

Phytochemistry, 1976, Vol. 15, p. 1190. Pergamon Press. Printed in England.

The Germination of Seeds by A. M. MAYER and A. POLJAKOFF-MAYBER. Second Edition. Pergamon Press, Oxford 1975. £5.

The format of this book has changed: the pages are bigger than in the first edition published in 1963, but the length is only slightly greater and the structure is almost identical. The chief change is the deletion of a chapter on 'Rest period and states of dormancy in other organisms' in order to enable the authors to incorporate new and more directly relevant material in the rest of the book.

Inevitably it is difficult for authors to decide what to include and what should be given emphasis in a book of this type which covers a wide field, and personal predilections are bound to influence the choice. Reviewers are also not immune from their own idiosyncrasies and consequently one is hesitant to mention the following apparent minor shortcomings. Little consideration is given to quantitative relationships and insufficient information is provided to enable the reader to understand fully the two equations quoted so that the reader could make use of them. The evidence that chromosome breakage in stored seed is more related to oxygen pressure (rather than CO₂ pressure) is not made clear. More emphasis could have been given to Thompson's extensive work in dealing with the temperature characteristics of germination. The classification of dormancy types does not include Harper's 'enforced dormancy' which has been a particularly helpful concept in dealing with ecological problems. The discussion on the osmotic inhibition of germination ignores the special advantages of using polyethylene glycol, and its use in the exciting practical

pre-sowing treatments which Heydecker has been developing. Although the discussion of the dormancy-breaking activity of thiourea is given prominence, there is virtually no discussion of the often more effective sulphhydryl compounds and Pollock and Kircop's suggestion that the activity of thiourea may be due to its *iso*-form. Although the effect of nitrate on germination is mentioned, there is no discussion of the possible mode of action of this very widely applicable ion, or of the fact that nitrite is often superior in activity. The discussion of respiratory inhibitors does not emphasise the fact that all the major terminal oxidase inhibitors (cyanide, azide, carbon monoxide, hydrogen sulphide) have been found to stimulate the germination of dormant seeds of a very wide range of species—even in lettuce azide may not necessarily be as inhibitory as implied and indeed can be highly stimulatory, as shown by Black. In discussing the depletion of seed population from the soil, insufficient attention is drawn to the evidence that suggests that a large proportion of the loss is due to *in situ* germination resulting in self-destruction.

Nevertheless these are minor quibbles and nobody who is interested in seed germination should be without this book: it is essential for research workers but at the same time its approach is broad and succinct enough to recommend as collateral reading to undergraduates. It is clearly written and contains sixty-four useful illustrations (six more than in the first edition). The references include some work published in 1974, and certainly a very large proportion of the papers quoted were published since the first edition.

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Plant Pathogenesis: by HARRY WHEELER. Springer-Verlag, Berlin, 1975. 106 pp., \$16.00.

This is a stimulating and valuable account of recent physiological, biochemical and ultrastructural researches into the nature of plant disease. Right at the beginning, the author points to the difficulty of defining even such a simple term as 'plant disease' and throughout he is rightly critical of much of the loose terminology that abounds in the literature on physiological plant pathology.

The various chapters in this brief book deal in turn with mechanisms of pathogenesis, responses of plants to pathogens, disease-resistance mechanisms and the genetics of pathogenesis. Phytoalexins, phytotoxins and phenolics all receive critical attention. Most of the material comes from recent reviews and research papers and, in fact, this text nicely covers the literature published

since R. K. S. Wood's *Physiological Plant Pathology* appeared in 1967. Professor Wheeler concludes, perhaps with tongue in cheek, with some support for the suggestion that changes in negative surface charge trigger off the physiological symptoms of plant disease. Clearly here, as in most other facets of plant pathogenesis, much more experimentation is needed before present theories can be accepted or disproved.

The book is attractively produced and is well illustrated with SEM pictures of microbes penetrating plant cell walls. However, since half the book covers molecular aspects, the absence of any chemical formulae or metabolic pathways is rather disconcerting. Apart from this flaw, this book can be highly recommended as a succinct and balanced survey of a fascinating and important area of plant research.

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