

---

## BOOK REVIEWS

---

**A Farmer's Primer On Growing Rice**, (ed.) B. S. Vergara, (published by International Rice Research Institute, P.O. Box 933, Manila, Philippines), Price: Not given.

In the last two decades, techniques/technologies were developed to increase cereal production. The production increase was neither uniform nor as expected.

"Gap analysis" studies in the meanwhile highlighted the untapped yield reservoir even at the current level of technology. To bridge this yield gap, technology transfer programmes (including T and V system) were implemented by the Central and State Governments. The issue is the extent to which the farmers are aware of the technology. The present book by Dr. B. S. Vergara published in 1979 is an attempt to facilitate technology transfer in a manner that could be understood and practised by the farmers. The essentials of the rice (low cost input) technology are provided for increasing rice yields. For this, the author has relied more on diagrams. Brief explanations in simple and clear language are provided.

The information is considered under 23 titles covering 221 pages. The different stages of the growth and the development and the relevance of each stage to the crop as a whole are indicated. The idea behind the practice and reasons for adoption are spelt out. The farmer can understand why and how the varieties and the technology increase production.

To realise high yields in rice grown under varying situations, modifications in the technology proposed are necessary. By adjusting the practices suggested, to suit his own specific farm situations, the farmers could increase their rice production.

In this oversimplification process, points could be misinterpreted/misunderstood as in (i) third item in p. 4, (ii) first item in p. 6, (iii) second item in p. 39 and p. 47, second item in p. 80 (not more than 15 days), first item in p. 137, 192/sq. metre (too low) in p. 150, 20°C as in p. 153 (not the critical limit), second item in p. 157, last item in p. 158, last item in p. 212 and 272 panicles (low) per sq. metre (p. 221). These are simply indicated to effect changes in subsequent editions.

These points, in no way, minimise the value of the book. The IRRI and the author can be proud of this

publication. The "Primer" had already been published in 22 languages and editions in at least 45 other languages are proposed. No other IRRI publication had been translated in so many languages – a barometer for its wider acceptance. In future editions, the possibilities of effecting minor changes in the diagrams in pages 191, 192, 196, 216, 219 etc can be considered.

R. SEETHARAMAN

Central Rice Research Institute,  
Cuttack 753 006.

---

**Annual Review of Neuroscience**, (ed.) W. M. Cowan, (published by Annual Reviews Inc., 4139, El Camino Way, Palo Alto, California 94306, USA), Vol. 9, 1986, pp. 531. Price: USA \$31, Elsewhere \$34.

This volume contains 17 review articles comprising the full range of the molecular and cellular advances in the Neuroscience. The volume opens up with the review on artificial intelligence and the brain written by S. Ullman from the Massachusetts Institute of Technology, U.S.A. and the Weizmann Institute of Science, Rehovot, Israel. The paper considers computational studies of vision and their relevance to the goal of understanding the processes of "Thinking and intelligent behaviour". In conclusion, it has been reminded that such computations are still "not immediately translatable in any obvious manner to biological mechanisms". In the end of the volume, we have another interesting article on the Alzheimer's disease (by D. L. Price) which is a type of dementia with deficits of memory and various other cognitive functions, associated with death of nerve cells in the brain, particularly in the cholinergic system. This review specially concentrated on the structural changes in the neurons in different regions of brain as well as on the experimental approaches and the etiological factors. The molecular aspects of learning and memory have been considered from the data of invertebrates in

the review of Carew and Sahley who concluded that changes of synaptic connections and cellular properties would be involved in the learning, at least in the neurons endowed for such plastic changes, and also that memory could involve  $K^+$  conductance modulation, that learning could involve cAMP and  $Ca^{++}$  calmodulin, and biogenic amine modulations.

The volume has an exhaustive article by Kuhar, De Souza and Unnerstall on the methods of mapping neurotransmitter receptors. The article points out that the methods of labelling of receptors have advanced well but the methods for visualizing them have still the pit falls. The review states in summary that the methods of mapping receptors by autoradiography and PET scanning for imaging the receptors have opened up great prospects for rapid advances in future. The review of Prichard and Shulman on the NMR 'spectroscopy' of the brain metabolism *in vivo* points out that this field is rapidly growing since 1980 and is already being put to use in both human and experimental studies, but the localization of the source of the signals is still a limitation. In contrast, the NMR 'imaging' machines are already in good use as they offer better images than the x-ray methods (including CT scanning), and without ionising radiation.

The relations of the unique properties of the retinal rods to the cGMP cascade have been reviewed by Stryer. It may be recalled that the rods have reached the limits of sensitivity by being sensitive to a single photon and in other related properties. It has been summarised that  $Na^+$  channels remain open in the dark due to high cGMP, and that light leads to an enzymatic cascade resulting in a rapid hydrolysis of cGMP and closure of the channels, and that the cascade is inactivated by the GTPase activity.

