
REVIEWS AND NOTICES OF BOOKS

Ecology : An Evolutionary Approach. By J. Merriam. (Addison-Wesley Pub. Co., Reading, Massachusetts-01867), 1973. Pp. xiv + 493. Price \$ 17.25.

The science of ecology has definitely progressed beyond its natural history phase and can now boast of a substantial body of theoretical formulation. Such theoretical formulation ultimately derives either from thermodynamics or from the principle of natural selection. The thermodynamic approach finds its expression in the works of Odums, and is the approach generally emphasized in the Indian Universities. Emlen's book is a comprehensive presentation of the second approach based on the principle of natural selection. This evolutionary approach is based on the notion that all the characteristics of a living organism are constantly being moulded by natural selection so as to maximise its genetic fitness. We therefore expect all the ecological attributes such as the number of young produced in a litter, the size of prey taken, the amount of distance over which the young disperse and so on to confer maximal genetic fitness under the prevailing environmental conditions on the genotype concerned. The application of this idea may be illustrated by the classic studies of David Lack on clutch size in birds. He argued that the number of eggs laid by any bird species must be such as to ensure that the maximum number of young are successfully raised. If the clutch is too large, many young will be inadequately fed and die of starvation, if too small, the ability of parents to feed the young is not taken full advantage of. Since there is a certain variation in nature in the size of the clutch, we may expect the most frequent clutch size to correspond to that leading to the maximum number of successfully raised young. Lack's field studies showed that this expectation was in fact borne out in many cases.

Lack derived much inspiration from the conceptual advances brought about by the work of Lotka, Haldane, Fisher and Gause, who had pioneered the application of rigorous mathematical reasoning to biological problems. Present-day evolutionary ecology is a happy blend of Lack's brand of informal theorisation and Haldane's brand of mathematical modelling, of Gause's brand of population experiments and of classical natural history. The discipline has rapidly matured during the last twenty years, and by now supplies the

paradigm followed by a large school of ecologists. Emlen's book is a very useful and competent review of the field and would serve the need earlier fulfilled by Slobodkin's charming little book which has now become rather outdated. MADHAV GADGIL.

Genetics and Society. Edited by Jack B. Bresler. (Addison-Wesley Publishing Co., Massachusetts), 1973. Pp. xv + 280. Price \$ 5.20.

This volume presents a variety of essays and attempts to introduce students to the newly emerging, rapidly developing field of 'Socio-genetics'.

The eugenic contributions of H. J. Muller are significant and permeate all discussions which relate genetics to Society. The influences which have acted on Muller as well as the chronological progression of his thinking on Science and culture are reviewed by Allen.

The section on 'Basic genetic patterns' contains papers which explore relationship: individual, familial and social through the simpler genetic patterns of dominance, recessiveness, and twin development. The reports indicate that social implications are derived from genetic patterns and genetic implications from social contacts.

The topic of 'Human chromosomes and antisocial behaviour' examines the "Human chromosome abnormalities as related to physical and mental dysfunction".

Some of the deepest social and political controversies on radiation, intelligence, prenatal influences and postnatal influences constitute the subject-matter of the section on 'Genetics and early human development'.

Ethnic groups frequently have characteristics which are largely genetic in origin. This aspect is well brought out in the papers, 'Genefrequencies in jews'; 'Welshness and fertility' and the 'Behavioral differences between Chinese-American and European-American New borns'.

Characteristics of ethnic group and the outcome of matings between ethnic and racial stock are depicted in the papers: 'The Founder effect and deleterious genes', 'Genetic aspects of plantation slavery' and 'Outcrossings in Caucasians and fetal loss'.

'Genetic counselling as an integral part of medical care' and a fascinating review of the different systems of laws and different interpretations of

genetic relatedness as a basis for prohibition of inbreeding, adopted in the United States, highlight the aspect of "Human restructuring of his own species".

M. SIRSI.

Annual Review of Biophysics and Bioengineering (Vol. 2). (Annual Reviews, Inc., Palo Alto, California, U.S.A.), 1973. Pp. vii + 333. Price \$ 12.00 in U.S.A.; \$ 12.50 elsewhere.

This volume also keeps the same high standard as the earlier Volume I. Since a number of different subjects are considered in the volume, the contents are best described by the following titles and authors of the various articles: Aaron Katchalsky (Obituary); Frequency Dynamics of Peripheral Vascular Blood Flow, E. O. Attinger and R. M. Attinger; Electric and Magnetic Field of the Heart, David B. Geselowitz; Interpretation of Some Microelectrode Measurements of Electrical Properties of Cells, A. Peskoff and R. S. Eisenberg; Clustering, J. A. Hartigan; Technology of Multiphasic Patient Screening, Morris F. Collen and Joseph F. Terdiman; Optimization of the Mammalian Respiratory Gas Transport System, Fred S. Grodins and Stanley M. Yamashiro; Primary Processes in Bacterial Photosynthesis, Roderick K. Clayton; Toward Direct Brain-Computer Communication, Jacques J. Vidal; Biophysics of Flagellar Motility, J. J. Blum and J. Lubliner; Long-Range Physical Forces in the Biological Milieu, V. Adrian Parsegian; Structure and Symmetry of Oligomeric Enzymes, B. W. Matthews and S. A. Bernhard.

The volume opens with a short obituary of Prof. Aaron Katchalsky who was unfortunately killed by terrorists' bullets at the Tel Aviv airport. He was certainly one of the world's outstanding biophysicists. It is very tragic that Katchalsky's death occurred at the height of his abilities and influence. Throughout his scientific life, his primary interest was to understand the molecular mechanisms of life processes. Active transport in biological membranes is a field that received much elucidation as a result of Katchalsky's studies. He was

also greatly interested in brain functions, with special reference to the application of biophysical chemistry for its understanding.

Perhaps the most interesting of the articles in this volume is the one about Direct Brain-Computer Communication by J. J. Vidal. He raises the question whether observable electrical brain signals can be put to work as carriers of information in man-computer communication. The author believes that the purposeful use of such a communication is just around the corner.

Another interesting article is on the Structure and Symmetry of Oligomeric Enzymes by B. W. Matthews and S. A. Bernhard. They discuss in particular the modes of association of protomers in such systems, including the possible point group symmetries that they may have. They describe techniques like electron microscopy and X-ray crystallography which provide useful information regarding this feature and they list a large number of examples in which the required information is available. The chemistry of association and dissociation of such enzymes and their ligand binding are particularly discussed. They have also summarized the structural data currently available from X-ray crystallographic studies of a number of oligomeric proteins.

The volume contains very useful information for biophysicists and bioengineers and should find a place in every library devoted to these subjects.

G. N. RAMACHANDRAN.

Books Received

WHO Technical Note No. 126—Comparison Between Pan and Lake Evaporation. By C. E. Hounam; Pp. iv + 52. Price not given; *Technical Note No. 129—Energy Fluxes Over Polar Surfaces.* Edited by Svenn Orvig; Pp. iv + 299. Price not given.

Acta Botanica Indica (Vol. I, Nos. 1 and 2), 1973. (Society for Advancement of Botany, Department of Botany, Meerut College, Meerut-250001), Pp. 75. Annual Subscription: Individual Rs. 25.00 or £ 2.50 or \$ 7.00; Institution: Rs. 40.00; £ 4.00; \$ 10.00.

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