political and scientific disputes of the professional societies of "ethnologicals" and "anthropologicals" divided by Darwinian issues. Less attention is paid to various styles of presenting and interpreting evidence of human diversity, the textual and documentary conventions that altered over the course of the period, and to many scholars and researchers difficult to nail with prevalent doctrinal pegs. In the case of John Crawfurd, for example, Stocking eventually acknowledges that this ethnological "polygenist," who argued a diversity of human races on linguistic grounds, was nevertheless a staunch opponent of slavery (p. 252).

Victorian Anthropology is not just a period history of anthropology but an anthropologically informed history of broader aspects of the Victorian period. Those "other Victorians" must be understood by way of their own understandings of others. This volume is a stately summing up, and it establishes a compelling new point of departure for the history of anthropology among the human sciences.

JAMES A. BOON
Department of Anthropology, Cornell University, Ithaca, NY 14853

Planetary Moons

Satellites. JOSEPH A. BURNS and MILDRED SHAPLEY MATTHEWS, Eds. University of Arizona Press, Tucson, 1986. xii, 1021 pp., illus. $55. Space Science Series. Based on a conference, Ithaca, NY, July 1983.

Our solar system contains only nine planets; indeed, some critics of little Pluto would have us reduce that number to eight. Unfortunately, theoretical models for the origin of the solar system tend to contain more than eight free parameters, and unique cosmogonic models cannot be crafted to account for the planets at hand. This situation has led to the common lament of planetary scientists that there are "too few planets." The situation is not readily remedied. The two most promising paths are to search for planets about nearby stars and to explore the larger satellites in our own planetary system. *Satellites* brings us nicely up-to-date on the latter effort.

Observations of the satellites of the Jovian planets by the Voyager 1 and 2 spacecraft (1979–1986), of the Martian moons Phobos and Deimos by Mariner 9 (1971) and the two Viking Orbiters (1976), and of Pluto and Charon by Earth-based observers (1980–1986) are distilled in this massive and fascinating book. An up-to-date review of thinking about Earth's moon is also included, showing that the cessation of American lunar spacecraft missions in 1972 and Soviet missions in 1976 has not fully prevented scientists from *thinking* about the subject.

Although small satellites and planetary rings undeniably have a certain charm and are attended by their own peculiar and interesting problems, the strongest incentive to most prospective readers of *Satellites* is the opportunity to learn more about the large, evolved, complex, planet-sized satellites (the moon; Jupiter's four Galilean satellites, Io, Europa, Ganymede, and Callisto; Saturn's largest moon, Titan; and Neptune's oddly situated Triton). The last five of these all contain substantial quantities of ices and hence can exhibit melting and volcanism even at temperatures far below 0°C. All of these satellites exhibit a clear trend toward higher contents of volatile materials at greater distances from the sun, as do the solid planets themselves.

To aficionados of satellites, however, the intermediate-sized bodies are a treasure trove of information on planetary evolution: bodies with radii less than about 100 km cannot melt and differentiate by density as a consequence of the decay of long-lived radioisotopes within them. Conversely, ice-rich bodies with radii larger than a few hundred kilometers cannot avoid at least partial differentiation and internal tectonic activity. Thus these mid-sized models (and the largest few dozen asteroids) provide valuable tests of our theories of planetary thermal evolution. Obviously, then, the smallest satellites should generally be very ancient, primitive, undifferentiated samples of the raw solid materials out of which the planets and larger satellites were formed. Thus planetologists are led naturally to the comparative study of planets with all the many varieties of satellites they possess.

The account of the satellites presented here is truly mind-stretching: lava flows of aqueous ammonia solution at −100°C; volcanic plumes of sulfur dioxide and sulfur vapor 250 km high; surfaces that seem to be collages of fragments from three or more radically different types of bodies; oceans of liquid nitrogen, methane, and ethane; a planet-sized body stained brown by organic polymers; holes "bitten" out of radiation belts by tiny satellites; donuts of hydrogen, sodium, and potassium circling planets near the orbits of large moons; extremely narrow, well-disciplined planetary rings "shepherded" by small nearby satellites; a planet-sized moon in a retrograde orbit about its primary body. Of necessity, research on these phenomena involves a host of scientists from widely diverse disciplines.

The organization and authorship of this book reflect that interdisciplinary character. The 45 authors are drawn from the ranks of astronomy, geology, chemistry, physics, aeronomy, geophysics, and geochemistry. The editors have, following the tradition of the series in which this volume appears, invited from two to five authors with very different disciplinary backgrounds to collaborate on each of the 18 chapters. These "arranged marriages" have for the most part parented chapters that can be read by scientifically literate nonspecialists. Planning this endeavor must have been challenging.

