



## Book Review

D.J. CANTRILL and I. POOLE. 2012. *The Vegetation of Antarctica through Geological Time*. vii + 480 pp., 60 text-figures. Hard cover, size 17 × 25.2 cm. Cambridge University Press, Cambridge. Price: 85 GBP. ISBN 978-0-521-85598-3.

The study of flora preceded that of vegetation. The first modern botanic monograph, that of the Umbelliferae, was written over eighty years before Linnaeus (Morison 1672), while the first synthetic book on world vegetation dates from the beginning of the nineteenth century (Humboldt 1805). The same applies for fossil plants: while it would be fastidious to enumerate manuals of systematic palaeobotany elaborated since the beginnings of modern palaeobotany about 1820, continent-scale syntheses of vegetation history are relatively recent works (Hill 1994; Mai 1999; Graham 1999). This underscores the ambitiousness of the goal of Cantrill and Poole, all the more that this book is the first monograph to treat the history of vegetation of a continent since the beginnings of the land flora and not only the Caenophytic (angiosperm-dominated) essentially present-type vegetation.

The first chapter is an introduction, dealing with history of palaeobotanical research in Antarctica (inevitably in the context of exploration of the polar lands; from 1699 to 2011) and then summarising the geological structure of the continent. The remaining eight chapters are devoted to the vegetation history, each chapter corresponding to a period of its development: Ordovician to Devonian, Carboniferous to Permian, Triassic, Jurassic, Early Cretaceous, Late Cretaceous, Palaeogene, and Neogene. Each chapter has an extensive introduction devoted to palaeogeography, palaeoclimatology, and global palaeovegetation of a given period. A summary is provided at the end of each chapter.

Each discussed period is provided with the lithostratigraphic scheme for the continent. At least one (usually two, sometimes more) photographic plates with representative plant fossils (mostly macrofossils) is given (although the physiognomy of palaeocommunities could be better appreciated in synoptic leaf shape plates like those given by Mai 1999). Full lists of plant fossils from Antarctica are compiled for Carboniferous–Permian and Triassic floras (more than one reader would appreciate such lists also for later periods). Minor floras not discussed in the main text are listed with bibliographic references in an appendix. All that means that this book will probably become the first reference to be checked when looking for information on any fossil flora from Antarctica.

I especially appreciated the palaeoecological reconstructions (*e.g.*, figs 6.10, 8.7) and lists of modern analogues of fossil ecosystems (*e.g.*, tables 8.2, 9.1). On the contrary, palynological data, quite rich for the Palaeozoic, are less and less complete when dealing with younger strata, notably the Tertiary. A short conclusive section, summarising the presented data from a more comparative point of view (see below) and indicating directions of future research would make the end of the book less abrupt.

The strength of this book resides in its complete coverage of factual data. Most certainly it will be an invaluable compendium for palaeobotanists involved in the study of Southern hemisphere high-latitude floras. What I regretted (as a palaeobotanist working in the Northern hemisphere) was the limited extent of comparative approach. Generally speaking, the second part (from the Early Cretaceous onwards) is a bit richer in such data (*e.g.*, pp. 201–213), whereas the reader of the first part receives very little data on the problem to what extent the Carboniferous to Jurassic vegetation of Antarctica was similar or different from the rest of Gondwana. I also deplore that such a synthetic statement opening the fourth chapter as “The Permian–Triassic transition marks the turnover from ancient palaeophytic to more modern mesophytic floras” (p. 105) be not followed by even a short comparison of the timing of this transition on a global scale (in Euramerica it took place diachronously between the late Carboniferous and the late Permian; see *e.g.* Knoll 1984).

My attention was caught by the Coniacian Hidden Lake Formation flora (pp. 268–275), coeval with an assemblage from Poland I am presently studying. The flora is described as “well-preserved” (p. 269) but it is unclear whether cuticles could be recovered. If this is not the case, the attribution of several leaf morphotypes to families of a natural system should be considered with caution. For example, the presumed representative of Lauraceae (fig. 7.8B) is quite similar to a fossil leaf from the Campanian of Poland included into the Lauraceae by previous workers, an assignment I judged insufficiently supported (*Dicotylophyllum* sp. 2; Halamski 2013, fig. 6F).

A constant nomenclatorial problem of the reviewed book is the non-accordance of specific epithets with the gender of genus names. For example, *Haplostigma* “*linearis*” (pp. 41, 44) should be *lineare*, *Dicroidium* “*crassinervis*” and “*fremouwensis*” (pp. 127, 142) should be *crassineerve* and *fremouwense* (neuters of the third declension), *Dicroidium* “*trilobita*” (p. 128) should be *trilobitum*, *Araliaephyllum* “*quiquelobata*” (p. 223) should be *quinquelobatum* (neuters of the second declension), *Lophosoria* “*cupulatus*” (p. 219) should be *cupulata* (femine of the first declension), and so on (the list is at least twice as long).

I have also found a couple of other printing errors, either in plant names, like *Schizonuera* (p. 77) instead of *Schizoneura*, *Buradia* (p. 79) instead of *Buriadia*, and *Notophyhtum* (p. 129) instead of *Notophytum*, or especially in non-English bibliographic references. I do hope that “sceleromorphic plants” (p. 316) is just a printing error as well (Latin *scelera*, crimes, villainies)!

In some cases I wondered if editing of this book were not made in somewhat of a hurry. A few elementary notions are judged worth of a definition in a footnote (like “eudicots” or even “Eurasia”), whereas other, the precise definitions of which could profitably be reminded (like “microthermic”), are not. Some definitions are false: Laurasia did not result from a collision of Laurentia and Eurasia (p. 106) but of Laurentia and Baltica. An unclear phrase seems to suggest that the “taiga” is a type of vegetation “found in the transition zone between the boreal conifer forests and the tundra biomes” (p. 416), whereas it is simply a local name of the former biome.

This book is an irreplaceable guide through the four hundred million years of the vegetation history of Antarctica. For the relatively high price one might expect, however, a more carefully edited and a more richly illustrated volume (60 text-figures, compared to 147 in Graham 1999 and 257 in Mai 1999). Despite all objections, this book should find its place in any palaeobotanical library and in that of any student of fossil Antarctic floras.

## References

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