Book Reviews

A genetic approach to plant biochemistry. A. D. Blonstein and P. J. King (eds). Springer, Vienna, New York. 1986. Pp xi+291. Price DM 128, -. ISBN 3 211 81912 6.

When purchasing a volume of a series, information on the philosophy behind the series, the main subjects dealt with, the possible connection between the volumes, the type of readers to whom it fits, etc., would be useful. Unfortunately, this volume of the series *Plant gene research—Basic knowledge and application* lacks the number as well as the introductory paragraph to the series. Nevertheless, the real content of the present book forms a valuable source of general and specific information on plant biochemistry, treated from a genetic point of view.

The phenomenon “mutation” has been placed in a central position. Mutants are indispensable to geneticists for labelling chromosomes and for studying structure and function of genes, and organisation of the genome. To biochemists, physiologists and developmental biologists, mutations are also essential tools for the elucidation of the mechanisms behind biochemical and developmental processes. This book contains a lot of interesting information for those working on fundamental or applied subjects. In the first chapters specialists review gibberellin mutants, genetic aspects of abscissic acid, photosynthetic mutants, and molecular perspectives of maize alcohol dehydrogenase. The next chapters deal with nitrate assimilation, symbiotic nodulation and nitrogen fixation, and endosperm proteins. The last three chapters treat plant–pathogen interactions, gametophytic gene expression and *in vitro* isolation of auxotrophs. Unfortunately, the book lacks any mention of the biochemical genetics of primary and secondary metabolites.

The text is clearly presented, and the chapter subdivisions are consistent throughout the book. All chapters give an extended list of relevant references up to 1985 and the book contains a useful subject index. The (rather low number of) figures and tables are well-documented.

This attractive book can be recommended as a reference source to plant research-workers and graduates in the field of physiology, biochemistry, genetics, genetic engineering and plant breeding.

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Oxford surveys of plant molecular and cell biology. Volume 3. B. J. Miflin (ed). Oxford University Press, Oxford. 1986. Pp 477. Price £20.00. ISBN 0 19 854202 X.

In 1832, William Toone's *Glossary and etymological dictionary of obsolete and uncommon words, antiquated phrases and proverbs illustrative of early English literature* was published. It was and still is a jolly good read (how important, for example, to know that a “Wittol” is “one who knows himself to be a cuckold and is content”), but Toone seems to have started the book in a fit of enthusiasm which subsequently evaporated (or maybe the publisher's deadline got too close for comfort) since the letters A–C take up the first 201 of the 467 pages. A similar, albeit less extreme, organisation seems to have been used in the third volume of the *Oxford surveys of plant molecular and cell biology*—of the ten full reviews, the first (on legume storage proteins and their genes) takes up nearly a quarter of the space. Happily, though, there is no evaporation of interest here, and we are treated to a series of excellent reviews on organelle genetics, RFLPs, rRNA genes, nitrogen fixation, phytochrome, fruit ripening, and heat shock responses. These reviews are pitched at a very useful level for a plant scientist wishing to be brought up to date in areas with which he is less familiar than he should be, although I noted in one or two a tendency to concentrate in rather unnecessary and exclusive detail on the authors' own research. The presentation of the book is also reasonably good—certainly an improvement on the rather uneven and unpleasant print of the last volume in the series. There is a liberal sprinkling of typographical errors which are nearly all inconsequential, although I noted in one place that “anther culture” had become “another culture” and I marvelled at the stout souls who treated soybean embryos with abscissic acid at 10^5 M. (How did they get it all to dissolve? “I say, Chuck, can I borrow your cement mixer?”).

My major reservation was probably over the “News and Views” section, containing four very short articles, which does not seem at all appropriate to a publication coming out rather infrequently. The subjects of these chapters did not seem to be any more topical than the others and were just as worthy of full reviews. I also found the omission of the titles of articles in the reference lists in this section somewhat irritating.

