
BOOK REVIEWS

Advances in Materials Technology: Monitor, (Compiled by the Technology Programme of UNIDO, Vienna, P.O. Box 300, A-1400, Austria) Issue No. 4, May 1985, pp. 93, Price: Not given.

The United Nations Industrial Development Organization has been bringing out a series in the field of materials technology. Each issue is devoted to state-of-the-art reviews of selected areas. The fourth in the series 'Advances in Materials Technology: Monitor' is devoted to powder metallurgy, while the first three deal with high strength low alloy steels, advanced ceramics and fibre optics. The issue on powder metallurgy contains four articles of research on hot isostatic pressing, future developments and advances and Indian experience. The articles are in the nature of broad surveys and are informative. Information on India's experience in powder metallurgy proves particularly interesting, as the article gives the current position of powder metallurgy in India and discusses future expansion plans. The advances in rapid solidification processing and the fresh lease of life secured by powder metallurgy are adequately discussed. For one interested in the fascinating developments in materials science and technology the monitor is highly recommended.

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Annual Review of Physiology, (ed.) R. M. Berne, (published by Annual Reviews Inc., 4139, El Camino Way, Palo Alto, California 94306, USA), Vol. 48, 1986, pp. 769, Price: USA \$32, Elsewhere \$35.

The volume opens up with a very interesting personal account of C. Ladd Prosser about the making of a comparative physiologist. Prosser's autobiography reveals how a young physiologist could use opportunities in those early years to gain experience and excitement of spending time in some of the most active centres in U.K. and U.S.A. at

that time. He rejoices at his fortune to have listened to the evidence that acetylcholine is a neurotransmitter in sympathetic ganglia presented by Dale and Feldberg of whom Dale has been honoured later on with the Nobel Prize. Such personal chapters will play a great role in stimulating and shaping the young scientists of the succeeding generations to look for the experiencing of such scientific excitements. Incidentally, Prosser, like many other great physiologists, worked during the World War II on the Manhattan Project of the U.S. Atomic Energy Commission which led to the first explosion of the atom bomb on Japan, although Prosser was one of those who before that signed the petition to President Truman not to explode the atom bomb on a city. The war ended but the destiny of the planet took into another path of uncertainty.

This year's volume has two special sections, one on the "cell biological approaches to brain function" and the other on "acid-base regulation". In the special section on brain function, the topics are on: (1) cell adhesion molecules in neural histogenesis by Gerald Edelman; (2) genes encoding mammalian neuroendocrine peptides by Mayo, Evans and Rosenfeld; (3) neural grafting in the aged brain by Gage and Bjorklund; and (4) on neuronal receptors by Solomon Snyder. These topics covered some of the most exciting new developments advancing in the recent years: on how the CAMs regulate the development of the brain, on the role of small peptides in the information interchange within the nervous system and also across different systems, how the new molecular biological techniques have lead to the identification and analysis of the genes encoding the peptides, whether the possibilities opened up by the brain tissue transplantation techniques offer scope of retarding the ageing of brain by grafting younger tissue, and how the understanding on the drug and transmitter receptor subtypes has been significantly advancing with the help of the ligand binding techniques.

The renal and electrolyte physiology section included three important topics under tubular transport, dealing on the dependence of renal functions on the ATP, tissue oxygenation and metabolism of phosphoinositides which are known to serve as second messengers, like the cyclic AMP.

The gastrointestinal section has five reviews on different aspects of identification of specific recep-

tors related to the transport functions of the gastric cells in the intestinal secretion and absorption.

The cell membrane physiology section has seven reviews, focussing attention on "membrane fusion", covering the aspects of membrane biogenesis, expression of proteins and other complexes, transport of materials across the plasma membrane, the regulations of exocytosis, endocytosis and vesicles, the sperm-egg fusion, and other dynamic aspects.

The cardiovascular physiology section has seven reviews, all directed to cover the physiology of the endothelial cells which regulate highly the vital exchange of materials between the blood and the brain. Endothelial cells, like smooth muscle cells can also make prostaglandins under appropriate stimuli. In the lung, the endothelial cells seem to contribute to the regulation of the plasma contents of hormones and autacoids. The endothelial cell plays significant role in thrombosis, in cell division and phenotypes in the arterial wall, and in modulating the tone of the vascular smooth muscle. The biogenic amines can modify the shape of the endothelial cells.

The special section on acid-base regulation, has five topics covering a number of interrelated issues concerning the mechanisms of regulation of pH intracellularly.

In the section on endocrinology and metabolism seven topics have been covered to deal with the current issues of regulation of the pituitary functions by the nervous system peptides which have been known as the releasing factors. The section also covers the themes of endogenous opioid peptides, substances P, and neurotensin which have also been suggested to influence the secretions of pituitary hormones.

The respiratory physiology section (heading misprinted as comparative physiology in the text) has six topics to cover the advances of knowledge on the oxidants and antioxidants in the lung. The formation of the free radical oxidants in the lung, like superoxide, hydrogen peroxide and their bactericidal activity have been considered. Also considered is the defence against oxidants provided by the superoxide dismutases, the catalases and the peroxidases. The toxic effects of oxygen on the lung have been considered extensively.

