REVIEWS AND ANNOUNCEMENTS

Physics of Quantum Electronics. Volume 6—Based on Summer School Lectures—Adaptive Optics and Short Wavelength Sources. Editors: Stephen F. Jacobs, Murray Sargent III and Marlan O. Scully. (Addison–Wesley Publishing Company, Inc., Advanced Book Program, Reading, Massachusetts 01867, U.S.A.), June, 1978. Pp. xi + 312. Price : U.S. $ 24·50 (in hard binding).

The book under review "Adaptive Optics and Short Wavelength Sources" is the sixth volume in the series on "Physics of Quantum Electronics." Each book in the series represents an expanded and edited version of the lectures delivered by eminent experts in the field at the Summer Schools held every alternate summer in various scenic parts of the Western United States. The editors themselves are trendsetters as well as pioneers in the fields of Quantum Electronics and Quantum Optics. Naturally the quality of the books in the series is high and the book under review conforms to the standard set by the editors as well as the authors of the other volumes in the series.

Following the tradition set by the other volumes, the present volume is concerned with an in-depth presentation on a particular theme, *viz.*, Adaptive Optics and Short Wavelength Sources. The reviewer is a bit puzzled at the combination of seemingly diverse topics. Anyway the first five chapters deal with an emerging field known as Adaptive Optics (or is it Active Optics as some prefer to call ?), which is defined as techniques and optical systems that measure and correct wavefront aberrations in real time. These five chapters represent a very well chosen sample-set of diverse areas in which Adaptive Optics could possibly play a very major role in future. The last two chapters are concerned with coherent sources for short wavelength radiation such as VUV and X-rays. A wealth of information is awaiting to be unearthed in Solid State Physics and other areas of physics, for which experiments on the interaction of short wavelength radiation with matter are crucial. Hence an in-depth presentation about such sources of radiation is timely. Finally a chapter on diamond turned metal optics is thrown as a bonus. As the chapters are writtent by experts, naturally they are thought provoking. The reviewer appreciates the candidness with which some of the authors have presented their subject-matter. For instance Avizonis strikes (on page 2) a timely note of caution about the overenthusiastic approach to use adaptive optics. Of course, in my opinion, this should be applicable to any technique.

Except for minor slips in proof reading (*e.g.*, diligence is spelled wrong on page 52) the getup of the book is excellent and the treatment of the subject by the various authors is masterly. For my own education (and I am sure many would subscribe to this view) I would have liked to see a first-principles presentation of the basics of adaptive optics as the first chapter of this book, so that the book would have become complete in itself.

The book, I am sure, will definitely find a place in the bookshelves of specialists as well as generalists in the area of Quantum Electronics.

Finally the reviewer feels that it is better to converge sooner than later to adopting one name either Adaptive Optics or Active Optics. The latter term has been used recently by John Hardy (see *Proc. IEEE*, June 1978).

S. V. PAPPU.

Annual Review of Microbiology, Volume 32. Editor: Mortimer P. Starr, Associate Editors : John L. Ingraham and Sidney Raffel. (Annual Reviews Inc. 4139 El Camino Way, Palo Alto, California 94306, U.S.A.), 1978. Pp. 773. Price : $ 17·00 in U.S.A., $ 17·50 elsewhere.

This volume continues to uphold the high traditions, now long established, for appropriate selection and depth of treatment in the difficult task of providing an accurate profile of current microbiological interests. That the editors have seen fit to share the cover, with the many contributors, represents a commendable display of sensitivity and accreditation. The review opens enjoyably with the reflections of distinguished molecular biologist, Robley Williams, on the early years of his career. Pioneers, the objects of our reverence today, were often part of the personal working environment of Dr. Williams.

There are 25 articles in the volume, and each of the 25 areas represented, will undoubtedly appeal to its own community of interested specialists; neither space nor this writer's omniscience allow significantly critical comments in each case. Worthy of special recommendation are the following: Ahearn's article on medically important yeasts are of interest specially to microbiologists in India. In extreme circumstances, almost any nonpathogenic yeast might become an opportunistic pathogen. Till now, only cursory attention has been directed towards definition of properties of these yeasts, that relate to the saprophyte-parasite infection, and this lacuna is sought to be removed

by the author. Kharatyan's article on microbes as food for humans is another interesting topic. The author discusses the direct use of biomass of various microorganisms for human consumption and the save limits of their utilization. Evaluation and selection of microorganisms for the protein preparation, substrates, conditions of processing, storage and distribution must also be taken into consideration while evaluating such foods.

