own, genuine, positivist-empiricist commitments—it would not be wrong to describe them as constructivist—he finds it unsettling that the scope of quantum mechanics seems to be so much wider than the observations it correlates. Finally, Jean Bricmont, theorist at Louvain, offers by far the longest and most extensively documented (45 pages and 145 notes) paper in this volume, "Science of chaos or chaos in science?" As his title telegraphs, Bricmont, like Goldstein, is concerned chiefly with willful worldview implications of physical theory propagandized by acclaimed scientists—here specifically Nobelist Ilya Prigogine: "It is a sad fact that those ideas that were so nicely explained by Boltzmann a century ago have to be reexplained over and over again." In sum, these papers, each with its well-taken points, are an embarrassment to the organizers' hordes-without-the-gates thesis.

Finally, some words on the concluding section of papers, Education. Here one finds Ivy-disparaging physicist/popularizer James ("grew up on the wrong side of the tracks") Trefil confidently hawking his snake-oil cure for scientific illiteracy, flanked by Harvard economist/historian/administrator Henry ("I accepted the invitation . . . with great hesitation") Rosovsky and Harvard physicist/philosopher/historian Gerald ("I too do not advise throwing furniture") Holton, member of the conference's organizing committee. Holton, like several others central to this enterprise (Levitt and philosophers Susan Haack, Oscar Kenshur, and Noretta Koertge—each of the last three has two papers in the volume), is sufficiently attuned to postmodern critiques and criteria, and to the normative order of our postmodern world, that he frames the issue not primarily as the truth of science but as "the moral authority of science"—"the moral" being indeed the dimension of our intellectual lives rediscovered in postmodernity. After expressing his dismay that "the constructivist point of view had found its way" into early drafts of the National Science Education Standards "prepared under such high auspices" (no irony *intended*) as the National Academy of Sciences, the National Research Council, and the National Science Foundation and then, on better grounds, deploring the negligible role accorded to science and technology in the since-revised National Standards for United States History, Holton concludes with

> a third example where an enterprise with national scope, distinguished patronage, and years of labor resulted in a severely flawed educational presentation of science and technology in our time. This is of course the exhibit "Science in American Life," now showing as a permanent installation at the National Museum of American History of the Smithsonian Institution in Washington (not to be confused with the plans for the Enola Gay exhibition at the National Air and Space Museum).

But,

> There is, after all, hope that the prejudicial and unbalanced representation of science for the education of a national audience is going to be corrected. The main reason for this rethinking is that . . . at last a scientific society—specifically the American Physical Society—blew the whistle loudly . . . . The chairman of the Board of Directors of the American Chemical Society also made the principal concerns of his society known to the Smithsonian. . . . As a result of these communications, the Smithsonian has promised to revise at least the most egregious parts of the "Science in American Life" exhibit. When that actually happens, the principle I am advocating will have been demonstrated again: *The moral authority of science, as of any professional field, depends importantly on asserting its sense of self.*

This was written in the summer of 1995. But now, if, as has proved to be the case, the changes actually made in the "Science in American Life" exhibit are few and insubstantial, even while the Smithsonian was quick to make drastic changes in its Enola Gay exhibition, would we not have to conclude that the moral authority of the American physicists and chemists is greatly inferior to that of the members of the Veterans of Foreign Wars and the Air Force Association? But can it be in the interest of science and reason so to confuse "moral authority" with political muscle? Is it not, indeed, a betrayal of modernity and its project of enlightenment so to couple "the moral" with "authority"?

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Browsings

Behavioral Neurology and the Legacy of Norman Geschwind. Steven C. Schachter and Orrin Devinshy, Eds. Lippincott-Raven, Philadelphia, 1997. xvi, 304 pp., illus. $110. ISBN 0-397-51631-2.

A memorial volume in which 31 associates of the late neurologist, who died in 1984, offer "personal perspectives" and accounts of his work on disorders of language and other higher cortical function, epilepsy, and handedness and cerebral asymmetry.

