

EVOLUTIONARY BIOLOGY, Vol. 2. Ed. Th. Dobzhansky, M. K. Hecht and Wm. C. Steere. North Holland, 1968. Pp. xi+452. £7.

This volume opens with a review by Th. Dobzhansky of some fundamental concepts of Darwinian Biology. The doyen of the study of experimental evolution in the New World sketches his view of adaptation, adaptability, plasticity, fitness, selection modes and progress in evolution. It forms, one suspects, a basis from which a new version of "Genetics and the origin of species" could develop. It is a well integrated, lucid exposition from which all students of evolution, and particularly those innocent of formal training in population genetics could benefit.

J. C. Barr, Jr, looks at the theories which attempt to account for the regressive changes in eyes and pigment seen in cave-dwellers and concludes that such changes are best explained by pleiotropic effects of gene complexes selected for under cave conditions, perhaps combined with selection for economic energy utilisation.

J. de Ley in an interesting article entitled "Molecular Biology and Bacterial Phylogeny" considers aspects of bacterial evolution, notably the relationship between taxa which may be inferred from base composition and from DNA homologies measured by hybridisation techniques. Bacteria vary widely in GC amount and de Ley discusses the divergence between genera in terms of equations obviously derived from population genetics but not including any selective factors. It is unfortunate that this discussion occurs under the heading "Evolution drift", and may well be taken to mean that he considers the difference in GC content between *Staphylococcus* and *Streptococcus* or any other pair of taxa to be primarily a result of random processes. It is also possible that the apparent uniformity of GC content in more complex organisms may be due in part to the large amounts of repetitive DNA which so far as I am aware have not been demonstrated in bacteria. To the geneticist the notion of a "genetic species" defined apparently by members of the "species" having 70 per cent. or more homology when DNA's are tested with a hybridisation technique may be disturbing.

H. T. Spieth considers the evolutionary implications of sexual behaviour in *Drosophila*. Of particular interest is the description of the lek behaviour shown by species of the rich Hawaiian fauna, plausibly inferred to be an adaptation to predator avoidance. Species with indistinguishable females have evolved strikingly different male phenotypes and courtship behaviour, presumably as a result of the sexual selection so important in lek situations.

C. L. Remington gives a comprehensive picture of suture zones in North America. Such a zone is a localised region where species are hybridising, and typically contains many hybrid zones each applicable to a single, normally allopatric, pair of species. Suture zones result from the removal of barriers to crossing, and it seems that in such removal Man's influence is likely to have been more, and glaciation effects perhaps less, important than has been supposed. In six major and several smaller zones, some 140 species-pairs are known to hybridise and as many more are thought to do so. Such widespread removal of bars to crossing must lead to wholesale disruption of the integrity of the gene-pools of the species concerned and some interesting examples of this are discussed.

Other articles include a selection of electron micrographs pleasing both scientifically and aesthetically in the article by R. M. Eakin, on "Evolution of Photoreceptors", J. P. Scott on the evolution of the dog (necessarily related

to the evolution of his master species) and I. I. Gottesman discussing the nature of psychological traits, explaining the complex genetic bases likely to be involved and the manifold sources of relevant knowledge in fields like pharmacogenetics and cytogenetics.

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GENETIC MOSAICS AND OTHER ESSAYS. Curt Stern. Harvard University Press (distributed in England by Oxford University Press). 1968. Pp. 185. 62s.

One expects anything written by Professor Curt Stern to be of major interest; this book is no exception. Written in a direct and simple style which effectively overcomes the conceptual difficulty of much of the material, the reader is carried buoyantly along by Stern's evident enthusiasm.

There are four essays of different lengths; in the first, "Mendel and Human Genetics", Stern traces the development of the subject, its beginnings and highlights the interaction between the key scientists involved.

The largest work in the book is a review of genetic mosaics—individual organisms which consist of cells of more than one genotype—in particular as they occur in *Drosophila*, mice and humans. The account is liberally spiced with examples, illustrating the myriad origins of mosaicism. Stern finds grounds for speculating that while the identification of one's father is proverbially uncertain, one also cannot be sure of the identity of one's genetic mother—she may even be one's uncle! One of the commonest types of mosaic is a gynander—where cells of male and female genotype coexist in one individual: in mammals the physiology and behaviour of gynanders is complicated by the circulating sex hormones, but in insects the expression of the sexual state of the cell may be quite autonomous.

Under the general heading of mosaics Stern also includes animals which contain populations of cells of functionally different genotype, and therefore discusses the Lyon hypothesis, intersexes and even antibody formation.

In the third essay Stern illustrates how artificially induced genetic mosaics have provided material for the study of cellular interaction in developing tissues. Stern and his school have made central contributions to this area of research—one of the most difficult and challenging mysteries left in biology. In spite of Stern's efforts there is a danger that the reader will become inextricably enmeshed in semantics, but the elegance of the methods described is bound to appeal.

Finally there is a reprint from *Science* of a short "sermon" on the joys and pitfalls of the research life. This reminds one that the modern fashion of writing about experiments as objectively as possible leaves out the personality of the investigator, and allows here a welcome glimpse of Professor Stern.

This book must be read and will be enjoyed by anyone whose field of interest overlaps even slightly with its contents and there will be few who can compete with Stern's deep knowledge and balanced view of the literature.

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