

served and extended by the Arabs and ultimately the knowledge was transferred to western Europe. Seitz traces the flowering of science during the 17th century and then describes its development in the United States. As might be expected, he devotes considerable attention to the early role of the National Academy of Sciences.

From observations of the way in which science developed in various regions, the author lists the principal factors required if science is to move ahead. In brief these are: the existence of a leisure class, freedom to ponder, logistical support, an institutional environment, communication among investigators, pressure for valid conclusions, experimentation, and proper indigenous culture.

One of the puzzles Seitz addresses is the failure of the very gifted Chinese to invent science. Two thousand years ago, they made many technological advances. Seitz concludes that the culture was not conducive to science. In addition, he was told by a Chinese scholar that an individual who discovered a scientific law would have been inclined to keep it a family secret.

Essays in the second half of the book deal with such present-day topics as "Science, technology and the environment," "Fraud, piracy and priority in science," "Big science—small science," and "The future of science." As to the future, Seitz is slightly optimistic but cautious. Factors favorable to science include the innate curiosity of humans, practical needs, national pride and global problems such as pandemics. Unfavorable factors include costs of equipment, decline of interest among gifted individuals, and anti-science movements. The future of public opinion is not predictable. In the past, charismatic leaders have been able to sway the public in directions that have seemed irrational and turned out to be highly destructive.

The book can be read with interest by all natural scientists, engineers, and physicians. It would provide knowledge and perspective to undergraduates, and it would be informative to intelligent lay persons.

PHILIP H. ABELSON  
American Association for the  
Advancement of Science,  
Washington, DC 20005

## Books Received

**The Art of Recording.** The Creative Resources of Music Production and Audio. William Moylan. Van Nostrand Reinhold, New York, 1991. xii, 260 pp., illus. \$39.95.

**Artificial Believers.** The Ascription of Belief. Afzal Ballim and Yorick Wilks. Erlbaum, Hillsdale, NJ, 1991. ii, 285 pp., illus. \$45.

**Artificial Habitats for Marine and Freshwater**

**Fisheries.** William Seaman, Jr., and Lucian M. Sprague, Eds. Academic Press, San Diego, CA, 1991. xviii, 285 pp., illus. \$39.95.

**Aspects of Nonparametric Density Estimation.** A. J. van Es. Centrum voor Wiskunde en Informatica, Amsterdam, 1991. vii, 137 pp., illus. Paper, Dfl. \$39. CWI Tract, 77.

**Atmospheric Transmission, Emission and Scattering.** Thomas G. Kyle. Pergamon, New York, 1991. xii, 287 pp., illus. \$80.

**Biology and Medicine into the 21st Century.** M. A. Hardy and R. K. H. Kinne, Eds. Karger, New York, 1991. viii, 200 pp., illus. \$180. Issues in Biomedicine, vol. 15. From a symposium, New York, Nov. 1989.

**The Biology of Cyclic Nucleotide Phosphodiesterases.** Samuel J. Strada and Hiroyoshi Hidaka, Eds. Raven, New York, 1991. xviii, 429 pp., illus. \$130. Advances in Second Messenger and Phosphoprotein Research, vol. 25.

**Bioreactor Design Fundamentals.** Norton G. McDuffie. Butterworth-Heinemann, Boston, 1991. xii, 137 pp., illus. \$42.95.

**The Birth and Early Evolution of Our Universe.** Proceedings of Nobel Symposium 79, Gräfvallen, Sweden, June 1990. J. S. Nilsson, B. Gustafsson, and B.-S. Skagerstam, Eds. Physica Scripta (Royal Swedish Academy of Sciences), Stockholm, and World Scientific, Teaneck, NJ, 1991. 301 pp., illus. \$78. Also published as *Physica Scripta*, vol. T36.

**Brain Endocrinology.** Marcella Motta, Ed. 2nd ed. Raven, New York, 1991. xiv, 482 pp., illus. \$145. Comprehensive Endocrinology.

**Cognitive Science and Concepts of Mind.** Toward a General Theory of Human and Artificial Intelligence. Morton Wagman. Praeger, New York, 1991. xvi, 192 pp. \$45.

**Colliding Plane Waves in General Relativity.** J. B. Griffiths. Clarendon (Oxford University Press), 1991. xiv, 232 pp., illus. \$49.95. Oxford Mathematical Monographs.

