cerned with the biochemistry (six papers) and the physiology and pathophysiology (10 papers) of branched chain amino acids and keto acids, and with the diseases in which either their metabolism is affected by genetic causes (three papers) or in which their use in therapy is advocated, the latter including protein wasting diseases (two papers), kidney diseases (five papers), and liver diseases (eight papers). Some of the papers present excellent reviews of current knowledge in the field while others are more superficial and weak. Particularly good are biochemical chapters on α -keto isovalerate metabolism in liver and its interactions with other metabolic pathways, and chapters on the role of branched chain amino acids in the regulation of glucagon and insulin release and of brain neurotransmitters that complement chapters on disease states. The latter concentrate on areas of medicine in which branched chain amino acids and keto acids are used in treatment, particularly in chronic uraemia and in hepatic cirrhosis and hepatic and portal-systemic encephalopathy. There are only three papers on genetic disorders, concerned with isovaleric aciduria and with 'MSUD' (branched chain keto aciduria), and in the general context of the book and symposium I found these rather out of place and reiterating information that is readily available elsewhere.

The book is well produced with clear figures and tables. Most chapters contain a useful summary, although the format used is inconsistent through the book and even two systems have been used for references. The book will be of most value to biochemists and physiologists interested in branched chain amino acid and keto acid metabolism and functions and to clinicians interested in their application to therapeutic medicine. There is little to recommend the book to medical geneticists who are without a specific interest in these areas, and with the relatively high price I would expect this book to find a place primarily in libraries of institutions involved in research and medicine in these areas.

R A CHALMERS

Evolutionary Biology

Volume 18. Edited by Max K Hecht, Bruce Wallace, and Ghilleen T Prance. (Pp 267; figures + tables. \$37.50.) New York: Plenum Press. 1984.

Evolutionary Biology has appeared for 18 years as a series of reviews, commentaries, and original research reports, all based on the conviction that evolution is a unifying principle in biology. It is edited in the USA by a distinguished team of three

and a total of only five editors has been involved from the series' outset. They have produced a journal with a consistent standard which has rightly been highly acclaimed. It contains long articles, often too long for standard journals, on a breadth of topics which reflect the underlying evolutionary theme. Papers on evolutionary aspects of anthropology, biochemistry, developmental biology, molecular biology, and physiology have all appeared, as well as those in more obviously evolutionary disciplines, such as genetics, palaeontology, and ecology.

Volume 18 exemplifies the broad content of the series. It contains six articles on: species selection by A Hoffman; homology in the bird wing skeleton by J R Hinchcliffe and M K Hecht; interspecific hybridisation in *Drosophila* by I R Bock; a demographic theory on the evolution of mating systems by B G Murray; ecomorphological convergence among Mediterranean bird communities by J Blondel *et al*; and arboreality in metatherian and eutherian mammals by F Szalay.

The articles on species selection and the evolution of mating systems are important theoretical contributions in areas of considerable topical debate and dispute. Bock's comprehensive review of the 1500 or so species of *Drosophila* indicates that the ability to cross, and produce offspring, with a closely related species is more the rule than the exception, but is mainly a laboratory phenomenon since hybrids in nature are very rare. The three remaining report/reviews are concerned with specialised aspects of homology or convergence. All six articles maintain the previous high standards of the series. They are authoritative, well organised, and well written. Each is a significant contribution in its own field.

Evolutionary Biology is clearly not aimed at the layman with a general interest in evolution; rather it will interest professional biologists, particularly those active in evolutionary studies. As a series it should be on the shelves of all libraries catering for the biological sciences. As this reviewer knows from recent experience, scanning the contents of previous volumes can be extremely profitable in both the contexts of teaching and research. I look forward to volume 19.

D R LEES

Annual Review of Immunology

Volume 3. Edited by W Paul, C G Fathman, and H Metzger. (Pp 584; figures + tables. \$27.00.) USA: Annual Reviews Inc. 1985.

