Book Reviews

Methodology in medical genetics (2nd edition). Alan E. H. Emery. Churchill Livingstone, Edinburgh. 1986. Pp. 197. Price £24.00. ISBN 0443 03509 1.

This is an excellent concise little book. It provides practical coverage of many topics which are of interest to the more statistically inclined medical/human geneticist. There are 12 chapters in all and the topics include the bases of Hardy-Weinberg, genetic linkage, segregation analysis, multifactorial inheritance, disease associations, resolution of genetic heterogeneity and recognition and estimation of changes in disease frequency.

The structure of each chapter is very similar. For instance the chapter on twin studies, their use and limitations, states why twins are important in genetic studies before discussing variation in twinning rates, diagnoses of zygosity, concordance/discordance and the use of twin studies with continuous characters. The chapter concludes with a brief overview of the problems and limitations of twin studies. All these topics are covered in a mere 13 pages and there are worked examples where relevant. Consequently each chapter provides worked examples of the methods used as well as their advantages and disadvantages.

In summary, this book provides an ideal reference and worked guide for many of the most important areas of relevance to medical and human geneticists. Highly recommended for both student and staff.

NICK MASCIE-TAYLOR
*Department of Physical Anthropology
University of Cambridge*

Breeding of silage maize. O. Dolstra and P. Miedema (eds). Pudoc, Wageningen. 1986. Pp. 191. Price Dfl. 80.00. ISBN 90 220 0895 9.

This book is a compilation of papers and abstracts of posters presented at the 13th Congress of the Maize and Sorghum section of Eucarpia held at Wageningen in September 1985.

The main topics covered are use of genetic resources, cold tolerance, improvement of feeding value and selection criteria for silage maize.

Breeders are currently very active in adapting silage maize varieties so that they can be reliably grown in cooler, more northerly areas. Many of the papers are consequently devoted to the effects of low temperatures upon growth, development and digestibility and the book is an absolute goldmine of information for those workers concerned with extending the geographical range of silage maize northwards.

It is pointed out by te Velde (Maize for Silage in the Netherlands, p3 *et seq.*) that in 1984 silage maize accounted for no less than 24 per cent of the total area under arable crops in the Netherlands. However, the growth in popularity of silage maize is due in part to a move towards more specialised farming methods as well as to the availability of improved varieties. It is further pointed out that yields of dry matter in the Netherlands are only about two-thirds of those obtained in southern Italy and that yield stability leaves much to be desired, being less reliable than winter rye.

It is clear that if silage maize is to continue its northward march, then much attention will have to be given to identifying and counteracting those factors which are the principal causes of yield instability in cool wet windy climates. In addition to cold tolerance, other problems include slow initial growth (which may not be related to cold tolerance), proneness to lodging, fungal diseases and, paradoxically, sensitivity to drought. For those working in northern climates, these problems must claim a higher priority than those associated with nutritive value or digestibility.

The book is well produced and commendably free from misprints. It is essential reading for all those involved in the improvement and testing of silage maize, especially in N.W. Europe.

B. E. COSTELLOE
*N.I. Horticultural & Plant Breeding Station
Loughgall*

The genetics of the skeleton: Animal models of skeletal development. D. R. Johnson. Clarendon Press, Oxford. 1986. Pp. xvi + 407. Price £45.00. ISBN 0 19 854183 5.

This book sets out to replace the classical but out of print work of H. Gruneberg (1963) *The pathology of development*. Dr Johnson retains most of the original section headings in that text but brings it right up to date with a mass of information and new concepts which have emerged in the intervening 2 decades. He does not attempt to review the whole field of inherited disease but concentrates on the skeleton. The 10 chapters describe animal models of disease processes, the membranous skeleton, the cartilaginous skeleton, the bony skeleton, the axial skeleton, the skull, face and palate, the teeth, limbs, the interaction between genes and teratogens and then finally enters a philosophical discussion of the validity of these animal models. In each section, the author first describes normal skeletal development, before comprehensively reviewing disorders and defects and the mutant genes responsible for

them—these are grouped by similarities in animal, mostly rodent, models. The story is completed with an overview, and conclusions are drawn about the relevance of the lesions seen in animal models to human disorders. References are listed at the end of each chapter and include those available up to 1985. The whole text is well indexed. The black and white line drawings are clear and complement the text. Although coloured light micrographs would have been welcome (but presumably prohibitively expensive) the black and white photographs are surprisingly good.

