



"Image of Saturn at 6 cm wavelength made at the National Radio Astronomy Observatory's Very Large Array in New Mexico. The banded structure is due to variations of ammonia concentration in the subcloud Saturn atmosphere that are related to the general circulation at deep levels. . . . The rings are inherently faint at microwave frequencies but are readily identified in the image." [From the dust jacket of *Atmospheric Remote Sensing by Microwave Radiometry*; courtesy of Arie W. Grossman and Duane O. Muhleman]

both from the ground and from satellites. It is also employed extensively from various platforms for a wide range of scientific investigations. *Atmospheric Remote Sensing by Microwave Radiometry* is a detailed treatment of remote sensing by microwave techniques of the atmospheres of Earth and other planets.

Weighting functions are widely used in the remote sensing community to describe the information content of passive measurements of temperature profiles. They are often misused in measurements of constituent profiles. Westwater's chapter, "Ground-based microwave remote sensing of meteorological variables," contains a general discussion of weighting functions that provides a common theoretical basis for both applications. This chapter should be required reading for anyone involved in passive remote sensing in any spectral region.

It is inevitable that in a book of this scope any given reader will find shortcomings in the coverage of his or her own specialty. In this spirit I wish that Gasiewski, in his chapter "Microwave radiative transfer in hydrometeors," had illustrated his concepts with an example in a portion of the spectrum commonly used for rainfall measurements, which would have provided a better background for the discussions of the measurement of rainfall from satellites that appear further on in the book. Also, in Grody's chapter "Remote sensing of the atmosphere from satellites using microwave radiometry" I was disappointed by the absence of any discussion of the measurement of precipitable water. It was clear from his treatment of the measurement of water vapor profiles that

he had not read Westwater's discussion of weighting functions.

Like many multiauthored compilations, the book suffers from some redundancy among the chapters, although the various authors' different approaches to the common themes can be interesting and instructive. All the chapters have substantial depth, but some are more accessible than others. Rosenkrantz's contribution ("Absorption of microwaves by atmospheric gases") will be almost impossible reading for anyone without some background in quantum mechanics.

This book belongs on the desk of anyone working (or planning to work) in the atmospheric applications of microwave radiometry. Those working in other branches of remote sensing will find many of the ideas presented here useful as well. Those merely curious about the field will find it rather slow going.

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Reprints of Books Previously Reviewed

Breaking the Maya Code. Michael D. Coe. Thames and Hudson, New York, 1993 (distributor, Norton, New York). Paper, \$14.95. *Reviewed* 257, 1773 (1992).

Chandra. A Biography of S. Chandrasekhar. Kameshwar C. Wali. University of Chicago Press, Chicago, 1993. Paper, \$16.95 or £13.50. *Reviewed* 251, 455 (1991).

Complexity. The Emerging Science at the Edge of Order and Chaos. M. Mitchell Waldrop. Simon and Schuster, New York, 1993. Paper, \$12. *Reviewed* 259, 387 (1993).

The Diversity of Life. Edward O. Wilson. Norton, New York, 1993. Paper, \$14.95. *Reviewed* 259, 1774 (1993).

The Mismeasure of Man. Stephen Jay Gould. Norton, New York, 1993. Paper, \$9.95. *Reviewed* 215, 656 (1982).

Books Received

Action and Reaction. Paul Theerman and Adele F. Seeff, Eds. University of Delaware Press, Newark, 1993 (distributor, Associated University Presses, Cranbury, NJ). 324 pp., illus. \$39.50. From a symposium, College Park, MD, April 1987.

Ad Infinitum. . . The Ghost in Turing's Machine. Taking God Out of Mathematics and Putting the Body Back In. An Essay in Corporeal Semiotics. Brian Rotman. Stanford University Press, Stanford, CA, 1993. xviii, 203 pp. \$39.50; paper, \$12.95.

The Adaptive Decision Maker. John W. Payne, James R. Bettman, and Eric J. Johnson. Cambridge University Press, New York, 1993. xiv, 330 pp., illus. \$59.95; paper, \$19.95.

