aspects includes a lengthy account of the arguments on whether Black and White in the U.S. differ genetically in mean IQ. The authors conclude there is no evidence for this. It also includes a discussion of any possible dysgenic trends of differential fertility by social class and intelligence. The authors conclude, probably correctly, that there is no reason to assume any dysgenic trends at present, and might have added that differences in family size by social class in the most recent United States and European censuses have largely disappeared, though there are still urban-rural differences.

The section on positive eugenics is perhaps rather old fashioned and tends to stress the difficulties of aim and method. Most of these difficulties disappear if the approach is at the level of the individual parents. These have the moral duty to consider the probable genetic potential of their children for healthy development of mind and body in deciding the size of their families. The task of the human geneticist is to spread knowledge of human genetics so that parents will themselves make informed decisions, rather than to direct the parents along certain lines of action. This book will make a valuable contribution to such instruction.

CEDRIC CARTER

Early Diagnosis and Prevention of Genetic Diseases.

Boerhaave Series for Postgraduate Medical Education, No. 11. Edited by L. N. Went, Chr. Vermeij-Keers, and A. G. J. M. Van Der Linden. (Pp. 160; Figures + Tables.) Leiden, The Netherlands: Leiden University Press. 1975.

This volume includes the content of a postgraduate course in the Boerhaave Series organised by The Faculty of Medicine, University of Leiden. There are 15 contributors: the majority, a proportion of whom are theologians, are from the Netherlands, but others are from the United States and England. Fourteen formal papers are included with a very short discussion at the end of each. The final chapter, on the ethical aspects of prevention, is entirely in the form of a discussion and includes some speakers, presumably from the audience, who are not listed as contributors.

The formal presentations, some more detailed than others, cover Huntington's chorea, dystrophia myotonica, retinoblastoma, phenylketonuria, cystic fibrosis, and the sphingolipidoses. These early chapters, which also include neural tube defects and the detection of carriers of haemophilia, lead into a more broadly based section on prenatal diagnosis, possible methods of detection of genetically determined disease, both in the family and in the community, and genetic counselling.

Apart from the problems associated with publication of symposia of this type, this volume seems a useful contribution to the literature at present because the various presentations do highlight some of the dilemmas in human genetics. These are not always comparable with those encountered in clinical or community medicine as currently practised and novel solutions are, therefore, required. The implications are substantial and it will be wise to seek advice from sections of society other than the scientific. It is, therefore, encouraging to find theologians included here though it is clear from the final discussion that there was also a great deal of ethical variation of opinion!

GERALD CORNEY

Methodology in Medical Genetics. An Introduction to Statistical Methods.

By Alan E. H. Emery. (Pp. 145, illustrated. £6·50.) Edinburgh: Churchill Livingstone. 1976.

Reading this book proved to be an enjoyable and rewarding experience for the reviewer, who learnt a considerable amount in the process. Its value lies not only in its compact size and practical approach but from the fact that it brings together the majority of methods of analysis that workers in medical genetics require in handling their data, methods that are often hard to find in textbooks of either statistics or genetics. Throughout the book worked examples are given, based on practical problems and data, which add greatly to its value. No extensive knowledge of mathematics is assumed, which is a distinct advantage to those workers in the field (one suspects still the majority!) who do not have a natural inclination in this direction.

The book opens appropriately with an explanation and derivation of the Hardy-Weinberg Equilibrium, and then illustrates the estimation of gene frequencies for the different types of inheritance and for multiple alleles. The fully worked examples are particularly clear and helpful. The chapter on the genetic structure of populations is of necessity limited, but the estimation of consanguinity by different approaches is well discussed and illustrated, as is the analysis of fitness and its relation to the frequency of mutation. A table gives useful data on this in various X-linked disorders.

Segregation analysis receives a separate chapter, with particular emphasis on the problems of autosomal recessive inheritance. Full tables are given for the use of Li and Mantel's 'singles' method in addition to the *a priori* and maximum likelihood methods. Multifactorial inheritance is discussed in relation to heritability and twin studies, and the limitations of heritability are perhaps not sufficiently emphasised; this is apparent from the table of heritability estimates which shows early onset of diabetes to be much greater than that of late onset, contrasting with recent

work suggesting that late onset diabetes in fact has the greater genetic component.

