

BOOK REVIEWS

Reproductive Biology of Invertebrates: Vol. 1. Oogenesis, oviposition and oosorption. Eds. K. G. Adiyodi and R. G. Adiyodi. (John Wiley & Sons Ltd, Distribution Centre, West Sussex, England P.O. 22 9SA, UK). pp. XXV + 770. Price not given.

This first volume in the series devoted to reproduction in the invertebrates, is an up-to-date presentation of three related, currently active areas of female reproduction. Continuing research efforts have produced considerable information in this expanding area and the volume offers a thorough and interesting treatment of a difficult and rapidly developing area of invertebrate reproduction. The extent of information available in the different groups of invertebrates varies but the authors have dealt with their material with considerable exactitude. This reflects the versatility and breadth of interest of the contributors.

That a couple of Indian biologists, working in one of our newer universities should be able to produce a volume of this thoroughness is a highly refreshing experience. It is easy to let such volumes degenerate into a boring and repetitive account of facts of structure (including ultra-structure) and function. It needs more than ordinary competence to illumine the presentation with interest and scientific excitement and it is a matter of gratification that several of the chapters included in the volume make highly interesting and exciting reading.

The recognition that invertebrates offer problems of interest as well as complexity, more particularly in the areas of reproductive biology, is only just beginning. The diversity of form and function has often daunted biologists and it is indeed difficult to find common threads which bind related aspects of reproductive biology in the different phyla, in order to draw meaningful messages. It is to be expected that in a compilation of this kind, with contributions made by different people, and not withstanding the guide-lines issued by the editors, the presentations exhibit a variance in the intensity of treatment afforded by the authors.

While the volume analyzes and synthesizes data with emphasis on physiological, biochemical and ultrastructural points of view, the more general, biological aspects are dealt in a limited manner. Perhaps a general idea of the typical reproductive cycle of each group could have preceded the details on the female systems. This has been done in a few chapters but not in all.

Further, several phyla have been left out, perhaps, as the editors point out, due to the difficulties of commissioning contributions on them. The Protozoa are significantly omitted. This is rather unfortunate

since in an evolutionary treatment, the groundwork for sex differentiation is laid in this group. Several important classes, especially, Insecta, have been omitted. This is a significant omission particularly when, in some chapters (viz. Crustacea), there is very frequent comparison of events with those of Insects. Some organisms like *Bonellia*, on which interesting information is available, are also omitted. On the other hand, several chapters have been written with commendable competence, for example the chapter on Polychaetes. This contribution which brings a harmonic synthesis between facts of ultra-structure and biochemical work on labelled precursors, makes illuminating reading. This could well be the authoritative guide-line not only for existing information but also for future studies.

When the emphasis has already been shifted from Vertebrates to Invertebrates and there is little to learn from the most primitive Chordates, the latter could have been omitted from the series and in their place, the other invertebrate groups could have featured.

The volume features considerable unpublished data in addition to preliminary observations from ongoing research and is of invaluable interest to workers on comparative studies on the reproduction of invertebrates. The careful documentation and rich bibliography make the book a valuable reference work.

KATRE SHAKUNTALA

Department of Zoology,
Bangalore University,
Jnana Bharathi, Bangalore 560 056.

NIMHANS Journal Volume 1 No. 1 and 2, Edited by Dr G. N. Naryana Reddy, Director, NIMHANS, Bangalore, published biannually in January and July 1983, Pages 1-89, 90-160. Annual Subscription: Rs. 50.00, U.S.A., \$ 20.00, U.K. £ 10.00.

The National Institute of Mental Health and Neurosciences NIMHANS publishes a variety of scientific literature. NIMHANS journal is a new series of science journals documenting the results of research conducted by its faculty and students. It also includes other research communications and proceedings of national seminars, workshop or symposia. Mental health and neurosciences cover a wide spectrum of interrelated scientific disciplines. Subjects like psychiatry, Clinical psychology, neurology, neurosurgery and sociology form a well known part. Less well known but of equal impact and importance are subjects like neurochemistry, neurophysiology, neuropathology.

thology and microbiology. Overlapping fields of Bio-medical engineering, Indian and Eastern philosophy, Yoga and other consciousness disciplines help us to view mental health from a multi-disciplinary approach. Each of these sciences have their own society and journal. But the NIMHANS Journal forms the first common forum for publication of scientific research over these many different fields.

