deduction and counting, a maximum likelihood method, would help introduce this treacherous field. The uncritical use of multipoint methods is discussed and Morton's paper on 'Multipoint mapping and the emperor's clothes' cited.

The authors seem unaware of the contribution of cytogenetics to positional cloning. Notwithstanding numerous contrary claims, while many disorders have had their position found within a few megabases by linkage none has been caught by within-family linkage studies alone. Duchenne was deciphered through a deficiency and the position pinpointed by concordant translocations. Neurofibromatosis was localised by translocations, and assisted by a mouse. Cystic fibrosis, myotonic dystrophy, and Huntington's chorea were caught by allelic association, or between family linkage, which is possible only when old mutations, or highly mutable alleles, are involved. Others were defined by astute recognition of neighbouring candidate loci in man or mice. A human karyotype, annotated by some key loci, is absent from the extensive appendices.

Premutations are discussed, but this useful term is now obscured by the realisation that not only are all alleles potential premutations but some, "hot" alleles, are peculiarly prone to mutation for reasons so clearly described in the text. Identity by descent, mentioned in relation to allelic association, is not the same as inbreeding. Ancestors at any generation level are necessarily rarer than the number of parents in any stable or expanding population and allelic association will then necessarily occur between elderly alleles at neighbouring loci. It is the ratio of ancestral to recent numbers which determines the strength of allelic association.

This is a remarkable book and deserves a wide readership. All possible genetic misprints seem to feature with a detailed description supported by diagrams. It should clarify, and shorten, the voluminous recommendations on radiation safety, which basically amount to "keep below double the background level until we know more", but involve documents whose size and weight limit readership, and whose reasoning is based on older and simpler data. Much of this, such as malformation rates, is of dubious relevance to the problems at issue: until recently recessive disorders, the main problem, were ignored. There is little on mice, but the challenge for a similar book is clear, and the authors were wise to keep to the species on which their extensive expertise is based. It is a big book with hardly a wasted word. To have collected and discussed such massive data, much of it very recent, within 400 pages, is a remarkable achievement for both the authors and publisher. It is almost free from any typographical mutations. The typesetting, done locally near to the publisher, is of unusual clarity as are the extensive tables in appendices. The book is highly recommended: it is a fitting companion to McKusick's book on the phenotype and obligatory reading to anyone involved in mammalian mutation.

J H EDWARDS

McKusick's Heritable Disorders of Connective Tissue. 5th edition. Ed P Beighton. (Pp 748; £96.00). St Louis: Mosby-Year Book. 1993. ISBN 0-8016-6358-X.

Connective Tissue and its Heritable Disorders. Ed P M Royce, B Steinmann. (Pp 709; £185.00). New York: Wiley-Liss. 1993. ISBN 0-4715-88199.

The student of connective tissue disorders has had a lean time of late. Fortunately help is now at hand. After a lengthy period of drought, those with an interest in these conditions can now wallow in the luxury of choosing between two large multiauthor texts published almost simultaneously to plug a gap which has existed for over 20 years. Both of these volumes succeed admirably in providing up to date reference sources with coverage of all the remarkable progress achieved over the last two decades.

There is a striking similarity between these books which extends beyond their titles to size, authorship, format, and style. Surprisingly no author has contributed on an identical topic to each volume, although several distinguished names feature in both. Has there been an element of collusion in these productions? If so no matter. In fact we should be grateful that for each disorder we now have two independent reviews which complement rather than duplicate one another. Individually each of these books is valuable. Taken together they provide a tour de force.

Each text opens with an introductory chapter outlining the basic principles of human inheritance and medical genetics. These are followed by sections on connective tissue structure and function. *Heritable Disorders* opts for brevity with, for example, a single page devoted to elastin, which in contrast is the subject of its own 21 page chapter in *Connective Tissue*. Presumably this differing emphasis on basic biology reflects to some extent the background and interests of the respective editors. Peter Beighton seems to be catering primarily for medical geneticists, whereas Peter Royce and Beat Steinmann clearly have an eye on the basic scientist market also.

The remainder of both volumes is devoted to detailed accounts of individual connective tissue disorders. In maintaining the tradition of previous editions, *Heritable Disorders* is particularly strong on cutis laxa, the mucopolysaccharidoses, skeletal dysplasias, and the Weill-Marchesani syndrome. *Connective Tissue* barely mentions this last disorder but expands its coverage to include conditions with a secondary effect on connective tissue such as epidermolysis bullosa, prolyase deficiency, and the ichthyoses. Generally the clinical contributions in *Heritable Disorders* are more lavishly illustrated and more expansive. For example its chapter on Marfan syndrome extends to 84 pages with 55 illustrations and 528 references, as compared with 31 pages, 11 illustrations, and 276 references in *Connective Tissue*. However, both provide extremely comprehensive reviews and pass with flying colours this reviewer's test of discoursing on the difficulty of confirming or refuting this particular diagnosis in equivocal clinical cases.

In summary, both of these books are excellent. Each provides a scholarly overview of their subject without which no self-respecting departmental library can consider itself complete. *Heritable Disorders* scores highly in terms of cost and production quality with more illustrations, glossier pages, and larger type. This will probably be the first port of call for the practising clinician. *Connective Tissue* offers a more cosmopolitan authorship

with much greater depth in basic biology and science. Essentially "you pay your money and you take your choice". Either way you will not be disappointed.

