date rather too quickly. Although publications on pharmacogenetics have expanded considerably in the two years since the book was written, I am sure it will continue to be a valuable text not only for those who are new to the field but also to those of us with a strong research interest in the subject. Perhaps Professor Price-Evans will take on the further challenge of producing a second edition in a few years time.

MARTIN LENNARD

ABC of Clinical Genetics. 2nd edition. Helen M Kingston. (Pp 73; £13.95.) London: BMJ Publishing Group. 1994.

Having read the first edition, which happened to be the first text book of genetics I have managed to read from cover to cover (because of its size and its reader friendly presentation), I was not disappointed with the second edition.

This is an introductory review of clinical genetics as implied in the title. The second edition is similar in its presentation and contents to the previous one, with a few new additions. It has 17 short chapters crammed into 73 pages, which summarise the cytogenetic and molecular genetic background to clinical genetics, the application of risk calculation, and an introduction to the common problems in clinical practice, including well illustrated chapters on dysmorphology and cancer genetics. Included in the book are chapters on the methods of prenatal diagnosis, the molecular diagnosis of some of the common genetic diseases, and treatments available at present (and the near future) for genetic disorders. Some of the diagnostic and ethical problems encountered in clinical practice are also discussed briefly.

The presentation is still very user friendly, with the text kept to a minimum and with numerous colour illustrations. There is a surprising range of subjects covered in this deceptively simple and short textbook, including mitochondrial inheritance and gene therapy. My criticisms are minor quibbles. The placing of the chapters is difficult to follow in a logical order, and this is particularly true for the chapters at the end of the text. There are also some typing errors, the most important of which is on page 46, when cordocentesis and the risk associated with the procedure is quoted differently as 1%, and in the next line, as 3%. The presumably Americanised spelling of "dysjunction" is also a minor irritation.

This is an excellent introductory text for those interested or involved in clinical genetics. It would be particularly useful for medical students and also for doctors, midwives, and nurses as a book which can update them quickly on the basics of clinical genetics. As such, it would be a useful addition to any genetics library.

D DE SILVA

Genetics and Medicine in the United States 1800 to 1922. Alan R Rushton. (Pp 209; £37.00.). Baltimore, London: Johns Hopkins University Press. 1994. ISBN 0-8018-4781-8.

The period covered by this book involved considerable changes in regard to genetics and medicine in the United States. Up to

the rediscovery of Mendelism in 1900, the general assumption was that much disease had a significant hereditary component and that there was a hereditary predisposition, or diathesis, to most conditions. Physicians were fond of expressing the view that "like begets like". The concept was embedded in terms such as "heredo-familial" which persisted in some textbooks until relatively recently. When a parent was also affected the term "hereditary" was used, when sibs were affected the disorder was considered "familial". There was much debate and interest in the subject but there was no way of studying the problem further. At this time American physicians often turned to Europe for training in science where interest largely centred on microscopic pathology, especially in neurology, which added very little to the understanding of the role of heredity in a particular disease.

With the rediscovery of Mendelism at the beginning of the century it is generally assumed in most textbooks that problems of human inheritance then immediately became clear. But this was not so. Though Mendelian principles could be shown by plant and animal breeders, this was far more difficult in humans. Controlled matings were impossible and generation times long. The physician could only observe a pedigree and draw inferences from it. Appropriate statistical methods, such as segregation analysis, had to be developed. (The precise modes of inheritance for Duchenne muscular dystrophy and cystic fibrosis were not incontrovertibly established in fact until around 1960.) Furthermore physicians often found Mendelian concepts puzzling and of little relevance to their practice. The profession was understandably concerned more with the problems of infectious diseases, the basis for which began to be understood from around 1880 but for which there was still little effective treatment. Some scientists with no such concerns, however, attempted to apply Mendelian principles to almost all human traits. The argument that hereditary factors could be involved in such traits as criminality, prostitution, and mental defect led to the Eugenics movement and Davenport's Eugenics Record Office established at Cold Spring Harbor in 1904. Towards the end of this period the importance and relevance of genetics in medical practice slowly began to be appreciated, and has been a continuing process ever since!

The author argues that the situation in Britain has been different. From the beginning of the century British geneticists led developments in the field. He plans therefore to write a subsequent volume concerned with the role of genetics in British medicine up to 1920. Meanwhile the present well documented and well written analysis of the scene in America will no doubt be read with considerable interest on both sides of the Atlantic.

ALAN E H EMERY

From Genetics to Gene Therapy. Editor D S Latchman. (Pp 261; £55.00.) Oxford: BIOS Scientific Publishers. 1994.

