migration rate, measures of which Slatkin reviews. Finally Aoki presents a model of cultural transmission with a Wrightian flavour and Fukuda reviews the work done on *Trillium* species which underlines one of Slatkin's points, the long-range migration occurs and has important genetic consequences.

Section 4 has three chapters on multigene families. Yamazaki reviews experimental data from two gene families in *Drosophila*, and both Ohta and Watterson summarize their theoretical studies. Of great interest is the amylase allelic system which clearly demonstrates that selection is acting to maintain some of the polymorphism. Ohta looks at the mutation and substitution loads in multigene families in what is a rather poorly written chapter; and Watterson considers the number of alleles maintained in a multigene family. This last chapter is very difficult mathematically.

A related problem to that of maintaining genetic variation at the molecular level, is that of maintaining quantitative genetic variance. They may or may not have the same solution depending on whether the neutral theory really is correct in divorcing molecular from phenotypic evolution. Section 5 contains excellent chapters by Mukai, Hill and Tachida and Cockerham. Mukai reviews his very important experimental work characterizing mutations which affect viability. He argues that a model of mutation–selection balance is generally sufficient to explain the observed levels of variation, but that genotype–environment interactions maybe involved in certain localities. However the authors of the last two chapters in this section both point out that biological reality requires us to investigate models involving pleiotropy (Hill), and dominance and epistasis (Tachida and Cockerham). The work presented by Tachida and Cockerham shows that both epistasis and dominance have effects on the amount of genetic variation maintained and the ability to respond to selection. However the effects involved are not large – at most two-fold.

The sixth section is on molecular phylogeny. Nei and Livshits present recent work which supports the idea that modern man originated in Africa. However their chapter is most notable for a good discussion on the relative merits of using mtDNA to work out evolutionary relationships. Takahata introduces a novel theoretical treatment of allelic relationships, which when applied to the MHC loci suggests that overdominance, and not frequency dependent selection is responsible for the polymorphism maintained. Finally Tateno quantitatively considers the principle of parsimony often used in phylogenetic tree construction, showing by simulation that it is useful, though not always decisive or correct.

The final section of the book is entitled 'Molecular Evolution' and includes papers on visual pigment genes (Yokoyama and Yokoyama), the AIDS virus (Gojobori and Moriyama) and the evolution of the sex chromosomes (Miyata, Kuma, Iwabe, Hayashida and Yasunaga). The Yokoyama and Yokoyama show that there have been periods in the evolution of the pigment genes when the rate of non-silent substitution has been greater than the rate of silent substitution, a clear indication of advantageous alleles being fixed, especially when these periods can be matched up to the evolution of new functions. Gojobori and Moriyama examine the origins of HIV and the possibility of identifying regions suitable as vaccines; and Miyata *et al.* provide good evidence from sex chromosomes that it is the male which generates most point mutations. One feels that this latter observation has significant population genetic consequences.

The book as a whole doesn't have any particular message or central theme. It does however offer the reader a broad spectrum of good reviews from which much can be learnt. A number of chapters touch upon the neutral theory, and one is very much left with the impression that it will be some time before the controversy Motoo Kimura raised is finally resolved.

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The Genetics of Neurological Disorders. By MICHAEL BARAITSER. 2nd Edition. Oxford Medical Publications, Oxford University Press. 1990. 733 pages. Hardback £60.00; ISBN 0 19 261814 8. Paperback £30.00; ISBN 0 19 261813 X.

Russell Hoban once commented that a nervous disorder means an attack by the nervous system, and what chance do you have against a system? Books of this sort, documenting over 500 nervous afflictions with a genetic basis, tend to produce the same sentiment of being overwhelmed. Neurological disorders have highly visible phenotypes so it is not surprising that so many have been documented, ranging from writer's cramp to dentato-rubro-pallidoluysian atrophy and other ridiculously named conditions. Presumably, like most such clinical catalogues, it represents a far larger number of abnormal genes, it being the rule rather than the exception that such disorders are genetically heterogeneous. Inevitably therefore this is not a readable book but it is undoubtedly a superb one, the best of its kind. Many of the conditions described are vanishingly rare but collectively they crop up not infrequently in genetic, neurology and paediatric clinics and send the physician scurrying for a text such as this, with wonderfully succinct summaries and replete with over 200 pages of references. The author's reading of this vast literature is critical and he is seldom tempted to go beyond the available evidence, so the book will retain its value for longer than most.

The initial aim of the book was to provide an expanded *vade mecum* for counsellors, but it goes far beyond this in its scope. When appropriate, Dr Baraitser changes style from the encyclopaedic to that

of the experienced and psychologically aware counsellor in discussing alternative approaches to difficult counselling situations. There are clear examples of Bayesian risk calculations and useful figures illustrating clinical points and the principles of diagnosis based on genetic linkage. Some will object to the promotion of simple tables of recurrence risks for genetically complex disorders, which are as often as not inadequate to the task. With multifactorial inheritance, risks change with the number of affected relatives, with the population incidence and often with the proband's sex, requiring threshold or related models and more complex calculations, readily carried out with simple computer programmes or statistical tables. The style reflects the slightly didactic approach of the busy and practical clinician with little time for abstruse risk calculations, perhaps on the grounds that risks are at best approximate and the distinction between 8 and 13% is one that few patients are able to take advantage of.

This second edition is considerably longer than the first and gives due space to the dramatic advances in the area of recombinant DNA mapping. It is outstanding value at £30 in paperback and even at £60 in hardback and will deservedly find itself very widely used and referred to with pleasure, providing as it does so lucid and informative a guide to a complex and painful subject matter.

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