

Book reviews

Harris, E. H.: The Chlamydomonas Sourcebook. *A Comprehensive Guide to Biology and Laboratory Use.* San Diego New York Berkeley Boston London Sydney Tokyo Toronto: Academic Press. XIV + 780 pp., 61 tabs., 122 figs. Hard bound \$ 145.00.

Chlamydomonas has matured as an experimental model organism, both in its own right and as a potential intermediate in higher plant engineering. It shares many characteristics with another model system, yeast: its genetics is well characterized, it is easy to handle and it has a short generation time. Not surprisingly then, it has become popular for studying cell-wall metabolism, cell division, sexual interactions, photosynthesis, organelle heredity, etc. Those who doubt the scope and wealth of information available on Chlamydomonas should be presented with this book. It is an unusually complete and detailed sourcebook documenting all aspects of the life of Chlamydomonas. It contains extensive sections on cultivation methods, experimental procedures, and even student exercises. Roughly half of the book is devoted to the genetics of Chlamydomonas: genome structure, patterns of inheritance and mutant analysis. It includes a comprehensive list of mutants of *C. reinhardtii*, *C. eugametos* and *C. moewusii*. The book is written in a lucid and enthusiastic style, never dry or turgid. It is liberally illustrated with photographs, figures and tables. At a time when we are expected to produce as many different publications as possible per unit time, everyone in the Chlamydomonas field should be grateful to Lib Harris for having produced this single volume. I expect that this 780-page heavyweight will be a vademecum and standard text on the microbiology, genetics and cell biology of Chlamydomonas for many years to come. I advise experts and novices alike to buy it. H. van den Ende, Amsterdam

Chepko-Sade, B. D.; Tang Halpin, Z. (eds.): Mammalian Dispersal Patterns. The Effect of Social Structure on Population Genetics. Chicago London: The University of Chicago Press 1987. XVIII + 342 pp., 38 figs. 51 tabs. Soft bound \$ 19.95.

This book is based on a symposium of the American Society of Zoologists, entitled "Patterns of Dispersal Among Mammals and their Effects on the Genetic Structure of Populations" (Denver, Colorado, December 1984). Eighteen chapters were presented as papers at that symposium, the concluding chapter was written afterwards.

The introductory chapter starts with useful definitions of concepts (like effective dispersal, neighborhood, and effective population size) used throughout the book and discusses the possible role of inbreeding avoidance and reproductive competition on mating systems and dispersal.

The next eight chapters report long-term ecological studies on populations with individually recognizable (often telemetrically followed) individuals. Carefully collected data on social structure, and on mating- and dispersal patterns are presented for ungulates, carnivores and "small" mammals like Prairie Dogs or Kangaroo Rats. However, the importance of the collected data to the "genetics of the studied population" is nowhere discussed. In trying to relate dispersal to population

genetics, it obviously costs too many years to establish the genetic structure in "large" mammals. In small mammal populations it seems easier to measure genetic distances, but here great difficulties arise in exactly tracing dispersal.

Nevertheless, in chapters 10–15, data on relations between dispersal patterns and genetic structures are given. Genetic differentiation (based on polymorphic loci) and dispersal distances are described in small rodents. In two chapters demography and dispersal patterns are related to the genetic structure of "large mammals". These concern studies on two isolated populations of the species *Homo sapiens*, two of the few endangered populations that live outside our human garden.

The next three chapters give mathematical models of population structure, viz. the prediction of dispersal distances, a possible effect of inbreeding and outbreeding in natural populations based on data from captive mammals, and the effects of kin selection in complex groups. In the concluding chapter the concept of "effective population size" is presented as a first step in better understanding the results from studies on different species.

It is stated that an understanding of the importance of dispersal and social structure to population genetics could provide guide-lines for the breeding of endangered species in captivity. Unfortunately this is true. For the readers of this journal it must be clear that it is not merely theoretically important that genetic rules remain applied in nature by the species themselves, especially in a nature endangered by our knowledge of its rules.

J. J. van Gelder, Nijmegen

Sorsa, V. (ed.): Polytene Chromosomes in Genetic Research. (*Ellis Horwood Books in Gene Technology*). Chichester: Ellis Horwood 1988. 289 pp. Hard bound.

This book is a guide to the giant chromosome world, written by an author who himself has contributed to the analysis of the structure of these chromosomes. It contains reviews on the classical studies in the field and on our present knowledge of the structure and functional organization of polytene chromosomes. About half of its content is a survey of methods which have been used in studies of replication, transcription and puffing, for the mapping of bands and gene loci, for the localization of sequences by in situ hybridization and of antigens by indirect immunofluorescence, and for the analysis of rearrangements. It is, however, not a laboratory handbook, and those who plan to do experimental work with these fascinating chromosomes or to design a lab course will have to look up the protocols in the cited references. The primary interest of the author is in the structural aspects of polytene chromosome organization, and the recent literature on their molecular biology is not fully covered. The unique and very promising microcloning of sequences from isolated chromosome bands, e.g., is only briefly mentioned. Most of the illustrations are original computer-aided art work. While some appear less appealing to me, many are novel and interesting and remind me of the fact that the author, in addition to his scientific work, has won reputation as an artist.

U. Grossbach, Göttingen