

Book Reviews

Genetic perspectives in biology and medicine.

Edward D. Garber (ed). University of Chicago Press, Chicago, 1985. Pp. vii+500. Price £25.50 HB; £10.25 PB.

This book is a collection of essays selected by Edward Garber from *Perspectives in Biology and Medicine*. His aim was to choose "those essays which most effectively tell the story of the latter twentieth-century advances". To some extent he has succeeded, but I get the feeling that his selection has had more to do with essays that he enjoyed. Why else include Bruce Wallace's pithy essay "Changes in the genetic mentality" in which he laments the scarcity of real geneticists in a world populated by ersatz geneticists, for example molecular geneticists (biochemists and physiologists) and developmental geneticists (embryologists), "scientists who once scarcely conversed with geneticists". J. B. S. Haldane's "A defense of beanbag genetics" is also there, but suitably sanitised for modern American sensitivities by the deletion of his epic poem "Cancer's a funny thing".

Garber has grouped the 28 essays under five headings: "History", "Two geneticists and a founding father", "Interdisciplinary genetics", "Human genetics", and "Futurism". These headings will give some idea of the scope of the collection. I need only say that I thoroughly enjoyed reading this book. It is well worth having for a bit of recreational scientific reading, and at £10.25 for the paperback, excellent value.

JOHN BARRETT
Department of Genetics
University of Cambridge

Animal behaviour: a concise introduction. Mark Ridley. Blackwell Scientific Publications, Oxford. 1986. Pp. vi + 210. Price £8.80 PB. ISBN 9 780632 014163.

In a memorable sketch from a memorable early series of *Monty Python's Flying Circus*, contestants in a quiz programme were obliged to summarise the works of Marcel Proust in 15 seconds. The result was a cleverly amusing, if verging on unintelligible, blast through the great man's character and writings. It left the viewer impressed but exhausted. While Mark Ridley has set himself the rather less heroic task of introducing the study of animal behaviour in 200 pages, the reader is left with something of the same sense of breathlessness by the time he gets to the end of the book. As he skips from mechanisms of behaviour to its development, function and evolution in this slim and copiously illustrated volume, Ridley manages to mention everything from

neurotransmission and the principles of Mendelian genetics to human culture and sexual selection. The result is a high-speed, if carefully directed, summary of the main fields of investigation.

On the whole, the book is well-written (an absolute necessity in this case) and Ridley makes his points with authority and some style (though pedants will be irritated by his consistent use of "less" where he means "fewer"). However, there is a price to be paid for brevity and in several places Ridley pays it. In his efforts to avoid space-wasting detail and qualification, he frequently leaves the reader, often undirected, to seek other sources to fill gaps in the background or look up counterarguments. In places, therefore, the book is not so much a self-contained introduction as a guide to what should be looked up elsewhere. The chapter on the machinery of behaviour (2) is particularly afflicted in this way. However, this is only a patchy problem. In other places Ridley explains difficult ideas with consummate skill; the first chapter on the biology of behaviour, for example, is quite simply one of the best introductions I have read.

A baffling aspect of the book is the almost complete lack of reference to cost-benefit analysis and optimality theory. While it is hinted at in various places, "optimality" does not appear in the index under anything and even in the chapter on finding food (5), it is mentioned for the first time only in the summary. Since the optimality approach derives logically from the idea of evolution by natural selection and has been responsible for some of the most profound insights of the last decade, its virtual invisibility here is extraordinary.

If omission is one cost of brevity, over-simplification is another. In the discussion of Rothenbuhler's bees (Chapter 3), for instance, Ridley implies that uncapping and removal behaviours are each controlled by a single gene. In fact the evidence suggests that these behaviours are coded for polygenically with the "U" and "R" alleles perhaps acting as switches. Similarly, it is a misleading simplification to say that kin recognition is necessary for the appropriate apportionment of altruism (Chapter 9) (even if this statement is weakly qualified later on). Some topics, such as motivation and the adaptiveness of migration, are dealt with so summarily that either little or no real insight is imparted or insight is imparted so sparingly that the reader is left confused rather than enlightened. The discussions of filial and sexual imprinting (Chapter 3) and the use of magnetic compasses and magnetic maps in navigation (Chapter 4) exemplify the latter problem.

