Journal of Agricultural Science, Cambridge (1998), **131**, 121–123. *Printed in the United Kingdom*

Book reviews

Measurement and Control in Agriculture, by S. W. R. Cox. viii + 271 pp. Oxford: Blackwell Science Ltd (1997). £49.50 (hardback).
ISBN 0 632 04114 5.

Once upon a time, a local education authority was quizzed by a newspaper on the acceptability of many children missing school because they were working on farms. The justification trotted out was that these children probably didn't have any great use for education because they would be going into farming. This book, dealing with instrumentation and its use on and around farms, demonstrates clearly how important technical knowledge is now, and will increasingly be, in our food production industries.

It is clearly a compendium of information for the non-specialist, underpinned by sufficient detail to ensure that the interested student can appreciate the principles as well as the applications. The breadth of the content must have posed a considerable challenge to Sidney Cox when planning the book. The first third gives a thorough introduction to the basics of sensing and measurement, linked to instrumentation and control. The remainder then considers example situations and processes under largely sectoral headings (e.g. agricultural crop production). I expect this structure will be entirely appropriate to the college student who has a prime interest in the production system. The content is oriented towards technology available either now or in the near future, and the examples, from image analysis for grading and harvesting in horticulture, to yield mapping and GPS systems for precision agriculture, provide good links between research and commercial practice.

With this complex mix of examples and applications, the one thing the book cries out for is a more extensive index. The reader interested in harvesting technologies is directed towards sugarbeet harvesters and grain combines, but not to the (unsubheaded) section on harvesting field horticultural crops that appears within the spraying section on p. 150. The entry for image analysis does not include the fascinating application in citrus harvesting, or the very practical work on potato grading and mushroom harvesting (is this really post-harvest treatment?).

Despite this shortcoming, and perhaps a rather ancient feel to some of the illustrations, this book can provide a very valuable insight to the world of engineering technologies. The education of the future practitioners of crop and animal production must include this aspect, and this book will provide a good entry point.

W. DAY

Plant Pathogen Detection and Disease Diagnosis, by P. Narayanasamy. vi + 331 pp. New York: Marcel Dekker Inc (1997). $145.00 (hardback).
ISBN 0 8247 0040 6.

'You cannot tell a book by its cover' – so the saying goes. Nor by the text thereon I am afraid. It is claimed on the jacket that this book 'provides a practical guide for plant pathologists, physiologists and biochemists; horticulturalists; botanists; microbiologists; environmental scientists; agronomists; agriculturalists; foresters; and upper-level undergraduate and graduate students in these disciplines'. The list does not include virologists, which is surprising as almost all this book relates to the detection of viruses. For example, Chapter 4 covers dissemination of plant pathogens (I am still unclear as to how this aids detection and diagnosis) and, among its 24 pages, fungi are given 12 lines and bacteria 9. Similarly, the visual diagnosis of fungal diseases is covered in half a page of text and 10 poor quality photographs of questionable relevance. Throughout, the text too often reads like a string of examples plucked from the literature with no apparent attempt to explain their relevance or merits. Given this, one would expect the index to allow these examples to be located. Unfortunately, the indexing is totally inadequate if one wishes to find examples of diagnostics relating to a specific host or pathogen.

As a self-proclaimed 'practical guide' I wonder how it is to be used. It certainly cannot be used in a 'stand-alone' manner without reference to the original sources. For example, many of the polymerase chain reaction (PCR) protocols do not give the sequence of the primers used and hybridization protocols make no mention of which probe to use or how to go about producing such probes.

The above comments make it clear why I am unable to recommend this book.

P. NICHOLSON

CSIRO Armidale: Fifty Years of Pastoral Research 1947–1997, ed. J. L. WHEELER. 197 pp. (Publications and Reports 1947–1997 on disk.) Armidale, NSW: Pastoral Research Laboratory (1997). (paperback).
ISBN 0 643 06029 4.

This publication delivers more than the title promises. The scientific research and development achievements of the Pastoral Research Laboratory (PRL) are amply described in four central chapters, namely, 'Grazing Systems', 'Animal Health and Production', 'Animal Nutrition and Production', and 'Reproduction and Genetics'. These are supplemented by other chapters detailing the history of land acquisitions, building developments and the vital support services. (The word 'Laboratory' is in fact something of a misnomer since the PRL is really a Research Institute or Station). The readability of the publication is improved by selective citing of only a small number of key references in the chapters while, in a novel approach, the huge list (over 3500 references) of published work and reports by staff, alphabetically listed in chronological order, has been compiled on a disk, included in a pocket inside the back cover.

