

Book reviews

Genetic Risk: a Book for Parents and Potential Parents.

By STEPHEN THOMAS. Penguin Books. 1986. 192 pages. £3.95. ISBN 0 14 022617 6.

Several years ago Stephen Thomas attended a genetic clinic to receive counselling on an unspecified disorder. It is an experience which has been shared by thousands of people, particularly in the developed world where the progressive conquest of infectious disorders has focused more attention on inherited diseases. Many first-time counselees react to genetic advice with anger and dismay, and ultimately with guilt. Professional counsellors are aware of this, and know that part of the art of communication is to wait until the shock and self-pity have abated and the patient is ready to talk realistically about prospects. 'No one ever takes in hard genetic facts at the first visit' is a standard dictum of the trade.

Thomas, who has degrees in history and law, felt that much of the wretchedness of his own experience stemmed from his ignorance about genes, chromosomes and reproductive risk. He has set out to write a book which will acquaint parents and potential parents with some of the basic biological facts that underpin reproduction and which will give them a fundamental awareness of their degree of genetic risk. Undoubtedly this is a laudable aim. However, most scientists will know that the problem of genetic ignorance has its roots in our system of specialized secondary-school curricula, which turns out people regarded as educated and literate but without any knowledge of the simple tenets of 'O'-level biology. The non-scientific professional is a particularly difficult person to counsel; he or she has the benefits of a university training but must now grapple with a side of life hitherto thought to be irrelevant.

It is my guess that those who are unfortunate enough to find themselves in a genetic counselling clinic would appreciate a biological primer, long on genetic facts and short on the moral and ethical dimensions. Thomas has taken a different tack. He is fascinated by the way in which reproductive issues have moved to a prime position in the public consciousness, and intrigued by the passionate debate

on the moral implications of new technical developments. Almost inevitably, with such a slant, the longest chapter in the book is on artificial reproduction – husband and donor insemination, *in vitro* fertilization and even surrogacy. These themes are dealt with in style and with some fascinating side-lights. I had not realized that as recently as 1948 a Church of England commission had stated that AID was adultery, wrong in principle and contrary to Christian standards. They recommended that it be made a criminal offence. It needed a learned Scottish judge to observe, some ten years later, that AID could not be adultery, since it lacked the essential – and presumably enjoyable – component of *conjunctio corporum*.

But what, one may ask, does this have to do with genetic risk? Most parents or potential parents in a genetic clinic are concerned with the risks of occurrence or recurrence of specific named disorders. Thomas covers the facts of meiosis and mitosis with competence, and is sound in drawing distinctions between the principle modes of inheritance of single gene defects. However, beyond that his lack of biological training begins to show. Genetic heterogeneity is mentioned but obviously not understood, while the discussion of multi-factorial inheritance is somewhat confused. Conditional probabilities, the key to counselling in *X*-linked recessives, are not even mentioned. There is an extended chapter on decision-making, which largely ducks the issues in its reliance on the extended anecdote.

I have to say that I greatly enjoyed reading the book, for Thomas writes fluently and with concern for his subject matter. However, I would tend to keep it away from the audience for whom it is intended.

D. J. H. BROCK
Human Genetics
Western General Hospital
Edinburgh EH4 2XU

Manipulating the Mouse Embryo: A Laboratory Manual. Edited by BRIGID HOGAN, FRANK COSTANTINI and ELIZABETH LACY. Cold Spring Harbor Laboratory, 1986. 350 pages. Paper \$60. ISBN 0 87969 175 1.

It is clear that this book will be of interest primarily to investigators wishing to make transgenic mice. The techniques for making transgenic mice are founded in embryology and are now well established, although complicated. Those who wish to use these techniques are by and large, molecular biologists, not embryologists. Given this, the methods were ripe for writing up in detail. Indeed, this book was originally due for publication over a year before it finally appeared.

It would be wrong to give the impression that the manual will be of use only to 'transgeneticists' as the range of techniques covered is very comprehensive. A great many embryologists will find it useful. A successful laboratory manual needs to be robust, well presented, clearly written and concise. The comb binding allows the book to be opened flat at any page, without risk of it closing or of pages falling out. The presentation is excellent, with many clear illustrations. The text is a little patchy, some protocols being given with too little information. In most of these cases appropriate references are given to fill in the gaps. For the majority of the techniques described, the protocols should be sufficient.