In the section on comparative and integrative physiology, four papers have been included to deal with the major issues of the thermoregulation in vertebrates, in the areas of central and peripheral receptors and on neurotransmitters and modulators

which might be involved in the thermal pathways and their functioning.

This annual volume, like the volumes of the previous years provides an extremely useful collection of critical reviews of high quality, covering specialized aspects in almost all the major developments in physiology. Therefore, all those working in physiological and allied sciences will be greatly benefited by studying it.

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Medicinal Chemistry Research in India (eds) Har-
kishan Singh, A. S. Chawla and V. K. Kapoor,
(published by National Information Centre for Drugs
and Pharmaceuticals, Central Drug Research Insti-
tute, Lucknow 226 001, India), Price: Rs. 150/- or
US \$35.

Medicinal chemistry research started in India with the preparation in 1922 of urea stibamine by Sir U. N. Brahmachari, who, in the tradition of Ehrlich, used it, for the treatment of patients with Kala azar. The discovery of the extraordinary anti-bacterial properties of some sulphonamides in the early thirties convinced chemists and biologists that compounds could be synthesised in the laboratory for the cure of a whole range of human ailments. Prior to the discovery of the sulphonamides, the number of synthetic compounds used in medicine was relatively few. Pharmaceutical companies which had hitherto manufactured drugs mainly from plant sources, turned their attention as never before, to synthesis of new organic compounds and testing for biological activity in a large number of animal systems. What had remained so far, the preserve of individual pioneers like Ehrlich became highly organised effort in the hands of pharmaceutical companies. Undoubtedly, humanity has benefited immensely from these efforts, concomitantly enriching the pharmaceutical industry.

In India, one of the pioneers of chemotherapy was Col. S. S. Sokhey under whose inspiration several hundred sulphonamides were synthesised at the Haffkine Institute by his colleagues Dr K. Gana-

pathy and (the late) Dr S. Rajagopalan but perhaps none of them proved superior to sulphathiazole, at that time, the most effective drug for streptococcal and staphyococcal infections. Over the years, several thousand compounds have been synthesised in University and College laboratories in India with the intention of discovering compounds with anti-bacterial, anti-fungal, anti-inflammatory, hypoglycaemic, hypotensive and other activities. Unfortunately, these cannot be considered as serious medicinal chemistry, since most of these institutions had no facilities for *in vivo* testing in animals.

Real medicinal chemistry research commenced with the inception of the Central Drug Research Institute at Lucknow in the early fifties. Subsequently, other CSIR laboratories like the R.R.L., Hyderabad, R.R.L., Jammu and the IDPL Research Centre at Hyderabad, started programmes in medicinal chemistry. In the private sector, Hindustan CIBA-GEIGY Research Centre and later the Hoechst Research Centre set up large programmes in medicinal chemistry research patterned after the research laboratories of the parent companies. The volume under review is an exhaustive summary of the many programmes carried out in the laboratories mentioned in this paragraph. The twenty chapters in this book are: 1. Introduction, 2. Anthelmintic Agents, 3. Anti-protozoal Agents, 4. Anti-fungal and Antibacterial Activities, 5. Anti-viral Activity, 6. Anti-neoplastic Agents, 7. Psychotropic Agents, 8. Other Central Nervous System Acting Agents, 9. Anti-inflammatory Agents, 10. Local Anaesthetics, 11. Neuromuscular and Ganglionic Blocking Agents,

12. Anti-histaminics, 13. Agents with Cardiovascular Activities, 14. Diuretics, 15. Hypoglycaemic Activity, 16. Antifertility and Related Activities, 17. Agents Showing Other Activities, 18. Quantitative Structure Activity Relationship Studies, 19. Prostaglandins and 20. Peptides. The book concludes with a subject index and author index. The authors have to be congratulated for getting the cooperation of all the laboratories active in drug research in giving a full account of their activities. The field has been covered with commendable thoroughness. Any one wishing to have an idea of the research programmes and achievements of these laboratories will be gratified at the complete coverage.

The input for research in medicinal chemistry in India, is very small. The total research expenditure for all these institutions, public and private is but a small percentage of the sums spent by even individual U.S. or European pharmaceutical companies on this type of research. It is creditable that at least a few drugs have been discovered in India, which have therapeutic use. The authors have done signal service in publishing this book, which gives an accurate idea to workers in India and abroad of the type of research carried out in this country in medicinal chemistry. The book is remarkably free of errors both in the text as well in the diagrams.

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ANNOUNCEMENT

FIRST NCB INTERNATIONAL SEMINAR

The First International Seminar organised by the National Council for Cement and Building Materials (NCB), New Delhi, will be held at Vigyan Bhavan, New Delhi, on 6-9 January 1987.

The theme and the areas covered at the Seminar are: 1. Productivity enhancement in operating plants including energy conservation, 2. Modernisation of manufacture of cement and allied building materials through improved techniques and installations, 3. Improvements and in-

novations in packaging, bulk handling and transportation, 4. Newer technologies, processes, Equipment and Products, 5. Environmental improvement and 6. Review of performances and uses of cement and allied building materials.

Further particulars may be had from: The Organising Secretary, First NCB International Seminar, NCB, M10 South Extension, Part II Ring Road, New Delhi 110 049.