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BOOK REVIEWS

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Huntington's Disease. Ed Peter S Harper. (Pp 438; £45.00.) London: W B Saunders. 1991.

This book is a welcome addition to the 'Major Problems in Neurology' series to which Peter Harper has already contributed his excellent *Myotonic dystrophy* monograph, now in its second edition.

The present monograph deals with all aspects of Huntington's disease in separate chapters including historical, social, and psychological, management, epidemiology, genetics, counselling, and predictive testing. All the chapters are written by Peter Harper or his colleagues in Cardiff and there is a pleasant continuity of style unusual in a multiauthor book.

The Cardiff team lead by Peter Harper has made major contributions to the understanding of Huntington's disease since 1976 and it would have been nice if the Cardiff team had already found the gene for Huntington's disease as they have recently done for myotonic dystrophy. However, this goal still eludes the intense international search.

It is hard to imagine a better reference volume for a single disease and many people will find it invaluable for information to help with the diagnosis, management, or counselling of individual patients and families. It is also remarkable how many of the principles of clinical genetics are illustrated by Huntington's disease and the Cardiff team exploit this in a series of elegant vignettes which include an excellent description of genetic registers and the ethical problems relating to predictive testing.

This book is to be thoroughly recommended for all neurologists, clinical geneticists, and anybody else with even a passing interest in medical genetics

RODNEY HARRIS

Annual Review of Genetics. Volume 25. Ed J F Atkins *et al.* (Pp 682.) USA: Annual Reviews Inc. 1991.

If there is a theme to this volume, it is irregularities. Irregularities in DNA replication and their correction are covered in chapters on spontaneous mutation and on mismatch repair. Irregularities in transcription are the subject of a review of mRNA editing, and irregularities in translation are described in a chapter on programmed frameshifts. Finally, chapters on segregation distortion and on inheritance of acquired characters deal with irregularities in inheritance.

Few of these chapters contain much material directly relevant to day to day clinical genetics, so whether or not you like them depends on how much curiosity you feel about some of the wilder shores of genetics. Connoisseurs of the obscure will especially relish the chapter by Cattaneo on mRNA editing. If you thought your car was needlessly complicated, consider trypanosomes. These organisms have totally garbled mitochondrial genes. To make sensible mRNAs they perform a mind boggling series of specific sequence alterations on the transcripts, guided by template RNAs in which both A and G pair with U. And it's not just trypanosomes: human apo-B48 apolipoprotein is made by specifically changing C to U at position 6666 of the mRNA, to generate a stop codon which is not present in the DNA.

I suspect that some students are still being told that bases occasionally change from keto to enol forms and so mispair during DNA replication. Their lecturers should read the chapter on spontaneous mutation by Drake. Unusually for Annual Reviews it is badly written, but it is worth putting up with the pretentious style for a very useful summary of how DNA sequences really get changed. In a complementary review, Modrich discusses mechanisms of mismatch repair. Even when the DNA sequence is correct the gene product may not be what you expect: Askins, Weiss, Thompson, and Gesteland discuss programmed reading frame shifts. These are not the 'hardware' frameshifts made by adding or deleting nucleotides from DNA, but 'software' shifts in which ribosomes execute a programmed jump while reading a message.

Even if the genetic information obeys the rules, the overall inheritance pattern may not. Lyttle discusses segregation distorters, and Landman the inheritance of acquired characters. Landman's chapter is a nice illustration of how science works by placing phenomena on a mental map. Inheritance of acquired characters, that great unthinkable of evolution, becomes acceptable and uncontroversial once it is mapped to the periphery of genetics as a series of one off mechanisms which don't threaten the Central Dogma.

This year, unusually, there are very few reviews directly relevant to clinical genetics. Enthusiasts for receptors will enjoy the chapters on transcription activation by oestrogen and progesterone receptors (Gronemeyer), and on the T cell antigen receptor (Weiss). Otherwise the best review is by Lasko, Cavanee, and Nordenskjold on 'Loss of constitutional heterozygosity in cancer'. They show how extensions to the retinoblastoma model are needed to account for other cancers. The story is familiar but well told, with a useful large table summarising much data. Beside this, Ehling describes methods for estimating mutation risks from radiation or mutagens. These are based mainly on his work on induced dominant cataracts in mice. This should be read alongside Neel's chapter in last year's *Annual Reviews of Genetics*; both refer to the Hiroshima studies.

As always, the book is well produced, mostly well written, and very well priced, especially for members of the American Society of Human Genetics. Even if this year is thin on human genetics, it is still a thoroughly good buy.

ANDREW P READ

The Human Genome. T Strachan. Ed A P Read, T Brown. (Pp 160; £13.95.) Oxford: Bios Scientific Publishers. 1992.

The book is packed with useful information. It is quite up to date and the author and publishers deserve credit for this. The non-specialist at whom the book is partly aimed may find some sections of the book difficult to get through. For those who perservere there is an opportunity to learn of some of the tremendous developments in the rapidly advancing field of molecular genetics.

The book is divided into six chapters. The first deals with the organisation of the human genome and control of expression. The second chapter deals with the evolution of genes and the origin of mutations. The next four chapters deal with the applications of recombinant DNA technology. The areas covered include methods used to analyse DNA, the principles of linkage analysis to map the human genome, and the clinical applications of DNA technology in a broad spectrum of diseases. Some recent examples of disease specific mutations are described, particularly for single gene disorders. In addition, some emphasis is placed on the more complex disorders such as diabetes, coronary artery disease, cancer, and mental illness, which are already major areas of research interest.

