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## REVIEWS AND NOTICES OF BOOKS

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**Quantitative Stereology.** By Ervin E. Underwood. (Addison-Wesley Publishing Company, Inc., West End House, 11, Hills Place, London, W. 1, England), 1970. Pp. x + 274. Price sh. 117.

Stereology is the study of the structure of matter in three dimensions at the microscopic level, based on the examination of two-dimensional sections through the material. This book presents a unified and comprehensive treatment of the essential elements of stereological analysis. It provides, under one cover, the theoretical background to these methods, practical examples of their application, selected problems based on actual microstructures, and complete coverage of the literature. Thus it can be used as a text for college students at all levels, as a self-study guide, and as a reference work for a wide variety of research.

The generalized, geometrical approach is designed to appeal equally to those engaged in metallurgy, petrology, mineralogy, and research in polymers or ceramics; to those studying microscopic anatomy, histopathology, botany or biology; and to those concerned with advancing the mathematics of statistics, geometrical probabilities, the theory of curves and surfaces, topology, and projective geometry.

C. V. R.

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**Annual Review of Plant Physiology (Vol. 21).** (Annual Reviews, Inc., 4139, El Camino Way, Palo Alto, California 94306, U.S.A.), 1970. Pp. ix + 653. Price Postpaid: U.S.A. \$10.00 and Foreign \$10.50.

Volume 21 of this well-known series contains the following articles: 1. Prefatory Chapter: The Passing Scene; 2. Cell Organization: Biochemical Aspects of Chloroplast Development; Compartmentation of Intermediary Metabolites; Cell Wall Metabolism; 3. Nutrition and Absorption: Oxidation of Inorganic Nitrogen Compounds; Ion Transport in Chloroplasts and Plant Mitochondria; The Leaching of Substances from Plants; 4. Nitrogen Metabolism: Protein Synthesis in Plants; Fraction I Protein; 5. Bioenergetics: Physical Separation of the Photosynthetic Photochemical Systems; Photosynthetic CO<sub>2</sub>-Fixation Pathways; Photorespiration; Photosystem II and O<sub>2</sub> Evolution; 6. General Metabolism: Biosyn-

thesis of Cuticular Lipids; Regulation of Enzyme Activity in Photosynthetic Systems; 7. Translocation: Biochemistry and Fine Structure of Phloem in Relation to Transport; 8. Growth and Development: Air Pollution Oxidants—Their Effects on Metabolic Processes in Plants; Cytokinins; Morphactins: Physiology and Performance; Gibberellins: Structure and Metabolism; 9. Special Topics: The Botanical and Chemical Distribution of Hallucinogens.

C. V. R.

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**Peptides: Chemistry and Biochemistry.** Edited by Boris Weinstein and Saul Lande. (Marcel Dekker, Inc., 95, Madison Avenue, New York), 1970. Pp. xv + 538. Price \$19.50 or £9 6sh. 0d.

This book covers topics on classical and solid-phase peptide synthesis, theoretical and experimental studies of peptide conformation, correlations between structure or conformation with biological activity, isolation, characterization and synthesis of new peptide natural products, and synthesis of analogs.

The contributions are divided into four categories: peptide synthesis, relationships between structure and biological activity of peptides, racemization in peptide chemistry, and special problems in synthesis and analysis. Applications and development of new coupling reagents and techniques are described, including solid-state synthesis. Included is a discussion of the factors relating structure and activity in angiotensin, calcitonin, and secretin.

Other articles consider methods for detection, control, and study of the mechanism of racemization in peptide chemistry. Finally, work involving unusual amino-acids and peptides, antibiotics, cysting peptides, and  $\gamma$ -glutamyl peptides are also contained in the book.

The papers published in this volume were delivered at the first American Peptide Symposium held at Yale University, August 13-18, 1968. This conference brought together, for the first time in the United States, physical, organic, biological, and pharmaceutical chemists with a common interest in peptides. Publication of these proceedings makes available a permanent record of research in peptide chemistry for 1968, and may be of particular interest to scientists not present at the meeting.