Satellites joins a distinguished family of over a dozen books in the Space Science Series of the University of Arizona, which boasts a 13-year history of excellence. This volume is not only technically meritorious and current, it is written (considering its very diverse authorship) in a surprisingly even and readable style. Planetary scientists are obliged to read it. Denizens of the more classical "parent disciplines" of the planetary sciences should find it a stimulating and accessible survey of one important aspect of the study of our solar system. And anyone who thinks that we can truly understand planet Earth without paying diligent attention to the study of other planetary bodies should find this book enlightening.

JOHN S. LEWIS
Lunar and Planetary Laboratory, University of Arizona, Tucson, AZ 85721

Transmitters and Receptors

Excitatory Amino Acid Transmission. T. PHILIP HICKS, DAVID LODGE, and HUGH MCLENNAN, Eds. Liss, New York, 1987. xxvi, 426 pp., illus. $69.50. Neurology and Neurobiology, vol. 24. From a symposium, Banff, Alberta, July 1986.

The purpose of the meeting whose proceedings constitute this volume was to discuss the role of excitatory amino acids and their associated receptors in synaptic transmission within the vertebrate central nervous system. As one is reminded frequently throughout the book, there are at least three pharmacologically distinguishable postsynaptic receptors for excitatory amino acids—the *N*-methyl-D-aspartate (NMDA), kainate, and quisqualate receptors—with the possibility of additional receptor subclasses at presynaptic sites. Each of these receptors can be found throughout the central nervous system. Their distributions are heterogeneous and their physiological and behavioral effects variable.

More than 100 authors contributed 74 papers covering diverse facets of their re-

search. Grouped in seven broad sections, the papers vary both in format and in quality; some are helpful reviews of general topics or methods and others are short presentations of new or recently published data. The opening overview is a historical look at research on excitatory amino acids that raises many of the topical issues appearing throughout the book. The next section concerns the classification and activation of postsynaptic excitatory amino acid receptors. The first paper in this section is a useful review of postsynaptic pharmacology, with subsequent papers giving more detailed views of specific physiological or pharmacological properties of receptor activation. The third section, on receptor interactions, is almost exclusively dedicated to phencyclidine-sigma opiate interactions with the NMDA receptor, including discussion of how these and other NMDA antagonists may function as anticonvulsants and how phencyclidine-related drugs might be used for PET imaging of NMDA receptors. The section on transmitter identification and localization contains an excellent opening paper on immunocytochemical approaches to glutamate and aspartate localization and other interesting papers on endogenous NMDA receptor ligands. The group of papers on clinical implications includes discussions of the role of excitatory amino acids in neurodegenerative and psychotic disorders as well as in hypoglycemia- and ischemia-induced neural injury. The last two sections, on subcortical and cortical synaptic transmitters, are a hodgepodge of papers sometimes grouped by brain area, predominantly about receptors rather than transmitters per se. Although the quantity of data is daunting, these sections include a number of extremely useful and informative papers on excitatory amino acid receptor physiology and pharmacology with specific reference to such brain areas as the spinal cord, hippocampus, thalamus, and cortex.

In a field expanding rapidly on many fronts, it is impossible to produce a book or scholarly review that is thoroughly up-to-date. Thus one of the negative aspects of this book, the near absence of information about or discussion of the molecular basis of excitatory amino acid channel properties, is unavoidable since much of that work was published after the July 1986 meeting. Nevertheless, there is a good diversity of viewpoints, approaches, and methods throughout the book and broad coverage of areas of the central nervous system in which excitatory amino acid transmission is important. The editors have not attempted to summarize or generalize about the huge body of data that is presented, leaving it to the reader to search out patterns as well as inconsistencies. Therefore this is not a good primer for the novice, nor was it intended to be. What the book provides is a valuable collection of data, overviews, conclusions, historical perspectives, and prejudices from many of the most active scientists in the field.

AMY MACDERMOTT
Howard Hughes Medical Institute, College of Physicians and Surgeons, Columbia University, New York, NY 10032

Books Received

Animal Evolution in Changing Environments. With Special Reference to Abnormal Metamorphosis. Ryuichi Matsuda. Wiley-Interscience, New York, 1987. xviii, 355 pp., illus. $44.95.