The first article 'Innovations in Neuropsychiatric Services' by Dr G. N. Narayana Reddy the director of NIMHANS is very relevant. Planning of neuropsychiatric services in India with problems like poor manpower, meagre hospital beds, limited infrastructure of social and community services, restricted finance, culturally based expectations and referrals to traditional healers, requires innovations. These have been tried and their feasibility and validity assessed scientifically. Good success has been obtained with family involvement in psychiatric treatment and delivery of health care through Primary Health Centres (P.H.C.) for rural areas, training of multipurpose workers (M.P.W.), with special Manuals developed for them.

Contributions of Indian thought and philosophy towards understanding and treating the functions and malfunctions of the human mind have been made by very able exponents like Prof. Ramachandra Rao and Swami Ranganathananda. Study of the consciousness disciplines and Yoga are primarily by personal subjective experience. To assess them by objective, replicable experimental methods are difficult. But these efforts will form an unique Indian contribution.

The number of papers on each subject is low. It has to be compensated by great originality or high excellence. This has yet to be achieved.

I welcome this new series of multi-disciplinary scientific forum on subjects of mental health and neurosciences.

S. S. JAYARAM

The Bangalore Nursing Home,
Bangalore 560 009

Concepts and Models of a Quantitative Sociology—by W. Weidlich and G. Hagg, Published by Springer Verlag, Berlin, Heidelberg, New York, 1983, pp. xii + 217, Price \$ 31.20

This book is divided into six chapters. The first introductory chapter purports to define unifying concepts applicable to natural and social sciences qualitatively. In the same context, chapter three deals with fundamental concepts of quantitative sociology. Chapter two describes a semi-quantitative opinion

formation model; chapter four discusses demographic processes including migration; chapter five, outlines a non-equilibrium theory of investment and the last chapter deals with the interaction of competitive macro-societies. The mathematical tools and concepts here have been borrowed from Physics. The 'master equation' in the opinion formation model for example portrays an *ensemble* (a statistical population) of societies—each of which consists of one homogenous (human) population of $2N$ members and defines the probability distributions ('fluxes') over their 'socio-configurations'. The book may be of interest to mathematicians and mathematical physicists; for sociologists it is virtually useless. The book lacks any empirically valid conceptual framework and methodology in its analyses. It is marked by a conspicuous failure by its authors to demonstrate the applicability and/or meaningful relevance of their models to any real world sociological situation of interest. The conclusions derived from the models are sociologically trite and naive. In the opinion of this reviewer, the volume does not offer anything useful to a sociologist. It represents a rather poor attempt toward realizing the goal of a science of 'social physics'.

P. N. RASTOGI

Indian Institute of Technology,
Kanpur 208 016

Annual Review of Physiology—by R. M. Berne and J. F. Hoffman. (Vol. 45) (Annual Reviews Inc., Palo Alto, California, USA), 1983, pp. 710, Price: \$ 30/-.

This Volume opens up with the prefatory chapter of the Nobel Laureate A. L. Hodgkin, with the title of "Beginning: Some reminiscences of my early life (1914-1947)". This has provided immense light on the history and the experiences that contributed to one of the great discoveries of this century in the cellular neurobiology. Everyone will benefit by studying it.

The volume contains outstanding reviews on the most interesting of the contemporary trends of physiology covering the fields of Endocrinology (10 reviews—section edited by R. M. Berne), Comparative Physiology (5 reviews—section edited by J. E. Heath, Jr.), Cell and Membrane Physiology (7 reviews—section edited by J. F. Hoffman), Respiratory Physiology (7 reviews—section edited by A. P. Fishman), Renal Physiology (5 reviews—section edited by T. E. Andreoli), and Gastrointestinal Physiology (6 reviews—section organized by T. M. Forte).

Further, there is a special section containing 5 reviews under the broad theme of Development of Synapses (editor: P. H. Patterson).

Each of the sections of physiology mentioned above starts with an introductory review provided by the editor of that particular section, indicating salient aspects and emphasis brought out on the whole by the set of review articles presented under that section. Thus, although the Volume has encompassed a wide range of areas of physiology, the organization of introductory notes for each section helps specialists in other areas to grasp the advances happening therein.

