

BOOK REVIEWS

Basic Principles and Techniques of Molecular Quantum Mechanics—R. E. CHRISTOFFERSEN. 686 pp. 1989. Springer Verlag, New York. DM 178.

Many students are put off by Quantum mechanics but this book presents vector analysis and matrix techniques as two introductory chapters, so that students can brush up their maths. The experimental basis of quantum theory is given, together with basic postulates and initial considerations. Other chapters are on: one dimensional model problems; angular momentum; hydrogen atom; the molecular Hamiltonian; approximation methods for stationary states; many-electron systems; computational techniques using single configuration wave functions; beyond Hartree–Fock theory. Each chapter concludes with a series of problems. This book will be useful both as a textbook and also as a reference for those wishing to brush up their quantum mechanics.

Bioorganic Marine Chemistry, Vol. 3—Edited by P. J. SCHEUER. 175 pp. 1989. Springer Verlag, Berlin. DM 148.

The topics covered in this volume are: peptides from marine organisms; sperm activating peptides from sea urchin egg jelly; pharmacology of conus shell toxins; natural products inhibiting marine settlement and overgrowth; feeding attractants for gastropods; marine antineoplastic (anti-tumour) agents (bryostatin 1 stimulates bone marrow cells and also functionally activate neutrophils).

Resources and Applications of Biotechnology—Edited by R. GREENSHIELDS. 441 pp. 1989. MacMillan, Basingstoke. £60.

The volume discusses the applications of biotechnology to a wide range of systems such as: leaching of mineral ores using bacteria; micro organisms used for removal of metals from sewage; water treatment; earthworms for treatment of sewage; chemiluminescence; industrial enzyme; thermophil bacteria to produce stable enzymes; ethanol production; BP protein from natural gases; cell cultures; monoclonal antibodies; cell adhesives; cyanobacteria for nitrogen fixation and production of hydrogen for fuel; algae for production of glycerol; improved treatment of haemophilia, diabetes, etc; biomaterials in prosthesis; the future of biotechnology. It provides a readable overview of the advantages and problems of present day biotechnology.

Medical, Biochemical and Chemical Aspects of Free Radicals—Edited by O. HAYASHI, E. NIKI, M. KONDO and T. YOSHIKAWA. 2 volumes. 1560 pp. 1989. Elsevier, Amsterdam. \$514. D.Fl. 975.

This is the published proceedings of the 4th meeting of the Society for Free Radicals held in Kyoto. There are two introductory reviews: (1) disturbances of free radical reactions—a cause or consequence of cell injury?; (2) the biological implications of oxygen radical mediated inactivation of enzymes. The remaining 300 papers are grouped into sections on iron complexes (58 pp.); active oxygen (132 pp.); vitamin E (111 pp.); antioxidants (276 pp.); superoxide dismutase (156 pp.); assay methods (160 pp.); lipid peroxidation (54 pp.); lipid peroxide (60 pp.); prostaglandins (54 pp.); ischaemia-reperfusion (76 pp.); pathology (268 pp.); cancer (86 pp.).

Membrane Structure and Function—W. H. EVANS and J. H. GRAHAM. 86 pp. 1989. IRL/Oxford University Press, Oxford. Paperback \$12.95.

Although there are only 86 pages in this book, it will tell you more than many 300 page books on the same subject. It is very concise but has excellent tables and diagrams. For example it has a Table 3.1 telling which receptors are linked with ion channels; linked with protein kinase; activate adenylate cyclase; inhibit adenylate cyclase; activate phospholipase C; activate phospholipase A. It has an excellent diagram (Fig. 3.2) comparing the structure of the receptors for epidermal growth factor, insulin, transferrin, LDL, v-erb-oncogene. So, if you really want to know about membrane composition, structure, receptors, biogenesis, trafficking, transport and bioenergetics in a nut-shell, then this is the book for you.

Molecular Biology of Neuroreceptors and Ion Channels, NATO ASI Series H: Cell Biology, Vol. 32—Edited by A. MAELICKE. 675 pp. 1989. Springer Verlag, Berlin. DM 289.

Full length DNA codings for several excitatory and inhibitory receptors and ligand gated ion channels have been obtained, their amino acid sequence determined, and they have been expressed in *Xenopus* oocytes. The main sections of this book are on: the nicotinic ACh receptors; the amino acid (GABA, glycine, glutamate, 5HT) receptors; voltage gated ion channels (Na, K, Ca); other receptors and ion channels (dopamine-2, TRH, GTP); structure–function relationship of ion channel proteins; gene expression, gene regulation and development; clinical aspects. The 60 reviews provide an excellent picture of the main types of receptors and ion channels together with their subclasses and variations.

The Metabolism and Toxicity of Fluoride—G. M. WHITFORD. 160 pp. 1989. Karger, Basel. S.Fr 147. DM 176. \$98.

Fresh mackerel, sardines, salmon and cod have a fluoride (F) content between 6–27 ppm. Brewed tea has 1–6 ppm depending on the amount of tea used. Most foods have an F content between 0.01–1.0 ppm. U.S.A. water ranges between 0.37 and 1.04 ppm. F is removed from the body via the kidneys. The lethal dose of F for a 70 kg man is 5–10 g of sodium fluoride; i.e. 32–64 mg/kg body wt. This is the LD₁₀₀. The probable toxic dose is 5 mg/kg body wt. Now that dental caries have been reduced in children, the general fluoridation of water is being criticized, since F can be more selectively administered in toothpaste.

B Lymphocytes; Function and Regulation—Edited by P. DEL GUERCIO and J. M. CRUSE. 310 pp. 1989. Karger, Basel. S.Fr 278. DM 333. \$185.50.

The bone marrow of a normal mouse produces enough B cells so that the whole peripheral content of B cells in the mouse body can be replenished in 2–4 days. In the healthy control mouse, 80% of these B cells disappear less than 7 days after they have been produced. B cell production is stimulated by circulating antibodies. The B cells can be activated by the six interleukins, Fc receptors, IgE and Ig binding factors. B cells are also involved in the autoimmune