**Combinatorial Matrix Theory.** Richard A. Brualdi and Herbert J. Ryser. Cambridge University Press, 1991. x, 367 pp., illus. \$49.50. Encyclopedia of Mathematics and its Applications, vol. 39.

**The Complete Fishkeeper.** Everything Aquarium Fishes Need To Stay Happy, Healthy, and Alive. Joseph S. Levine. Photographs by Aaron Norman. Morrow, New York, 1991. 240 pp. \$30.

**Computational Models of Visual Processing.** Michael S. Landy and J. Anthony Movshon, Eds. MIT Press, Cambridge, MA, 1991. xii, 394 pp., illus. \$55. A Bradford Book. From a workshop, Cold Spring Harbor, NY, June 1989.

**Computer Modeling of Chemical Reactions in Enzymes and Solutions.** Arieh Warshel. Wiley Interscience, New York, 1991. xvi, 236 pp., illus. \$90.

**Covering the Environmental Beat.** An Overview for Radio and TV Journalists. Lou Prato. Media Institute, Washington, DC, and the Radio and Television News Directors Foundation, Washington, DC, 1991. viii, 103 pp. Paper, \$9.95.

**The Elements of Nonlinear Optics.** Paul N. Butcher and David Cotter. Cambridge University Press, New York, 1991. xiv, 344 pp. Paper, \$29.95. Reprint, 1990 ed.

**Emerging Technologies for Materials and Chemicals from Biomass.** Roger M. Rowell, Tor P. Schultz, and Ramani Naryan, Eds. American Chemical Society, Washington, DC, 1992. x, 469 pp., illus. \$99.95. ACS Symposium Series, 476. From a symposium, Washington, DC, Aug. 1990.

**The Ends of Human Life.** Medical Ethics in a Liberal Polity. Ezekiel J. Emanuel. Harvard University Press, Cambridge, MA, 1991. xii, 307 pp. \$34.95.

**The Environmental Career Guide.** Job Opportunities with the Earth in Mind. Nicholas Basta. Wiley, New York, 1991. xii, 195 pp., illus. \$29.95; paper, \$14.95.

**Enzymic Catalysis.** A. R. Fersht and D. Gani, Eds. Royal Society, London, 1991. vi, 78 pp., illus. 35. From a meeting, London, Dec. 1990. Reprinted from *Philosophical Transactions of the Royal Society*, Series B, vol. 332, no. 1263 (1991).

**Graincollection.** Humans' Natural Ecological Niche. Sergio Treviño. Vantage, New York, 1991. xviii, 293 pp., illus., + plates. \$18. Translated from the Spanish by Rebecca San Martín-Feeney.

**Introduction to Renormalization Group Methods in Physics.** R. J. Creswick, H. A. Farach, and C. P. Poole, Jr. Wiley, New York, 1991. xiv, 409 pp., illus. \$64.95.

**Introduction to the Principles of Plant Taxonomy.** V. V. Sivarajan. N. K. P. Robson, Ed. 2nd ed. Cambridge University Press, New York, 1991. xiv, 292 pp.,

illus. \$79.95; paper, \$29.95.

**Ions, Electrodes and Membranes.** Jiří Koryta. 2nd ed. Wiley, New York, 1991. xiv, 198 pp., illus. \$74.95.

**Isaac Asimov's Guide to Earth and Space.** Isaac Asimov. Random House, New York, 1991. xiv, 285 pp., illus. \$19.50.

**Molecular Design and Modeling.** Concepts and Applications. Part A, Proteins, Peptides, and Enzymes. John J. Langone, Ed. Academic Press, San Diego, CA, 1991. xxxii, 824 pp., illus. \$95. Methods in Enzymology, vol. 202.

**Molecular Design and Modeling.** Concepts and Applications. Part B, Antibodies and Antigens, Nucleic Acids, Polysaccharides, and Drugs. John J. Langone, Ed. Academic Press, San Diego, CA, 1991. xxxii, 764 pp., illus. \$95. Methods in Enzymology, vol. 203.

**Molecular Genetic Approaches to Neuropsychiatric Diseases.** Jürgen Brosius and Robert T. Fremeau. Academic Press, San Diego, CA, 1991. xxii, 493 pp., illus. \$69.95.