It is assumed that the reader is medically or biologically trained, familiar with basic genetics (even if, as in my case, from a long perspective) but the book is not directed toward the expert geneticist. As such, I found the presentation clear and logical and, above all, enjoyable to read. I like the balance between basic science and clinical relevance. The book should appeal to all students of embryology and developmental pathology of the skeleton from teratologists to orthopaedic surgeons. It is very good indeed.

COLIN GREEN
*Northwick Park Hospital
Harrow*

Exploiting new technologies in animal breeding, genetic development. C. Smith, J.W.B. King and J.C. McKay (eds). Oxford University Press, Oxford. 1986. Pp. xii+202. Price £30.00. ISBN 0 19 854209 7.

This history of the science of genetics is a fascinating drama, from the publication of Mendel's papers in 1866, their "discovery" in 1900, through the Crick/Watson race for the publication of the genetic code, to the exciting prospects of present day applications to animal breeding. A rational assessment of the exploitation of developments in genetics and reproductive biology requires a balance between the accelerating euphoria of possible scenarios and a cooler, rational, jaundiced appreciation of practical, ethical and economic constraints.

This book reports the proceedings of a seminar in the Commission of the European Communities Animal Husbandry Research programme held in Edinburgh in 1985. It is a good read and not to be missed by practising animal geneticists who want to glimpse a frame of this fast moving saga. In spite of the interest of the individual contributions the editors have had difficulty in setting out a discernible logical pattern to link it all together and there is at times a disconcerting (possibly inevitable?) variation in style and format. However, with one or two exceptions, the contributions generally fulfil a prime requirement of such an exercise in communication, that of clarity of expression at a level comprehensible by a range of specialists in the various facets of the field.

The coverage admirably straddles some of the areas of interest at the meeting point of reproductive biology, genetic engineering and their use in the genetic improvement of farm animals. These include the manipulation of the embryo, transfer of genetic material (at the DNA and chromosome level) and the applications for determination of sex, genetic change in farm animals (both for traditional and new products) and indirect identifications of breeding value. Overlap between these contributions has not been entirely avoided. Other contributions concentrate on specific genetic problems relating to control of double muscling in cattle the control of ovulation and the usefulness of ovulation rate measurements in the development of highly prolific stocks of sheep and pigs and the assessment of the possible value of embryo transfer and of sexed embryos and semen in cattle and sheep systems.

All in all an interesting, patchy chimaera of a book that will need regular updating by further descendants to keep up with the exciting facets of this developing drama.

JOHN B. OWEN
*School of Agricultural and Forest Science
University College of North Wales*

Nucleic acid and protein sequence analysis. A practical guide. M.J. Bishop and C.J. Rawlings (eds). IRL Press, Oxford. Pp. xviii+417. Price £19.00, \$34.00 US PB; £30.00, \$54.00 US HB. ISBN 1 85221 006 0 PB, 1 85221 007 9 HB.

The avalanche of DNA sequence data coming from molecular biology laboratories has created the need for an introduction to the computer procedures available to deal with this data. Many of the questions being asked about sequences are ones which computers are ideally suited to answer. Thus, programs should be used for locating restriction sites, demonstrating open reading frames, calculating base, codon, and amino acid compositions, assembling contiguous DNA sequences from shotgun sequencing gels, and performing the important steps involved in formatting and annotating sequence information for publication. The details of these and other analyses are supplied in this new addition to the Practical Approach Series.

The chapters can be divided into those dealing with available DNA sequence analysis packages, databases, and the hardware on which they operate (Chapter 1-5), chapters on the processing of restriction fragment and sequencing information (6-9), and a series of chapters on more complex sequence analyses in which computers can be employed. Stormo (Chapter 10) discusses what, in eukaryotes, is the complicated problem of identifying coding sequences within DNA. Gouy (11) and Taylor (12) discuss the use of computer algorithms in attempts to predict secondary structures of RNAs and proteins respectively. Collins and Coulson (13) discuss methods