chondrial interactions. As the author points out, the development of new technologies within the last ten years has rendered obsolete most of the old data on these subjects, and these chapters are filled with new information of great interest. The title of this book, as compared to that of the 1973 volume, reflects the current view of the sea urchin embryo; it is now the system of choice for many cell and molecular biologists as well as developmental biologists.

Giudice is particularly well qualified to take on the enormous task of reviewing the literature of the last 12 years of research on the sea urchin embryo, for his own work covers a wide range of topics. The 67 pages of references are themselves a valuable resource. Indeed, so assiduously did the author pursue his task of bringing us up to date that even as he was correcting proofs he was also writing an addendum of 15 pages of text and six pages of references, making the coverage complete through 1984.

The editors of the volume, however, have not served the author well. Over half the pages have typographical errors, figure labels do not always correspond to figure legends (arrows, letters, or numbers are sometimes missing), and references to figures and tables are occasionally missing in the text.

Nevertheless, this book is a valuable resource for all those who work with sea urchin embryos, including the specialist who wishes to be informed of work in related areas and the graduate student who is new to the field.

EVELYN SPIEGEL
Department of Biology,
Dartmouth College,
Hanover, NH 03755

Copper Chemistry

Biological and Inorganic Copper Chemistry. KENNETH D. KARLIN and JON ZUBIETA, Eds. Adenine, Guilderland, NY, 1986. In two volumes. Vol. 1, xii, 273 pp., illus. $65. Vol. 2, xii, 298 pp., illus. $65. Vol. 2, xii, 298 pp., illus. $65. Based on a conference, July 1984.

These are exciting times for copper chemists. Fired by discoveries that in living systems copper performs such diverse functions as oxygen transport, electron transfer, dismutation of superoxide ion, hydroxylation of dopamine and tyrosine, reduction of dioxygen, and oxidation of amines to aldehydes and by industrial applications ranging from hydroquinone production to catalytic carbon-carbon bond formation, bioinorganic, coordination, and organometallic chemists have focused attention on the chemistry of this element to an unparalleled degree. In order to facilitate communication among scientists in this fast-moving area, K. D. Karlin and J. Zubieta organized conferences in 1982 and 1984 at the State University of New York at Albany. The present two-volume work houses contributions from participants in the second conference.

Volume 1 begins with 12 papers on copper proteins, in which most of the important systems are discussed, including the blue copper proteins plastocyanin and azurin, copper-zinc superoxide dismutase (SOD), cytochrome c oxidase, hemocyanin, galactose oxidase, and laccase. A highlight of this section is the spectacular 300 MHz ^{1}H NMR spectrum of copper(II)-cobalt(II) SOD, Cu_2Co_2SOD, obtained by Bertini and Luchinat, in which sharp, isotropically shifted resonances arise for ligands bound to the copper chromophore. The next section devotes four papers to medicinal aspects of copper chemistry, including a valuable survey by Crouch *et al.* of the use of copper complexes to treat (inter alia) arthritis, acute rheumatic fever, and cancer. This interesting area would benefit from incisive research at the molecular level. The volume closes with eight contributions on the physical characterization of copper complexes, including magnetic studies by Hatfield and Kahn, who direct two of the leading groups. Other papers in this section cover applications of electron spin resonance and optical spectroscopy and Hendrickson's pioneering work on electron transfer in binuclear mixed valence copper complexes.

The second volume leads off with nine papers describing the interactions of copper complexes with dioxygen, without question the highlight of the series. This work, inspired by the known biological functions of copper, reports small copper complexes that bind dioxygen reversibly (Karlin, Zubieta *et al.*), stabilize copper(II)-superoxide and -peroxide linkages (Thompson), catalytically oxidize phenol (Lyons and Hsu), and convert acetonitrile to 3,5-dimethyl-1,2,4-triazole (Nelson, Drew, *et al.*). It is astonishing that so much progress in this difficult area of chemistry has been made in only two years since the previous Albany conference. The remaining two sections of volume 2 are devoted to coordination chemistry and nonfunctional protein models (eight papers) and to organometallic copper complexes (three papers). The latter section includes the very nice studies of Doyle *et al.* on metal-metal bonded copper clusters and of Caulton *et al.* on polyhydrides, most notably $Cu[H_5ReL_3]_2^+$, where L is diphenylmethylphosphine.