Animal Societies. Theories and Facts. Yosiaki Itô, Jerram L. Brown, and Jiro Kikkawa. Japan Scientific Societies Press, Tokyo, 1987 (distributor, Bussiness Centre for Academic Societies Japan, Tokyo). xvi, 291 pp., illus. Y8200. Based on a symposium, Kyoto, July 1986.

Animals in Their Places. Tales from the Natural World. Roger A. Caras. Sierra Club Books, San Francisco, CA, 1987 (distributor, Random House, New York). xii, 297 pp. $18.95.

Approximate Reasoning in Intelligent Systems, Decision and Control. E. Sanchez and L. A. Zadeh, Eds. Pergamon, New York, 1987. x, 195 pp., illus. $50. Based on a conference, Paris, Jan. 1986.

Death, Sex, and Fertility. Population Regulation in Preindustrial and Developing Societies. Marvin Harris and Eric B. Ross. Columbia University Press, New York, 1987. 227 pp. $25.

Delivery Systems for Peptide Drugs. S. S. Davis, Lisbeth Illum, and E. Tomlinson, Eds. Plenum, New York, 1986. xii, 368 pp., illus. $65. NATO Advanced Science Institutes Series A, vol. 125. From a workshop, Copenhagen, Denmark, May-June 1986.

Dermatoxicology. Francis N. Marzulli and Howard I. Maibach, Eds. 3rd ed. Hemisphere (Harper and Row), New York 1986. xxvi, 773 pp., illus. $95.

The Fundamentals of Paleohydrogeology of Ore Deposits. Evgeny A. Baskov. Springer-Verlag, New York, 1987. viii, 253 pp., illus. $79. Translated from the Russian edition (Leningrad, 1983).

Fundamentals of Receptor Molecular Biology. Donald F. H. Wallach. Dekker, New York, 1987. x, 398 pp., illus. $85. Immunology Series, vol. 34.

Gas Flow and Chemical Lasers. S. Rosenwaks, Ed. Springer-Verlag, New York, 1987. xiv, 579 pp., illus. $72.60. Springer Proceedings in Physics, vol. 15. From a symposium, Jerusalem, Israel, Sept. 1986.

General Photobiology. Donat-Peter Häder and Manfred Tevini. Pergamon, New York, 1987. xviii, 323 pp., illus. $40; paper, $21.95. Pergamon International Library of Science, Technology, Engineering and Social Studies.

Genetic and Perinatal Effects of Abused Substances. Monique C. Braude and Arthur M. Zimmerman, Eds. Academic Press, Orlando, FL, 1987. x, 211 pp., illus. $55. Cell Biology.

Genetic Regulation of Development. William F. Loomis, Ed. Liss, New York, 1987. xviii, 423 pp., illus. $78. From a symposium, La Jolla, CA, June 1986.

Genetics in the Courts. Henry M. Butzel. Mellen, Lewiston, NY, 1987. xxii, 801 pp. $89.95. Studies in Health and Human Services, vol. 9.

Handbook of Marriage and the Family. Marvin B. Sussman and Suzanne K. Steinmetz, Eds. Plenum, New York, 1987. xlii, 915 pp., illus. $95.

Handbook of Toxicology. Thomas J. Haley and William O. Berndt, Eds. Hemisphere (Harper and Row), New York, 1987. xiv, 697 pp., illus. $110.

Health Care and Its Costs. Carl J. Schramm, Ed. Norton, New York, 1987. x, 301 pp. $18.95. From a meeting, Harriman, NY, Nov. 1986.

Hendrik Adriaan van Reede tot Drakenstein (1636–1691) and Hortus Malabaricus. A Contribution to the History of Dutch Colonial Botany. J. Heniger. Balkema, Accord, MA, 1986. xvi, 295 pp., illus. $75.

Molecular Inclusion and Molecular Recognition. Clathrates I. E. Weber, Ed. Springer-Verlag, New York, 1987. x, 171 pp., illus. $69. Topics in Current Chemistry, vol. 140.

Molecular Mechanisms of Desensitization to Signal Molecules. T. M. Konijn *et al.*, Eds. Springer-Verlag, New York, 1987. xiv, 335 pp., illus. NATO Advanced Science Institutes Series H, vol. 6. From a workshop, Noordwijkerhout, the Netherlands, May 1986.

Molecular Neurobiology of the Mammalian Brain. Patrick L. McGeer, John C. Eccles, and Edith G. McGeer. 2nd ed. Plenum, New York, 1987. xxvi, 774 pp., illus. $59.50; paper, $27.50.