The Volume will be of outstanding educational and reference value to anyone working in physiological sciences.

T. DESIRAJU

Department of Neurophysiology,
National Institute of Mental
Health & Neuro Sciences,
Bangalore-560 029.

Annual Review of Neuroscience—by W. M. Cowan, E. M. Shooter, C. F. Stevens and R. F. Thompson. (Vol. 6) (Annual Reviews Inc., Palo Alto, California 54306, USA) 1983, pp.563, Price: \$ 30/-.

This Volume like its predecessor volumes contains reviews of outstanding quality on a wide range of topics of current interest.

The Volume opens with an article on Nobel Laureates in Neuroscience — 1904–1981 by Herbert Jasper and T. L. Sourkes. This article reveals the panorama of the growth of the neuroscience through the twentieth century. The editors should be congratulated that they could have the article written by Herbert Jasper who himself has been one of the architects of the neuroscience. Everyone related to the speciality of neuroscience will be immensely benefitted by reading it.

The other reviews cover the themes of: Dopamine receptor classification (Creese *et al*); Basal ganglia disorders (Penney and Yound); Thalamo-cortical auditory system (Imig and Morel); Receptor sensitivity modification (Friedhoff and Miller); Retinal microcircuity (Sterling); Transduction by hair cells in the acoustic lateralis system (Hudspeth); Microcircuity of the visual cortex (Gilbert); Positron emission tomography (Raichle); Hypothalamic integration of paraventricular and supraoptic nuclei (Swanson and Sawchenko); Plasticity of somatosensory cortex (Kass, Merzenich and Killackey); Magnocellular hypothalamo-neurohypophysial neurosecretory system (Silverman and Zimmerman); Spinal and trigeminal nociceptive mechanisms (Dubner and Bennett); Neuronal ion transport proteins (Goldin *et al*); Cellular Processes of learning and memory in mammals (Thompson *et al*); Neuronal protein phosphorylation

(Kennedy); and Molecular neurobiology (Mckay).

Every review article in this Volume is of outstanding quality.

T. DESIRAJU

Department of Neurophysiology,
National Institute of Mental
Health & Neuro Sciences,
Bangalore 560 029.

Annual Review of Pharmacology and Toxicology, by Robert George, Ronald Okum, and Arthur K. Cho. Vol. 23, 1983. Published by Annual Reviews Inc. 4139 El Camino War Polo Alta, California-54306. pp. 713, Price: \$ 27.00 USA, \$ 30.00 Elsewhere.

Annual Reviews now cover 14 biomedical sciences, 7 physical and earth sciences, 3 social sciences and physical chemistry. These have become standard reference sources for not only getting a first hand account of the latest trends of research in the subject area covered but also as invaluable guides for identification of research problems. All over the world scientists expectantly look forward to the arrival of the reviews pertaining to their subjects of interest.

The volume under review is no exception to the high quality of presentation and the topical relevance of the subjects reviewed that one has always associated with Annual Reviews. Altogether there are 28 chapters in this volume covering the mechanism of action of drugs and chemicals, structure activity, relationship, metabolic fate of drugs and chemicals, antimicrobial, anti viral and anti parasitic chemotherapy, cancer chemotherapy and immunopharmacology, cardiovascular pharmacology, renal pharmacology, neuro muscular pharmacology, smooth muscle pharmacology, anaesthetics endocrine pharmacology, allergy & drug sensitivity, environmental and industrial toxicology, clinical toxicology, gastro intestinal pharmacology and techniques.

Opiodes belonging to the peptide and nonpeptide classes have been dealt with extensively. The chapter on endorphins is an exceedingly useful account of the state of art of this subject investigations on endorphins. In view of controversies on the carcinogenicity of asbestos, the chapter on the mechanism of toxicity of asbestos is most welcome. Many libraries catering to the needs of toxicologists and pharmacologists, nowadays find it difficult to raise funds for the mounting cost of specialised research journals. A standing order for the relevant Annual Reviews is recommended as the most sensible and rewarding investment.