This is a relatively new series with a format similar to its respected stablemate *Annual Review of*

Biochemistry. The first chapter by Merrill Chase is a historical view of the immunology of skin reactions given from his personal perspective. The remaining 19 chapters are written in the more usual, impersonal style of scientific writing and cover a wide range of immunological topics. If there is a pattern in the choice of topics it is not obvious, nor is there any apparent logic in the order of the reviews. Nevertheless, most of the reviews are up to date (including 1984 references) and well endowed with references. The topics include fundamental aspects of immunology, for example, Ia gene expression, B lymphocyte differentiation, mechanisms of lymphocyte mediated cytotoxicity, and T lymphocyte receptors, as well as disease related topics, such as pemphigus, myasthenia gravis, diabetes, and perhaps inevitably chapters on both human T cell leukaemia viruses and the immunology of AIDS.

This is certainly not the sort of book to read from cover to cover, but it should provide a valuable source for teachers and researchers who need a current account of any of the selected topics.

N MATTHEWS

Fragile Sites on Human Chromosomes

By Grant R Sutherland and Frederick Hecht. (Pp 280; figures + tables. £40.00.) Oxford: Oxford University Press. 1985.

Study of the chromosomal fragile sites has been one of the fastest growing areas of cytogenetics over the past five or six years, and this book brings together many of the clinical and laboratory aspects under one cover. It is thus a very useful and informative text for clinical geneticists, routine cytogeneticists, and research workers alike.

The fragile sites can still at this time be firmly divided into the autosomal variety on the one hand, which may have clinical relevance, though this is as yet unproven, and the fragile Xq27 or 'marker X' on the other, which certainly does have relevance in the field of mental retardation. This demarcation between the fragile X and the rest tempts the reader to regard them as separate entities, and so it is with some surprise that instead of finding the book divided in this manner it attempts to set the fragility of the X chromosome into the context of all the other known fragile sites.

The book then divides naturally into laboratory aspects, clinical aspects, and genetic aspects of all the fragile sites taken together, rather than considering marker X and the rest. Of course, the clinical aspects section is primarily devoted to fragile Xq27 because it is this site which is associated with

Martin-Bell syndrome and mental retardation. The phenotype associated with the syndrome is described in some detail. This section also discusses the special problems associated with the fragile X syndrome, in that female heterozygotes can be clinically affected, sometimes quite severely, while males can transmit the condition while remaining unaffected.

The chapters on the laboratory aspects are particularly useful for the cytogeneticist as they clearly define the different classes of fragile sites and describe how each may be detected. The section on the genetic aspects, however, permits speculation and, after tackling the very knotty (in the case of the fragile Xq27) problem of segregation analysis, it offers a chapter on the possible relationship between the fragile sites, cancer, and oncogenes, an area which opens up many possibilities for research. Perhaps too in the next edition of the book, DNA probes will have moved from the chapter on future prospects.

Attempting as it does to bring together all the different aspects of the chromosomal fragile sites, this book is especially recommended for departments where cytogeneticists and clinicians are working alongside each other as it is instructive for both. It is, however, rather expensive for the individual person who presumably must wait his turn for the departmental copy.

TESSA WEBB

Chemical Mutagens. Principles and Methods for their Detection

Volume 9. Edited by F J de Serres. (Pp 306; figures + tables. \$42.50.) New York, London: Plenum Press. 1984.

This volume represents the latest in a series which contains an extensive range of contributed papers covering various aspects of mutagenicity. The papers include descriptions of many of the assays and techniques used to detect and evaluate chemicals which may be capable of inducing genetic change in living cells. As in previous volumes the Editor, Dr de Serres, has collected together a variety of papers written by experts in particular aspects of the diverse scientific discipline which is now generally called 'genetic toxicology'.

This latest volume contains four chapters describing techniques involving the use of strains of bacteria and viruses to detect mutagenic activity, two chapters describing the use of cultured mammalian cells, and two chapters describing rather more 'unusual' assays, that is, a grasshopper neuroblast