

BOOK REVIEWS

'Molecular population genetics and evolution

by Masatoshi Nei

North-Holland Publishing Company; Amsterdam, Oxford/American Elsevier; New York, 1975

xiii + 288 pages. Dfl 82.00, \$ 34.00.

This book provides a rich source of material for those interested in modern research relating to the mechanism of evolution and for those teaching undergraduate courses in this area.

The latter will find plentiful examples illustrating the way in which data relating to gene frequencies, average heterozygosity and other aspects of population genetics of apparently only academic interest may be used to test the main theories of evolution, namely the 'Darwinian' and 'neutral mutation – random drift' hypotheses. Those readers daunted by some of the mathematics may, like the present reviewer, have to take some of the derivations on trust; the text also requires careful study as the arguments are tight. However, the effort is well rewarded. Biochemists in particular will appreciate the author's attempts to explain, wherever possible, in molecular terms the basic processes of evolution, mutation, gene evolution, and even speciation!

Evolution has always been a controversial subject, and one area where 'Darwinists' and 'Drifters' are presently flexing their muscles concerns the role of protein and enzyme polymorphisms in evolution. This is well covered in the present text, together with related topics like genetic diversity within and between populations.

The subject itself has, of course, evolved from the morphological to the molecular level, which in turn has allowed greater precision of observation. Darwinian theory has been criticised by several philosophers of science, notably Popper, on the grounds that it is essentially an untestable hypothesis. The Drift theory may suffer from the same basic defect, but at least the techniques available to the molecular biologist should soon allow the rigorous testing of many of its predictions. In this respect it seems a pity that some molecular evolutionists are 'sequencing proteins by homology' whilst some population geneticists are identifying genes on the sole criterion of electrophoretic mobility.

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