I D YOUNG

Essential Medical Genetics. 4th edition. J M Connor, M A Ferguson-Smith. (Pp 260; £15.95.) Oxford: Blackwell Scientific Publications. 1993.

This volume lives up to its name. It is concise, and covers the topics with which an undergraduate medical student should have some familiarity. It is useful for preclinical and clinical students, and provides a reasonable core of content. The systematic description of mendelian and polygenic disorders that are likely to be seen, or at least mentioned, in other sections of the clinical course is a great strength. In comparison with some of the competitor volumes, I can recommend this more wholeheartedly to every student. Some other texts are more appropriate for the student who is specifically interested in genetics and the scientific basis of medicine.

This fourth edition has been adequately updated. Already some details require amendment, but that is only to be expected. The only areas that I feel are "essential" and that have not been adequately covered are the closely connected areas of the psychosocial impact of genetics and the ethical issues raised in clinical genetic practice. These areas would be very difficult to cover in a volume of this sort, but I hope that they are attended to in the fifth edition that, I am sure, will deservedly follow before too long.

ANGUS CLARKE

Heredity and Your Family's Health. A Milunsky. (Pp 488; £14.00.) London: The Johns Hopkins University Press. 1993.

As a family doctor with a special interest in medical genetics I read this book for my own education and also for possible inclusion on the patients' library shelf.

The opening chapter has a crusading quality and one assumes that the main readership is intended to be middle class America. Given the importance attached to non-directive genetic counselling, it is interesting to discern a slightly directive style. Dr Milunsky has clearly spent many years picking up the pieces following genetic catastrophes and he feels deeply about helping people to obtain the information to allow them to make the right choices. The issues raised are important and the comprehensive cover inspires one to read on, although some may disagree with the observation that "compassion, patience and love are unusual in most families caring for a child with birth defects".

The reader with at least high school biology will find the chapters on chromosomes detailed and understandable and the simple explanation of mitosis and meiosis is welcome. Here and elsewhere in the book doctors may benefit from technical descriptions of complex areas written for patients. Too often genetic nomenclature leaves even a medical graduate feeling like a stranger in a foreign country.

Problems of intersex are dealt with sens-

itively but the reader looking for guidance on sex chromosome abnormalities, for example XXY or XYY detected at amniocentesis, may find this chapter unhelpful. The details of criminal trials involving defendants with XYY make uncomfortable reading. The separate chapter on fragile X is valuable because this alerts the reader to the salient features of the most common inherited cause of mental retardation and opens up avenues for seeking further guidance.

The chapter 'You and Your Genes' raises interesting questions about the mechanisms involved in the delayed onset of genetic diseases. This reader was grateful for the simple definition of a homeobox gene. However, the author omits to define hereditary and congenital which would be useful as these words are used throughout the book.

The chapter dealing with 'New Genetics' airs some difficult ethical dilemmas but it is surprising that the author does not place more emphasis on the reassurance given by negative genetic tests, and the consequent reduction of anxiety associated with reproduction. The short section on gene therapy does not mention cystic fibrosis, surely surprising when the hopes of so many patients are focused on this research.

The chapter on 'Genes, Ethnic Origins and Blood Groups' is probably too complicated for the lay reader, although the subject matter will be of great interest to a multi-racial readership.

There is a dispassionate discussion of the relationship of IQ to race and the interaction between genetic endowment and environment.

The chapter on 'Genetic Counselling' begins with the aphorism "... by not knowing you do not remove the chances you remove the choices". Dr Milunsky's commitment to helping couples avoid children with genetic defects is matched by a most valuable chapter which deals objectively with the practical and ethical issues raised by genetic counselling. It would be a useful teaching aid for students. 'Drugs, Infections, X-rays and Habits Harmful to the Fetus' gives sensible and comprehensive guidance to anyone contemplating pregnancy.

The problems of population screening for Tay-Sachs disease, sickle cell disease, and thalassaemia are addressed in this book. It is timely to consider that genetics should be taken to the people rather than the individual patient taking his genetic problem to the doctor. This book goes some way to beginning this process. However, screening programmes should be undertaken only after extensive pilot studies and as a partnership process between the patient, the family doctor, medical geneticists, and others.

The section on the inheritance of common disease will leave the family doctor and his patients disappointed that clear genetic markers are still rare for breast cancer, isch-

aemic heart disease, colon cancer, and Alzheimer's disease. Such genetic markers as do exist show how these could translate into practical applications. Milunsky makes lifestyle recommendations which will be useful for both patient and doctor and the risk tables provided for some diseases will be helpful in the consulting room. The message undoubtedly is that family doctors should elicit, and patients should expect, a family history of common diseases to be taken. As the effects of the new genetics increases the precision of risk estimation, patients and relatives can be identified and offered appropriate advice and screening.

The legal lessons in prenatal diagnosis give only American examples but the points made are valid. Issues covered include the right to information, the right to choice, and the right that medical consultation should be free from the personal and religious bias of the doctor.

This is the comprehensively revised text of *Choices Not Chances* by the same author published in 1989. The information is as up to date as possible in this fast moving field where significant advances may happen between printing and publications.

I found reading this book a useful exercise, and many doctors will profit by having a copy handy when explaining things to patients or students. For more sophisticated patients and relatives, it will complement the information sheets produced by genetic charities and patient organisations.

HILARY J HARRIS