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**Book Reviews**


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**Fischer, H.E.: Heterosis. Genetik Beitrag No. 9**

Jena: G. Fischer 1978. 163 pp., 22 figs., Hard bound DM 25,—

This is the first comprehensive monograph on heterosis since the publication of van Gower's book in 1952. It discusses among other things, the noticeable amplified growth of hybrids over their parents. The effects of heterosis are, however, not restricted to vegetative growth; it also results in higher yield, increased resistance in crops and improved intelligence in animal breeds. After a historical introduction of the terminology, which was introduced in 1914 by Shull, there follows a presentation of the classical interpretation of heterosis. This is necessary because of the many synonyms within the nomenclature of the field. The introduction of the terms 'absolute' and 'relative' heterosis is new; they are defined in an appended glossary. Most interesting are the explanations of inbreed effects. The author emphasizes the importance of interactions between genotype and phenotype. Nowadays heterosis can be considered as a phenomenon of optimization at the molecular level but it remains a fact that the proposed mechanisms are not yet sufficient for all explanations. The borders between the dominance and the superdominance hypotheses become vague. The application of the heterosis phenomenon in breeding is still increasing, as yet the main problem is the fixation of the heterotic state. This important book brings once again to the foreground a genetic phenomenon for applied and pure geneticists. It should also stimulate further research.

H.F. Linskens, Nijmegen

**Ayala, F.J.; Valentine, J.W.: Evolving: The Theory and Process of Organic Evolution.**

California: The Benjamin/Cummings Publ. 1979. 452 pp., 189 figs., 27 tabs. Hard bound \$ 16.95

The declared aim of this book is to give a basic modern account of organic evolution to readers with only a high-school biology background. It could be used by and for students in a one-semester college course. This elementary text covers many aspects of evolution but it is made clear that there has to be restriction in the treatment of the vast number of topics concerning organic evolution. Therefore, microevolution, macroevolution, systematics, and evolutionary ecology have been chosen as the main subjects of this book.

The 13 main chapters reach from evolution of evolutionary science and basic genetics to the future evolution of mankind. Some of the special sections throw a 'closer look' preferentially on methodology, e.g. genetic mapping, gel electrophoresis, measures of genetic variation, and calculating genetic identity and genetic distance, and are especially useful. Each chapter is followed by a list of questions — not examination questions for instructors using this book as a basis for their college courses — but for the students as stimulation for further studies and inquiry.

The book is a fine account of the problems associated with organic evolution. It is clearly written and excellently illustrated and

designed. It can be recommended not only to students but also to research workers in any field of biology who want to come in closer contact with the problems of organic evolution.

K. Hammer, Gatersleben

**Plomin, R., DeFries, J.C., McClearn, G.E.: Behavioral Genetics A Primer.**

Reading: Freeman 1980 417 pp., 144 figs., Hard bound \$ 25.00

This text follows a previous book by McClearn and DeFries (Introduction to Behavioral Genetics; Freeman, San Francisco, 1973) but, although it bears some resemblance to the earlier text, the material is extensively updated and reorganised into a more logical arrangement of subjects. The authors, who are active workers in this interdisciplinary field of research, have prepared a most readable book, truly a primer, that is useful for courses directed to undergraduate students and is, moreover, reasonably priced. After a rather superfluous introductory chapter, the second chapter provides a pithy historical survey. Chapter 3 deals in a feather-weight but competent way with the role of behaviour in evolution and considers sociobiological notions; regrettably, it does not contain a section on ethological achievements in these areas. Chapter 4 adequately covers basic genetic principles, single-gene analysis of animal behavioural traits, including the recombinant inbred strain method, and pedigree analysis as applicable to human behavioural deviations controlled by single genes. Biochemical pathways from genes to phenotypes and the use of mutants and mosaics for the genetic dissection of behaviour are quite thoroughly discussed in chapter 5. Incidentally, the present book repeats the erroneous statement that "... homogenetic acid is normally converted into urea." (p. 103). The next two chapters are concerned with basic cytogenetics and with associations between chromosomal anomalies and behaviour, particularly in man. A satisfactory account of elementary population genetics is given in chapter 8. The following chapter is an excellent theoretical exposition of quantitative-genetic concepts and methods, including path analysis but omitting problems of scaling, and it serves as an introduction to four subsequent chapters on the application of these quantitative-genetic methods to behavioural differences among individuals as investigated in animals (family, strain, and selection studies), in family studies of human behaviour, twin studies, and adoption studies — the latter three focusing on cognitive abilities and psychopathology. The final chapter (14) is devoted to the important issues of genotype-environment interaction and correlation, group differences in IQ, and the relationship between science and politics. On the whole, the book offers a fairly balanced overview; there is, however, no denying that physiological behavioural genetics and psychopharmacogenetics are both clearly underrepresented, which is a pity. Nevertheless, this well-written and well-illustrated book can be recommended as a nice appetizer to those who wish to become acquainted with the field.

J.H.F. van Abeelen, Nijmegen