The Biology of the Autistic Syndromes. Christopher Gillberg and Mary Coleman. 2nd ed. Keith, London, 1993 (U.S. distributor, Cambridge University Press, New York). viii, 317 pp., illus. \$64.95. Clinics in Developmental Medicine, no. 126.

Bird Migration. Thomas Alerstam. Astrid Ulfstrand, illustrator. Cambridge University Press, New York, 1993. viii, 420 pp. Paper, \$34.95. Translated from the Swedish edition (1982) by David A. Christie. Reprint, 1990 ed.

Brain Development and Cognition. A Reader. Mark H. Johnson, Ed. Blackwell, Cambridge, MA, 1993. xii, 734 pp., illus. \$64.95; paper, \$26.95.

C/Math Toolchest for Engineering and Scientific Applications. Charles P. Bernardin. PTR Prentice Hall, Englewood Cliffs, NJ, 1993. viii, 484 pp., illus., + diskette. Paper, \$65.

Cahuachi in the Ancient Nasca World. Helaine Silverman. University of Iowa Press, Iowa City, 1993. xvi, 371 pp., illus. \$59.95.

Captive Seawater Fishes. Science and Technology. Stephen Spotte. Wiley, New York, 1992. xxiv, 942 pp., illus., + plates. \$97.95. Wiley-Interscience Publication.

Chemical Physics of Intercalation II. Patrick Bernier *et al.*, Eds. Plenum, New York, 1993. x, 403 pp., illus. \$115. NATO Advanced Science Institutes Series B, vol. 305. From an institute, Chateau de Bonas, France, June 1992.

Children and Disasters. Conway F. Saylor, Ed. Plenum, New York, 1993. xxii, 237 pp. \$39.50. Issues in Clinical Child Psychology.

The Chromosome. J. S. Heslop-Harrison and R. B. Flavell. Bios Scientific, Oxford, U.K., 1993 (U.S. distributor, Books International, McLean, VA). xx, 281 pp., illus. \$99 or P49.50. John Innes Review. Based on a symposium, Sept. 1992.

Civilizing Mission. Exact Sciences and French Overseas Expansion, 1830-1940. Lewis Pyenson. Johns Hopkins University Press, Baltimore, MD, 1993. xxii, 377 pp., illus. \$45.

Clean Production Strategies. Developing Preventive Environmental Management in the Industrial Economy. Tim Jackson, Ed. Lewis, Boca Raton, FL, 1993. xxiv, 415 pp., illus. \$60.

Combat Stress Reaction. The Enduring Toll of War. Zahava Solomon. Plenum, New York, 1993. xvi, 284 pp., illus. \$35. Plenum Series on Stress and Coping.

Desmopressin in Bleeding Disorders. G. Mariani, P. M. Mannucci, and M. Cattaneo, Eds. Plenum, New York, 1993. x, 361 pp., illus. \$105. NATO Advanced Science Institutes Series A, vol. 242. From a workshop, Il Ciocco, Tuscany, Italy, April 1992.

Diagnostic Molecular Microbiology. Principles and Applications. David H. Persing *et al.*, Eds. American Society for Microbiology, Washington, DC, 1993. xxii, 641 pp., illus. Spiral bound, \$59.

Dietary Lipids and Insulin Action. I. Klimes *et al.*, Eds. New York Academy of Sciences, New York, 1993. xiv, 388 pp., illus. Paper, \$110. Annals of the New York Academy of Sciences, vol. 683. From a symposium, Smolenice Castle, Slovak Republic, Sept. 1992.

Electrodynamics of High-Temperature Superconductors. Alan M. Portis. World Scientific, River Edge, NJ, 1993. viii, 247 pp., illus. \$68; paper, \$28. Lecture Notes in Physics, vol. 48.

Evolutionary Ethics. Matthew H. Nitecki and Doris V. Nitecki, Eds. State University of New York Press, Albany, 1993. x, 368 pp., illus. \$16.95. SUNY Series in Philosophy and Biology. From a symposium, Chicago, May 1990.

The Evolutionary Tales. Rhyme and Reason on Creation/Evolution with Apologies to Chaucer and Darwin. Ronald L. Ecker. North Bridge, Palatka, FL, 1993. xii, 212 pp. Paper, \$10.