The editorial and production work is of the generally high quality that one has come to expect from the editors and publisher, although there are some annoying lapses. In volume 1 the paper by Bertini and Luchinat has text missing at the top of p. 25, p. 121 displays a gel electrophoresis figure that is useless owing to unlabeled lanes and a scanty caption, and p. 125 tells us that "the search for antitumor agents has been eminated [sic] by studies of organic compounds." Volume 2 reveals some unevenness in the type of material presented. In one chapter we find a table of analytical data, whereas other chapters present their subjects more superficially. On the whole, however, the papers are incisive and well written.

In summary, I recommend these volumes to all bioinorganic and coordination chemists. Anyone working with copper will find it a handy compendium of much of the important work through 1984, and students especially will profit from the overview approach taken by most of the authors. This reviewer hopes that the Albany copper conferences will be continued (there was none in 1986) and that their legacy will include further volumes such as these.

STEPHEN J. LIPPARD
Department of Chemistry,
Massachusetts Institute of Technology,
Cambridge, MA 02139

Some Other Books of Interest

Biology of New World *Microtus*. ROBERT H. TAMARIN, Ed. American Society of Mammalogists, [no place], 1985 (available from Gordon L. Kirkland, Jr., Vertebrate Museum, Shippensburg University, Shippensburg, PA). xiv, 893 pp., illus. $55. ASM Special Publication no. 8.

This treatise on the rodent genus *Microtus* (voles), commissioned and published by the American Society of Mammalogists, is modeled on the Society's 1968 volume *The Biology of Peromyscus*. In this case coverage has been limited to New World forms to keep the work to a manageable size. The volume consists of 21 chapters, mostly by single authors. It begins with accounts of the fossil record, taxonomy, zoogeography, macroanatomy, microanatomy, and ontogeny of the genus. Habitats, community ecology, behavior, activity rhythms and spacing, and dispersal are then reviewed. Further chapters cover parasites and predators, population dynamics, and management in the wild and in the laboratory. Finally, endocrinology, reproductive patterns, nutrition, energetics and thermoregulation, and genetics are discussed. The chapters were subjected to review prior to publication. According to the editor "there is some repetition and fragmentation, but each subject is self-con-

tained," and "some chapters . . . contain much new information." Each chapter has its own reference list, and the volume has a 10-page subject index.—K.L.

Predator-Prey Relationships. Perspectives and Approaches from the Study of Lower Vertebrates. MARTIN E. FEDER and GEORGE V. LAUDER, Eds. University of Chicago Press, Chicago, 1986. x, 198 pp., illus. $26; paper, $11.95. Based on a symposium, Norman, OK, 1985.

This volume stems from a symposium at which an invited group of researchers concerned with fishes, reptiles, and amphibians were asked to consider the utility and potential of their research approaches with respect to the development of a general theory of predation. The volume opens with considerations of the study of functional morphology (Gans) and locomotion (Webb) as related to predator-prey relationships, neural mechanisms of prey recognition (Roth), and the measurement of behavioral energetics (Bennett). There follow a general discussion of the value of the comparative, descriptive approach (Huey and Bennett) and a paper by Harry W. Greene, added after the symposium, that considers the reasons for "recent disinterest and condescension toward natural history," notes some practical consequences of this attitude, presents some examples of the fruitfulness of the natural history approach, and makes some suggestions for the maintenance of the field. The remaining papers discuss features of defense against predators (Endler) and behavior of fish as prey (Helfman) and strategies for analyzing adaptation (Arnold). A "commentary and conclusion" by the editors and a subject index conclude the book.—K.L.

Response and Stability. An Introduction to the Physical Theory. A. B. PIPPARD. Cambridge University Press, New York, 1985. xii, 228 pp., illus. $49.50; paper, $17.95.

"While textbooks of physics normally stress continuous processes, if only because they are easier to understand, and must precede the study of discontinuity," the author writes, "this book is far more concerned with the moments of sudden change." Based on lectures given to physics students "in an attempt to broaden their outlook," the volume addresses "questions which are apt to arise in all branches of physics and engineering, and not only in scientific circles." The author has chosen illustrative examples likely to be of interest to engineers as well as physicists and has adopted a "prolix style" in preference to an economical, mathematically compressed one for pedagogic reasons and because he himself finds "the mathematics rather dull and the . . . examples interesting." The subject is presented in seven chapters: on the harmonic oscillator, generalized linear systems and stability criteria, response of linear systems, periodically driven nonlinear systems, elementary types of catastrophe, phase transitions, and broken symmetry. A number of exercises and descriptions of experiments for the reader to carry out are included, along with many illustrations, and the author also presents (in square brackets) some speculation on the applicability of the ideas discussed outside the realm of physics.—K.L.