In a book of this size inevitably there are aspects which are only described briefly in principle and this may not entirely satisfy the curious mind. The compensation for this is the breadth of the areas covered, and this is a notable achievement in an area where there has been an explosive increase in the number of publications in the last few years.

This book is inexpensive and well worth the price. I look forward to a second edition in perhaps two years' time.

N A KALSHEKER

The Seeds of Time. Christopher Sexton. (Pp 301; £19.95.) Oxford: Oxford University Press, 1991. ISBN 019 5532740.

There is a singular fascination in biographies of the great and famous. This is no exception. It traces the life and work of one of the most distinguished scientists of modern times, Macfarlane Burnet. Of Scots-Irish Presbyterian stock, he was born in a small town in the state of Victoria, Australia, in 1899. From an early age he exhibited a talent for application and hard work, and won a rare scholarship to Geelong School and from there to Melbourne University, graduating in medicine in 1922. But he seems never to have been really attracted to clinical work and soon gravitated to pathology, most notably bacteriology. Apart from a period at the Lister Institute in London, where he took a PhD degree, and later at the National Institute of Medical Research, nearly all his professional life was spent in Melbourne at the Walter and Eliza Hall Institute of which he eventually became director.

His early work centred on viruses, especially those associated with influenza and Q fever, the causative agent of which was named after him (*Coxiella burneti*) in recognition of his work. He was elected a Fellow of the Royal Society in 1942. But then in 1957 he switched his interests to an entirely different field, namely immunology. Furthermore, his research team was obliged to follow

suit. Some colleagues considered this self-inspired change over as arrogant and insensitive to the interests of his co-workers. But it worked. His subsequent research led to major new concepts, most importantly acquired immunological tolerance and clonal selection, for which he was awarded the Nobel Prize in 1960 along with Peter Medawar. But following retirement some five years later, he began to see himself as a biological generalist, propounding ideas which often attracted considerable opprobrium from the scientific community, as for example in his book *Endurance for Life*, published in 1978, where he addressed issues as diverse as ageing, the value of human life, aggressive power, good and evil, and the future of man! He espoused infanticide for serious untreatable conditions and euthanasia. Why is it that the great and famous in their waning years often feel the need to pontificate in this way? In Burnet's case it may well have detracted somewhat from appreciation of the very major contributions he made to science in his halcyon days.

This is one of the most interesting and beautifully written biographies I have ever read. It is peppered throughout with quotations from Burnet's correspondence, writings, and discussions with the author. It is well documented and informative. It is also very good to read.

ALAN EMERY

Fetal and Perinatal Neurology. Ed Y Fukuyama, Y Suzuki, S Kamoshita, P Casaer. (Pp 388; £130.) Basel, Tokyo: Karger. 1992.

The authors have selected topics on developmental neurology which were presented at the Joint Convention of the 5th International Child Neurology Congress and the 3rd Asian and Oceanic Congress of Child Neurology, held in Tokyo at the end of 1990. The articles fall into several groups. Firstly, there are reviews of the development of the brain in its biochemical and anatomical aspects. Then there are descriptions of several paediatric syndromes, most of which are genetically determined. Thirdly, there is a group of papers discussing the mechanism of intrauterine growth retardation and the significance of pre- and perinatal events, and finally a group of papers discusses ethical problems in child neurology.

Some of these articles are particularly commendable. M V Johnston provides an exciting review of the role that neurotransmitters (particularly glutamate and its receptors) play in the normal development of the brain, and in protecting it from biochemical insults such as hyperbilirubinaemia and hyperglycaemia. Y Suzuki describes the analysis of β-galactosidase deficiency as an example of reverse genetics. Eleven different mutations have been found in its gene, including deletions and single base substitutions. It is interesting that patients with late onset G_{M1}-gangliosidosis are mainly homozygotes for a single, common mutation. A critical account of the peripheral neuropathies is given by R A Ouvrier who emphasises the clinical features of type III with its facial involvement (pouting lips and coarse facial features) and autosomal recessive inheritance. He also gives a useful description of the severe early onset neuronal type of peripheral neuropathy but in this the genetic pattern is unclear. B Hagberg *et al* describe a new condition which they term the carbohydrate deficient glycoprotein (CDG) syndrome. This may present in infancy, childhood, or adult life and is characterised by ataxia, mental retardation, and a deficiency of serum glycoproteins, particularly of transferrin. There are also useful reviews concerning the treatment of metabolic disorders of childhood, the neurocutaneous disorders, the peroxisomal diseases, and AIDS affecting the central nervous system of children. However, some of the reviews are too descriptive and ignore clues to pathogenesis. For example, there is no mention of chromosome abnormalities in some autistic patients.

The section on ethical problems in child neurology discusses practices in different countries and cultures concerning the determination of brain death, and the allocation of scarce medical resources. Dr I C Verma from India provides a thoughtful review of the ethical implications of health care in developing countries, in which he emphasises the high infant mortality rate, the financial and emotional burden of having a neurologically handicapped child, the expense of major corrective surgery, and the different parental responses towards the ill health of sons compared to daughters.

I have one major criticism of this book, namely that it is far too expensive. For £130 it is possible to buy a major textbook in medicine or endocrinology or medical genetics. These conference proceedings should certainly have been produced in paperback.

SARAH BUNDEY

NOTICE

Molecular Basis of Ion Channels and Receptors Involved in Nerve Excitation, Synaptic Transmission and Muscle Contraction

This symposium, sponsored by The New York Academy of Sciences, will be held on 12 to 15 January 1993 at The Ibuka Memorial Hall, Waseda University, Japan. For further information contact: Conference Department, The New York Academy of Sciences, 2 East 63rd Street, New York, NY 10021, USA. Tel: (212) 838-0230. Fax: (212) 888 2894.