**More Gene Manipulations in Fungi.** J. W. Bennett and Linda L. Lasure, Eds. Academic Press, San Diego, CA, 1991. xiv, 470 pp., illus. \$75.

**Motivation, Emotion, and Goal Direction in Neural Networks.** Daniel S. Levine and Samuel J. Leven, Eds. Erlbaum, Hillsdale, NJ, 1992. xx, 447 pp., illus. \$79.95. From a workshop, Dallas, May, 1988.

**Numerical Solution of Markov Chains.** William J. Stewart, Ed. Dekker, New York, 1991. xx, 704 pp., illus. \$145. Probability: Pure and Applied.

**Plant Physiology.** Frank B. Salisbury and Cleon W. Ross. 4th ed. Wadsworth, Belmont, CA, 1991. xviii, 682 pp., illus. \$60.75. Wadsworth Biology Series.

**Plasticity and Regeneration of the Nervous System.** Paola S. Timiras *et al.*, Eds. Plenum, New York, 1991. xii, 365 pp., illus. \$85. Advances in Experimental Medicine and Biology, vol. 296. From a conference, Torino, Italy, April 1990.

**Politics and Psychology.** Contemporary Psychodynamic Perspectives. Joan Offerman-Zuckerberg. Plenum, New York, 1991. xvi, 313 pp. \$45.

**Protein Phosphorylation.** Part A. Protein Kinases: Assays, Purification, Antibodies, Functional Analysis, and Expression. Tony Hunter and Bartholomew M. Sefton, Eds. Academic Press, San Diego, CA, 1991. xxxiv, 763 pp., illus. \$95. Methods in Enzymology, vol. 200.

**Protocols in Human Molecular Genetics.** Christopher G. Mathew, Ed. Humana, Clifton, NJ, 1991. x, 461 pp., illus. \$69.50. Methods in Molecular Biology, vol. 9.

**A Quarter Century of Paleoanthropology.** Views From the U.S.A. Lawrence Guy Straus, Ed. Department of Anthropology, University of New Mexico, Albuquerque, 1991. 158 pp., illus. Paper, \$12.50. Journal of Anthropological Research, vol. 47, no. 2.

**Research Issues in Human Behavior and Sexually Transmitted Diseases in the AIDS Era.** Judith N. Wasserheit *et al.*, Eds. American Society for Microbiology, Washington, DC, 1991. x, 391 pp., illus. \$48.

**The Resistance Vasculature.** John A. Bevan, William Halpern, and Michael J. Mulvany, Eds. Humana, Totowa, NJ, 1991. xii, 476 pp., illus. \$89.50. Vascular Biomedicine. A publication of the University of Vermont Center for Vascular Research.

**Sete.** Giorgio Nebbia. Riuniti, Rome, 1991. x, 106 pp. Paper, L 12.500.

**The Skills of Argument.** Deanna Kuhn. Cambridge University Press, New York, 1991. x, 324 pp. \$59.50; paper, \$22.95.

**A Social History of the Minor Tranquilizers.** The Quest for Small Comfort in the Age of Anxiety. Mickey C. Smith. Pharmaceutical Products Press (Haworth) New York, 1991. viii, 265 pp., illus. Paper, \$14.95. Reprint, 1985 ed.

**The Social Psychology of Minority Influence.** Gabriel Mugny and Juan A. Perez. Cambridge University Press, New York, and Editions de la Maison des Sciences de l'Homme, Paris, 1991. xiv, 190 pp. \$64.50. European Monographs in Social Psychology. Translated from the French edition (Paris, 1987) by Vivian Waltz Lamongie.

**Solid State NMR of Polymers.** Lon J. Mathias, Ed. Plenum, New York, 1991. x, 408 pp., illus. \$95. From a symposium, Toronto, June 1988.

**Spatial Variabilities of Soils and Landforms.** M. J. Mausbach and L. P. Wilding, Eds. Soil Science Society of America, Madison, WI, 1991. xviii, 270 pp., illus. Paper, \$30. SSSA Special Publication No. 28. From a symposium, Las Vegas, NV, Oct. 1989.

**Stability, Duality and Decomposition in General Mathematical Programming.** O. E. Flippo. Centrum voor Wiskunde en Informatica, Amsterdam, 1991. viii, 228 pp., illus. Paper, Dfl. 59. CWI Tract 76.