Books Received

Biologie Végétale. Plantes Supérieures. Vol. 1, Appareil Végétif. Robert Gorenflot. 2nd ed. Masson, Paris, 1986. xii, 238 pp., illus. Paper, F110.

Biology of Benthic Marine Organisms. Techniques and Methods as Applied to the Indian Ocean. Mary-Frances Thompson, Rachakonda Sarojini, and Rachakonda Nagabhushanam, Eds. Balkema, Boston, 1986. xxviii, 608 pp., illus. $38.50. Indian Edition Series, 12. From a symposium, Aurangabad, India, Jan. 1984.

Chemistry of Organo-Zirconium and -Hafnium Compounds. D. J. Cardin and C. L. Ralston. Horwood, Chichester, England, and Halsted (Wiley), New York, 1986. 451 pp., illus. $120. Ellis Horwood Book in Inorganic Chemistry.

Chemistry Trivia. Book 1, History. Sylvania Tascher. James D. Navartil, Ed. Litarvan, Arvada, CO, 1986. ii, 126 pp., illus., + appendix. Paper, $12.50.

Chemometrics. Muhammad A. Sharaf, Deborah L. Illman, and Bruce R. Kowalski. Wiley-Interscience, New York, 1986. xii, 332 pp., illus. $49.95. Chemical Analysis, vol. 82.

Child Development and Education in Japan. Harold Stevenson, Hiroshi Azuma, and Kenji Hakuta. Freeman, New York, 1986. xii, 315 pp., illus. $24.95; paper, $14.95. A Series of Books in Psychology. Based on a conference, 1982.

Children, Parenthood, and Social Welfare. In the Context of Developmental Psychology. Michael Siegal. Clarendon (Oxford University Press), New York, 1985. viii, 170 pp., illus. $26.95.

Emil W. Haury's Prehistory of the American Southwest. J. Jefferson Reid and David E. Doyel, Eds. University of Arizona Press, Tucson, 1986. xii, 506 pp., illus. $45. A collection of reprinted articles by Haury, to which have been added his "Retrospective" on his work, a bibliography of his publications, and six brief retrospective papers by colleagues.

Environmental Consequences of Nuclear War. Vol. 2, Ecological and Agricultural Effects. Mark A. Harwell, Thomas C. Hutchinson *et al.* Published on behalf of the Scientific Committee on Problems of the Environment by Wiley, New York, 1986. xxxviii, 523 pp., illus. $81.95. SCOPE 28.

The Human Thymus. Histophysiology and Pathology. Hans Konrad Müller-Hermelink, Ed. Springer-Verlag, New York, 1986. x, 275 pp., illus. $85. Current Topics in Pathology, 75.

Humor and Life Stress. Antidote to Adversity. Herbert M. Lefcourt and Rod A. Martin. Springer-Verlag, New York, 1986. x, 142 pp., illus. $29.95.

Immunity in Invertebrates. Cells, Molecules, and Defense Reactions. Michael Brehélin, Ed. Springer-Verlag, New York, 1986. x, 233 pp., illus. $54. Proceedings in Life Sciences. From a conference, Montpellier, France, Sept. 1984.

In Praise of Wolves. R. D. Lawrence. Holt, New York, 1986. x, 245 pp. + plates. $16.95.

Instrumentation for Environmental Physiology. B. Marshall and F. I. Woodward, Eds. Cambridge University Press, New York, 1985. xii, 241 pp., illus. $34.50. Society for Experimental Biology Seminar Series, 22.

Measurement and Analysis of Socioeconomic Development. An Enquiry into International Indicators of Development . . . Donald McGranahan, Eduardo Pizarro, and Claude Richard. United Nations Research Institute for Social Development, Geneva, 1985. xx, 504 pp., illus. Paper, Report no. 85.5.

Measures and Men. Witold Kula. Princeton University Press, Princeton, NJ, 1986. x, 386 pp., $39.50. Translated from the Polish by R. Szreter.

Nightwatch. An Equinox Guide to Viewing the Universe. Terence Dickinson. Illustrations by Victor Costanzo and Adolf Schaller. Camden House, Camden East, Ontario, 1986 (U.S. distributor, Firefly Books, Toronto). 160 pp., illus. Spiral bound, $19.95. Revised reprint, 1983 ed.

Nonlinear Optics. Materials and Devices. C. Flytzanis and J. L. Oudar, Eds. Springer-Verlag, New York, 1986. viii, 249 pp., illus. $41. Springer Proceedings in Physics, 7. From a school, Erice, Sicily, July 1985.

