REVIEWS

GENETIC STRUCTURE AND FUNCTION. P. F. Smith-Keary. Macmillan, London. Pp. xvi + 368 + 177 text figures + 49 tables. £3.95.

This book, which is intended for use in second- and third-year courses in molecular genetics, is well described by its title. The emphasis is on genes and how they act, and classical cytogenetics, though not entirely neglected, is treated comparatively briefly. Prokaryotic examples naturally predominate. Within these limitations Dr Smith-Keary has produced an attractive, clearly written and up-to-date account of gene action. On the whole he holds a good balance between the different aspects of his subject though, inevitably, one is happier about some sections than others. There is more biochemical detail on molecular synthesis than one would expect to find in a genetics text and the book attempts, I think on the whole successfully, to cater for students who have little or no background of biochemistry courses. On the other hand, in a book of this kind, I would have expected to find a more detailed discussion of intra-gene mapping and the special problems associated with it. It is good to see a fairly full account of fungal tetrad analysis and, as one would expect from the author, the treatment of transduction is excellent. The chapter on mutagenesis is perhaps not so satisfactory, with a rather dubious story about the mechanism of frame-shift mutation, and some very questionable statements about the mode of action of bromouracil (whether it acts mainly by misincorporation or misreplication). The illustrations have obviously been given much thought and are neat and mostly helpful, though it is unfortunate that the one (Fig. 11-8) illustrating allelic complementation implies a precise structural complementarity between mutant protein subunits which is implausible in general and which nobody, so far as I know, has ever postulated. Again, *à propos* complementation, it is surely courting confusion to introduce the term in connection with intragenic (second-site) suppression (p. 299 and Table 17-2). I found the chapter on recombination clear and well done up to a point, but the relation between conversion and crossing-over is not well brought out; this is in part a consequence of concentrating on the original Whitehouse-Hastings rather than the Holliday model, which surely provides a more satisfactory framework for discussion. The final chapter on "Genetic Organisation and Function in Eucaryotes" makes fascinating reading and draws attention to most of the key problems, though I would have liked to have seen a more detailed account of different degrees of DNA sequence reiteration, and more consideration given to the likely role of non-histone chromosomal proteins (indeed the histones themselves receive rather scant consideration). A feature of the book is a comparatively full description of the McClintock controlling element systems in maize, which many readers are likely to find helpful.

Most of the above comments, so far as they are critical, reflect the personal approach of one reader and concern questions of emphasis about which opinions inevitably differ. There is, however, a more serious criticism to be made. Very little in the book is clearly wrong ("rRNA" for "ribosomal protein" in the Summary for Chapter 17 is evidently a slip) and, indeed, the general level of accuracy in matters with which one is familiar

inspires confidence in the reliability of the rest. Nevertheless, many university teachers who use the book are likely to feel the need for more references to original literature. There is a rather short list of recommended research papers, as well as others of collections of reprints and books, but many highly interesting statements in the text, evidently based on recent work, which one has either missed or cannot quite call to mind, are not backed by any reference. One asks "Is that really certain?" or "How can he know that?", without being told where to go to find the evidence. When teaching at University level to (one hopes) critical audiences, it is really not possible to use "facts" which are briefly stated in a textbook without being able if necessary to quote the primary sources. A more adequate bibliography would have required a significant number of extra pages, but I think it would have been worth it.

Broadly speaking, this book covers much the same ground, and in a rather similar style, to Watson's "Molecular Biology of the Gene". The greatest compliment one can pay to Dr Smith-Keary's book is that it may well be considered as a slimmer, less expensive and more up-to-date alternative to Watson's classic text. It deserves, and will probably achieve, a considerable sale.

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STADLER GENETICS SYMPOSIA, VOL. 6. Edited by G. P. Rédei. University of Missouri, Columbia, Missouri. Pp. 168. \$4.50.

This sixth volume of the now well-established series of Stadler Symposia is again good value for money, even though the articles are rather more variable in character and interest than in some of the earlier volumes.

There are several useful reviews of past work. In this category, Puck's account of the biochemical genetics of mammalian cells will serve as a succinct and authoritative introduction to the subject. A short review by O. L. Miller and his colleagues on electron microscopic visualisation of active genes brings eukaryotic and prokaryotic information together very usefully, with excellent photographs. Covering an apparently narrower field, but one which may have broad implications, Rowland Davies summarizes the elegant work on metabolic compartmentation in *Neurospora* which has been his own special contribution during the past several years. In a more controversial vein, Ungar's review of the evidence on the chemical basis of memory (learning through molecular cannibalisation) is also worth having, though it will leave many questions in the minds of the sceptics. Two papers deal essentially with work in progress. McBride discusses results which suggest that genetic information can be transduced into mammalian cells by isolated chromosomes, though whether the ingested chromosomes can ever replicate as such in the alien cell is not yet clear. The editor, Rédei, reports experimental results on mutations affecting photoperiodic response in *Arabidopsis*, with some preliminary results on the mechanism of an effect of bromodeoxyuridine in promoting flowering. A feature of this volume is an "extracurricular" article on "Genetics and