

REVIEWS

A COLLECTION OF OXFORD BIOLOGY READERS: READINGS IN GENETICS AND EVOLUTION. Foreword by J. J. Head. Oxford University Press, 1973. Pp. 256; plates, 106; figs., 167; tables, 15. £3.50.

This book is a collection of 15 short monographs on genetics and evolution, edited by J. J. Head and O. E. Lowenstein. Each work of 16 pages (one on meiosis is 32) is written by a leading scientist. Some are under joint authorship. The writers are all acknowledged research authorities and teachers respected in their own fields of inquiry. Presentation of their work is very much in the modern style, aiming at improved communication through a more favourable ratio of illustrations to words and incorporating the most recent results of original research. Each monograph has a short bibliography of general reading and key reference papers.

Numbers 1 to 5 are concerned with aspects of genetics. John and Lewis present accounts of the two basic life processes, *Somatic Cell Division* and *The Meiotic Mechanism*, with their usual lucidity, originality and succinct summation of material. Meselson and Stahl's legendary experiment on DNA replication for example, is described in three short sentences and a diagram (with a legend!). Their treatment of meiosis is magnificently illustrated and also encompasses much recent material concerned with the biochemical and ultrastructural aspects of chromosome pairing and recombination. Senior school pupils and first year undergraduates (see the foreword) may well find it rather on the weighty side. Fincham's contribution on *Using Fungi To Study Genetic Recombination* should help out with the molecular models, but more importantly, it ties in the principles of genetics, as studied through tetrad analysis, to the mechanics of chromosome behaviour. Fincham leads on from there to a detailed consideration of one of the important exceptions to Mendelian segregation, namely gene conversion, and in his consideration of the molecular basis of recombination brings out the all-important relationship between molecules and chromosomes. What to the cytologist is manifested as a reciprocal point exchange at the chromosome level is, under the "resolving power" of a microbial system, a frequently non-reciprocal event extending over hundreds of base pairs. In this account one comes to believe that chiasmata and gene conversions really are expressions of one basic recombination process. Gurdon's account of *Gene Expression During Cell Differentiation* will likewise fire the interest of a good many would-be geneticists. As with the previous three papers it obviously originates directly from the laboratory bench rather than the library table. *The Nucleolus* by Jordan should, as the foreword says, "make a contribution to the improvement of science teaching". Jordan explains how the two different experimental approaches of electron microscopy and modern biochemical analysis have contributed to our understanding of nucleolar structure and function.

Monographs 6 to 15 deal with evolution. Speculative questions on *The Origin of Life* are, apparently, based on the ideas of two men, Oparin and Haldane. The evolution of life proceeds like the development of an organism; small molecules are first formed, polymerised into large polymers and

these in turn organised into a living system. Sir Gavin de Beer has two contributions dealing with the "stuff" of evolution viz., the science of comparative anatomy and *Adaptation*. He gives us the classical textbook treatment with a fair smattering of history. Only in the closing paragraphs are we informed (after suspecting it throughout) that *Homology An Unsolved Problem* is really a question of developmental genetics, yet we are denied more than a tantalising clip from Sonneborn's experimental approach to "gene action in development". E. B. Ford embarks on an inquiry into the mechanism of evolution (*Evolution studies by Observation and Experiment*) and explains in an "infectious" and enthusiastic manner how the information has been gained through a fertile combination of ecology and laboratory genetics. Some account of more recent work revealing extensive allelic variation detectable only at the level of enzyme polymorphisms, would have been welcome. There are more than the proverbial "two schools of thought" about *The Origin of Chordates*. Bone adopts "the orthodox position deriving chordates from echinoderms or, hemichordates" and one would need to study the "Further Reading" pretty thoroughly before taking sides in this particular argument!. *Metamorphosis* has come rather late, slotted in between the Chordates, and Napier's account of *Primates and Their Adaptation*. It ought to be in company with the earlier account by Gurdon on differentiation. M. H. Day succeeds in putting "life" into the *Fossil History of Man*. Technical jargon is held to a minimum in this clear and fascinating story about the origin of our ancestors. The last two Readers, appropriately illustrated in shades of green, discuss the evolutionary history of the angiosperms. They make absorbing reading and bring us, through skilful writing and presentation, right to the forefront of these two important and challenging fields of research—*The Mysterious Origin of Flowering Plants* (K. R. Sporne) and *Studying the Past by Pollen Analysis* (R. G. West).

The reader is left in little doubt that these Oxford Biology Readers make a valuable contribution to the teaching and appreciation of Modern Biology. They have been stringently edited in a fashion which communicates the methods and excitement of science, yet still preserves the style and attitudes of individual authors. Given the titles only, one could have supplied many of the names. One monograph is conspicuously absent. Where is the account of the finest and most ingenious of all scientific success stories—the elucidation of the genetic code?

The 15 monographs making up this book are a selection from 84 to be published by 1974. Doubtless most students will find it preferable to purchase them singly and put together their own favoured selection.

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BACTERIAL TRANSFORMATION. Ed. L. J. Archer. Academic Press, London and New York. Pp. 413+85 text figures, 3 plate figures. £6.50.

This book comprises 23 of the papers given at the First European Meeting on Bacterial Transformation held in Oeiras, Portugal in September 1972. The subject matter is presented under three headings; the early steps in transformation, the fate of transforming DNA and recombination. Although the major emphasis is upon studies with *Bacillus subtilis*, *Pneumococcus* spp.