behaviour disorder, and sex chromosome abnormality for the data which it provides. It cannot be recommended as a good review of the history of this field for those not already familiar with the literature.

M. D. CASEY

Birth Defects. Edited by A. G. Motulsky and W. Lenz. (Pp. xviii+373; figures+tables. Dfl.105.00.) (International Congress Series No. 310.) Amsterdam. North Holland. 1974.

This book covers many aspects of the causation and management of birth defects. Although the term 'birth defects' means 'conditions of prenatal origin . . . manifest at birth or various ages later in life', the subject of this fourth international conference sponsored by the National Foundation—March of Dimes deals with malformations and diseases which are congenital, or which are apparent in infancy. This volume presents the papers of the invited speakers, and gives summaries of the workshops. Such selectiveness is good, and indeed the abstracts of the free communications are available in an earlier publication (International Congress Series No. 297). The subjects of the invited papers are wide-ranging and include cellular and molecular biology, precise analysis of chromosome structure, sex determination and differentiation, epidemiology and teratology, prenatal diagnosis and genetic counselling. In an interesting pair of papers M. M. Kaback and G. Stamatoyannopoulos describe the effects of genetic screening programmes in two very different communities. The most valuable workshops were those on the regulation of gene expression (J. D. Ebert), the management of spina bifida patients and their families (C. O. Carter), and the treatment of genetic disease (C. R. Scriver). The volume is completed by two chapters by the editors. A. G. Motulsky discusses the ethical aspects of the genetic advances presented. He points out that in practice the medical geneticist who considers only the best interests of a particular family will rarely have any ethical problem to face. W. Lenz provides a thoughtful summary of the conference.

Most geneticists will find one section or another particularly to their taste but an important use of the book is as a source of reference for those subjects less well known. As most papers are written as reviews, with current work explained and put into perspective, they will be useful even when further work has modified or added to some conclusions. All those who are interested in the aetiology, prevention, and treatment of birth defects will find this a helpful and stimulating book.

SARAH BUNDEY

The Genetics of Locomotor Disorders. By C. O. Carter and T. J. Fairbank. (Pp. xii+170; tables. £5·00.) Oxford University Press. 1974.

Individual constitutional disorders of the skeleton are particularly difficult to define unless, like rickets and the mucopolysaccharidoses, they have consistent biochemical lesions. Many variations occur on the common themes of proportionate and disproportionate dwarfism, spinal, cranial, and limb malformations, while diagnostic overlap and mimicry are so common that the practical application of any classification, however logical, soon breaks down. Thus, no nomenclature of constitutional disorders of bone is entirely satisfactory and Dr Carter and Mr Fairbank have wisely not attempted yet another. They have chosen common sense chapter headings of several types. Thus, some relate to the site of main disorders, eg, metaphyseal, epiphyseal, spondylo-epiphyseal, or to localized abnormalities of the limbs, skull, face, and spine. Other chapters are devoted to the muscular dystrophies, to errors of timing of development (anarchic development of bone and cartilage), to syndromes, and to inborn errors of metabolism affecting the skeleton. In view of the companion volume in the Oxford monograph series by Dr Pratt only brief reference is made to neurological conditions of skeletal significance.

This book is a complete and up-to-date summary of inherited musculoskeletal anomalies presented in a particularly clear and non-discursive manner. The clinical descriptions are brief and the atlases listed in the bibliography are necessary to define the large number of entities involved but the clinician and geneticist using 'The Genetics of Locomotor Disorders' will be able quickly to determine for any condition the probable mode of inheritance and key references for further reading. This reasonably-priced and well-produced book is a very welcome addition which will illuminate a currently rather confusing area.

RODNEY HARRIS

Human Gene Mapping. Edited by Daniel Bergsma. (Pp. 216; figures+tables. $13.50; £10·00.) New York: Intercontinental. 1974.

The rapid exploitation of incomplete rejection of human chromosomes by some hybrid cells, especially from mice and Chinese hampsters, has lead to many observations which needed to be integrated with the results of the classical methods of pedigree analysis, results which can now be supplemented by the identification of harmless chromosomal variants. The integration of these results involved difficulties in terminology, in the weighing of evidence, and in the identity of enzymes; the problem of enzyme identity can be particularly difficult since red cells and the cells established in culture often have different enzymes with similar functions, and names are based on function. Further, many laboratories specializing in hybrids do not have regular access to individuals whose heterozygosity could be checked on several tissues.

The New Haven Conference, appropriately sited at one of the major laboratories exploiting hybridization, resolved a number of problems, and identified others; this book provides a 'state of the art' review as of summer 1973. As such it is a valuable contribution to the literature on linkage. Unfortunately it is rather expensive, in part because of the excellent binding and production which are hardly justified by the rapidity of change of the subject.

