

inbred, strains. The products of artificial selection would be segregating at many loci, which could mean that larger sample sizes were necessary to characterize them, and would also make it harder to pin down any effects of selection to particular gene loci. Furthermore, the only justification for using mice is that they are more similar than *Drosophila* to humans. However, are they similar enough to justify the labour and expense of producing selected lines? There are clearly some imponderables involved here. However, the huge advantage of selected lines is that they show less ageing than the original wild type strain from which they were derived. The trouble with most of the mutants supposedly affecting ageing is that they either cause a drop in survival, or increase only longevity. This is true, for instance, of the catalase-deficient mice in Section 4 which show decreased lifespan and the *Caenorhabditis elegans* mutants described in Section 2, whose increased longevity may simply reflect the fact that they are virtually sterile, and therefore make little reproductive effort. There are lots of ways of making organisms go wrong; this does not mean that these mechanisms are involved in normal ageing. To understand the mechanisms of ageing it is necessary to postpone it by increasing longevity and late-life fertility: then one can be sure that any mechanism underlying the effect must have been involved in producing the earlier onset of ageing in the base stock.

In keeping with the focus on mammalian ageing, much of the volume is given over to accounts of ageing in specific tissues in mice and rats. There is also a section on human progeroid syndromes and Alzheimers, which make very interesting, if sad, reading. This is a valuable collection for those actively involved in research on ageing, although the frequent typos are an irritant. At £50 the volume is too expensive for the general reader to buy, but some of the chapters would make it worth borrowing from the library for a browse.

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The Comparative Method in Evolutionary Biology. By PAUL H. HARVEY and MARK D. PAGEL. Oxford University Press. 1991. 239 pages. Price £12.50. ISBN 0 19 854640 8.

Evolutionary biology is not an experimental subject. That statement would probably appear to be self-evident to the vast majority of the audience for this book, although it is not entirely true. In consequence of the inability to experiment, knowledge has to be gained by the use of extreme rigour in inference. Darwin's writings are permeated throughout with the awareness of this need, as have been those of the other great contributors to the study of adaptation. There is an extreme contrast with a prokaryotic molecular biologist who can have the most way-out ideas, but

has to test them by tightly controlled experiments. So the establishment of an accepted approach which is quantitative and based on appropriate statistical techniques, which is the Comparative Method, has been an important development of the last decade or so and one with which Harvey has been closely associated. In particular, he has pointed out the importance of taking out the effect of phylogeny when making such comparisons, and in this book gives a comprehensive description of a rigorous approach to evolutionary inference based on these principles. This book is undoubtedly an important contribution and will serve to consolidate the recent developments in the area by making them more widely disseminated.

The book introduces the problem posed by relationships between taxa in the analysis of adaptation and takes the reader through the reconstruction of phylogenies, emphasizing the cladistic method but also discussing to what extent this is appropriate for phylogenies based on purely molecular data. The problems involved in comparative analysis in the content of a known phylogeny are then discussed, first with discrete data and then with continuous characters. The statistical frameworks within which knowledge of the phylogeny can be taken into account are then presented with numerous examples. After reading it I should feel confident that any competent behavioural ecologist would be able to put their investigations of the adaptive significance of a particular trait on a sound basis. The main direct criticism I have of the book is a tendency to make references to some studies in an almost cryptic manner; for example on page 25 'Sandell's (1989) optimality model... is a fine example'. A fine example it may be but the reader is not told why, and this detracts from our understanding of the point which follows, which is about the requirement for 'suitable data'. Likewise, the subsequent presentation of Martin's analysis of the relationship between brain mass and body size in birds and reptiles: '(he) had both pre-empted Armstrong's explanation and cast doubt upon it...' is not made clearly. The extent of the difference in metabolic rate between these two groups, which is the critical point in this discussion, is not given. Perhaps this is the 'Oxford' style?

That brings me to the main point which occurred to me on reading the book. This cannot really be levelled at this book but perhaps indicates the need for another one. Evolutionary ecology is a highly anthropocentric field, with most of the publications centring on either furred or feathered animals. Yet the biggest development in biology recently has of course been in the molecular areas and in developmental biology, and investigators in those areas are forever making 'evolutionary' comparisons and deductions. These are frequently naive because these scientists have been trained in an experimental subject, as outlined above. Yet they have every reason to want to know how to make reliable inferences from evolutionary compari-

sons, and another great service would be done by a less comprehensive book which dealt with the Comparative Method at an introductory level and was more accessible to biologists from the experimental fields. Within Harvey's Department at Oxford are also some leading developmental biologists. When they and the evolutionary biologists start talking to each other we can expect some real progress.