The book will also be of value to chemists, biochemists, and physiologists who work with peptides and peptide hormones. C. V. R.

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**Handbook of Metal Ligand Heats and Related Thermodynamic Quantities.** By James J. Christensen and Reed M. Izatt. (Marcel Dekker, Inc., 95, Madison Avenue, New York), 1970. Pp. vii + 324. Price \$14.50 or £6 18 sh. 0 d.

Until now there has been no extensive compilation of heats of metal-ligand interactions in solution. This book provides a tabulation of this information.

One comprehensive table of heats for metal-ligand interactions in solution summarizes the published literature values up to mid-1969, and five indexes (author, empirical formula, element, synonym, and reference) provide cross-references to this table. Included in the book are the related thermodynamic quantities,  $\log K$  and  $\Delta S$ , and  $\Delta C_p$  values where available.

The book is a convenient reference source for workers in the areas of thermochemistry and thermodynamics of metal-ligand interaction, including those in such fields as chemistry, physics, bacteriology, engineering, microbiology, and medicine. It is especially directed to workers in the field of co-ordination chemistry. C. V. R.

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**Carnegie Institution of Washington—Year-Book 1968.** Pp. xii + 716. 25 plates, 234 figures. 1530, P Street, N.W., Washington D.C. 20005 (1970).

The Carnegie Institution of Washington with its six major departments functioning in different parts of the United States has been contributing in a significant manner to new knowledge in varied fields of scientific research. The Institution's *Year-Book* is a necessary addition to all science libraries.

Year-Book 68 covers the period from July 1, 1968 to June 30, 1969. It contains the annual address of the President, Prof. Caryl P. Haskins, his general report and the detailed reports from the various departments on their achievements and researches in progress.

Since the discovery just two years ago, of the first pulsating radio source by the radio astronomers of Cambridge, nearly fifty astronomical objects of this kind (pulsars) have been detected. They emit sharply defined pulses (10–30 milliseconds) of radio energy at extraordinarily regular intervals. All these

pulsars have so far been observed as to their radio pulse emission only. The first pulsar to be optically observed is the one designated NP 0532 in the Crab nebula. The report of the *Mount Wilson and Palomar Observatories* contains details of the optical observation and characterisation of NP 0532, using the prime-focus photometer of the 200-inch telescope at Palomar. The light of NP 0532 arises almost entirely from the short rapid light pulses emitted at the rate of 30 pairs per second. The two distinct and sharp pulses of the pair occur during each 33 msec period—a main 5 msec wide pulse followed, 13.5 msec later, by a secondary pulse somewhat wider but with a third of the amplitude and a half of the energy of the main pulse. It is interesting to note that this first optical pulsar is the very one that Baade and Minkowski at Mount Wilson in 1942 had suggested as the central star of the Crab nebula on the basis of its position near the centre of expansion and its spectroscopic peculiarity (a featureless blue continuum). Crab nebula has again become the chief centre of interest in modern astronomy.

*The Geophysical Laboratory* reports results of continued investigations in the fields of geochemical and petrological research. These are becoming increasingly fruitful on account of new techniques and instrumentation facilities that have become available. The report contains advances made during the year in petrography, phase-equilibrium studies, crystallography, biogeochemistry, age determinations of rocks, and mineralogy.

The measurement of strain changes in the earth's crust is fundamentally important to the understanding of earthquakes. In the report of the *Department of Terrestrial Magnetism* is given the description and performance of a highly sensitive seismic instrument, namely, the prototype of a borehole strain rate meter installed at a depth of 150 ft. In essence, it consists of a water-filled resilient tube in intimate contact with the walls of a borehole. As the strain in the surrounding rock changes, the tube is deformed, forcing the liquid through a flow sensor device into an air space. This device is such that the minute distortions, down to  $10^{-7}$  microns, are faithfully followed. The frequency of response covers a wide range of geophysical interests—from strain changes induced by microseisms, through those caused by microbarometric pressure influences on solid rock, to those resulting from the gravita-

tional deformation of the earth by the moon (earth tides). Records of performance of the strain meter show its use on the timely prediction of major earthquakes to be very promising.