Nuclear Structures. Isolation and Characterization. A. J. MacGillivray and G. D. Birnie, Eds. Butterworths, Boston, 1986. xii, 209 pp., illus. $69.95.

Numerical Simulation of Plasmas. Y. N. Dnestrovskii and D. P. Kostomarov. Springer-Verlag, New York, 1986. xiv, 304 pp., illus. $77. Springer Series in Computational Physics. Translated from the Russian edition (Moscow, 1982).

The Ontogeny of Information. Developmental Systems and Evolution. Susan Oyama. Cambridge University Press, New York, 1986. x, 206 pp. $34.50; paper, $12.95.

An Operating Systems Vade Mecum. Raphael A. Finkel. Prentice-Hall, Englewood Cliffs, NJ, 1986. xii, 292 pp., illus. $32.95.

Optical Bistability III. H. M. Gibbs *et al.*, Eds. Springer-Verlag, New York, 1986. xiv, 364 pp., illus. $34.50. Springer Proceedings in Physics, 8. From a meeting, Tuscon, AZ, Dec. 1985.

Psychopathology in Epilepsy. Social Dimensions. Steven Whitman and Bruce P. Hermann, Eds. Oxford University Press, New York, 1986. xviii, 309 pp., illus. $39.95.

Quantitative Receptor Autoradiography. Carl A. Boast, Elaine W. Snowhill, and C. Anthony Altar, Eds. Liss, New York, 1986. xii, 268 pp., illus., + plates. $49.50. Neurology and Neurobiology, vol. 19. From a symposium, Anaheim, CA, 1984.

Radioactive Waste Management and Disposal. R. Simon, Ed. Cambridge University Press, New York, 1986. xiv, 734 pp., illus. $89.50. From a conference, Luxembourg, April 1985.

Rate Equations in Semiconductor Electrons. J. E. Carroll. Cambridge University Press, New York, 1986. xii, 177 pp., illus. $39.50.

Readings in Input-Output Analysis. Theory and Applications. Ira Sohn, Ed. Oxford University Press, New York, 1986. xiv, 453 pp., illus. $39.95. A collection of 28 reprinted papers intended to present some of the best work in input-output analysis to teachers and researchers.

Social Psychology. Kenneth J. Gergen and Mary M. Gergen. 2nd ed. Springer-Verlag, New York, 1986. xxii, 453 pp., illus. $30.95.

The Social Role of the Man of Knowledge. Florian Zananiecki. Transaction, New Brunswick, NJ, 1986. xiv, 212 pp. Paper, $19.95. Social Science Classics Series. Augmented reprint, 1968 ed.

Soil Mineral Weathering. J. A. Kitrick, Ed. Van Nostrand Reinhold, New York, 1986. xvi, 271 pp., illus. $34.95. A Hutchinson Ross Publication. Van Nostrand Reinhold Soil Science Series.

Sourcebook on Asbestos Diseases. Medical, Legal, and Engineering Aspects. Vol. 2. Barbara J. Peters and George A. Peters. Garland, New York, 1986. x, 843 pp., illus. $75.

Space Missions to Halley's Comet. R. Reinhard and B. Battrick. European Space Agency, Paris, 1986. xvi, 253 pp., illus. Paper, F200. ESA SP-1066.

Spectral Evolution of Galaxies. Cesare Chiosi and Alvio Renzini, Eds. Reidel, Dordrecht, 1986 (U.S. distributor, Kluwer, Hingham, MA). xii, 490 pp., illus. $78. Astrophysics and Space Science Library, vol. 122. From a workshop, Erice, Italy, March 1985.

Spinors and Space Time. Vol. 2, Spinor and Twistor Methods in Space-Time Geometry. Roger Penrose and Wolfgang Rindler. Cambridge University Press, New York, 1986. x, 501 pp., illus. $89.50. Cambridge Monographs on Mathematical Physics.

Star Wave. Mind, Consciousness, and Quantum Physics. Fred Alan Wolf. Macmillan, New York, 1986. x, 342 pp., illus. Paper, $9.95. Reprint, 1984 ed.

Storm Over Biology. Essays on Science, Sentiment, and Public Policy. Bernard D. Davis. Prometheus, Buffalo, NY, 1986. vi, 324 pp. $22.95. A collection of 44 editorials, book reviews, letters, and writings on themes ranging from sociobiology through affirmative action, public concern over science, and genetic engineering.