work on natural selection in the Darwin finches is discussed (though one of the relevant papers is listed), and there seems to be no treatment of character displacement. To those who believe that the evolutionary play can be performed only in an ecological theatre, this is no trivial matter.

The production of the book is workmanlike, with non-glossy but generally clear figures. A nice feature is the inclusion in the legends of precise references to their sources, and individual chapters have substantial bibliographies. The use of bold type for technical terms that are defined in the glossary is helpful, while emphasizing the jargon load with which biology students are burdened. In some places the text could have been improved by a more critical editorial eye, and there is a sprinkling of misprints.

Overall, I would welcome this as a timely and impressive book, but look forward to a second edition in which the few weaknesses can be eliminated. In the meantime it is likely to be frequently adopted in a new breed of evolution courses for the 1990's, which should demonstrate to students in all areas of biology that their subject still makes no sense except in the light of evolution.

N. PHILIP ASHMOLE
Department of Zoology, University of Edinburgh

Molecular Biology of RNA. UCLA Symposia on Molecular and Cellular Biology, New Series, Volume 94. By THOMAS R. CECH. New York: Alan R. Liss and Sussex, England: John Wiley & Sons. 1988. 392 pages. $80.00 from Alan R. Liss. ISBN 0 8451 2693 8.

Not so many years ago, RNA was the focus of attention for biochemists interested in nucleic acids. DNA was inert and long; it was a forbidding barrier to studies of gene expression, and progress in sequencing DNA was slow. Some sequencing techniques even involved priming to incorporate ribonucleotides into the copy DNA. Restriction enzymes changed all that; cloning and rapid sequencing of DNA followed, and RNA was left to one side except for the purpose of mapping the transcribed segments of DNA. DNA sequences sufficed to describe RNA sequences, and studies on the mechanisms of processing RNA were naturally the concern of enzymologists; few people were interested in the properties of RNA *per se*.

'The Molecular Biology of RNA', therefore, is a stimulating title for a symposium and a book; it tells us that RNA is once again the primary focus of attention for many scientists. Nonetheless, the title is not very informative. The phrase 'molecular biology' encompasses both an emphasis on the processes of gene expression and an interest in the atomic structure of macromolecules; rarely do the twain meet. In this case it is plain that to many workers RNA is a passive substrate, and to others it is an absorbing type of molecule with its own activity. The revival of interest in RNA is the outcome of the realisation that the regulation of gene expression operates at many levels, most of which involve RNA as a substrate, together with the discovery in the early 1980s that some RNA molecules are intrinsically reactive or catalytic. At present, conferences on RNA tend to hold these divergent aspects together, and possibly with good reason: who knows, nowadays, when an RNA substrate will be found to contribute to the reaction, or when an enzyme will reveal an RNA component? Nonetheless, the dichotomy of views is there.

The book reviewed here is a compilation of contributions to the 1988 UCLA Symposium on the Molecular Biology of RNA. The editor is Thomas Cech, whose pioneering work on inherently reactive RNA has been followed by a string of rigorous and elegant studies on its properties; with justice, this work has been praised widely, and it has done much to stimulate the current interest in the properties of RNA. In his preface, the editor remarks that a number of meeting topics are not represented, and he lists some of these: NMR of RNA structure, the activity of group II self-splicing introns, self-cleaving infectious RNA of plants (hammerheads etc), enzymes with RNA substrates, tRNA-symthetase interactions and mechanistic studies of RNA splicing. If there was deliberate selection, these omissions are unfortunate. The scope of the book is very wide, and it might have been worthwhile to concentrate on, say, the more chemical work on RNA, or to have divided contributions into two volumes with different emphases.

