

Urquhart, A.T. 1884. On the natural spread of the Eucalyptus in the Karaka District. T.N.Z.I. 16: 383-4.

"TUBEROUS, CORMOUS AND BULBOUS PLANTS"

BY J.S. PATE AND K.W. DIXON

(1982, UNIVERSITY OF WESTERN AUSTRALIA PRESS, 268PP. \$82.00)

Reviewed by R.O. Gardner

This is a beautifully-executed study of a picturesque group of West Australian native plants, those that survive drought by means of underground food or water-storing organs. They are mostly wildflowers like sundews, orchids and lily relatives but include a few trees, shrubs and climbers, a cycad and five pteridophytes. The authors emphasize that their list (213 species in 44 families) is preliminary, the large size of the W.A. flora (c. 7000 spp.) and the inadequacy of current herbarium collections making it certain that more lie undiscovered. Characteristically thorough is their own addendum, which includes three perhaps-new species, a tuberous-rooted seedling (Erythrina vespertilio) and a unique bulb-forming Cyperus.

The plants are not only of "desert" sandplain vegetation but are found from coastal heaths and seasonally-dry swamps to clay breakaways, rock outcrop aprons &c; a few grow in woodland or forest (e.g. Gastrodia). They are otherwise untypical of the flora, drought resistance here being mostly through sclerophylly or ephemerality. Certainly they are strangely-shaped plants and as the jacket watercolour seems to suggest, with habits strange enough to satisfy any Darsh desert or nomad specialist. But the book is of importance to Australian biology generally and is also an outstanding advanced botany text, the very opposite of "dry morphology".

The plants are introduced by their arrangement into life-form groups; bulbs, corms and various types of tuber are elucidated, a piece of ecological work is compactly presented and there is a fascinating account of seedling growth. Memorably-diagrammed and unimprovably written this chapter constitutes a teaching classic.

The long central part of the book is taxonomic description with distribution, habitat notes &c. Much information here on storage organ structure, growth and longevity is new. There are five colour plates showing representative floral types, and twenty-four lucent half-tone plates, excellently labelled and arranged, of nearly all 213 species "in depth", most useful and inspiring to collectors.

Twenty or so taxa (orchids mostly) are found in New Zealand too, and while current N.Z. monocot Floras treat the subject conscientiously some description in Flora I now appears rather insubstantial. Pate and Dixon describe the corm of Isoetes, for example, not just as trilobed but "crescent-shaped, comprising spent corm segment and two current meristematic regions on each side of the central region of mature tissue; seasonal replacement of corm tissues by means of the meristems". Anogramma leptophylla has an "aestivating organ of gametophytic origin ... side by side annual replacement ... terminating with production of

sporophyte" and Craspedia uniflora "adventitious root tubers 3-10 ... arranged around a compact stem buried 1.0-1.5 cm; tubers survive for two or more seasons, annual recruitment of new tubers."

The taxonomic chapter also has a list and very brief discussion of relevant naturalised plants, mostly South African Oxalis and Iridaceae species. A seasonal-growth diagram for O. pes-caprae shows what research can be accomplished without even an axe or scalpel.

Detailed chapters of observation and experiment follow, treating physiology, demography and reproductive behavior in selected species. A model geographical analysis and an overall summary conclude. Visual interest is kept with the neatest of tables, diagrams and pictorialized graphs. Professor Pate's speciality is biochemistry so we get plenty about nitrogen, phosphorus and mineral nutrition (especially for Drosera), and the different types of storage substances.

There is a short account of the use animals and humans make of these plants as food. Predation by insects is, according to the authors, at a very low level in the field, but nothing is known yet about the plants' chemical defences.

This original, thorough and magical-looking book was only six years in the making — animated botany down under indeed.

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NEXT EDITION

The deadline for the January 1988 edition is 10 December 1987. Publication dates should be back to normal next year — January and July.