The chapter on genetic linkage succeeds admirably in dispelling much of the unnecessary complication which has deterred many ordinary investigators from work in this field; lod scores appear almost simple, and a full table of them is given in an appendix.

A crucial chapter introduces the valuable concept of the Bayesian approach to estimation of genetic risks, with clear examples of its use in X-linked and late onset dominant disorders. The importance of utilising risks appropriate to specific levels of carrier tests within the normal range is also discussed, though unfortunately an attempt is made to bring this into a cumbersome overall formula.

The final chapters are epidemiological in their approach. The methods and some of the pitfalls in searching for associations between genetic markers and diseases are outlined with emphasis on the HLA system and its associations, and on problems of significance levels when using multiple variables; useful tables of the main blood group and HLA associations are given.

Another valuable chapter compares the various approaches to analysis for a birth order or parental age effect and also stresses the importance and difficulty of providing comparable control data, giving useful tabular data extracted from the Registrar General's tables.

The last section, on changes in disease frequency, returns to classical epidemiology and gives clear examples of testing for frequency fluctuations and cyclical trends in congenital malformations. The use of CUSUM methods and Hewitts non-parametric method are particularly clearly illustrated.

The only general criticism that can be held against this valuable book is that a number of formulae are given without being clearly derived; this is perhaps inevitable in a book of this compactness, and it is surprising how fully the author has managed to treat most of the subjects in a small space. Though the price may seem high in relation to the number of pages, it is fully worth it, as this is a book which workers in medical genetics will not only wish to read thoroughly, but to use repeatedly for a wide variety of data.

PETER S. HARPER

Cancer Genetics.
Edited by Henry Lynch. (Pp. xv + 610; Figures + Tables. $49·50.) Springfield, Illinois: Charles C. Thomas. 1975.

Studies of the distribution of cancer in human populations suggest that given the right environment, 80 or 90% of cases would not occur. In the effort to find environmental causes for cancer which this suggestion has encouraged, the role of the genotype may be in danger of being neglected. The appearance of this book, for which 'Human cancer genetics' would be a more accurate title, is, therefore, timely as a reminder that genetic factors are undoubtedly involved in the aetiology of many neoplasms and that some of these relations (e.g. that of xeroderma pigmentosum to skin cancers) suggest models of carcinogenesis that may apply to other cancers also.

The editor is Professor of Preventive Medicine at Creighton University, Nebraska, and he and his colleagues there have written about half the book. The chapters fall into two groups, the first dealing principally with particular factors of genetic significance that affect liability to cancer—immunological status, histocompatibility, xeroderma pigmentosum, karyotype, and ethnic group—and the second with genetic and related aspects of particular neoplasms—especially leukaemia and lymphoma, retinoblastoma, central nervous system tumours, and cancers of the colon, lung, skin, and breast.

Even for a multi-author work, the coverage of the subject matter is surprisingly variable, with more space devoted to Teter's histology-based classification of gonocytomas than to the whole fascinating subject of cancer incidence in different countries and in migrants and their descendants—which except for observations in Israel is hardly mentioned, despite the light it sheds on the relative importance of genotype and environment. Also, some of the chapters on particular neoplasms are naïve in their interpretation of the data presented. For example, the view that smoking is a simple autosomal recessive trait seems to be accepted as credible because of the results obtained when the observed frequency of smoking in the children of non-smokers is compared with the frequency expected on this hypothesis—results which arguably say more about the limitations of the methodology than about the determinants of smoking. By contrast, the book contains few if any comparisons between the kinds of observed and expected figures one would like to see—figures relating the frequency of specific neoplasms (e.g. in different groups of relatives of cases) to person-years of exposure, with the age distribution of these person-years taken into account in calculating the expected rates. Without some such figures to show how the risks vary according to family relationship, one cannot begin adequately to assess even the relative importance of genetic and environmental factors as causes of the familial clusters of cases that the editor and his colleagues describe, let alone the nature of whatever genetic causes there are. But though the book fails to give a fully balanced and rigorous appraisal of its subject and is not always as up to date as it could have