
BOOK REVIEWS

Experimental Organic Chemistry (Vol I & II) By P. R. Singh, D. S. Gupta and K. S. Bajpai. Published by Tata Macgraw Hill Publishing Co. Ltd, 12/4 Asaf Ali Road, 3rd Floor, New Delhi. 110 002. Pages. 267 and 378 resp. Price Rs. 27/- each.

A good new addition to the rather large number of text books on experimental organic chemistry is the two volume text book—Experimental Organic Chemistry by Singh, Gupta and Bajpai.

A sufficiently large number of preparations—107 to be exact—have been included. A good number of new preparations have also been included. The details about apparatus, reagents, solvents and purification techniques including chromatography and vapour phase chromatography are also there.

A welcome addition is spectroscopy. Though only a few institutions provide the equipment even for IR and UV at present, the chapter is necessary because spectroscopy is bound to be included in regular laboratory work in the near future.

The number of preparations is more than adequate for the undergraduate course; but some of the more involved techniques like handling of reagents, stirring and extraction apparatus need to be included for the postgraduate students.

This good text book in practical organic chemistry will be very useful for undergraduate students.

Department of Chemistry,
Central College,
Bangalore 560 001.

F. V. PATIL

Annual Review of Earth and Planetary Sciences, Vol. 9, Edited by G. W. Wetherill, A. L. Albee and F. G. Stehli. (Annual Reviews Inc., Palo Alto, California 94306, U.S.A) 1981: pp. 502. Price: Hard Cover \$21/- (Outside USA).

The latest volume of the series starts on a personal note by A. O. Nier, one of the pioneers of mass spectrometry. He recounts his fascinating experiences with isotope geology and geochronology. There are seven interesting articles on petrology, mineralogy, geochemistry, tectonics and palaeontology. B. F. Windley and others describe the two contrasting types of layered igneous complexes in Archaean gneiss-granulite belts. They propose a feed-and-bleed model for the genesis of a northosite-lencogabbro complexes, but leave the question of tectonic environment open. In an excellent review paper, R. P. Sheldon discusses the sedimentary petrology of ancient marine

phosphorites. The commercial value of phosphorite as fertilizer has paved the way for recent advances in phosphorite studies. P. H. Nixon and others describe the depleted and fertile xenoliths from South African kimberlites and propose a model of diapiric, asthenospheric upwelling for the genesis of kimberlitic magma. D. E. James reviews the role of crustal contamination in the evolution of mantle-derived magmas, and of source contamination in the genesis of island and continental volcanics. R. G. Burns dwells at length on intervalence transition of Fe and Ti in some minerals and offers explanations for their colour, pleochroism and magnetism. G. M. Mavko deals with mechanics of fault motion along plate boundaries. R. H. Benson reviews the progress in research on the functional morphology and principles of architecture of ostracode shells.

There are five exciting review articles on geophysics and planetary sciences. Z. Sekanina highlights the breakthrough achieved in the study of rotation and precession of comets. G. D. Garland outlines the contribution of regional conductivity studies to the knowledge of the structure and composition of the lower crust and the degree of partial melting of the asthenosphere. W. R. Peltier illustrates the geodynamic response of the Earth to the massive continental deglaciations of the current ice age. R. Buland traces the contemporary developments in the theory of free oscillations of the Earth. A. B. Watts and S. F. Daly show that gravity and topography anomalies on the Earth's surface may provide useful new information on deep processes occurring in the Earth.

Three state-of-the-art papers on atmospheric science and oceanography, cover the rest of the volume, O. B. Toon and N. H. Farlow review the progress on modelling of the particles above the tropopause such as stratospheric aerosols, nacreous and noctilucent clouds, and meteoric debris. A. W. Castleman (Jr.) and R. G. Keese trace the growth of the stratospheric aerosol layer above the tropopause. In the concluding article, L. W. Lion and J. O. Leckie describe the chemical and biological nature of the air-sea interface, which is a microlayer between the atmosphere and the oceans.

The Annual Reviews Inc. a non-profit corporation, deserves congratulations for organising the latest annual volume of excellent review articles covering a wide spectrum of subdisciplines in the Earth and Planetary Sciences. This volume will be a valuable addition to any standard library.

Geological Survey of India
Hyderabad

M. RAMAKRISHNAN

Annual Review of Plant Physiology: V. 32, 1981. edited by Winslow R. Briggs, and published by Annual Review Inc., 4139 Caminiway, Palo Alto, California 94306, U.S.A. pp. 640.

