

in the studies pertaining to the occurrence of acetylcholinesterase in the embryos of cestodes^{3,10-12}. In the present study the embryos of *Cotugnia* showed only non-specific esterase activity. But unless specific inhibitors are employed it is not possible to identify the esterase present in the cestode embryos.

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REVIEWS

Indian Precambrian Stratigraphy, Volume 4.
By V. J. Gupta. [Hindustan Publishing Corporation (India), Delhi 110 007], 1977. Pp. x + 333.
Price : Rs. 75.00, \$ 19.00.

This book marks the culmination of a project on the revision of Indian Stratigraphy, initiated in 1972 by the author. Three volumes by the author on Phanerozoic stratigraphy have already been published. The strength of the present book lies in giving a bird's eye view of the recent (up to 1975) stratigraphic revisions in the vast Precambrian terrain of India. The book is usefully illustrated with some recent geological maps and cross-sections. The value of the book is enhanced by several tables showing the stratigraphic columns of various regions. Synthesising a large mass of data, which have started pouring in particularly from the sixties, is no mean task, and the author, who is probably not personally familiar with a large part of the Peninsular India, has made a valiant attempt. The book, however, bears the mark of haste, with authors' names and references quite often mis-spelt and misquoted.

One would have wished that the author had begun the book with the Peninsular India, which exposes the Indian Precambrian at its best, rather than with the Himalayan Precambrian. This is particularly so when the identification, classification and correlation of the Precambrian formations of the Himalayas are beset with a great deal of uncertainty in the absence

of adequate geochronological information. There has also been an unequal treatment of the Indian Precambrian, with the Himalayas getting 152 pages, the Peninsular Archaean (including the Proterozoic) 118 pages and the Purana a mere 58 pages.

The division of the Indian Precambrian under the obsolete scheme of Archaean and Purana does not do justice to the current advancements in the global Precambrian geology. The term Archaean is usually restricted to the period of about 2,500 million years, and most of the areas covered in this book under the Archaean will rightly belong to the Proterozoic. There has apparently been an uncritical evaluation of radiometric data, which has resulted in the lumping together of dates with variable accuracy and utility. A more purposive assessment of geochronological data would have enabled the author to arrive at a tentative chronostratigraphic correlation of the Indian Precambrian.

Pluralising stratigraphic names is forbidden by various stratigraphic codes, and one is surprised to find the author of "Precambrian Stratigraphical Nomenclature" using names like the Salkhalas, Haimantas, etc., in the present book.

At its present price, this book may be beyond the reach of most graduate students and research scholars. Nevertheless this book attempts to fulfil an urgent need for literature on Indian Precambrian geology, and therefore is a useful addition to the library.

M. RAMAKRISHNAN.

Pest Control in Tropical Root Crops. PANS Manual No. 4 (Centre for Overseas Research, Ministry of Overseas Development, PANS Office, College House, Wrights Lane, London W8 5SJ, U.K.), 1978. Pp. iv + 235. Price : £ 2.50 (Postage and Packing extra).

Manual four of 'Pest Control in Tropical Root Crops' lives upto the usual standards of PANS. In many areas of tropics and sub-tropics, root crops like sweet potato, cassava, yam and taro form staple food and heavy crop loss is incurred due to various pests, diseases, weeds and rodents. Besides these, spoilage during storage also damages the crop. Though a great deal of information is available on various aspects of these root crops, it remains more or less scattered in different journals and only a few of these are accessible to most of the research workers. This book is written and compiled to pool the latest information about these tuber crops and it has taken a good shape and forms a cogent reading.

The introduction gives a brief account of the annual world production of these root crops, their morphology and agronomical aspects. Mr. L. Kasasian has given excellent information about the weed control, citing most promising chemicals and the methods used in these crops in different countries. Valuable information is provided by Miss E. J. Taylor on the extent of damage caused by different rodent species and various methods of their control. Dr. R. H. Booth has made an excellent presentation of various storage methods of these root crops individually and detailed information is furnished regarding the post-harvest damage caused by different pathogens and insect pests followed by control measures to avoid these losses. The subsequent chapters on sweet potato, cassava, yams and taro are dealt in detail by Dr. S. C. A. Cook regarding fungal, bacterial and viral diseases, giving their distribution, symptoms, mode of transmission and control measures. Similarly nematodes and insect pests infecting these crops are dealt in detail by Dr. J. Bridge and Dr. A. Ward and recommendations of their control through cultural and chemicals are exhaustively furnished. At the end of each chapter, for further reading there is an up-to-date fairly extensive list of references for all the topics. The manual includes 99 text-figures and 18 tables, which add value to this publication. Like the other manuals of PANS on bananas and rice, it would have been more attractive, if they had included some colour photos of important pests and diseases of these root crops. A further highlight of this book is the inclusion of the comprehensive check list of the diseases, insects, mites, nematodes and

pesticides in the appendix against each crop, which serves as an extremely valuable ready reference. This book adequately fulfils its objectives and should find a place in all the institutions and libraries as a reference manual. As the case of the other three manuals of PANS published so far, the same standard of excellence and neat get-up has been maintained in this fourth manual of *Pest Control in Tropical Root Crops*.

K. S. SASTRY.

Proceedings of the International Conference (6-12 January 1977) and Winter School (13-21 January 1977) on Frontiers of Theoretical Physics held to celebrate the Fiftieth Anniversary of Bose Statistics. Edited by F. C. Auluck, L. S. Kothari and V. S. Nanda. (The Macmillan Company of India Limited, 4, Community Centre, Naraina Industrial Area, Phase I, New Delhi 110 028), 1978. Pp. 504. Price : Rs. 200.

