

Moving times

Theodore Friedmann

Molecular Genetics in Diseases of Brain, Nerve and Muscle. Edited by Lewis P. Rowland, Donald S. Wood, Eric A. Schon and Salvatore DiMauro. *Oxford University Press: 1989. Pp.481. £45.*

WHAT a peculiar and exhilarating time it is to be working in human genetics! The surprising results of today are with us for the briefest time, only to be replaced by the amazing results of tomorrow and the quite unbelievable results of the day after tomorrow. To paraphrase an old aphorism, the utterly impossible, we must all now be convinced, will take just a bit longer. The speed with which genetic science, clinical application and the art and ethics of medicine are becoming so intricately intertwined is dazzling. The distinctions between these previously disparate disciplines, once so clear, are melting disquietingly and uncontrollably away, making it increasingly difficult for any of us to take refuge in our parochial past.

The multi-authored *Molecular Genetics in Diseases of Brain, Nerve and Muscle*, edited by Rowland, Wood, Schon and DiMauro, well illustrates some of the problems faced by those who would try to use the format of a single volume — in this case an expanded symposium report — to describe such an explosive field to a clinical audience and to examine the impact of molecular genetics on clinical medicine, in particular on neuromuscular and neurological diseases. All the appropriate and *de rigueur* topics, at least as they were recognized two years ago, are conveniently present and most are covered reasonably well. Most of the flavour of the current revolution in medical genetics is in evidence, and a strength of this volume lies in its enumeration of some of the fields in which major upheavals in the approach to neuromuscular disease have already occurred. The book's principal weakness lies in its transience. For whom will it be of more than casual interest one or two short years from now?

There are the usual trivial clashes in style, redundancies and variations in the quality of writing, ranging from eloquent (Wexler's chapter, "The Oracle of DNA") to the more ordinary to the slightly tortured. Discussions of the basics of gene structure, genome organization and genetic analysis are generally clear and appropriately aimed at an interested clinical audience, although most of this material is more thoroughly described and illustrated in several other sources. Especially good are the descriptions of library screening and sequencing (Monaco), construction of physical maps (Smith and Cantor) and two chapters on

linkage and genetic analysis. Some discussions are a bit skimpy and will not be easily understood by clinicians (many may wonder to what the adjective "restriction" in restriction enzymes refers — they're certainly never told). Amazingly, there is even a chapter describing mendelian and non-mendelian inheritance without the use of a single pedigree. Most of the illustrations are of good quality and make their points, although figures adapted from other sources or taken from slides are occasionally almost incomprehensible.

The most satisfying and useful parts of the book for clinicians are the disease-specific chapters, including excellent discussions of fragile X syndrome (Davies), neurogenetic diseases (Gusella), Duchenne muscular dystrophy (Kunkel) and the many other fascinating clinical targets for genetic analysis. To the clinical audience, this volume therefore represents a handy, reasonably complete and comprehensible, albeit a fleeting, view of a burgeoning field. □

Theodore Friedmann is in the Center for Molecular Genetics, School of Medicine, University of California at Davis, La Jolla, California 92093, USA.

Fossil forays

Michael H. Day

The Human Revolution: Behavioural and Biological Perspectives on the Origins of Modern Humans. Edited by Paul Mellars and Chris Stringer. *Edinburgh University Press: 1989. Pp.800. £65. Distributed by Princeton University Press in the United States, \$65.*

IN 1986, the World Archaeological Congress was held at Southampton in the United Kingdom despite the absence of participants from South Africa which had earlier threatened to bring about its cancellation. The price paid was that one or two symposia planned to be held at Southampton were withdrawn. The meeting at Cambridge held in the spring of 1987 giving rise to this book was one of these. The Cambridge meeting was not without its political problems, as the editors readily concede in a preface that sets out the circumstances of the decision to withdraw from the World Archaeological Congress. Despite the eminence of those who did take part, there are notable omissions from the list of contributors.

In the event, the symposium was clearly a success and this volume is the first of two planned to document the meeting. The largest section contains papers on human palaeontology and evolution; the other two sections contain chapters on more general conclusions from the behavioural and archaeological data presented at the

meeting. The companion volume promises to deal with more specialized case studies.

The problem addressed at the meeting is that of the origin of our own species, *Homo sapiens*, as opposed to other hominid creatures, such as ape-men from Africa or *H. erectus* from the Far East or wherever. That this is a problem will perhaps come as a surprise to the non-specialist as it is broadly true that the further back in time that is sought, the less the palaeoanthropological evidence and the greater the controversy generated by published conclusions. The focus of attention on our own species in recent years seems to rest on three factors: the discovery of new fossils and the reinterpretation of others; improvements in established dating methods and the discovery of new ones; and innovations in statistical analysis, microscope analysis and in taxonomic theory. The outdated but still persistent correlation of anatomical type with tool type (for example, Upper Palaeolithic tools equals modern *H. sapiens*) has been challenged by new data from Skhül and Qafzeh (Middle Palaeolithic tools and modern skeletal form) as well as Saint Césaire (Neanderthal partial skeleton and an Upper Palaeolithic industry). These challenges to conventional thinking are tending to decouple anatomical form from behaviour, at least in terms of evidence from stone tools.

One of the main debates centres on the question of the primacy of Africa as the centre of the evolution of anatomically and genetically modern *H. sapiens* (the so-called "Noah's Ark" hypothesis) as opposed to a multiregional theory of sapient evolution that sees modern man evolving as a polytypic species from more than one centre. The "Out of Africa" hypothesis has received a good deal of support in recent years from new dating evidence for specimens from sites such as Klasies River Mouth and Border Cave. This evidence seems to point to modern human anatomy originating between 70,000 and 100,000 years before present and in some cases, such as Omo, even earlier. In addition, new evidence derived from DNA and other molecular-genetics studies seems to indicate unequivocally that the modern human genotype arose in Africa.

This view of sapient evolution is attacked forcefully by Wolpoff, both in terms of the unreliability of the dating of the so-called anatomically modern human remains from African sites and the evidence relied upon by molecular geneticists for the calibration of the mutation rates of mitochondrial DNA. A slower mutation rate could retard the dispersal of populations from Africa to about 850,000 years before present, a date that corresponds to the widely accepted dispersal of *H. erectus*