Book Reviews

Journal of Medical Genetics (1972). 9, 485-487.

Biomathematics. Volume 1. *Mathematical Topics in Population Genetics.* Edited by Ken-ichi Kojima. (Pp. vi+400; 55 figures and tables. \$18.70.) Berlin, Heidelberg, New York: Springer. 1970.

This book, after a curious introduction, in which the work of various distinguished non-authors is mentioned, starts well with a chapter by Wright, who expounds with conciseness and lucidity his views on drift, or rather on drifts with complex interactions, and on adaptive surfaces. The mathematics may, as his critics have pointed out, be circular, and adaptive surfaces may be useful aids to historical reconstruction, rather than recipes for struggling incipient species. Whether one can climb an imaginary surface, or get trapped in an imaginary potential well, seems a minor point, for mathematicians must be seen as painters rather than photographers or engineers, and certainly some readers will be helped in their attempts at understanding. The chapter is also a useful introduction to Wright's recent volumes, and has the advantages, and disadvantages, that the numerical treatment is mainly simple, and obtrudes less on the grand sweep of his prose.

The second paper, by J. R. G. Turner, challenges Fisher's fundamental theorem not because it is too fundamental, or tautologous, but because its author reached his conclusions 'erroneously by a certain lack of mathematical rigour'. Turner's provision of additional qualifying words to Fisher's definition hardly helps in the search for bedrock and rigour. To criticize Fisher's claim that fitness resembles entropy, on the ground that his concept of fitness is hazy, seems strange, for entropy could well be criticized on the same grounds. The chapter is difficult, like its subject, and any judgement on it even more difficult.

Diffusion is treated thoroughly in chapters on dispersal by Richardson and on stochastic process by Kimura, the former acting as a useful introduction and the latter as a definitive review of Neutrality by the leading Neutralist. These chapters are separated by a definitive review, on loads, by Crow, with a supplement on costs, which achieves the difficult task of being self-sufficient as an introduction to both and also by Cockerham's recursive formulation of the inbreeding problem. Hill and Robertson, in separate chapters, review and extend their own work on phenotypic selection, Robertson discussing in detail his empirical study by Monte Carlo methods of the influence of linkage on the speed and extent of selection with several loci and variable intensities of recombination.

Sved and Mayo discuss and review Fisher's theory on the evolution of dominance, which they study by both

exact and approximate methods and by simulation studies.

There is a chapter on the application of branching process theory to genetics, by Schaffer; and a chapter on incomplete binomials by Li, now a problem of mainly historical interest in an era of small families and advanced biochemistry. The book ends with short chapters on the evolutionary significance of linkage and epistasis by Kojima and Lewontin and on fitness and optimization by Levins.

Dr Kojima, who was killed in a road accident last year, has created a most valuable selection of articles, mostly in the form of reviews with recent additions and a sufficient lucidity to act also as introductions.

The book can be recommended highly for University libraries and departments of genetics. Many papers are dedicated to Dobzhansky for his seventieth birthday. As a whole the book is a fitting memorial to the enthusiasm and catholicism of its editor.

J. H. EDWARDS

Comparative Genetics in Monkeys, Apes and Man.

Edited by A. B. Chiarelli. Proceedings of a Symposium on Comparative Genetics in Primates and Human Heredity held at Ernice, Sicily, July 1970. (Pp. x + 346; figures and tables. £5.50; U.S. \$16.50.) London and New York: Academic Press. 1971.

This book is based on a conference held in Sicily in July, 1970. The topics covered included epigenetic polymorphism of the primate skeleton, blood groups, leucocyte antigens, and haemoglobin of non-human primates, phylogeny of immunoglobins in the primates, evolving primate genes and proteins, and comparative cytogenetics in primates.

It is the two last topics that throw most light on primate evolution. Goodman and his colleagues show how immunological resemblances measured by Ouchterlony plate comparison, haemoglobin, cytochrome C, and fibrinopeptide A resemblance in amino-acid sequences and DNA hybridization experiments give on the whole a consistent picture. All three methods place man, chimpanzee, and gorilla in one close group, with orang-utang some way away and the gibbons almost as far away as the old world monkeys. Comparison with palaeontological evidence indicates that the rate of nucleotide change has slowed down by absolute time in the primate line leading to man, though it may have been fairly constant in terms of generation time.

The comparison of karyotypes by Chiarelli again shows the close resemblance of man, chimpanzee, and