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Genetic Disorders and the Fetus: Diagnosis, Prevention and Treatment (third edition). Edited by A. MILUNSKY. The Johns Hopkins University Press. 1992. 992 pages. \$125.00. ISBN 0 8018 4413 4.

The original edition of 'Milunsky' appeared in 1979, at the end of the first decade of the clinical application of prenatal diagnosis to chromosomal disorders, inborn errors of metabolism and congenital malformations. As a comprehensive summary of the state of the art it had few peers, and it became the reference text for genetic counsellors, obstetricians and laboratory personnel. More than half of the first edition was the personal work of Aubrey Milunsky, whose command of the literature was one of its most impressive features. In the second edition it became an edited work, and although this allowed expansion of topics covered, there was consequent loss of the unique Milunsky style.

The surprising feature of the third edition is how little different it is from the second, given the many achievements that have occurred in prenatal diagnosis over the last six years. It is even 15 pages shorter, for which some kind of ecological award should be made. Several chapters have been dropped – flow sorting of metaphase chromosomes, Rh disease and prenatal diagnosis and public policy. Two chapters have been added, on fetal cells in the maternal circulation and on fetal therapy. The main difference is that the sense that chapters had been thrown in the air and then ordered as they fell, which was such a startling aspect of the second edition, has gone. This is a logically organized book and now one has the feeling that Milunsky has the right formula and will stick with it. And so he should; this is a very successful book.

The main role that a reviewer should play in assessing the merits of a book of this nature is to rate it against the competition. Here I have a problem, because the only current alternative to Milunsky (M) is *Prenatal Diagnosis and Screening*, edited by Brock, Rodeck and Ferguson-Smith (BRF), and published by Churchill-Livingstone in 1992. Naturally I prefer the latter. I am tempted to do a Julie Burchill and tell you all about my book in this review of Milunsky, but instead I shall try a fair-minded comparison.

There are many similarities between the two, with M weighing in at 3 lb for its 880 pages and BRF at 6 lb for its 785. M costs £94 and BRF £95, the latter being printed on fine quality paper. M gives you 29 chapters and 47 contributors, most of whom are American, while BRF has a more international distribution of 71 contributors over 47 chapters. Given the amazing time that it takes a publisher to produce a finished product from a manuscript, it is gratifying that both books managed to include the cloning of the fragile X gene (May 1991), and unsurprising that neither could cover the myotonic dystrophy gene (February 1992).

I do have one personal gripe about Milunsky's book. He invited me to contribute the chapter on cystic fibrosis, but when I pointed out that I was editing BRF and would be writing the chapter on CF in that, abruptly withdrew the invitation. What offends me is that my replacement has produced quite the most pathetic account of the subject I have seen in a long time. Cystic fibrosis is one of the most important disorders for DNA based prenatal diagnosis and deserves better treatment.

The main difference between the two books lies in emphasis. M is an encyclopaedic tome and probably cites every paper on prenatal diagnosis ever written. Occasionally, this makes it irritatingly uncritical, but as it is primarily aimed at people who want facts rather than opinions, this does not matter too much. The laboratory scientists will find it a hugely useful book. BRF is conscious that it is obstetricians who control access to prenatal diagnosis, and who because of the growing powers of imaging techniques, actually do the lion's share of the practice. Thus BRF has a whole section on congenital malformations and is particularly strong on ultrasonography. I would guess that if choice between the two has to be made, it is likely that it will be geneticists and scientists for M and obstetricians and other medical specialists for BRF.

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The Biology of Mosquitoes, Vol. 1: Development, Nutrition and Reproduction. By A. N. CLEMENTS. Chapman & Hall. 1992. 509 pages. Price £69.00. ISBN 0 412 40180 0.

This book is an absolute must for any laboratory working on mosquitoes. It covers everything about their genetics, morphology and development as well as information on physiology and endocrinology.

It is a good mix of descriptive biology, essential for a handbook to be of value, and experimental studies. The diagrams and figures complement the text extremely well and the extensive reference list will be of great value to newcomers to particular areas of study.

Each chapter of the book is thoroughly researched and Alan Clements has gone to a great deal of trouble