Several themes recurred throughout the book. One is the great use in molecular studies of the stocks produced in breeding work—mutants and more particularly chromosome addition and substitution lines. This is a resource which is not available in anything like the same

way for animal work, and was particularly apparent in Flavell's chapter on rRNA genes. Another theme is the likely future role of *Arabidopsis* in plant molecular biology. Its small genome size, short generation time and ready availability of mutants (among other properties) make it well suited to become a green *Drosophila*, although in spite of early enthusiasm it seems to be a little slow in getting off the ground. A third theme, the importance of which cannot be overstated, is of course the development of transient expression systems and techniques for producing transgenic plants. The contribution these are making and will make to our understanding of the molecular and cellular basis of the control of plant gene expression is vast, and there were foretastes of it in several of the chapters. There is a lot of scope for refinement, of course, notably the need to be able to direct sequences to particular parts of the genome and also the need to get them into the chloroplast and mitochondrial genomes. The mitochondrial genome at least is becoming a little more accessible using the cybrid techniques described by Pelletier. I expect these and other themes will get the development they surely deserve in future volumes. Certainly I can recommend this volume as a useful collection of good review articles covering a wide, but by no means complete, area of Plant Molecular and Cell Biology.

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Biological, biochemical and biomedical aspects of actinomycetes. Parts A & B. Gabor Szabo, Sandor Biro & Michael Goodfellow (eds). Akademiai Kiado, Budapest. 1986. Pp. Part A xxvii + 429, Part B xxii + 451. Price: £59.50 ISBN 963 05 4395 8.

These two volumes contain the written account of the 6th International Symposium on Actinomycetes Biology held in Debrecen, Hungary in August 1985. Since the Fifties this group of organisms, especially those of the genus *Streptomyces*, has risen to a position of central importance in the biotechnology industry as a consequence of their proven value as antibiotic producers. Their continued importance derives not only from their capacity to synthesise antibacterial drugs but also a range of other secondary products which include antitumour, antiviral and herbicidal agents. This has stimulated a dramatic expansion of actinomycete research as was evident from this gathering of some 500 scientists from 27 countries.

The conference covered current research in all aspects of actinomycete biology. This was organised into nine plenary sessions devoted to: genetics, physiology and biosynthesis of primary metabolites, biosynthesis of secondary metabolites, biochemistry, morphology and ultrastructure, taxonomy, pathogenicity and immunology, ecology and epidemiology, differentiation.

However, it is notable that the application of molecular genetics to actinomycete research is now a major research focus with well developed DNA cloning systems complete with a range of designer vectors and associated DNA transfer systems.

The conference topics are covered in the written proceedings by three types of article; the full text of lectures read at the nine plenary sessions, abbreviated versions of eight mini-symposia and the abstracts of seven poster sessions. Each type of written article has its special value although the latter two, being brief, serve to give only a taste of the fruit.

As a snapshot of the current position of the entire field of actinomycete research these two volumes provide a collection of great value to those wishing to survey the field. This is really where its usefulness lies. As a sourcebook for undergraduates it lacks the necessary coherence and unification to be of much value although the major articles do represent mini-reviews. Unfortunately like others of its kind, this book suffers the fate of all snapshots in a field in full gallop—the field passes quickly by.

The comment on this group of organisms made by the symposium president in his preface will touch a chord with all those researchers who read this book. "They really are beautiful, although it is not easy to work with them".

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Population genetics and fishery management. Nils Ryman and Fred Utter (eds). Washington Sea Grant Program; Distributed by University of Washington Press, Seattle and London. 1986. Pp. xvii + 420 Price \$17.50 US PB; \$35.00 US HB. ISBN 0 295 96436 7 PB; 0295 96435 9 HB.

Any cynical geneticist who has worked with fish species of commercial or sporting importance may be forgiven for suggesting that until recently the two subjects linked together in the title of this book have been incompatible. The reasons for this are complex. Historically the genetical identification of fish stocks with a view to assisting in fisheries management commenced with studies on marine species. The species chosen usually had large population sizes, widespread distribution and complex life histories involving longterm planktonic egg and larval phases and adult migrations of great distance between spawning and feeding grounds. The degree of genetical variation these studies provided frequently proved insufficient to assist the traditional population dynamics workers in their efforts to manage fish stocks by catch quotas, restricted areas and seasonal limits.

However with the development of efficient hatchery techniques and programmes of stock enhancement for species over which some measure of population manage-