The invertebrates have been offering tremendous scope for experiments for advancing the fundamental knowledge on the basic processes of nervous tissue. Kaissling reviewed the insect olfactory receptors; Tanouye, Kamb, Iverson and Salkoff reviewed the genetics and molecular biology of ionic channels in *Drosophila*. The vertebrate olfactory reception and the studies on olfactory epithelial cells have been reviewed by Lancet.

The role of the Schwann cells in the production of the basal lamina material between the axon and its ensheathment have been reviewed excellently by the Bunges and Eldridge. The review of McCarthy, Earnest, Young, Choe and Stroud up-dates the

recent knowledge on the molecular biology of the acetylcholine receptor. Prell and Green have reviewed the evidence for histamine as a neuroregulator.

Schwartz and Costa have reviewed the hybridization approaches to the study of neuropeptides. Their inactivation and metabolism have been reviewed by McKelvy and Blumberg.

The linkages between basal ganglia and cerebral cortex have been reviewed by Alexander, DeLong and Strick. Georgopoulos has reviewed the processes related to the arm movements aimed into space, and the effects of the brain lesions on the relevant neuronal recording studies of cortical regions. This topic on arm leads to the subject of the will and consciousness which are the most fundamental of all the issues of the neuroscience and of all other sciences.

As with the annual volumes of the previous years, this is also another outstanding one which will benefit the neuroscientists and others in the allied disciplines.

T. DESIRAJU

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

---

**Organic Chemistry**, (eds) S. N. Mukherji, S. P. Singh and R. P. Kapoor, (published by Wiley Eastern Ltd., 4835/24 Ansari Road, Daryaganj, New Delhi 110 002), 1985, Vol. I, pp. 706, Price: Rs. 73.50; Vol. II, pp. 1377, Price: Rs. 73.50.

The book under review is divided into two volumes. The authors have classified the topics as fundamentals, core courses and special topics.

In the first volume the chapters on chemical bond, stereoisomerism, organic spectroscopy and general principles of reaction mechanisms have been presented in a lucid and easily understandable manner, highlighting the latest advances. In the first chapter 'The chemical bond', the formation of bonding, antibonding and nonbonding orbitals is clearly explained. Interactions associated with molecules such as inclusion compounds, clathrates and charge transfer complexes have also been included in this

chapter. In the second chapter 'Stereoisomerism' a new system (R.S. System) of nomenclature, replacing D and L system in naming chiral compounds is well presented. Nuclear magnetic resonance spectroscopy is dealt with in an elegant manner in the third chapter, citing the spectra of a number of organic compounds. The fourth chapter deals with reaction mechanisms elucidating the energy profiles associated with the intermediates and transition states involved in organic reactions. Chapters five and six deal with routine topics such as alkanes, alkenes and cycloalkanes, and the reactions involved are explained through convincing mechanisms. The seventh and the ninth chapters on 'Aromatic hydrocarbons' deal with the latest picture of aromatic and antiaromatic nature of the compounds. The eighth chapter consists of discussion on aromatic electrophilic substitution reactions proceeding through sigma and pi complexes. A similar discussion on the aromatic nucleophilic substitution reactions, highlighting possible bimolecular mechanism and benzyne intermediate is covered in the tenth chapter. The eleventh chapter consists of preparation, structure and synthetic application of organometallic compounds of magnesium, zinc, lithium, lead and cadmium. Finally, the chapters from twelve to eighteen deal with the chemistry of organic compounds having several functional groups, laying stress on reaction mechanisms.

The second volume comprises of sixteen chapters. The chapters nineteen to twenty-one describe in detail, the chemistry of organic compounds containing nitrogen, phosphorus and sulphur. Mention of industrial applications of these compounds could have been more useful from the point of view of students.

Organic synthesis via enolates is well presented in chapter twenty-two, though inclusion of synthetic application of enolates would have been an added advantage to the reader. The special topics on organic photochemistry (chapter 23) and pericyclic reactions (chapter 24) are perhaps more useful to the honours and post-graduate students. Chapter twenty-five (petroleum and petrochemicals), chapter twenty-six (polynuclear hydrocarbons), chapter twenty-seven (terpenoids) and chapter twenty-eight (steroids) provide an excellent account of the various topics dealt with. The material on heterocyclic compounds has been dealt with in a conventional manner in chapter twenty-nine. Inclusion of structures of some drugs, carbohydrates and amino acids would have enhanced the usefulness of this chapter.

Useful information on alkaloids and synthetic polymers is given in the chapters thirty and thirty-one respectively. It is rather surprising that elucidation of structure of quinine has been omitted in this part of the book. There is a welcome change in the material dealing with carbohydrates in chapter thirty-two, where all the structures of carbohydrates are represented in chair form. Qualitative tests for carbohydrates, amino acids and proteins could have been included in this chapter and chapter thirty-three respectively. The last chapter on organic chemistry of life (chapter 34), though very brief, is quite useful to the beginners.