Despite these difficulties, which all arise from trying to shoe-horn too much into too little space, there is no doubt that the book is a competent, informative and for the most part readable account. One has to ask, however,

what purpose it will serve at a time when there are already over 30 up-to-date textbooks dealing with animal behaviour on the market. In my view, its chief use will be an aid to lecturers in planning or revising undergraduate courses in animal behaviour rather than as a recommended text for students. Most of the ideas and examples dealt with by Ridley are dealt with, usually in greater depth, by many of the other texts and it is to these, I feel, that students will repair in their reading around.

C. J. BARNARD
Department of Zoology
University of Nottingham

Drosophila: a practical approach. D. Roberts (ed). IRL Press Ltd, Oxford. 1986. Pp. xix+310. Price £26.00, \$47.00 US HB; £16.50, \$30.00 US PB. ISBN 0 947946 66 7 HB, 0 947946 45 4 PB.

This volume sets out to be a simple guide to the basic techniques of *Drosophila* genetics. There has been a crying need for such a text for many years and the problem of writing it has become increasingly daunting with the introduction of molecular and biochemical techniques. In Chapter 1, Roberts outlines laboratory methods of handling *Drosophila* stocks. Successive chapters discuss such techniques as mutagenesis, transposon-tagging, microcloning, *in situ* hybridisation, the handling of embryos, induction of mitotic clones and monoclonal antibodies.

The real joy of this book is that each chapter is clearly written. The normal problem with multi-author texts, that the particular chapter you're really interested in is unreadable, has been avoided. This might reflect ruthless editing on Roberts' part, but I suspect has more to do with his care in selecting the contributing authors in the first place.

The text does not set out to be definitive. Rather it is a set of methods that work, with a few source references. As an introduction this is ideal: not only is the information in the book, but you can find it. Should your perusal be disturbed by a passing fly, the whole book remains small enough to be picked up and used to swat it.

Despite limitations of space, I would prefer to see the second half of Chapter 2 expanded. In this chapter, Grigliatti describes methods of mutagenesis and recovery of mutations and deletions. Techniques of handling chromosome aberrations, however, are mentioned only briefly. Much of the advantage of working with *Drosophila* derives from this arcane, terminology-ridden, branch of classical fly-pushing and a detailed discussion of the available approaches would be helpful. In particular, the segmental aneuploids of Lindsley and Sandler *et al.* are briefly mentioned and the reader is assured that the techniques are well described in that paper. As one of the generation of *Drosophilists* that broke its milk-teeth sweating over Lindsley and Sandler *et al.*, I readily concede that the method is conceptually

simple, elegant and a key work in the literature. It is not, however, easy to read. In addition, the omission of a discussion of Craymer's technique for constructing synthetic deletions and duplications from pericentric inversions is a serious lack.

This volume gives a clear, concise introduction to the techniques used by *Drosophila* workers. It is consistently well-written and well-illustrated despite covering a wide range of different approaches. Every flylab. should have a copy.

D. GUBB
Department of Genetics
University of Cambridge

Plant breeding systems. A. J. Richards. George Allen and Unwin, London. 1986. Pp. xiv+529. Price £45 HB, £19.95 PB. ISBN: 0 04 5810206 HB, 0 04 5810214 PB.

Over the past 20 years there have been enormous advances in our understanding of plant breeding systems. With the formulation of appropriate models, and the application of new genetic techniques, notably gel electrophoresis, it has been possible to take the subject beyond the level of description and speculation. We are now in a position experimentally to test theories of breeding system evolution and to investigate their genetic consequences. With the increase in knowledge comes the necessity for a new synthesis of ideas and a re-evaluation of current wisdom. Dr Richards has set himself the exciting but exacting task of producing such a synthesis, a task which few would have the temerity to undertake.

The author's interest in plant breeding systems stems from his love of plants and natural history and his enthusiasm for the subject is especially evident in Chapters 3 and 4 of this volume which deal with sexual reproduction in seed plants and floral diversity and pollination. I found these chapters stimulating and informative, illuminating many dark corners of my own ignorance. The style is chatty, with many anecdotal asides, a format which suits the topic admirably. Unfortunately this easy style is not sustained throughout the book. I gained the impression that in the preparation of many chapters too little time had been devoted to sorting, digesting and assimilating the material before it was presented. In places the book bears an uncomfortable resemblance to commentary on a series of papers which have just been read, and it is very difficult to discern a coherent theme running through the text.

A second shortcoming of the book is that the author shows a general aversion to mathematical modelling. The consequence is that many of the evolutionary arguments which he uses are verbal arguments which lack rigour, and are in the author's words "unashamedly popular and group selectionist". This leads to a number of inconsistent statements. Thus in Chapter 2 he argues that environments are so heterogeneous that there is