Book reviews

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Medical Genetic Studies of the Amish. Selected Papers
By V. A. McKusick. (Pp. x + 525; Figures + Tables. £19·25.) Baltimore and London: Johns Hopkins University Press. 1978.

To read this edited collection of papers is both a fascinating experience and, for one already familiar with the Amish, a pleasurable reminder of the persistence and success of their remarkable way of life in 20th century America. A visitor to the Moore Clinic at Johns Hopkins Hospital in the late 1960s might have been excused if he had thought that the Amish formed a majority of the Baltimore population, but this book shows clearly how worthwhile the intensive study of this group has proved in both medical and population genetics.

The papers are reproduced unchanged, but their value is greatly increased by the addition of notes on subsequent developments. They are grouped into those dealing with general and population genetics, studies of previously recognised Mendelian syndromes, and (the largest section) 'new recessively inherited entities, many of which would have been difficult, if not impossible, to recognise outside the setting of a defined, closed, and well documented community as provided by the Amish'. Among these delineations of new disorders, that of 'cartilage hair hypoplasia' still stands out for its clarity and its masterly combination of clinical and genetic information.

The value of the studies in this book extends far beyond the demonstration that the disorders in question are recessively inherited. The range of clinical expression produced by what clearly must be a single gene is something that is difficult to document in the more heterogeneous patients seen in most populations. The studies of autosomal recessive limb-girdle muscular dystrophy and of the 'Troyer syndrome' provide excellent examples of this. Another particularly impressive feature of the Amish studies is the detail and accuracy of the genealogical and demographic work which underlies them, much of it due to the attachment of Amish people themselves to this type of documentation. It is of interest that a number of the main contributors to the book are themselves of Amish origin, and it is fortunate that the Amish antipathy to further education has not prevented the emergence of those individuals to transmit the unique aspects of Amish culture to the world in general.

Anyone working in medical genetics to whom the Amish are unfamiliar should read this book without delay; it will be a revelation as to the value of studying genetic isolates. Those who do know of the Amish will not need encouragement to refresh their memory of the subject and gain new ideas. It should also serve as a stimulus for people to study their own equivalents of the Amish. Though few of us have access to such an ideal population, there are many minority groups which would repay much closer investigation, where studies of genetic diseases have not been attempted. Many of these groups, less robust than the Amish, may soon disappear for ever if the opportunity is not taken soon.

P. S. HARPER

British Medical Bulletin: The HLA System
Vol. 34, No. 3, September 1978. Scientific Editor, W. F. Bodmer. (Figures + Tables. £5·00.) London: The British Council. 1978.

Medical journals are now replete with articles on HLA and, though weary voices have been heard to exclaim 'not HLA again', we should take heart. Cytogenetics had similarly inauspicious beginnings when, 20 years ago, pictures of 'squashed spiders' began to appear in medical journals. There are many aspects of HLA which are relatively simple, though others seem comprehensible only to experienced travellers in the exotic lands of lymphomania. The latest issue of the British Medical Bulletin provides an excellent overview of the HLA system and will do much to enlighten the weary. It is a convenient introductory package for this fascinating genetic system. I recommend reading 'Evolution and Function of the HLA System' at an early stage as, in it, central issues relating to the system are dealt with succinctly and comprehensibly. The other articles can be divided into several categories. Firstly, the 'technology' of HLA: serology, cellular typing, the chemistry of HLA antigens, and the 'new' HLA-DRW locus are considered in 4 articles. Secondly, the role of HLA as part of the major histocompatibility system (MHS) is discussed in 2 articles devoted to complement genetics and to the immune response. Thirdly, the somewhat variable importance of HLA in human organ transplantation is described objectively. The fourth category, that of the association between HLA and various diseases, takes up a large part of the Bulletin in a total of 8 papers