On the whole the authors' attempt to explain almost every reaction through logical and easily understandable reaction mechanism is laudable. Though the book is written with a view to meeting the primary needs and interests of B.Sc., B.Sc. (Hons.) and M.Sc. students, yet this objective may not be fully achieved due to the high cost of the volumes in spite of government subsidy. However, these volumes are strongly recommended to all the libraries of Indian Universities and individuals who could afford to purchase.

Department of Chemistry,  
The National College,  
Basavanagudi,  
Bangalore 560 004.

GIRIJA SRINIVAS  
M. N. GUDI

---

**Annual Review of Immunology**, (eds) W. E. Paul, C. G. Fathman and H. Metzger, (published by Annual Reviews Inc. 4139 El Camino Way, Palo Alto, California 94306, USA), Vol. 4, 1986, pp. 730, Price: USA \$31; Elsewhere \$34.

There are 24 reviews in this volume. It opens with a prefatory article by David W. Talmage describing the conceptual and experimental background that led him to suggest that the immunocompetent cell was the selectable element in the immune system and considering the factors in the acceptance and rejection of immunological concepts. Fritz Melchers and Jan Anderson update the literature collection on B-cell growth control, summarise the accepted facts in the field pointing out controversies and paradoxes and state their bias. An overview of T-suppressor cell circuits is given by G. L. Aspersen *et al.* The salient molecular, biochemical and functional features of the human IL-2 receptor are

discussed by W. C. Greene and W. J. Leonard. J. C. Gluckman *et al* give an admirable account of lymph adenopathy-associated-virus infection and AIDS. D. W. Mason and P. J. Morris deal with the effector mechanisms of allograft rejection based on studies with experimental animals and the observations made in clinical transplantation and also give a brief outline of the present knowledge of the induction of rejection process. J. M. Davie *et al* summarise current information about the molecular basis of idiotype and focus attention on strategies that may be useful in idiotypic definition. Toshiyuki Hamaoka and Shiro Ono consider the current understanding of B-cell differentiation factors (BCDF) that govern late events in the development of antibody responses, concentrating on T-cell derived BCDF. Interleukin-3 is reviewed in detail by J. W. Schrader. The molecular immunobiology of complement synthesis is described by D. H. Perlmutter and H. R. Colten, while the membrane attack complex of complement is dealt with by H. J. Muller-Eberhard. G. N. Gaulton and M. I. Greene review the idiotypic mimicry of biological receptors. R. N. Germain and B. Malissen focus on recent work utilising DNA mediated gene transfer to identify class II-MHC genes and explore their structure and function and discuss critically future application of these methods. K. Kelly and U. Siebenlist review data from three experimental strategies that provide clues concerning the role of *c-myc* in normal and neoplastic cells. G. D. Yancopoulos and F. W. Alt describe the mechanism of Ig variable-region gene assembly and explore the possible regulatory mechanism that the cell exploits to control these genomic rearrangement events. H. S. Warren *et al* review the present status of immunological adjuvants, discuss their mode of

action and also the future approaches for immunopotentialiation. J. B. Underdown and M. J. Schiff deal with the fate and function of IgA after synthesis and try to assess which of its experimentally described properties are essential for IgA to contribute to the well-being of the host. H. Metzger *et al* review the Fc-receptor with high affinity for monomeric IgE, its structure and the early biochemical events that it initiates, based on recent data. G. S. Nathenson *et al* discuss molecular analysis and structure-function implications of murine MHC-class I mutants focusing on mutants of H-2K<sup>b</sup> gene. M. Kronenberg *et al* summarise the current understanding of the genes encoding for the  $\alpha$  and  $\beta$  chains of T-cell antigen receptor. They discuss also the  $\gamma$  genes and attempt to integrate the available knowledge of T-cell receptor genes with theories that account for the mechanisms responsible for MHC-restricted antigen recognition and immune response gene defects. A. Weiss *et al* review the role of T3/antigen receptor (T3/Ti) complex in human T-cell activation. Recent studies that have successfully used B-cell tumours to investigate some of the physiological processes that underline B-cell function and regulation are considered by J. M. Hanley-Hyde and R. G. Lynch. The mechanisms of cytotoxicity of NK-cells are discussed by R. B. Herberman *et al*. The last review deals with use of IL-2 and IL-2-activated lymphocytes in cancer chemotherapy.

The multipronged advances in our efforts to understand the immune system are well brought out in this volume.

“Apsara”,  
Opp: Srikanteswaram Fort,  
Trivandrum 695 023.

R. ANANTHANARAYANAN