
BOOK REVIEWS

Annual Review of Microbiology by L. Nichola Ornston, Albert Balows and Paul Bauman, (Published by Annual Reviews Inc, Palo Alto, 4139, El Camino Way, California, 94306, USA) Vol. 38, 1984, pp. 613, Price USA \$27-00 Elsewhere \$30/-

The volume under review has a preceptive prefatory chapter on 'Learning' by the leader of an important microbiological school in the States, Prof. I. C. Gunsalus. The chapter is excellent and is a summary of the major developments of microbial biochemistry covering a period of four decades. This covers the lessons from Lactic bacteria to molecular organisation for regulation of diversity through metabolic plasmids, the p450_{cam} Model.

Gonococcal genetics has stimulated the vaccine production and revealed new fundamental knowledge. There is a full update on cyanobacterial inclusions. The role of methylglyoxal in uncoupling catabolism and anabolism or as a precursor of D-lactate is speculated upon. Correlation of virulence of infection, with iron availability in the plasma and inhibition of host protein synthesis by RNA viruses are dealt with. Ecology of the *Spirochaetes* deals with much updated information. Nutrient transport by the photosynthetic bacteria is reviewed. Synthetic viral vaccines indicate, that any advances in this field are likely to be fortuitous and a greater understanding of factors determining protein configuration would accelerate progress. Molecular cloning of bacterial antigens and virulence determinants cover much new ground indicating how recombinant DNA methods have added a new dimension for studying pathogens.

The suggested interim utility classification of *Thiobacilli* and acidophiles will be of use to workers in this increasingly important field. A radical break in classification based on ribosomal RNA base sequencing is in the offing, considering them as a physiological family in the same way as the acetic and lactic bacteria.

An interesting analysis and proof of the protein toxin of the *S. aureus* associated with the toxic shock syndrome, is provided by a detailed epidemiological study report. Good evidence is given to show that the Vancomycin group of antibiotics have evolved for the specific purpose of defence of the producing organisms by killing or inactivating the competing gram positive bacteria. The chapter on *Pseudomonas* carbohydrate metabolism lists the progress in identification of the

concerned, perhaps novel, regulatory phenomena.

The monoclonal antibodies are reviewed as selective and analytical tools in antigen mutation. They have provided greater opportunities for diagnosis and new approaches for inducing protective immunity. The energetics of microbial growth highlight the problem of the capacity of microbes to dissociate catabolism with anabolism and indicate the need to have a 'mosaic nonequilibrium' thermodynamics for a rational explanation of this widespread phenomenon. Understanding the crucial role of the energy spilling reactions, will lead to symbiotic action between microbial physiologists, geneticists, bioenergeticists and fermentation technologists. An update of the work on deep sea microbiology highlights how there is a discrepancy between the lab studies and field observations. The review of Fe and Mn depositing bacteria highlights the special problems and scanty information on their genetics which could initiate their biotechnological applications. The last chapter deals with bioenergetics of *Desulfovibrio* where the cycling of hydrogen between hydrogenases, recycling hydrogen in the nitrogen fixers and implications of hydrogen cycling in the strictly anaerobic sulphate reducing bacteria and the acetogenic bacteria that catalyse the net synthesis of acetate as in *A. woodii* is examined.

The get up of the Annual Review which has now become standard in quality and appearance, is pleasing. This volume is an updated reference for research groups in microbiological sciences. There is a useful cumulative author and title index for the volumes 34-38.

K. S. GOPALAKRISHNAN

Microbiology and Cell Biology
Indian Institute of Science,
Bangalore 560 012

Marine Fisheries by D. V. Bal and K. Virabhadra Rao, (Published by M/s. Tata McGraw Hill Publishing Co. Ltd, New Delhi 4) 1984, pp. xiv + 470, Price Rs. 180/-

This book was released in the last quarter of 1984. While some books have been recently available on fishes, practically none seems to have been available in

our country so far, on marine fisheries. The recent book 'Fish and Fisheries of India' by Dr V. G. Jhingran (1975 and revised 1982) meets the requirement fully in relation to Inland fisheries but not in relation to marine fisheries.