Can a book be useful if it comprises only short accounts of results which, by and large, were published before the book was printed? In some cases, the answer must be positive. I can imagine that a comprehensive compilation of accounts in a given area would be of use to those for whom the area is interesting but usually peripheral; such a book would be a good starting point for systematic study of the most recent work. However, this book contains too few entries for each of too many topics to be useful in this regard: for example, there are no entries from Cech's own group under 'RNA Catalysis', and there are only one or two entries out of 36 relating to pre-mRNA splicing (a useful point of comparison is that splicing was the subject of about half of the papers presented at the 1989 Cold Spring Harbor meeting on RNA Processing). With such deficiencies, was it worth while including these topics at all? Another merit of such a volume might lie in accessibility, i.e., the short accounts might be more digestible than the principal primary reports to an outsider, or there might be mini-reviews of each topic. Instead, the accounts here are written in much the same style as in the primary literature. Claire Moore and David Draper do summarize discussions on particular topics, but, useful as the summaries are, it was disappointing to find that

they merely report workshop presentations rather than providing any indication that the methods or conclusions stimulated suggestions, criticism, pontification about their significance, or so on; in short, there is no evidence that there *were* any discussions.

I would not buy this book. For reviews, or for the primary literature, I would look elsewhere. The only merit of the book is that it serves to remind one of the diversity of work on RNA and of the need for meetings and editors to recognise this. The UCLA meeting itself was large, and attended by members from most laboratories with interests in RNA. Such meetings are excellent for lifting one out of a specialist's rut and for providing the comprehensive coverage lacking in this book. They are particularly valuable for newcomers to a field. Nonetheless, the outcome of this diversity and the dichotomy of attitude to which I referred earlier may mean that for meetings on RNA the future lies in smaller, more specialised and more intense meetings; books will move in the same direction or towards compilations of reviews. Perhaps this book, in missing the mark, has made a point after all: the field that Cech has done so much to revitalise has grown up already.

I. C. EPERON
Biochemistry Department
University of Leicester

Plant Breeding Methodology. By NEAL F. JENSEN. Chichester, West Sussex UK: John Wiley & Sons. 1989. 676 pages £39.30. ISBN 0 471 60190 X.

The author of this book is an experienced and successful plant breeder who spent a working lifetime breeding wheat and oats in upper New York State. The author's long experience comes through and the already well-informed reader will gather many points of interest, especially as Jensen was a pioneer in programmes aimed at exploiting enhanced recombination and population heterogeneity. (For example, he invented the now often-heard word 'multiline' in 1952.) Unfortunately, only the experienced reader will benefit; the innocent would get a very unbalanced view of plant breeding and the work is unlikely to do more for students than provide some references.

The book (a large one) consists of 38 chapters put together on no very clear basis and ranging in content from a few pages on genetic engineering in chapter 2 to '101 ways to enrich your breeding program' in chapter 38. The text itself (unadorned by biometrics, tables or figures) is mostly composed of a mass of summaries of published papers. The author has certainly read a lot and his reading has the (now rare) merit of going back to the 1940s and earlier. But his horizons are, alas, bounded by few crops and a limited geographical area: small grains in the north-eastern USA. A few other US crops (corn and soybeans) are mentioned and Europe just gets in; but clones, perennials and the big wide world outside hardly exist.

So I found the book interesting, enjoyed the author's evident horse-sense and got some useful references. But I can't recommend it except to those who already know enough to read critically and selectively.

N. W. SIMMONDS
The Edinburgh School of Agriculture
Kings Buildings
Edinburgh

Chromosomal Variation in Man: a Catalogue of Chromosomal Variants and Anomalies. By DIGAMBER S. BORGOANKAR, 5th edition. New York. Alan R. Liss, 1989, 852 pages. $96.00. ISBN 0 8451 4275 5.

This is the definitive and authoritative reference book of chromosome variation in man. It first appeared in 1975 and has gradually achieved pre-eminent status in the cytogeneticist's library. Reading it is like dipping into a telephone directory, an exercise best avoided unless one wants a particular number.

The book is organized, as one would expect, in numerical order of chromosomes. Almost two-thirds is taken up by structural variations and anomalies, marching from 1 to 22 and then from X to Y. Numerical anomalies follow and there is a final section on chromosomal breakage syndromes. The subject index is a little thin, but the author index is quite splendid. It is interesting to note the extent to which human clinical cytogenetics has been dominated by the French School of Boué, de Grouchy, Dutrillaux, Gallano, and Lejeune.

One cannot really fault this superb collection of data. Just as no medical geneticist can work without a McKusick, no cytogeneticist can be without a Borgoankar.

DAVID J. H. BROCK
Human Genetics Unit
Western General Hospital
Crewe Road, Edinburgh