In this volume twenty topics are covered under four different heads. Under the head "molecules and metabolism" eight topics have been reviewed. "Chloroplast proteins; synthesis, transport and assembly" by R. John Ellis deals with the importance of chloroplast and nuclear DNA in the development of chloroplast and in the synthesis of the key carboxylating enzymes. "The chloroplast envelop, structure, function and role in leaf metabolism", by Ulrich Heber and H. W. Hedlt gives a detailed account of the importance of the chloroplast membrane and the movement of substances into and out of chloroplast and its significance in the synthesis of carbon compounds in the cytoplasm. M. G. Guerrero, Jose M. Vega and M. Lossada have reviewed the topic. "The assimilatory nitrate-reducing system and its regulation". Regulation of the enzyme by internal factors and the effect of light and substrate availability on NR activity are reviewed. G. H. Lorimer has reviewed the information on RUDP carboxylase oxygenase and its relation with photorespiration. "The physical state of protochlorophyllide in plants" by H. I. Virgin focusses the important properties and structure of protochlorophyll, the precursor of chlorophyll. In the topic on "Modern methods for plant growth substances analysis" by N. L. Brenner, the technological advances made and precision obtained by the use of certain equipment like HPLC, GC and GC-MS-SICM technique have been emphasised. In this review the merits and demerits of the methods employed are also discussed. The topic on "cell wall turnover in plant development" is reviewed by John M. Labavitch. "Structure, biosynthesis and biodegradation of cutin and suberin", by P. E. Kolattakudy covers the recent developments in the biochemistry of two of the important polymers cutin and suberin.

Under the group "organelles and cells", six topics are covered. Two topics, on cytoplasmic streaming and plant protoplasts are reviewed by N. Kamiya and E. Galun respectively. "Electrogenic ion pumps" by R. H. Spanswick deals with the importance of this in plant systems and the energy relations. "Viroids: abnormal products of plant metabolism" by T. O. Diener gives a comprehensive idea about the structure, replication and pathogenesis of viroids. "Phycobilisomes" by E. Gantt deals with the importance, composition, structure and role of this group in some of the lower plants. "Phloem structure and function" by James Cronshaw is a review, much needed and useful in view of the importance of phloem

tissue in translocation of metabolites.

The following five topics are covered under the head "Tissue organs and whole plants". The review on the mechanism of control of leaf movements by R. L. Satter and A. W. Galston explains the biochemical and biophysical basis for leaf movement. The topic on "The control of morphogenesis in *in vitro* cultures" by K. M. Tran Thanh Van is an exhaustive review on *in vitro* morphogenesis and on future research in this area. "Infection of legumes rhizobia" by W. B. Bauer deals with the recognition sites of infection and growth of rhizobia. In the topic on "Photosynthesis and carbon partitioning and yield" by R. M. Gifford and L. T. Evans, the importance of partitioning of carbon compounds and its relationship with yield, the limitations, the possibilities and the factors influencing have been covered. This review is of considerable interest to crop physiologists and breeders. The review on "auxin receptors" by P.H. Rubery provides recent developments in this area. To understand the mode of action of auxins one of the important approaches is to identify receptor sites.

The only topic under population and environment is "Biochemical mechanisms and disease resistance" by A. A. Bell. Breeding for disease resistance, the most economic approach, is achieved by understanding the biochemical aspects. The review by A. A. Bell covers the importance of penoles and phytoalexins in disease resistance.

The prefatory chapter by Birgit Vennesland is a graphic account of the achievements and the interactions with fellow scientists. The para on the problems of scientific publishing is interesting to read.

K. S. KRISHNASASTRY

Department of Crop Physiology,
University of Agricultural Sciences,
G K V K Campus,
Bangalore 560 065.

Annual Reviews Reprints; Cell Membranes (1978-80)

Compiled by L. J. Mullins, Pub. Annual Reviews Inc. Palo Alto Calif., U.S.A. pp. 889, Price \$ 28.00—outside U.S.A. \$29.00

"Cell Membranes" is a truly inter-disciplinary area and has attracted the attention of the anatomist, physiologist, biochemist and the biophysicist. Consequently the wealth of information that has become available recently has been reviewed in diverse disciplines. Recognizing the usefulness of a collection of reviews on a *topic* rather than in a *discipline*, Annual Reviews Inc. published earlier a compilation of articles on "Cell Membranes" which appeared in several Annual Reviews series during 1975-77. This is the second volume on this topic and covers the three year period 1978-80.

