

science, although Kingsland does not open this particular can of worms.

Population ecology is currently in the throes of a series of intense and, at times, acrimonious debates. The arguments have several overlapping strands, including the role of density-dependent processes in population regulation, the importance of interspecific competition in structuring communities, the value of mathematics in ecology, and the proper way of doing science that would solve all these problems if only everybody would adopt the true way. Not one of these problems is new. All have been debated with just as much ferocity in the past, and what history shows is that the entrenched positions of the principal assailants have almost always proved to be misguided, irrelevant or wrong. History isn't bunk; it gives a sense of proportion.

Confronted with the realisation that we have been here before, sometimes more than once, it is easy to believe that population ecology has simply wandered round in aggressive circles, getting nowhere since Lotka published *Elements of Physical Biology* in 1925 and Volterra his famous letter to *Nature* a year later. Nothing could be further from the truth. Population and community ecology have made great strides over the past 60 years, despite the complexities of natural communities. From the fires of strong disagreement ultimately emerges the phoenix of scientific progress. But a better sense of history might reduce the sparks currently flying round population ecology, and help to generate less heat, more light and greater tolerance. □

John H. Lawton is a Professor in the Department of Biology, University of York, Heslington, York YO1 5DD, UK.

Plants in distress

Richard Dixon

The Biochemistry and Physiology of Plant Disease. By Robert N. Goodman, Zoltán Király and K.R. Wood. *University of Missouri Press: 1986. Pp. 433. \$45.*

RESEARCH in plant pathology is now entering an exciting period. Pathologists are becoming increasingly aware of the potential of new molecular techniques, while plant biochemists and molecular biologists are showing corresponding interest in plant-pathogen interactions as important systems for studies of cellular recognition, metabolic integration and gene expression. Any new, comprehensive review of this field should be judged in terms of its success in presenting the bases (often multidisciplinary) of current concepts, and its exposition of new experimental approaches. My first impressions of *The Biochemistry and Physiology of Plant Disease* were of a *magnum opus*, among whose wealth of detail would surely be found the signposts to future research. A full reading of the book left me impressed by the scale of the authors' understanding, but somewhat disappointed by the book's lack of direction and its conclusions.

Most chapters consist of brief descriptions of the biochemistry or physiology of a particular aspect of the healthy plant (respiration, photosynthesis, cell walls and so on) followed by detailed analyses of the effects of infection under the separate headings of viruses, bacteria and fungi. Taken together, the introductory sections almost make up a basic plant bio-

chemistry text, good in some sections (particularly cell walls), but in others too condensed to be of much value to non-biochemists (for example, the glyoxylate cycle is presented with no mention of its role in metabolism). Although the conceptual aspects are presented critically and lucidly, there are a relatively large number of material inaccuracies, particularly in the introductory biochemical sections — tyrosine is not only found in the *Gramineae* (p.211), acetyl CoA units are certainly not condensed to yield malonyl CoA (p.212) and phenylalanine is not altered by hydrolases (p.226).

The organization of the material, based on physiological divisions rather than temporal sequences of events, has inevitably led to repetition of information under different headings, although this is less apparent in the sections on viruses. Such repetition in a long work is often no bad thing, but some important topics are never fully dealt with in one section and appear piecemeal throughout the book. The accounts of the *Agrobacterium* system, fungal and host elicitors, and induced host gene expression fall into this category.

The scope of the book is, of course, clear from its title, and the depth of treatment and excellence of the illustrations will no doubt ensure its success as a standard text for advanced students. I was, however, disappointed by the lack of attention to genetics, both classical and molecular (viral nucleic acid metabolism excluded), as it is from the application of recombinant DNA techniques that the most promising developments in plant pathology will probably arise. In this respect, I feel that the authors' honestly-confessed lack of agreement in several areas, particularly the molecular basis of disease resistance, rather robs the book of an important component — that of informed prediction, even if based on personal prejudice. The search for avirulence, virulence and resistance genes is now a central effort in plant pathology, and more speculation in these areas, at the expense of repetition of correlative phenomena reviewed earlier in the book, would have increased the impact of the final "rounding-off" chapter on disease resistance. Likewise, the concluding sections to the individual chapters, each headed "Comparative Analysis of Disease Physiology", simply summarize rather than integrate the views of the individual authors.

Such problems apart, it is perhaps unfair to criticize the book too much for what it does not cover. It stands as a detailed source of information on physiological plant pathology, one which will certainly be widely read. □

Richard Dixon is a Reader in the Department of Biochemistry, Royal Holloway and Bedford New College, University of London, Egham TW20 0EX, UK.



Baking and brewing in Egypt around 2400 BC, taken from the Open University study pack on Biotechnology (PS621, £119). Designed for those with no specialist knowledge, the pack consists of over 600 pages of text divided between eight books, including two volumes Laboratory to Marketplace which look at the impact of biotechnology on a number of key industries, a series of case studies and two books of supporting technical material. Although the modular pack is designed to be free-standing, there is an associated set of six video tapes (£115 each or £299 for the set). Available from Learning Materials Sales Office, The Open University, PO Box 188, Milton Keynes MK7 6DH, UK.