design and distillation practise with such detailed diagrammatic explanations that basic processing plants could be built using this chapter alone. Practical aspects of marketing oils are outlined in Chapter 6 and several appendices give useful data (*e.g.*, collection locations, chemical structures) for specialised interests.

The production is remarkably free from error except for the occasional textual error (*e.g.*, isopentyl in Fig. 2.4) and a few more obvious type print misalignments. A general index in addition to the species index would have been helpful. Lodging voucher specimens for the Chapter 3 study may have enabled future workers to avoid the lack-of-reference problems encountered by the present contributors (*cf.*, Chapter 4). Photographs are informative in black and white. The explanatory note on the Chapter 3 maps could have been better positioned and contributors deserve more prominent credit by name at the commencement of each chapter. A good cover design is spoilt by choice of colour—the silver on green is illegible in some lighting conditions.

The Editors' Preface statement that the book was prepared primarily for use in developing countries does not do justice to a book that should be mandatory reading for all who deal with, or intend to deal with, eucalypts at the phytochemical, taxonomic, production, quality control or marketing level. The eucalyptus oil story also provides a convenient model for the development of other essential oils.

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1 A. R. Penfold and J. L. Willis, *The Eucalypts*, World Crop Series, Leonard Hill, London, and Interscience Publishers, New York, 1961, pp. 264–278.
2 A. R. Penfold and F. R. Morrison, in E. Guenther (Editor), *The Essential Oils*, Vol. 4, D. van Nostrand, New York, 1950, pp. 437–525.