C. R. KRISHNA MURTI

Centre for Environmental Studies,
Anna University,
Guindy, Madras-600 025.

Making Science Laboratory Equipment (A manual for students and teachers in developing countries), (Ed.) X. F. Carelse, 1983, John Wiley and Sons Ltd., Distribution Centre, West Sussex, England P.O22 9SA, U.K. p. xiii, + 273, Price \$ 10.95.

During the last four decades after the war, several of the former colonial countries in Asia and Africa became independent and are struggling to modernise their economy and to improve the quality of life of their people. All these developing countries have realised that road to this kind of prosperity is only through the application of modern science and technology. They have all, therefore, embarked on modernised educational programmes to train scientists and engineers and other technical personnel in adequate numbers. There seems to be an insatiable thirst for this type of scientific and technical education all over the developing world. One witnesses a large enrolment of school going population even in the rural parts resulting in overcrowded classes with illequipped facilities for demonstration and laboratory work which is indispensable for science education. It is rather difficult and practically impossible to procure such readymade teaching aids and laboratory equipment even from the industrially advanced countries. Under these circumstances, is it ever possible to foster good science education at the school levels relying on the ability and enthusiasm of teachers who are committed to serve education? The answer is yes and the ways of equipping a Science Laboratory is provided by this small manual under review.

The book is divided into two parts. Part I is entitled "Techniques" and has four chapters. Chapter (1) and (2) deal with various tools and materials used in any conventional workshop. Chapter (3) is concerned with electrical tools and apparatus and covers certain aspects of fault finding and repairs. Chapter (4) presents in a realistic way how the task of equipping a laboratory may be undertaken with minimum amount of financial resources. Part II contains five chapters including an Appendix. Chapters (5) and (6) include 28 Physics and 18 Chemistry projects respectively while chapter 7 embodies 5 of Biology and 5 of Geography projects. Chapter (8) gives the description for the construction of 6 pieces of equipment which may be required in the workshop such as a work bench, battery charger, hot-wire cutter, continuity tester and bunsen burner. A good selection of the project ensures the good laboratory training first to the teachers which may then be passed on to students at the High School level. Several useful tips are also given to the technicians and artisans who are likely to assist and help the teacher. Chapter 9 is the Appendix which contains stock lists as well as several bits of valuable informa-

tion, such as colour codes, chemical indicators, as well as glossary.

The book attempts to bridge many gaps in the high school science education. The success of such a programme depends on the assumption that (1) The teacher as well as the Headmaster and other authorities are positively motivated towards improvement, (2) in spite of inadequate finances sufficient funds are made available to get the programme started, (3) although the bulk of the education programme is concentrated in the rural areas there will be access to urban centers where standard tools and materials will be available. The author hails from an African country (The University of Zimbabwe) and makes references to local resources. His wide experience in Teaching in Schools and Universities and working in industrial and research centers has been distilled into these 200 and odd pages which will be of immense use in streamlining such education programme in schools.

All the necessary raw materials and gadgets mentioned in the book are easily available in the Indian market. Therefore, it may not be out of place to suggest that such an attempt from an Indian author to prepare a similar manual making use of indigenous resources would be quite helpful indeed.

The author wishes that the Science Teachers and Educationists will make the best use of such a manual.

A. R. VASUDEVA MURTHY

Department of Inorganic and Physical Chemistry,
Indian Institute of Science,
Bangalore 560 012

Biotechnology: International trends and perspectives

by Alan T. Bull: Geoffrey Holt and Malcolm D. Lilly, Oxford and IBH Publishing Co. 66 Janpath, New Delhi 110 001, 84 pages. Subject index included. Price Rs. 30/-

The organization of economic co-operation and development should be congratulated on commissioning a topical work of this type. As a sequel to the joint report ACARD, AERC and the Royal society and with its global outlook it is of special importance to the developing countries. This is a valuable summary of the state of the art setting out accurately the science, technology and economics of Biotechnology. The analysis is factual and objective. It is, in the words of the expert committee Chairman, "a major new contribution to governments, the scientific community and industry. The report details succinctly the potential of biotechnology not over-looking the considerable constraints, providing a sound basis for formulating a policy".