reviewing arthropathies, multiple sclerosis, diabetes mellitus, coeliac disease, liver disease, acute leukaemia and Hodgkin's disease, and finally trophoblastic tumours. Unfortunately, the genetic linkage between HLA and 21-hydroxylase deficiency was discovered too late for inclusion in the Bulletin. 21-hydroxylase deficiency is a paradigm of genetic disease as the genetics, biochemistry, and treatment are so well worked out. Never before have we had such razor-sharp dissection of a segment of a human chromosome and been able to discern, even if we do not always fully understand, the interactions of closely linked genes, the effects of linkage disequilibrium, and the emergence of disease associations. Without doubt, HLA will be of the greatest practical importance in the prediction of those at risk of developing many diseases with a clear genetic basis but which depend on environmental triggers. As our understanding of this system increases, we will be able to detect and potentially remove offending environmental agents thus allowing true prevention.

This issue of the British Medical Bulletin is first rate and is obligatory reading for every clinical geneticist. It is remarkable value at £5·00 and is perfectly complementary to 'Basic Immunogenetics' by Fudenberg and his colleagues which is reviewed below.

R. HARRIS

Basic Immunogenetics
2nd Edition. By H. H. Fudenberg, J. R. L. Pink, An-Chuan Wang, and S. D. Douglas.
(Pp. ix + 262; Figures + Tables. £3·95.)
New York and Oxford: Oxford University Press. 1978.

Since the first edition was published in 1972, a great deal has happened in the field of immunogenetics and it is remarkable that Dr Fudenberg and his colleagues have managed to limit the expansion of the second edition to only 48 pages. The use of finer quality paper has also kept the overall dimensions of the book about the same. One has to confess at the outset that immunogenetics is difficult. I wonder, for example, how many immunochemists feel at home in the new and rapidly expanding sister-field of cell immunology? Taken together, the subject matter of this book, which covers the chemistry and genetics of antibody molecules, cell mediated immunology, and human blood group serology, is a highly concentrated collection of facts and theories. One should not, however, succumb to the temptation of leaving immunogenetics to the experts in the hope that it will become easier as time goes by, for already the subject has produced a number of unexpected observations with wide relevance to genetics as a whole, as a few examples will show. Single immunoglobulin polypeptides are coded for by two or more genes; families of multiple closely linked genes are characteristic of immunology, but may well be a basic phenomenon of mammalian germ lines; immunoglobulins demonstrate the importance of somatic mutations; the interaction between different lymphocyte types exerts control over protein synthesis, presumably by some form of genetic feedback. Last, but not least, allelic exclusion (involving autosomes) was discovered in a study of antibody molecules.

Fudenberg's book covers all these areas with great clarity, tackling with skill a plethora of experimental data from both comparative and human studies. An abundance of tables and diagrams is a particularly praiseworthy feature of the book. As in the first edition, chapter 1 is an introductory essay which is well worth reading. Chapter 2 describes immunoglobulin structure and evolution and goes on to a lucid exposition of the admittedly complicated genetics of immunoglobulin molecules. Chapter 4 tackles the generation of antibody variability and describes what is known of the genetics of antibody specificity. Chapter 5 deals succinctly with lymphoid membrane antigens including their genetic control and relation to immune response, T and B cells, and lymphocyte interactions. The potted version of mouse H-2 is excellent. Chapter 6 is an adequate review of the human blood group systems and the book finishes, as before, with a number of useful appendices.

The index is generally good, though there are occasional omissions. For example, I encountered 'Fd' in the text but could not find an entry in the index or in the appendices. This edition went to press before the Seventh International Histocompatibility Workshop and before most of the new information on HLA-DW and -DRW loci became available. (This gap is filled admirably by 'The HLA System' in No. 3 of Vol. 34 of the British Medical Bulletin which should be read in parallel with this book and is reviewed above.) The section on HLA will no doubt be extended in a third edition. These criticisms do not detract significantly from 'Basic Immunogenetics' which remains an essential for the libary of geneticists of all persuasions, both graduate and undergraduate.

R. HARRIS

The Genetics of Aging
Edited by E. L. Schneider. (Pp. xvi + 424; Figures + Tables. $39·00.) New York and London: Plenum Press. 1978.

Homer likened the generation of man to the fall of leaves. Addison introduced a continuous stochastic