This book consists of 12 reviews that give the reader a flavour of the scope and potential of molecular medicine/pathology. The book is true to its title as some chapters focus primarily on the molecular and cell biology of various diseases (apolipoprotein B and heart

disease, X linked immunodeficiencies, Duchenne muscular dystrophy, leukaemias, neuroendocrine tumours, breast cancer, membrane protein processing in neurodegenerative diseases, herpes simplex) and mention gene therapy options only briefly, while others deal exclusively with topics directly related to gene therapy technology (gene therapy for cancer, retrovirus receptors on human cells, viral vectors for gene therapy, direct gene transfer for treatment of human disease).

Each chapter is written by recognised authorities. The reviews are clear, concise, and up to date. The authors enthusiastically convey the power of contemporary molecular and cell biological techniques as tools that can unravel the fundamental processes involved in the pathogenesis of various diseases. The importance of an in depth understanding of the molecular pathogenesis of diseases as a basis for therapy is appropriately stressed.

The format of this book may be considered by some to be unsatisfactory as the chapters are independent and do not generally look like they will amount to a coherent whole, even though they are loosely linked by a common theme. For instance, one may argue that this book provides neither a comprehensive review of the principles involved in the pathogenesis of genetic diseases, nor is it a primer on gene therapy. However, the quality and accessibility of the reviews more than compensate for this shortcoming. After reading this book I felt that I had a better understanding of the different approaches to gene therapy and their current limitations and was stimulated by the elegant studies that have led to deeper understanding of some of the diseases that are reviewed. I agree with David Weatherall's final remarks in his foreword: "This book should be read by young medical and non-medical scientists who are thinking about a career in this field, or those who wish to find out what is going on and about the current state of progress in some of the more important areas of molecular medicine."

DAVID RUBINSZTEIN

Clinical Genetics Handbook. 2nd edition. Editors A Robinson, M G Linden. (Pp 615; £32.50.) Boston: Blackwell Scientific Publications. 1993.

Initially this handbook was developed by the National Genetics Foundation and the editors of this second edition acknowledge the efforts of previous contributors and restate their aims of allowing the primary care physician to have ready access to genetic information when practical questions arise in a clinical setting. To this end the handbook is divided into two sections. The first, Applied Genetics, covers fundamental genetic topics and includes a chapter on issues related to genetic screening. The larger section, Disorders in Clinical Genetics, allows easy reference by organ system to reflect clinical presentation. Molecular genetic information provided is limited with each chapter concentrating on clinical detail, diagnostic confirmation, pathogenesis, empirical risks, and management. The style and terminology are very American and the quoted resources at the end of each clinical chapter are exclusively so. Overall it does fulfil its stated role as a useful first port of call for the clinician

encountering a wide range of genetic conditions and issues. The tables are well laid out and helpful though obviously not fully comprehensive. Illustrations are sparse but relevant. Suggested reading at the end of each chapter is reasonable and up to date in 1993! This handbook can be usefully used to complement other genetic counselling texts. It is a book that I would recommend to any clinical library or department as a helpful introduction to the appreciation and understanding of the genetic contribution to clinical disease.

S J DAVIES

Guide to Techniques in Mouse Development. Methods in Enzymology Volume 225. Editors Paul M Wassarman, Melvin L DePamphilis. (Pp 1021; \$59.95.) New York: Academic Press. 1993.

In the preface to this impressive book, the editors remark that its publication is timely in view of the enormous and rapidly growing interest in the mouse as an experimental organism. Perhaps the size of the book is also an indication of this explosion of knowledge.

When I first became interested in mouse embryology in the early 1970s, the mammalian embryologists "bible" was *Methods in experimental embryology of the mouse* by Keen A Rafferty Jr. This excellent book consisted of two sections, an appendix, and 94 pages. As well as dealing with basic embryo culture and handling, there were instructions for modish 1970s techniques such as aggregation chimeras, in vitro fertilisation, and artificial insemination.

In the 1980s, Rafferty was complemented and extended by the publication of *Manipulating the mouse embryo* by Brigid Hogan, Frank Costantini, and Elizabeth Lacy. This book moved things on by an order of magnitude, consisting of eight sections, three appendices, and 332 pages. We now had detailed information on the construction of transgenic animals and their analysis, also the production of embryonic stem (ES) cell lines, and the formation of chimeras by their injection into blastocysts.

We are now in the 1990s and looking at the latest brave attempt to encapsulate all that is known about experimental mouse embryology into one comprehensible volume. *Guide to techniques in mouse development* contains 12 sections, 56 chapters, and 1021 pages. There is an incredible amount of detailed information here and I feel it will be a daunting task for an editor in the next decade to supersede this volume.

Section I is titled "General methodology" and deals with mouse breeding records and anaesthesia. Section II is "Germ cells and embryos" and begins with chapters on the isolation, culture, and manipulation of primordial germ cells. We then progress to the isolation, handling, and culture of oocytes, sperm, pre- and postimplantation embryos.