In this volume 35 articles which appeared in Annual Reviews of: Biochemistry (7), Biophysics and Bioengineering (9), Neuroscience (1), Pharmacology and Toxicology (6), Physical Chemistry (2), Physiology (9) and Plant Physiology (1) during 1978-80 have been collected and grouped under Excitable membranes, Active Transport, Membrane structure and Chemistry and Receptors. There are ten reviews on excitable membranes covering electrical properties of egg cell membranes, mechanisms of slow synaptic responses, ionic currents and mechanisms of excitation in Molluscan soma and *Paramecium*, effect of Neurotoxins and on the role of cyclic nucleotides. Another ten articles on active transport consisted of the electrogenic Na^+ , K^+ pump in smooth muscle, biochemical mechanism of the sodium pump, transport of sugars, amino acids and Na^+ cotransport, cellular transport mechanisms and energy coupling for membrane transport in plants. Under membrane structure and chemistry, eleven authoritative articles

on Ca^{2+} dependent ATPase of the sarcoplasmic reticulum, membrane ATPases of prokaryotes, NMR studies on membrane structure and dynamics, assembly of proteins in biological membranes, lipid asymmetry in membranes, viral envelopes and plasma membranes and lipid bilayer phase transitions were presented. The remaining four reviews were on the role of lipids in receptor mechanisms, receptors for amino acids, biophysical analysis of receptor function and opiate receptors. Being an excellent collection of exhaustive and critical reviews on many aspects of contemporary interest in biological membranes, this volume would be particularly useful to research workers and for advanced level teaching in the field of membrane biology.

Biochemistry Department,
Indian Institute of Science,
Bangalore 560 012.

P. S. SASTRY

SCIENCE NEWS

NUTRITION AND THE DEVELOPMENT OF THE CHILD

An international workshop on 'Nutrition and the Development of the Child' was conducted at the Biochemistry Department of the M.S. University, Baroda from 8 to 15 January 1982. This workshop was sponsored by COSTED, UNICEF, UNESCO/IBRO, ICMR and UGC.

The objectives of the workshop were: (1) identification of factors which act as constraints or stimulants for the development of the child, their prevalence and impact; (2) stimulation of further research and social action designed to eradicate the former and explore the latter and (3) creation of an awareness of these factors among people in different walks of life concerned with the child and its development.

The formal sessions of the workshop were preceded by the inaugural sessions on the 8th which marked the silver jubilee celebration of the Biochemistry Department.

In sessions 1 and 2 on 'pregnancy and fetal development' the key points emphasized were the different approaches to and problems in the formulation of nutritional requirements and dietary allowances for pregnancy (Roderuck), the nutritional and biochemical phenomena and anomalies during pregnancy (Rajalakshmi), the potentiality of using selected serum constituents and other parameters such as blood glucose, serum lipids, tocopherols and magnesium, and their value in preventing fetal malnutrition

(Metcoff, Raman and Peramma), pregnancy gains and birth weights (Jansen), the fetoplacental unit (Agarwal) and the pattern of fetal growth retardation with maternal malnutrition (Bhatt).

Session 3 on 'postnatal care and development' was concerned with the nutrition of the pre-term with particular reference to the value of human milk (Gaul), the prenatal maturation of the intestine in relation to infant nutrition (Koldovsky) and the relevance of pre-natal and post-partum practices for maternal and infant nutrition (Jayam).

In session 4 on 'lactation and milk composition', the aspects discussed were milk yield and energy exchange (English), lactation in relation to maternal body build, food intake and infant growth (Kusin), and the special biochemical features of milk and their possible relevance for infant nutrition. These included lactose, nitrogen, protein and taurine, and short chain fatty acids (Gaul), hormones such as ACTH, corticoids, erythropoietin and thyroxine (Koldovsky), immunoglobulins such as IgA, IgG and IgM (Reddy) and lactoferrin, C_3 macrophages, lymphocytes and other cells (Barrois) and the capacity of human milk to prevent and reduce intestinal putrefactive processes (Haenel and Agarwal).

Session 5 on 'breast-feeding, bottle-feeding and weaning practices' was concerned with the possibility of reversing the increasing trend of bottle-feeding in urban areas by appropriate home-based and