A certain arbitrariness in designating degrees of assurance was necessary, and, providing the rough and provisional nature of such maps is appreciated, this method of assignment has provided some maps which have, in the main, survived the next annual stocktaking held in Holland last July.

A detailed list of variant loci with recommended abbreviations, is also included. There are some misprints, of which the most misleading is an editorial translation of P.T.C. (Phenylthio-Carbamide) to Hem.B., presumably due to confusion with plasma thromboplastin component. Anyway, the linkage noticed by Chautard should have been between P.T.C. and Kell.

This is an important reference book for those working on linkage, but its expense will exclude it from most departments with other main interests. There is, of course, almost nothing about the secure location of morbid loci, a subject as yet hardly touched by the new techniques.

J. H. EDWARDS

Nucleus and Cytoplasm, 3rd ed. By Henry Harris. (Pp. 186; figures. £4·20.) London: William Clowes. 1974.

This book is based on six lectures originally intended for senior undergraduates and postgraduates at Oxford. The declared aim is to awake an interest in the unanswered problems of cell biology, and in this it should be very successful. Evidence from such widely differing organisms as bacteria, unicellular algae, and Drosophila, and also from highly differentiated mammalian cells, is used in considering nucleocytoplasmic relationships. Each experiment is described in such a way that even a reader not familiar with all the technical details can still appreciate and assess the contribution made by the result to the understanding of a particular problem. The quality of the photographic plates is high and there is an extensive and useful list of references.

In this third edition much new information is included, especially recent work on the properties of messenger RNA and on cell fusion, the latter a field which was of course pioneered by Professor Harris. One of the attractions of the book is that it is the personal view of one author, and one not afraid of controversy. Inevitably there has been some selection of material, especially since the book is still relatively short—for instance the reactivation of the chick erythrocyte nucleus in the chick–mouse heterokaryon is described in great detail, whereas the regulation of synthesis of proteins characteristic of certain differentiated cells in mononucleate hybrid cells gets only a single page. As the author says, these experiments mostly involved aneuploid cell lines of unstable karyotype, so that the interpretation of the results is difficult, but perhaps his view of the potential interest of such work is unduly gloomy. The final chapter is concerned with normal differentiation. Medical readers might have hoped to find some discussion of pathlogical conditions such as malignancy but unfortunately this has not been included.

However, the third edition of this well known book remains an extremely readable and comprehensive summary of current knowledge, essential reading as an introduction to the field, but also probably of interest to those workers whose own experience has involved a more limited range of organisms.

SUSAN POVEY

Methods in Human Cytogenetics. Edited by H. G. Schwarzacher and U. Wolf. (Pp. xv+295; figures +tables. DM 72.00; $29.40.) Berlin, Heidelberg, and New York: Springer. 1974.

This book which is a translation from the German version, is useful since it collects together almost all the cytological techniques that would be required by the cytogeneticist for cell culture and the processing of cells for chromosome analysis. The inclusion of two chapters on the new banding techniques is particularly welcome. However, the translator can not have been conversant with cytogenetics, with the result that occasionally a description is totally misleading, this combined with bad proof reading has made certain parts incomprehensible. The description of most simple techniques, such as making slides by the air drying method, are unnecessarily complicated and in some passages, several statements are erroneous; therefore this book is not for the novice.

The inclusion verbatim of a large part of the Report of the 1971 Paris Conference on standardization in human cytogenetics, with no comments or explanation seems a pointless exercise when the report is readily available internationally. Further serious limitations of this book are that the reasons are not given for much of the technical variations described and there is an inconsistency in providing the sources of materials and chemicals. In this type of cookery the make of a stain, for example, is important in obtaining a given result.

The authors must be recommended for their references, which are up to date with even some 1974 publications; however, there are some noticeable omissions from earlier years. I consider this book not to be worth its price.

KARIN BUCKTON

Biomathematics, vol. 5—*The Genetic Structure of Populations.* By A. Jacquard. (Pp. xviii+569; figures+tables. DM 96.00; $37.00). Berlin, Heidelberg, New York: Springer. 1974.

This is an English translation of the French edition published in 1970. The translation was made by D. and B. Charlesworth (Liverpool, England), who are both competent in the field, and is very well done. Several parts have been revised since 1970, new sections added, and there are three new chapters on human population structure and a new appendix on difference equations.

The book is essentially a mathematical and theoretical text and is for the specialist in human population genetics. There is little guidance on application. For example, the theory of estimating linkage is discussed but not how to estimate a lod score in practice. Where examples are given they are usually taken from human