The birth of concepts like Bose Statistics and Raman Effect are indeed eventful and their fiftieth anniversaries meaningful. This volume contains the proceedings of the international conference and winter school held to mark the occasion of the Golden Jubilee of Bose statistics. Besides, the various speeches made on the occasion, twenty-nine papers presented in the conference by eminent authors and nine lectures at the winter school are included here.

The papers reproduced from the Conference are too many, too varied in coverage and too dissimilar in the treatment to be reviewed or listed in detail here.

The winter school reports present a more cogent appearance and include several detailed treatments like 'Random matrices and disordered systems' by S. F. Edwards (Pp. 275-314), 'Fluctuation and relaxation' by Suzuki (Pp. 315-344), 'Dissipative processes' by Grecos (Pp. 345-380), 'Electrons in disordered alloys' by Joshi (Pp. 415-452) and 'Exciton mechanisms for superconductivity' by Jha (Pp. 453-490).

The purpose of the publication of the entire proceedings (with no discussion whatsoever) becomes a debating point when a national academy brings it out, in a country like ours with a price tag of Rs. 200 ! Especially so, when it is directly reproduced from the manuscript with little editing, uses no particularly expensive paper for printing, contains no author or subject index and does not even have a note on the contributors to the volume (the blurb in the jacket gives, of course, information on the three editors only). May be it would have been better to bring the lectures given at the winter school (Pp. 265-504) as a separate volume and at a much lower price.

S. K. RANGARAJAN.

Annual Review of Neuroscience, Volume 1. Editor: W. Maxwell Cowan, Associate Editors: Zach W. Hall and Eric R. Kandel. (Annual Reviews Inc., 4139 El Camino Way, Palo Alto, California 94306, U.S.A.), 1978. Pp. xiii + 506. Price: \$ 17.00 in U.S.A., \$ 17.50 elsewhere.

The present volume of *Annual Review of Neurosciences*, Vol. I, contains an excellent reviews on 16 topics written by people who have worked for a long time in their respective field of specialities. Each article, in a nutshell, gives the present understanding of the problems and a review of the past studies. Furthermore, they have also given the much more important information regarding the areas in which the research has to proceed if one wishes to utilize the knowledge so far obtained. All these articles deal with the changes at the cellular, tissue level and the neurohumoral changes at different levels.

The first article discusses the influence of the environmental factors on transmitter function in the autonomic nervous system and the importance of the nerve growth factor has been identified. In the neural control of behaviour the authors discuss the events at the microscopic (cellular) level and identify the emerging problems posed by this approach. The concepts in the field of pain is changing. The spin as a specific sensation has been demonstrated by pain units by their increasing firing rate in response to noxious stimuli and studies in which morphine inhibit nociceptive neuron while leaving mechanoreceptors unaffected. Sensory evoked potentials are relevant in Neurology as an objective test of brain function and the changes in these potentials may localize the lesion to a particular site along the afferent pathway from the receptor to the cortex. The somatosensory, the visual and auditory evoked potentials and their clinical application has been discussed.

There are well-written chapters on circadian pace-makers in the nervous system, central catecholamine neuron system, mechanism of cortical development, regulation of autonomic development, motor system with specific reference to the control of locomotion, neuroanatomical methodology, biology of cultured nerve and muscle and organization of neuronal membranes. The authors discuss the modern concepts in these various fields relating to anatomical, biochemical and functional changes in the brain and the

modern methods by which the cellular functional areas could be mapped out. In optical monitoring of neuronal activity a new method is described and with the use of a dye the neuronal activities could be measured by the changes in fluorescence which does not involve the use of electrodes. The article on trophic mechanisms in peripheral nervous system, the authors consider several of the humoral and cellular influences known to act on the neurone and glia of the peripheral systems.

In the chapter on auditory mechanisms of the lower brain stem, the study of lower brain stem centres by new methods and multidisciplinary approach has given new information about the way these centres process acoustic information. By sophisticated studies of primary afferent fibres, made possible by advanced computer technology, continue to add new information about the inputs to the central auditory systems. In the modern concept on neurophysiology of epilepsy, data available emphasize the importance of depolarization shift as a characteristic event in neurons of acute epileptiform foci. It has been shown that different populations of neurons have different susceptibilities for generation of epileptic discharges, and that intrinsic regenerative neuronal events play an important role in depolarization shift generations. Alterations in the ionic microenvironment that occur *in vivo* such as increase in K^+ and decrease in Ca^{++} are of sufficient magnitude to induce depolarization shifts and epileptiform field potentials *in vitro*. The changes in these ionic alterations may be an important factor that amplifies excitation and leads to transition from interictal to ictal discharges.

It is significant to note the contribution made by this volume, to show, that the understanding the activities of the nervous system is not the domain of anyone single discipline. The integrated approach as demonstrated by the reviews written by zoologists, physiologists, neurophysiologists, neuropathologists, neurochemists, neurologists, and neurosurgeons is the only solution for the understanding of this fascinating discipline. The bibliography is extensive. Glancing at the list of reviews listed for the second volume, one cannot but commend the far-sightedness of the editors. This book is a must for all those individuals and institutions interested in the mechanisms of the brain function.

V. S. ACHAR.

SOLAR-POWERED COMMUNICATIONS SYSTEM OPENS

A major telecommunications system, believed to be the first in the world to be powered entirely by solar energy, began operating in Australia in January 1979. Electricity generated by the sun is powering 13 repeater stations in the arid zones of Central Australia, bringing television, telephones and telex facilities to the inland population centres. The 13 solar-powered repeater stations are hooked into Australia's extensive micro-

wave trunk system which carries telephone, television and cable communications. It is now possible for people living in Alice Springs, in the centre of the 7,682,300 km² (3,000,000 square mile) Australian continent, to dial direct to other countries with direct-dial arrangements. (Australian Information Service, New Delhi 120 021.)