The Cambridge Illustrated History of Astronomy. Michael Hoskin, Ed. Cambridge University Press, New York, 1997. ix, 392 pp., illus. $39.95 or £24.95. ISBN 0-521-41158-0. Cambridge Illustrated Histories.

Accounts by Hoskin, Owen Gingerich, and several others covering astronomy from prehistory to the mid-20th century, with color and black-and-white illustrations showing heavenly bodies and their movements, instruments used to observe them, and some of the observers.

Dreams, Stars, and Electrons. Selected Writings of Lyman Spitzer, Jr. Lyman Spitzer, Jr., and Jeremiah P. Ostriker, Eds. Princeton University Press, Princeton, NJ, 1997. xvi, 537 pp., illus. $99.50 or £75, ISBN 0-691-03702-7; paper, $39.59 or £30, ISBN 0-691-02797-8.

Thirty-two reprinted papers on interstellar matter, stellar dynamics, space science, plasma physics, and other topics by the Princeton astrophysicist, who died 31 March.

A History of Chemistry. Bernadette Bensaude-Vincent and Isabelle Stengers. Harvard University Press, Cambridge, MA, 1996. 305 pp., illus. $35 or £25. ISBN 0-674-39659-6. Translated from the French edition (1993) by Deborah van Dam.

A French work reviewed in *Science* **264,** 997 (1994) now appears in English.

Unsolved Problems in Astrophysics. John N. Bahcall and Jeremiah P. Ostriker, Eds. Princeton University Press, Princeton, NJ, 1997. xvi, 377 pp., illus. $69.50 or £55, ISBN 0-691-01607-0; paper, $24.95 or £19.95, ISBN 0-691-01606-2. Princeton Series in Astrophysics. From a conference, Princeton, NJ, April 1995.

Expositions by "leading astrophysical researchers" of 18 problems (six having to do with cosmology and large-scale structure, three with galaxies and quasars, and nine with "astrophysical laboratories"), prepared with the needs of a second-year graduate student looking for a thesis topic in mind.

The Westerbork Observatory, Continuing Adventure in Radio Astronomy. Ernst Raimond and René Genee, Eds. Kluwer, Norwell, MA, 1996. x, 266 pp., illus. $95, £64, or Dfl. 145. ISBN 0-7923-4150-3. Astrophysics and Space Science Library, vol. 207.

Twelve essays bearing on past, present, and future work at a Netherlands facility celebrating its 25th anniversary.

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Other Books Received

Atlas of the Oceans. Wind and Wave Climate. Ian R. Young and Greg J. Holland. Pergamon (Elsevier Science), Tarrytown, NY, 1996. xvi, 241 pp., illus. $265 or NLG 420. ISBN 0-08-042519-4.

Chaos. An Introduction to Dynamical Systems. Kathleen T. Alligood, Tim D. Sauer, and James A. Yorke. Springer-Verlag, New York, 1996. xviii, 603 pp., illus., + plates. Paper, $39. ISBN 0-387-94677-2. Textbooks in Mathematical Science.

The Chemistry Maths Book. Erich Steiner. Oxford University Press, New York, 1996. xii, 542 pp., illus. $80, ISBN 0-19-855914-3; paper, $29.95, ISBN 0-19-855913-5.

The Ethics of Human Gene Therapy. LeRoy Walters and Julie Gage Palmer. Oxford University Press, New York, 1996. xviii, 209 pp., illus. $27.95. ISBN 0-19-505955-7.

Ethics on the Ark. Zoos, Animal Welfare, and Wildlife Conservation. Bryan G. Norton *et al.*, Eds. Smithsonian Institution Press, Washington, DC, 1996. xxviii, 330 pp., illus. Paper, $16.95. ISBN 1-56098-689-1. Zoo and Aquarium Biology and Conservation.