

ECOLOGICAL GENETICS, 3rd Edition. E. B. Ford, F.R.S. Chapman & Hall, 1971.

The first edition of *Ecological Genetics* was published in 1964, the second edition, incorporating some minor corrections, in 1965 and now there is a third edition which, in Professor Ford's own words, "has many new passages and numerous adjustments". A rate of evolution which thus nicely corresponds with changes in relevant knowledge over the period considered.

In outline, the book is superficially much the same as the first edition, though the format is slightly different and a more attractive and readable typeface is used. The book has more pages, resulting partly from repagination but mainly from the incorporation of new material. The bulk of this is in the chapters dealing with sympatric evolution, genetic polymorphisms and polymorphism and the supergene in snails. Happily, too, those singularities of style associated with the author are preserved, though there may be some who find the stand of χ^2 -values grows a little too thickly in places.

E. B. Ford has a very precisely defined view of what constitutes ecological genetics and he has devoted a considerable part of his life to investigations within this conceptual framework. Considerable achievements have been recorded as a result of the work of his school, and the text details both the methods and the observations underlying these. These achievements include the demonstration of extremely large selective forces acting in nature, even in apparently stable conditions, analysis of the differentiation of races of the same species as in *Maniola* and elucidation of the mechanics of balanced polymorphisms of various kinds.

The book is marked, as we might expect, by clarity of expression, and the methods used to argue points are in general unexceptionable. I cannot help feeling, however, that the argument which says that laboratory experiments are not informative about the situations in natural populations has a slightly emotive tinge to it. (Do students of *Drosophila melanogaster* really think polymorphism is a rare phenomenon?) After all it is unfortunate but true that while the prosecution of much laboratory work in ecological genetics has suffered under the strain of working with organisms genetically well known but ecologically inadequately investigated, much field-work has been concerned with organisms whose ecology is moderately well-understood but which are genetically intractable or poorly known.

Reviewers of the earlier editions have already indicated the very considerable contributions the book makes and the changes cannot but add to these. It is, for example, pleasing to record that botanical examples figure more prominently in the newest edition; in particular the work of Bradshaw and his collaborators on the genetic adaptation of metal tolerance in a variety of species lends weight to the discussion of adaptation.

The etymological purist may well be provoked by the use of "reverse cline" for a "character displacement" situation as found in *Maniola* at the junction of Cornish and English forms, but the phrase seems to have survived the establishment phase.

One surprising feature of the book is the lack of any explicit discussion of stabilising selection. Many geneticists are now convinced that this mode of selection is ubiquitous and deserves closer investigation, particularly as its genetic consequences are so poorly understood. Perhaps because the Oxford group has not concerned itself with it this topic is barely mentioned even in the latest edition of *Ecological Genetics*. Although the evidence is scattered

and sparse, ecological factors like density are known to be of considerable importance in some stabilising selection situations.

Because it is one individual's view of a developing field, the book will continue to excite controversy. The closing sentence of the chapter on isolation and adaptation reads, "As a result [of the great selection pressures normally operating in nature] it is no longer possible to attribute to random genetic drift or to mutation any significant part in the control of evolution". I do not happen to be a fervent believer in the neutral-mutation theory, but it is by no means evident, on the evidence presently available, that the factors determining which alleles come to be represented in any given polymorphic or monomorphic situation are necessarily solely those of a selective nature. The only cases of which I am aware where this has been *critically* demonstrated are those involving human haemoglobins which, whilst highly informative, may not be typical. The views of Kimura and his supporters may be distasteful to many neo-Darwinians but perhaps they should not be totally rejected without more badly needed experimental evidence.

This book should be required reading for all who are in any way engaged in work in genetics or population biology.

J. A. BEARDMORE

Department of Genetics, University College of Swansea

BOOKS RECEIVED

- GENETICS EXPERIMENTS WITH BACTERIAL VIRUSES. D. Peter Snusted and Donald S. Dean. W. H. Freeman, 1972. Pp. 65. £1.10.
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 STUDIIL SI COMMUNICARI (2 volumes). Museul de Stiintele Naturii, Bacua, 1971. Pp. 925.
 COMPARATIVE GENETICS IN MONKEYS, APES AND MAN. Edited by A. B. Chiarelli. Academic Press, 1971. Pp. 346. £5.50; \$16.50.
 JOURNAL OF HUMAN EVOLUTION, VOL. I, No. 1. Edited by A. B. Chiarelli. Academic Press, Jan., Mar., May, July, Sept. and Nov., 1972. Pp. 135. £12.50+75p postage annually.
 LIKELIHOOD. A. W. F. Edwards. Cambridge University Press, 1972. Pp. 235. £3.80.