

BOOK REVIEWS

Advances in Desert and Arid Land Technology and Development, Volume 1.
 Editors: A. Bishay and W. G. McGinnies, 1979. (Hanwood Academic Publishers: New York). 618 pp. US\$66.

This book is comprised of papers presented at the International Conference on the Applications of Science and Technology for Desert Development, held at the American University in Cairo, Egypt from 9–15 September, 1978. It starts with a plenary session on combating desertification with discussion on the roles of education and demonstration as well as technology. This is followed by a series of papers on aspects of Egyptian deserts. "Desert Development and combating desertification" includes papers on land use in arid regions of India, Jordan and Australia. "Water resources and irrigation" has discussion of reserves and useage of water in desert regions. The paper by G. V. Skogerboe on "The development of effective irrigation systems for long-term agricultural productivity" should be read by those concerned with implementing and operating irrigation schemes. "Energy and mineral resources" has papers on energy requirements of developing desert regions of Egypt and some methods of obtaining these, including solar and wind power. Use of remote sensing is discussed. Costs are pre-1979 and allowance has to be made for this. One might wonder at the material and environmental costs of the wind turbine grid discussed by Lloyd P. Smith in "Productive use of solar and wind energy in desert areas". "Desert plants and environment" has papers on potentially useful desert species—guayle for rubber, jojoba for oil and *Thymelaea hirsuta* for pulp and paper. The paper on ordination uses diagrams that lack clarity in comparison to those in, for example, "An introduction to numerical taxonomy" by H. T. Clifford and W. Stephenson (Academic Press). It also ignores the use of classification methods in vegetation surveys. "Technology problems and desert communities" considers problems of sociology and environment associated with the settling of desert areas. The final section has papers on "Biosaline research".

The text contains a number of typographical errors, some of a serious nature. Table 2, page 124 is entitled "Livestock populations and growth—during 1966 and 1971". The next line of the table is "1956" and "1971" and the associated text (page 122) gives 1951 and 1972, with livestock population figures of 9.4×10^6 and 15.5×10^6 which do not occur in Table 2. The column headings (Table 2) appear to be transposed in some manner, and the growth rate percentages are not well explained. In "Productive use of solar and wind energy in desert areas" physics is not treated kindly. Equation 1 (page 292) has a term missing which apparently refers to the 50 metres (seemingly length of vertical vanes) undefined in the following paragraph. On page 294 the energy required to raise $V \text{ cm}^3$ of water $H \text{ cm}$ is $VH \text{ gm cm/sec}$. which suddenly becomes $980.7 \times 10^{-10} \text{ kw}$. Table 1 is derived from turbine power from Equation 2 and not Equation 3. Units of gals/metre/minute should be discouraged. Figures 1 and 2 (pages 559, 600) lack keys to the different shadings. Hopefully editing will be improved in future editions.

Considering its subject matter and its price of US\$66, the book will probably appeal only to those in the field of arid zone research.

I. F. BEALE

Potential Contribution of Research to Agricultural Development in Northern Australia (1979). The Australian Institute of Agricultural Science. 48 pp. (\$5.00 post free from AIAS, Department of Agriculture, University of Queensland, St. Lucia, Qld. 4067).

This booklet is a report prepared by the Australian Institute of Agricultural Science (AIAS) for submission to the Australian Science and Technology Council

(ASTEC). The first questions readers may ask in relation to the report are: what is ASTEC and why did the AIAS prepare a report for it?

Most readers will remember the Green Paper, prepared in 1974 by Mr. W. L. Morrison, Minister for Science in the Whitlam Government, and the subsequent White Paper he published, both of which dealt with the establishment of a body to advise the government on matters of science and technology. Indeed, the Green Paper was reviewed by Dr. Tothill in his presidential address to this society in 1974 (*Tropical Grasslands* 9:1). These papers were stages in the process started in 1972 and which culminated in the formal creation of ASTEC by Act of Parliament in 1978. The terms of reference given ASTEC require it "to investigate and to furnish information and advice to the Commonwealth Government in respect of matters relating to science and technology, including", amongst other things:

"the advancement of scientific knowledge",

"the development and application of science and technology in relation to the furtherance of the national well-being", and

"the adequacy, effectiveness and overall balance of scientific and technological activities in Australia".

