Book Reviews

Hecht, M.K., Steere, W.C., Wallace, B. (eds): Evolutionary Biology, Vol. 12.
New York London: Plenum Press 1980. 388 pp., 75 figs., 54 tabs. Hard bound $ 32.50

This volume of 'Evolutionary Biology' contains five papers which offer original results or reviews on selected fields of evolutionary biology and genetics. The volume opens with a discussion of the apparent changes in the diversity of fossil plants (Niklos, Tiffney and Knoll) which is based on an analysis of over 7500 North American fossil plant species. The paper considers with special attention biasing factors in fossil records and geological and biological explanations of residuals.

Microevolution has been studied most frequently in *Drosophila* and *mus* and the results obtained can often be generalized. Because there is an apparent lack of data from other taxonomic groups two papers are worth mentioning. One of them (written by Jablokov, Boranov and Rozanov) describes the population structure, variation and phenogeography of the sand lizard, the most frequently and widely distributed reptilian species in Eurasia. The other paper (written by Vuilleumier and Simberloff) studies the geographical distribution of the birds of the High Andes. In this latter paper the question has been discussed whether ecology or history are the determinants of their patchy and insular distributions. The authors conclude from their data that 'both ecology and history have played roles together at all times: they are indisputably linked, and there is probably no way to separate them, for nature is not dichotomous as far as "time" goes.'

Drosophila subobscura is that *Drosophila* species which has most extensively been investigated in European countries with respect to population genetics and ecology. In an extensive review, C.B. Krimbas and M. Loukas wanted to present all of the known data concerning the inversion polymorphisms of this species. Discussing the question of whether the geographical patterns of the distributions of inversions result mainly from selective or from historical processes, they put forward the thesis that historical processes have a major significance for the explanation of the distribution of *D. subobscura* inversion polymorphism.

The phenomenion of genetic instability leading to high rates of spontaneous mutations may play a crucial role in evolution, both at the cellular and at the organismic level. It often results from the action of mutator genes whose pecularities, however, are not always understandable for 'laymen' by reading of original papers. In an excellent review, R.C. Woodruff and J.N. Thompson consider the mutator activity with special emphasis on *Drosophila* and the genetic structure of natural populations. The authors describe in a short and impressive manner the measurement of genetic variation, the identification, distribution and frequency of mutator genes in *Drosophila*, the genetic changes induced by them and the hybrid release of mutator activity. Furthermore they offer a set of data on male recombination in natural population lines of *D. melanogaster*.

B. Kaina, Gatersleben

Baum, B.R.: Oats: Wild and Cultivated A Monograph of the genus Avena L. (Poaceae)
Ottawa, Ontario: Agriculture Canada. 1977. 463 pp., 329 figs., Hard bound £ 12.00.

This monograph presents an exhaustive analysis of the *Avena* genus including both wild and cultivated species. The monograph begins with a brief but detailed description of pertinent research in other areas such as etymology, archeology, anatomy, histology, palynology, cytogenetics and population biology which must be incorporated into a unified and meaningful taxonomic analysis of the genus. After this necessary and enlightening introduction, a discussion of the taxonomic analysis is presented immediately followed by appropriate classification keys. Thereafter, each species is described in great detail including synonyms, major distinguishing characteristics, distribution, phenology, chorotype and mode of dispersal. The distribution is shown using maps and photographs of type specimens and their distinctive morphological features are presented. For some species, excellent color photographs are included to show the typical habitats more clearly.

As accurately stated by the author, monographs containing such taxonomic information about commercial crops are rare but absolutely essential if progress in plant improvement programs is to be maintained. At this time, the maintenance and incorporation of germplasm from wild to cultivated species is recognized as essential for advancing plant improvement programs. This monograph represents a thorough and impressive compilation, analysis and synthesis of the information available and as such, should remain a classic reference to *Avena* taxonomy for many years. This monograph is highly recommended not only to students and research scientists interested in the *Avena* genus but also as an outstanding example of how taxonomy and both basic and applied sciences are interrelated. The author has excellent credentials and hopefully this monograph will stimulate other equally-knowledgeable taxonomists to develop similar monographs for other commercial crops.

P.L. Pfahler, Gainsville