One problem with this book is a consequence of its clarity. Many of the protocols are technically difficult, the conciseness and lucidity of the descriptions suggests the opposite. This is a feature well worth coming to terms with as the techniques will certainly be easier with the manual than without it.

As a laboratory manual, the book is well worth the price. I would recommend it to anyone embarking on embryo manipulation experiments. *MANIPULATING THE MOUSE EMBRYO* is however, more than just a laboratory manual. Approximately a quarter of the book is devoted to background developmental biology and genetics. This puts many of the techniques in context and provides a useful source of up-to-date information. Indeed, this book is probably unique in its coverage of mammalian developmental biology, and will be welcomed by anyone who has tried to plough through embryology texts in search of information relevant to mammals. In the preface, the authors state 'It is to help catalyze the interaction between molecular biology and mammalian embryology that this manual has been written.' I am sure that this aim will be fulfilled.

PAUL SIMONS

*Institute of Animal Physiology and Genetics Research
Edinburgh Research Station
West Mains Road
Edinburgh EH9 3JQ*

Evolutionary Processes and Theory. Edited by SAMUEL KARLIN and EVIATAR NEVO. Academic Press, New York. 1986. 786 pages. Hardback £52, Paperback £29. ISBN 0 12 398760 1 hardback; 0 12 398761 X paperback.

This book is the product of a workshop which moved among five different universities in Israel to discuss its

main topics – which must have added much to the labours of the organizers and those who had to keep on unpacking and repacking their luggage. Darwinism (both eo- and neo-) is still very much alive and spreads its tentacles into every corner of biology, as a glance through this book illustrates. In fact, almost any biochemical or genetic (molecular or populational) research can readily be shown to have evolutionary implications and lead to a workshop paper.

The range of the 33 fairly substantial papers (average 24 pages) collected here is very wide, with a strong bias towards mathematically oriented theory, but it by no means covers all the main areas of current evolutionary interest, or gives an adequate picture of those areas which are discussed. Most of the papers resemble research reports rather than reviews, and make no allowance for new readers not already blessed with the proper background. Almost any fairly knowledgeable reader, however, will find several topics of interest, and the book is well worth sampling.

There are six main section headings, I. Evolution Problems of Molecular Biology; II. Tempo and Mode in Molecular Evolution; III. Comparative Analysis of DNA and Protein Sequences; IV. Models and Evidence of Speciation; and Population Genetics divided into V. Observation, Experiment and Theory and VI. Ecological and Behavioural Interactions. These main headings are not realistically descriptive of the sectional contents, and the choice of papers within each section is a little idiosyncratic, not to say wayward. As an example Section II listed above contains articles on hybrid dysgenesis, by Margaret Kidwell (a good review but not entirely new) 'The spread and success of non-Darwinian novelties', by Gabriel Dover – this article might be subtitled 'In praise of molecular drive and molecular coevolution', and its difficult speculative theme has been and will be much exposed elsewhere – 'Population genetics theory of multigene families with emphasis on genetic variation contained in the family', by Tomoko Ohta (extending her previous mathematical analysis), and 'Statistical aspects of the molecular clock', by John Gillespie (his previous theme that molecular evolution is an episodic process).

Section III on DNA and protein sequence analysis includes Michael Clegg *et al.* on chloroplast evolution in barley, Alan Templeton on a statistical analysis of molecular data bearing on the relationships of the great apes and man: overall these favour the theory that gorillas and chimpanzees had a common ancestor after the human lineage split off, as opposed to the theory that humans and chimpanzees had a common ancestor after the gorilla lineage split off, but not all sets of data point the same way. There are also theoretical papers by Wen-Hsiung Li, Walter Fitch and Samuel Karlin. Articles in Section IV on speciation discuss sexual selection in the Hawaiian *Drosophilids* (Hampton Carson), Allopatric and non-allopatric speciation (Bush and Howard), The subterranean mole rats of Israel (Nevo), *Drosophila*