Section III considers various aspects of fertilisation including micromanipulation of

gametes and embryos, in vitro capacitation and in vitro fertilisation. The next four sections discuss gene expression from several different angles: messenger RNA, reporter genes, proteins, and methylation.

Section VIII is concerned with gene identification and has chapters dealing with the construction of cDNA libraries and yeast artificial chromosomes (YACS). There are also chapters on genome mapping, cloning of mutations, and insertional mutagenesis by retroviruses and promoter traps in ES cells.

The next three sections deal with nuclear transplantation, production of transgenic animals by pronuclear injection, embryonic stem cells, and gene targeting. In short, there is something for everybody in this book, but I must say that the great swathes of information are not presented with the exceptional clarity contained in *Manipulating the mouse embryo* by Brigid Hogan *et al.* Indeed, some of the chapters resemble research publications rather than a laboratory manual. This is a small criticism, however, and I think merely reflects how large a subject the study of mouse development has become. The range of topics covered and the depth in which most have been treated is very impressive and the editors deserve to be congratulated on the completion of what must have been a mammoth task. This book deserves to be in the laboratory of every developmental biologist.

PETER H GLENISTER

The Phenotypic Mapping of Down Syndrome and Other Aneuploid Conditions. Editor Charles J Epstein. Proceedings of a National Society Conference held in New York, January 1993. (Pp 238; \$96.00.) New York: Wiley-Liss. 1993.

This volume contains papers presented at a conference held early in 1993; the theme of the conference was to correlate the phenotype of conditions with human aneuploidy with the trisomic or monosomic chromosomal material.

The editor, Dr Charles J Epstein, collected and edited a number of excellent review papers that are of interest to clinical and molecular geneticists. The chapter on the conceptual bases for the phenotype mapping of conditions resulting from aneuploidy by Epstein should be read and appropriately filed by all those who create phenotypic/genotypic maps of aneuploidies. It reflects the experience and long term thinking of the author of how to correlate a particular chromosomal region with a particular phenotype of aneuploidy. The second chapter by Schinzel gives an extensive and very useful catalogue of karyotype-phenotype correlations in autosomal chromosomal aberrations. The chapter on physical mapping of chromosome 21, from the laboratory of Patterson, discusses some aspects of the physical mapping of this chromosome and in particular the use of somatic cell hybrids and the joint YAC screening for the completion of the physical mapping. The

numerous contributions of the Patterson laboratory to chromosome 21 mapping are included in this chapter. The chapter by Haines on the genetic linkage map of chromosome 21 provides data obtained from the Venezuelan families. In addition, it gives a biological flavour to the linkage map. The two chapters from the Korenberg and the Sinet and Delabar laboratories give a detailed account of the molecular mapping of several phenotypes of Down's syndrome on chromosome 21. The two chapters are written in different style and their conclusions are slightly divergent. The Korenberg emphasis is against the definition of a single "Down syndrome minimal region", while the Sinet-Delabar paper puts more emphasis on the importance of the D21S55 region as being central for many phenotypes of the syndrome. It is my impression that both studies concluded that different parts of the chromosome are associated with different elements of the Down's syndrome phenotype. The chapter by Davisson and collaborators on the production of a segmental trisomy 16 mouse as a model for Down's syndrome is, I think, the one paper to xerox and keep from the book, since it contains important information not published elsewhere. The chapter is written with such attention to detail that it looks like an important original paper in an outstanding journal. It describes years of hard work and the first systematic analysis of this extremely valuable mouse model. The contribution from Groner's laboratory on gene dosage effects of PFKL on transfected PC12 cells emphasises in a detailed, systematic, and convincing way the importance of studying the gene dosage in cultured cells.

The remaining five chapters deal with problems of aneuploidy other than trisomy 21. Wilson discussed the karyotype/phenotype correlation of trisomy 18 and Overhauser gave a molecular analysis of 18q deletions which provide an outstanding tool in further mapping studies on this chromosome. Emanuel and collaborators contributed a nice chapter on the recent and exciting developments of chromosome 22 microdeletion syndromes including DiGeorge and VCF syndromes. Lalande and collaborators enriched the book with a short chapter on the mapping of the regions involved in the Angelman and Prader-Willi syndromes. Finally, the paper by Patel, Lupski, and collaborators gave a thorough discussion of the exciting findings of the duplication of chromosome 17p that includes the PMP22 gene, which is responsible for Charcot-Marie-Tooth disease type 1A and probably represents the best example to study the effects of a short segment chromosomal imbalance. Their chapter provides a number of important conclusions to investigators who are confronted with the question of gene dosage and its relation to disease.

In summary, this volume contains an excellent collection of papers on phenotype/genotype correlation of aneuploidies. Of course, it suffers from all the symptoms of conference proceedings; however, some of the chapters are original, not published elsewhere, and useful to the investigator of human aneuploidies.

S ANTONARAKIS