Molecular Regulation of Nuclear Events in Mitosis and Meiosis. Robert A. Schlegel, Margaret S. Halleck, and Potu N. Rao, Eds. Academic Press, Orlando, FL, 1987. xiv, 375 pp., illus. $85. Cell Biology.

Molecular Strategies of Parasitic Invasion. Nina Agabian, Howard Goodman, and Nadia Nogueira, Eds. Liss, New York, 1987. xxviii, 775 pp., illus. $125. UCLA Symposia on Molecular and Cellular Biology, new series, vol. 42. From a symposium, Park City, UT, Jan. 1987.

Motivation, Intention, and Volition. Frank Halisch and Julius Kuhl, Eds. Springer-Verlag, New York, 1987. xiv, 436 pp., illus. $71.

No Way. The Nature of the Impossible. Philip J. Davis and David Park, Eds. Freeman, New York, 1987. xviii, 325 pp., illus. $17.95.

Non-Gravitational Perturbations and Satellite Geodesy. Andrea Milani, Anna Maria Nobili, and Paolo Farinella. Hilger, Bristol, U.K., 1987 (U.S. distributor, Taylor and Francis, Philadelphia). 125 pp., illus. $44.

Nonlinear Hydrodynamic Modeling. A Mathematical Introduction. Hampton N. Shirer, Ed. Springer-Verlag, New York, 1987. xvi, 546 pp., illus. $39.95. Lecture Notes in Physics, vol. 271.

Nonlinear Integrable Equations. Recursion Operators, Group-Theoretical and Hamiltonian Structures of Soliton Equations. B. G. Konopelchenko. Springer-Verlag, New York, 1987. viii, 361 pp. $29.40. Lecture Notes in Physics, vol. 270.

Nonlinear Optical Properties of Organic Molecules and Crystals. Vol. 1. D. S. Chemla and J. Zyss, Eds. Academic Press, Orlando, FL, 1987. xiv, 482 pp., illus. $79.50. Quantum Electronics—Principles and Applications. Published by arrangement with AT&T.

Nonlinear Stochastic Systems in Physics and Mechanics. Nicola Bellomo and Riccardo Riganti. World Scientific, Singapore, 1987 (U.S. distributor, Taylor and Francis, Philadelphia, PA). xiv, 244 pp., illus. $37.

Nonlinearity in Condense Matter. A. R. Bishop *et al.*, Eds. Springer-Verlag, New York, 1987. x, 401 pp., illus. $57. Springer Series in Solid-State Sciences, 69. From a conference, Los Alamos, NM, May 1986.

Numbers at Work and Play. Stephen P. Richards. Richards, New Providence, RI, 1987. 213 pp., illus. Paper, $8.95.

Seawater-Sediment Interactions in Coastal Waters. An Interdisciplinary Approach. Jan Rumohr, Eckart Walger, and Bernt Zeitschel, Eds. Springer-Verlag, New York, 1987. 338 pp., illus. + map in pocket. Paper, $49.95. Lecture Notes on Coastal and Estuarine Studies, vol. 13.

The Semantics of Destructive Lisp. Ian A. Mason. University of Chicago Press, Chicago, IL, 1987. ii, 282 pp., illus. $29.95; paper, $14.95. CSLI Lecture Notes, no. 5.

Seventh Workshop on Grand Unification/ICOBAN'86. (Toyama, Japan, April 1986.) Jiro Arafune, Ed. World Scientific, Singapore, 1987 (U.S. disributor, Taylor and Francis, Philadelphia, PA). xii, 560 pp., illus. $72.

Silent Spring Revisited. Gino J. Marco, Robert M. Hollingworth, and William Durham, Eds. American Chemical Society, Washington, DC, 1987. xviii, 214 pp, illus. $29.95; paper, $17.95.

Skew Linear Groups. M. Shirvani and B. A. F. Wehrfritz. Cambridge University Press, New York, 1987. iv, 253 pp. Paper, $22.95. London Mathematical Society Lecture Note Series, 118.

Sliding Piece Puzzles. Edward Hordern. Oxford University Press, New York, 1986. xiv, 249 pp., illus. $26.95. Recreations in Mathematics, 4.

The Snake. John Crompton. Lyons, New York, 1987. x, 150 pp., illus. Paper, $8.95. Reprint, 1963, ed.

The Sociobiology of Ethnocentrism. Evolutionary Dimensions of Xenophobia, Discrimination, Racism and Nationalism. Vernon Reynolds, Vincent Falger, and Ian Vine, Eds. University of Georgia Press, Athens, GA, 1987. xx, 327 pp., illus. $40. Based on a meeting, Oxford, U.K., Jan. 1985.