The present book has 470 pages of text including 14 pages of index. The first chapter deals briefly with the methodology in fishery biology and the second chapter with marine biology in relation to oceanography and fisheries. Chapters 3 to 22 deal with various groups of fishes with precise data on taxonomy and various aspects of biology as well as catch trends and the gears used in the capture. The various groups included are elasmobranches, oil sardine, lesser sardines, Indian mackerel, Bombay duck, sciaenids, polynemids, tunas and billfishes, seerfishes, pomfrets, carangids, silver billies and silver biddies, ribbon-fishes, flatfishes, catfishes, eels, barracudas, lizard fish, Bregmaceros and Indian whiting. The prawns, lobsters, crabs, and molluscs have been given in chapters 23 to 26. The remaining four chapters of the book are those dealing with (1) Offshore fisheries, (2) Mariculture, (3) Man-made hazards and fisheries and (4) Fishing industry and cooperative societies.

While the book deals essentially with the biology and fisheries of the different groups, there is some statistical and other advanced methodology included in the first chapter.

Systematic and taxonomic treatment is up to date. *R. faughni* is also included among the *Rastrelliger* species of India.

Printing is very good and the drawings are very well reproduced. The index is quite exhaustive.

Though a few groups such as Whales and Turtles are omitted, yet all the essential information has been cogently presented. There is no doubt that this book will run into a second edition soon. A few 'printer's devils' noticed here and there will no doubt be duly eliminated when the book is reprinted.

C/o Sri M. R. Srinarasimha,
865 (old) III Cross Road,
Srirampuram,
Bangalore 560 021

G. SESHAPPA

Advances in Chromosome and Cell Genetics, by Arun Kumar Sharma and Archana Sharma, Oxford & IBH Publishing Co., New Delhi, 1984, p. 311.

The field of genetics is growing so rapidly that it is difficult to keep abreast of the new developments in

areas other than those of immediate interest. Locally published volumes reviewing the current state of knowledge are extremely useful for the students, teachers and researchers when the topics are reviewed by eminent experts in the field. Unlike the books published abroad, such books are available at a price which one can afford to buy a personal copy. Unfortunately, the price is not indicated. This volume and hopefully others that may follow in the series, as the editors indicate, would be valuable if they are considerably lower in price like the Indian editions of the text books. This book contains 11 contributions by eminent experts. The first four are devoted to higher plants. Polyploidy and its role in the evolution of higher plants is reviewed by Professor Werner Gottschalk (Bonn, FRG). Gérard Second (Montpellier, France) has discussed the genome organization in the important cereal genus *Orzya*, in the light of the isozyme studies. Canio G. Vosa (Oxford, U.K.) has reviewed the information on heterochromatin, chromosome structure and karyotype evolution as revealed by chromosome banding techniques. Hu Han (Beijing, China) describes mainly the Chinese results on the production of aneuploid and heteroploid plants by anther culture techniques using wheat and wheat-rye hybrids. Sequentiality and parallelism of karyotype evolution during differentiation in mammals is discussed by Toshihide Yosida (Misima, Japan). W. Nagl (Kaiserslautern, FRG) has discussed chromosomal changes. Olli Haapala (Turku, Finland) has covered the organizations of eukaryotic chromosomes—particularly the inter chromomeric chromatin fibrils termed as chromosome axis or core. In a short chapter, Barbara Hamkalo and Sandya Narayanswami (Irvine, California) describe *in situ* nucleic acid hybridization at the electron microscope level and the use of this technique in studies on chromosome structure and function. Identification, occurrence, size, special features and evolution of nuclear and organelle split genes is written by Dr. S. K. Dutta (Washington D.C.). Mechanisms of chemical mutagenesis, modifying factors and relative efficiency of different test systems are reviewed by Dr. Archana Sharma (Calcutta), in a chapter titled chemical mutagenesis. In the last chapter, Professor A. K. Sharma (Calcutta) briefly summarises the chromosome architecture, C value paradox, repeated DNA sequences and amplification of DNA sequences. The book provides information in these areas published upto 1983.

Nuclear Agriculture Divn.,
Bhabha Atomic Research Centre,
Bombay 400 085

C. R. BHATIA