Three articles deal with the important role which plasmids play in microbial metabolism. Hopwood has discussed extrachromosomally determined antibiotic production. Davies and Smith have described plasmid-determined resistance to antimicrobial agents and consider the question of the evolution of resistance plasmids and their being brought together by selective pressures. Finally, Summers and Silver have reviewed the microbial transformation of metals like mercury, cadmium, lead and tin and the use of microorganisms in the leaching of metals from ores. Pollution caused by human activities introduces metals into the environment like water and these microorganisms are important in detoxifying the environment.

Other helpful features of volume 32 include a selection of titles from other areas covered by Annual Reviews, Inc. which may interest microbiologists and a cumulative index of contributors and titles over the last five years (volumes 28 through 32).

T. RAMAKRISHNAN.

AWARD OF RESEARCH DEGREES

Karnatak University, Dharwad, has awarded the Ph.D. degree in Mathematics to Shri S. S. Pujar; Ph.D. degree in Chemistry to Shri M. D. Patil; Ph.D. degree in Botany to Smt. Sanudevi Joshi; Ph.D. degree in Mathematics to Shri D. Q. Akka; Ph.D. degree in Zoology to Shri D. R. Jalihal; Ph.D. degree in Physics to Shri D. C. Patil; Ph.D. degree in Chemistry to Shri K. B. Patil; Ph.D. degree in Geology to Shri B. S. Machigad; Ph.D. degree in Mathematics to Shri G. S. Patel;.

Kakatiya University, Warangal, has awarded the Ph.D. degree in Botany to Smt. C. Laxminarasamma; Ph.D. degree in Mathematics to Shri D. Rama Murthy; Ph.D. degree in Chemical Engineering to Shri K. Jagadish.

The M.S. University of Baroda has awarded the Ph.D. degree in Physics to Shri Sudhir Babulal Trivedi; Ph.D. degree in Microbiology to Shri Anupam Somanth Wali.

Berhampur University, Berhampur, has awarded the Ph.D. degree in Chemistry to Sri Prafulla Kumar Misro.

Magadh University, Bodh-Gaya, has awarded the Ph.D. degree in Botany to Miss Sunita Mukherjee.

University of Jammu, Jammu (J and K) has awarded the Ph.D. degree in Botany to Shri Shiban Nath Kak.

Berhampur University, Berhampur, has awarded the Ph.D. degree in Chemistry to Sri Surjya Narayan Sahu; Ph.D. degree in Zoology to Shri Sarathi Charan Gantayat; Ph.D. degree in Chemistry to Sri Sarat Chandra Padhi; Ph.D. degree in Zoology to Shri Niraj Kanti Tripathy; Ph.D. degree in Botany to Sri Malaya Kumar Misra.

Osmania University, Hyderabad, has awarded the Ph.D. degree in Genetics to Kum. T. Padma; Ph.D. degree in Physics to Shri R. B. Ramchander.

Tamil Nadu Agricultural University, Coimbatore, has awarded the Ph.D. degree in Agriculture to Shri V. Sethumadhavan.

Utakl University, Bhubaneswar, has awarded the Ph.D. degree in Mathematics to Sri Trilochan Biswal; Ph.D. degree in Physics to Sri. Bimal Prasad Mohapatra; Ph.D. degree in Chemistry to Sri Hrudananda Mohanta; Ph.D. degree in Chemistry to Shri Nimai Charan Das; Ph.D. degree in Chemistry to Shri Bijoy Ketan Das; Ph.D. degree in Chemistry to Shri Bijaya Kumar Pattanayak.

Sri Venkateswara University, Tirupati, has awarded the Ph.D. degree in Chemistry to Sri. M. V. V. S. S. Subramanya Sarma; Ph.D. degree in Zoology to Shri G. V. Ramanaiah.

JAWAHARLAL NEHRU AWARD

Dr. Srikant Kulkarni currently working as Jr. Pathologist (wheat), Agricultural College, Dharwar, has been elected for Jawaharlal Nehru Award for the outstanding research in Plant Pathology.

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