REVIEWS

Microcomputers and Physiological Simulation. By James E. Randall. (Addison–Wesley Publishing Co., Inc., Reading, Mass 01867), 1980. Pp. xvi + 235, Price : $ 14·50.

One of the important methods used in quantitative physiology is mathematical modelling and simulation. While there will be a continuing need for large computers, especially for research projects, this book stresses the importance of microcomputers as a teaching-aid in physiology and medical courses. When only a handful of physiologists have recognized the potential of the microcomputer as a teaching aid, this book is most welcome ; and especially so because the author's training in multiple disciplines such as physiology, mathematics, computer technology, biophysics, physics and electronic circuitry has been very well reflected in this comprehensive book.

This book consists of fourteen chapters. The first five chapters discuss the hardware and software alternatives to aid a person for shopping a suitable microcomputer system. The use of TRS–80 and APPLIE II are discussed. In the remaining chapters the book presents programs and demonstrative exercises which can be used in teaching basic physiology. Some of the important exercises are on : Glucose tolerance test, cardiac output, arterial pressures, axon potentials and cardiac action potentials.

This book is very valuable in any bio-medical and physiology laboratory intending to introduce microcomputers into their curriculum.

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An Introduction to Operational Amplifiers. By S. V. Subrahmanyam (The MacMillan Company of India Limited, 4, Community Centre, Naraina Industrial Area Phase I, New Delhi 110 028), March 1980. Pp. xi + 132. Price : Rs. 12·00. (Low Cost University Edition).

This book serves as a text for under-graduate students in Engineering and Science, in particular, those taking electronics or instrumentation as a special subject in their post-graduate studies.

The fundamental characteristics of general purpose operational amplifier analysis including frequency response and stability has been well described. Some of the applications for chopper stabilization and wave form generation on active filters have been clearly dealt with including analog computations. Probably a little more information on applications like instrumentation amplifier, FET input amplifier, high slew rate amplifier (more with reference to commercially available ICs) could have been included to give a comprehensive picture. However, the book is quite useful for a student taking a first course on operational amplifiers and is of some help for the professional user.

Research workers without formal training in electronics and technicians who work with instruments involving the use of operational amplifiers will particularly find this book useful. The book is intended chiefly for those students who take the basic course in operational amplifier having undertaken basic training in AC/DC circuitry and elments of semiconductor electronics. Methodical treatment has been introduced to the extent required and each chapter has at the end, questions, problems and a set of experiments based on the concepts introduced in the chapter.

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Annual Review of Astronomy and Astrophysics Vol. 17. Editor : Geoffrey Burbidge, Associate Editors : David Layzer and John G. Phillips. (Annual Reviews Inc., 4139 El Camino Way, Palo Alto, California 94306, U.S.A.), 1979. Pp. 585. Price : $ 17.00 in U.S.A., $ 17.50 elsewhere.

Volume seventeen of the Annual Review of Astronomy and Astrophysics contains a wide variety of review articles on topics of active research. The standard of excellence has been maintained. Excepting for the reminiscences of Pol Swings the reviews are essentially of technical nature and meant for a scientific readership. There is a good assortment of papers on both theoretical and observational aspects of astrophysics.

Of particular interest for the observer are three papers, the first on astronomical photography by Smith and Hoag, one on digital imaging techniques by Kent Ford and one on computer image processing by Bracewell. Research on the evolution of galaxies and stellar populations is an extremely active field at the moment and several review articles in the present volume deal with different problems in this area.

Robert Kraft's article on the metal abundances in globular clusters and dwarf spheroidal galaxies needs special mention in this context. The discussion on mixing and primordial abundance variationsi s intresting and to be kept in mind by theorists modelling the chemical evolution of these systems. Globular clusters have also been reviewed by Harris and Racine with a strong observational emphasis. The present state of our knowledge of the interstellar medium has been described in two papers—the first by Savage and Mathis concentrates on the properties of interstellar dust and the second by McCray and Snow is on the more theoretical aspects of the dynamics of interstellar matter. Our knowledge in this particular field has been vastly enriched through coordinated UV, X-ray and optical observations of the last few years. McCray and Snow have described the observational background and elaborated on the current state of theory with special emphasis on the role of supernovae in all dynamical phenomena. A related problem in dynamics, that of the mass loss from stars is reviewed in detail by Cassinelli. For the hardcore physicist there is a paper by Baym and Pethick on neutron stars and for the meteorologist Conway Leovy has reviewed Mars. The occultation of SAO 158687 by Uranus which resulted in the discovery of Uranian rings in 1977 had shown the potentiality of stellar occultation studies. James Elliot who headed the American team in this venture has reviewed stellar occultation studies of the solar system. Besides these the volume contains articles on infrared spectroscopy of stars, infrared emission of extragalactic sources, model atmospheres of cooler stars, masses of galaxies and on compact HII regions and massive star formation. Needless to say this volume like its predecessors is a must for all physical and astronomical libraries.

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Mycoplasma Diseases of Trees. Edited by S. P. Raychaudhuri (Associated Publishing Company, 8763, Shidipura, Karol Bagh, New Delhi 110 005), November 1979. Pp. xx + 78. Price : Rs. 60·00. U.S. $ 20.00, £ 10.00.

This book is a compilation of ten research papers presented at the First Conference of International Union of Forestry Research Organisation (IUFRO) on mycoplasma diseases, which was held at Bangalore, India, during 17–21st September, 1977. Since the conference was held just after 10 years of the identification of the causal agent of the yellow type of diseases as mycoplasma-like organisms by Japanese scientists in 1967, the proceedings of this symposium have been awaited with interest by scientists engaged in this fascinating new field. The articles included in this voume, cover such important topics of interest in the field of mycoplasma and related diseases as : "Present status of mycoplasma and spiroplasma diseases of trees" by Dr. Karl Maramorosch; "Greening disease of Citrus in Asia" by Dr. Shoichi Tanaka; "Greening Disease of Citrus in India" by Dr. T. K. Nariani; "Isolation and cultivation of mycoplasmas—A survey of general principles" by Dr. E. A. Freundt and "Rickettsia-like organisms (RLO) causing diseases of plants" by Dr. Arunkumar Misra and his colleagues. In view of the keen interest currently evinced by IUFRO which has sponsored this conference, sandal spike disease has been the key topic of discussion and several articles cover this disease. These include "Control of sandal spike disease—A baffling problem" by Dr. S. P. Raychaudhuri; "Identity of the pathogen of the spike disease of sandal and the spike disease of the host plants" by Smt. R. A. Srimathi and Dr. P. S. Rao; "Entomological investigations on the spike disease of sandal—(*Santalum album* Linn.). Review and future plan of work" by Dr. V.R. Sivaramakrishnan. The inclusion of articles such as "Chemotherapeutic control of tree diseases" by Dr. V. M. G. Nair and "Variation pattern in *Santalum album* by Smt. R. A. Srimathi and her colleagues, which are at variance with the main theme of the conference and do not bear total relevance to the title of the book. In general the book covers a comprehensive account of various aspects of mycoplasmal diseases such as vector transmission, culturing, control measures etc. and thus would be very useful for scientists engaged in the field of mycoplasma diseases. Dr. Raychaudhuri has done an excellent job by editing this book and it deserves a place in libraries of research organisations and educational institutions.

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