The Department of Embryology is devoted to the study of the processes of development in living organisms. The most important techniques in the current progress of embryology are interdisciplinary. Molecular biology and genetics are receiving increasing emphasis. The Department's researches during the year illustrate this trend not only in the application of molecular genetics but also in the use of virology to probe into developmental processes at cellular level.

The Department of Plant Biology reports new results in the field of photosynthesis especially with reference to the theoretical aspects of the problem, interrelating the pigments, enzymes, and intermediate compounds that make up the photosynthetic system. The Director of the Genetics Research Unit has presented a highly interesting and up-to-date survey on the relation of microbiological and biochemical genetics to classical genetic theory. A. S. G.

## ANNOUNCEMENTS

### Award of Research Degrees

Andhra University has awarded the Ph.D. degree in Chemistry to Shri P. Suryanarayana Murty.

Karnatak University, Dharwar, has awarded the Ph.D. degree in Chemistry to Shri G. V. Patil.

M.S. University of Baroda has awarded the Ph.D. degree in Chemistry to Shri M. Venkatarasa Reddy; Ph.D. degree in Biochemistry to Kumari Veena Jashwantlal Shah, Shri Suresh Rudra Nadkarni, Shri Dineshkumar Jayantilal Parikh and Kumari Bhadrashila Ishwarlal Naik; Ph.D. degree in Zoology to Shri Davindra Kumar Magon.

Ormania University, Hyderabad, has awarded the Ph.D. degree in Chemistry to Shri S. Ramachandra Moorthy.

Sri Venkateswara University, Tirupati, has awarded the Ph.D. degree in Zoology to Shri J. V. Ramana Rao.

### Third Conference on Photographic Science and Technology

The Third Conference on Photographic Science and Technology will be held on 15 and 16 April 1971 at Indunagar, Ootacamund-5. For further details please contact The Secretary, Hindustan Photofilms Mfg. Co. Ltd., Indunagar, Ootacamund-5.

### Nuclear Physics and Solid State Physics Symposium

The Nuclear Physics and Solid State Physics Symposium organised by the Physics Committee, Department of Atomic Energy, will be held at the Madurai University, Madurai, on December 27-30, 1970. Further information can be had from Dr. S. S. Kapoor, Secretary, Nuclear Physics and Solid State Physics Symposium, BARC, Trombay, Bombay-85.

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### Books Received

From: (Addison-Wesley Pub. Co., West End House, 11, Hills Place, London W. 1, England).

*A Radical Approach to Algebra.* By M. Gray, 1970. Pp. viii + 232. Price 98 sh.

*Fundamentals of Geometry.* By B. E. Meserve and J. A. Izzo, 1970. Pp. vii + 246. Price 93 sh.

*The Process of Biology Primary Sources.* By J. J. W. Baker and G. E. Allen, 1970. Pp. viii + 380. Price 43 sh.

*Mathematics Creation and Study of Form.* By J. P. Evans, 1970. Pp. x + 358. Price 61 sh.

*Particles and Their Interactions.* By J. G. Powles, 1970. Pp. xii + 260. Price 47 sh.

*Elements of Precalculus Mathematics.* By D. M. Dribin, 1970. Pp. xiii + 274. Price 70 sh.

*Elementary Geometry for Teachers.* By M. M. Ohmer, 1970. Pp. 152. Price 52 sh.

*Probability and Calculus—A Brief Introduction.* By J. B. Fraleigh, 1970. Pp. vi + 250. Price 75 sh.

*Elementary Mathematics for Teachers.* By C. F. Brumfiel and E. F. Krause, 1970. Pp. x + 436. Price 91 sh.