It is perhaps invidious to single out specific achievements but a few examples will serve to whet the appetites of potential readers. The vision in 1947 of the need for inter-disciplinary research involving soils, agrostology, parasitology, animal husbandry and economics of land use is now *de rigueur* at research institutes all over the world. The concept of long term trials with fixed stocking rates was another early milestone at PRL and, likewise, the importance of sulphur, the 'forgotten' nutrient and its cycling in grazed pastures. Against perceived wisdom, it was proved that the reproduction rate in sheep could be improved by selection for genetic resistance to worm parasites. Another major milestone was to show the need for rumen digestion work under grazing conditions, as opposed to the easier method of indoor feeding with penned animals.

As the final chapters unfold, one is saddened by the events outlined in 'End of an Era' and '1996 and the Future'. Why? Because of the 'downsizing' of staff and facilities at this proud Laboratory which has taken place in recent years, together with its uncertain future. As the Preface so aptly puts it, the PRL has been caught in the avalanche of destruction of agricultural research capability occurring in Australia and wonders about the impact in the future of purblind economic rationalization. In the last chapter, a warning note is sounded that biotechnology is not the be-all and end-all of agricultural research. There is still a need for experimental field and farm validation of many of the fruits of the current biotechnological revolution. Resources typified by the non-ivory tower work mode of the PRL are still necessary.

To return to the opening sentence above, the publication interweaves the social history of the 50-year existence of the PRL with its research achievements and aphorisms. The egalitarian ethos is striking and due appreciation is made to the often unsung heroes of pastoral research, that is, the technical support staff. With the chapters being by different authors or sets of co-authors, the width and depth of the material represents their different viewpoints and perspectives. Overall this publication provides stimulating reading and salutory lessons to pasture and animal researchers. It also deserves study and meditation by the plethora of people involved in allocating financial resources to agricultural research.

JOHN FRAME

Genetic Engineering of Crop Plants for Resistance to Pests and Diseases, eds W. S. PIERPOINT & P. R. SHEWRY. vi + 103 pp. Farnham: British Crop Protection Council (1996). £25.00 (paperback).
ISBN 0 948404 97 3.

The title does not make it clear that this is not in any way a textbook on the subject. It is an updated revision for the BCPC of a 1995 report commissioned from IACR by MAFF to review the opportunities and make recommendations for future research. The book is a compilation of brief reviews by specialists following a search of literature and patents, a questionnaire sent to relevant scientists, informal discussions and selection from conference presentations.

The 'chapters' are informed summaries, so that the bibliographies attached to each are of great value. The enabling technology for European crops is dealt with in $6\frac{1}{2}$ pages with, for example, 19 lines on cereals and 7 on potatoes.

Subsequent chapters cover damaging organism groups – viruses, nematodes, molluscs, insects, fungi and bacteria. A final chapter deals with manipulation of the crop rhizosphere.

The individual chapters concentrate on reporting current projects and how far they are approaching practical utilization – thus the book will very quickly become dated as a snapshot of the mid 1990s. Very brief 'conclusions' sections attempt some looking ahead to the relatively immediate future. It is disappointing that there is no balanced treatise of advantages and disadvantages, other than the obvious ones, of technical limitations and escape into the wild of transgenes. Transgenically-based host plant resistance has serious potential hazards not associated with transgenic crops in general, including the likelihood of resistance-breaking biotypes, effects on non-target organisms such as insect natural enemies

and changes in pesticide susceptibility of the targets. It is a pity that these did not get an airing. With the organization of this book as a survey of current developments, it appears not to have been an issue in the editorial brief. The final chapter on risks is just $1\frac{1}{4}$ pages long. It is by the editors, and concentrates on hazards to human health.

This is a reference book on the current state of the art, and it demonstrates a much higher level of research activity in the UK and Europe than was known to me. It is perhaps more for research directors, funding agencies and politicians than for bench researchers.

H. F. VAN EMDEN

https://doi.org/10.1017/S0021859698245618 Published online by Cambridge University Press