To fulfill these objectives, ASTEC sought "views concerning the relevance of science and the priorities that should be given to different areas of research".

In response to ASTEC's request, the Queensland Branch of the AIAS undertook to make an assessment of the contribution research could make to agricultural development in northern Australia. The AIAS conducted a survey amongst its members concerned with agriculture in Australia north of the Tropic (but including, for convenience, the remainder of Queensland and the Northern Territory).

Agricultural development of northern Australia remains an emotive issue which over the years has generated a lot of argument. Often the political and social question of *why* development should take place, and the technical issue of *how* it should be done are not considered separately. The objective, technical aspects frequently become submerged in subjective, political considerations, and are often overlooked. Indeed the apparent inability of high level management in both government and business to separate these issues contributed substantially to the failure of all six major agricultural development schemes in northern Australia during the last thirty years (Peak Downs, Humpty Doo, Tipperary, Lakeland Downs, the Ord River rice and cotton projects and NADC). In the report, the AIAS draws particular attention to this matter, and argues that if the technology of agricultural development is understood, then the political decisions can be made more soundly. It is a compelling argument.

In the report, the AIAS firstly considers the amount of land in both northern and southern Australia which has suitable terrain, soil and climate for dryland agriculture, for sown pasture, and together with consideration of water resources, suitable for irrigated agriculture. The data show that 79 per cent of the suitable land in the south is being used for dryland cropping, compared with only 21 per cent in northern Australia. It is interesting, though, that the areas remaining (about 13 m ha) are the same in each region. The disparity between the regions in the development of sown pasture, and of irrigated agriculture are even wider.

The AIAS then outlines the production in northern Australia of existing agricultural industries (sugar and beef contribute 50 per cent, cereals, horticulture and sheep 10 per cent each, dairying and field crops 5 per cent each), their problems and the potential for increasing production, and discusses the contribution research could make to further increases in production. Some potential new crops and industries (energy, grain legume and horticultural crops) are discussed briefly, and some of the special problems (largely remoteness) of the Northern Territory and the Kimberleys of Western Australia are considered relative to Queensland, which is closer to the populous south-east.

The AIAS concludes "that there are large soil and water resources in northern Australia that could be developed if technological limitations could be overcome", and it identifies ten areas of research which it believes require special attention. In summary, they are:

Better definition of the soil and water resources, including soil nutrient status.

Development of crop and pasture systems which maintain soil fertility and prevent erosion.

Development of a wider range of crop (especially for grain, energy and fibre), pasture and horticultural plants, including the technology of their processing and marketing.

Extension of tropical pasture technology especially into extensive grazing systems.

Research into increasing the efficiency of production of beef and milk and of the sheep, pig and poultry industries.

Population ecology of pest species—animals (including birds), insects, diseases and weeds.

It is almost obligatory for a reviewer to point out any errors which he discovers in the text, presumably to show that he has read it minutely. The material in this report has been collected and compiled conscientiously, and the few small errors in it are of little consequence. It would be churlish to draw further attention to them. It is more interesting to try to assess the usefulness of the conclusions the AIAS drew from the study.

Readers of *Tropical Grasslands* may feel that the recommendations lean too heavily towards intensification of research on crops and cropping systems. However, in areas where agriculture is possible, there has been an accelerating trend towards integrating cropping with the traditional grazing systems. Furthermore, in view of the obvious benefits of diversified production when beef prices vary as much as they have recently, I believe the trend will continue, and that the emphasis in the AIAS report is not misplaced. The report therefore provides a timely review of the subject. It is a credit to the Queensland Branch of the AIAS and to those who compiled it.

M. J. FISHER