The book is in three chapters, nine appendices, a glossary and an index. The three chapters respectively deal with the potential of contributing sciences to biotechnology; scientific technological and resource constraints on biotechnology and important issues affecting developments in biotechnology. The appendices, include definitions, statistics of biotechnological industries, market predictions and a checklist for strategic planning; all important for industry and decision makers.

While acknowledging the promotor effects of molecular biology and genetic engineering it recognises the dangers of overstressing only these to the exclusion of other important areas. The recommendation that microorganisms other than *E. coli* should be studied especially by industry is topical when everyone is going overboard in recruiting experts in *E. coli*, genetics.

The report then deals thoroughly with the development of human resources and training and the need for a broad awareness of the overall problems. The multidisciplinary approach is especially stressed. The report rightly cautions against exclusive relationship between universities and industry resulting in restrictions on the dissemination of fundamental knowledge. Biotechnology and biotechnology industry open up new mind boggling horizons for future human activity comparable to the electronic industry.

Decision makers and professional bodies need to be alive to this situation for siezing quick initiatives to define appropriate policy. The book under review serves the important purpose of putting Biotechnology in a proper perspective. Professors Bull Holt and Lilly, themselves authorities on the subject are to be congratulated on an excellent work in a very important frontier area. Brevity and clarity are its assets. Its penetrative analysis is commendable, the price attractive, in these days of rising costs and is a recommendation for the individual, scholar and the decision maker. All of them will benefit from reading this thin but provocative work summarising the state of the art in Biotechnology. The publishers Messers Oxford IBH are to be congratulated in bringing out such an important work at an attractive price. The binding and get up could be improved.

K. S. GOPALKRISHNAN

Centre for Biochemical Engineering,
Indian Institute of Technology,
New Delhi 110 016.

Hyphomycetes—Taxonomy and Biology edited by C. V. Subramanian, Academic Press Inc. (London) Ltd. London, NW1-1983 pages vii+502, Price £ 35.00 \$65.00.

This scholastic treatment of hyphomycetes,

beautifully produced [and with the hardest cover] is much of interest to biologists.

A number of excellent texts, indeed, have appeared in the recent past on the taxonomy of Hyphomycetes (Ellis 1971, 1976; Carmichael *et al*, 1980; Kendrick & Carmichael, 1973) but this text alone gives comprehensive account of taxonomy and biology of the interesting group of fungi — the Hyphomycetes.

This book, the result of labour of love, is as the author expressed, "... an expanded version of the introductory, part of my monograph on Indian Hyphomycetes" (p. vi).

The contents of the book are divided into twenty one chapters with an additional exhaustive bibliography (pp. 410-461), an index of fungal genera and species (pp. 461-486) and an efficient general index (pp. 487-502).

The first three chapters pertain to the first subtitle—taxonomy—of the Hyphomycetes. After an introduction of the Hyphomycetes, in brief, the development of hyphomycetology from its beginning, evolution of a taxonomy of the Hyphomycetes (chapter 3) and the concept of "the whole fungus" (chapter 2) are traced in length and lucidly discussed. The author has proposed a tentative system of classification of the Hyphomycetes and nine new families (Table 3.2, pp. 79-94).

The second and much larger part of the book, comprises a comprehensive account of relationships of the Hyphomycetes to the substrates they colonize and degrade (chapters 6,7), to the organisms with which they interact (chapters 8,9,16,17); the ecosystems in which they occur (12,13,14,15); their relevance to man in agriculture (16), medicine (18-20) and industry (20, 21). The chapters 11, 17, 18, 19 reflect the untiring efforts of the author to collect and collate the information about viruses infecting hyphomycetes, pathogenic hyphomycetes (of man and animals), mycotoxicoses in man and animals due to the Hyphomycetes, and an amazingly large number of chemical substances produced by the Hyphomycetes.

The information in all these chapters is comprehensive, exhaustive and within the terms of reference (p.vi) set by the author. The major part of the book is devoted to the second aspect — biology — of the Hyphomycetes. The main disappointment of the readers however, will be lack of illustrations complementing the text.

In its scope and beautiful production this book which includes a wealth of invaluable information is, nevertheless, a remarkable achievement and therefore, should find a place in all biological libraries.

P. G. PATWARDHAN

MACS Research Institute
Pune 411 004.