

should be an answer to the Soviet test. Most agreed that the nuclear production capability of the AEC should be increased. But some felt that more was needed.

Ernest Lawrence, the inventor of the cyclotron, and Luis Alvarez, who was doing ingenious experiments using it, decided the time had come to make a major effort to develop Teller's thermonuclear weapon, the Super. They went to Washington and found enthusiastic support from the JCAE. The AEC was divided and asked the GAC for advice. At a meeting of the GAC at the end of October 1949, Oppenheimer asked all members to express their opinion before he gave his own. There was unanimous opposition to a crash program to develop the Super.

The military usefulness of the Super was questioned. Assuming that both sides would get the Super, the security of the United States would be further diminished if the yield of the bomb were increased by another factor 1000. The members of the GAC also felt it was morally wrong to introduce this additional step into the arms race.

The GAC did not prevail. After heated debate in Washington, President Truman decided in January 1950 to go full steam ahead with the thermonuclear development.

The trouble was that there was no design available. Teller's "classical Super" turned out, in many calculations by Ulam and others, to be far more difficult and costly than expected. There was the alternative of the Alarm Clock, but its yield was strictly limited. The lure of unlimited yield of the classical Super was irresistible.

So it went for a year, until early in 1951, when Ulam had the idea of compressing a thermonuclear secondary with the hydrodynamic shock produced by a primary fission bomb. Teller accepted the idea, improving it by using the pressure of the radiation from the primary, rather than hydrodynamic shock. The idea was immediately persuasive to everybody, including Oppenheimer, the GAC, and the AEC. Los Alamos, in 17 months, produced the first thermonuclear device, proved in the Mike test in the Pacific and yielding over 10 megatons.

This and many other developments are described in fascinating detail in *Dark Sun*. I can only admire the thorough research that is the basis of this book. Most of the story of the spies was new to me, and even some of the difficult engineering leading to the successful test of Mike. There were many conflicts of personality, in Washington and in Los Alamos. The book is full of suspense. Its only fault is that it kept me from doing other work.

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The Enola Gay Script

Judgement at the Smithsonian. PHILIP NOBILE, Ed. Marlowe, New York, 1995. xviii, 270 pp., illus. Paper, \$12.95.

The controversy that led to the cancellation of the Smithsonian Institution's Air and Space Museum exhibit centered on the *Enola Gay*, the airplane that dropped the atomic bomb on Hiroshima, has attracted much attention both here and in Japan as the 50th anniversary of the event has loomed on the horizon. Those who have pondered at second hand the expressions of outrage the planned exhibit evoked from veteran's groups and others and the generally quieter voices charging distortions in the critics' representations of the content of the exhibit will in this book find an opportunity to make some assessment of the matter for themselves. The book reprints, verbatim according to the editor, the original script for the exhibit, entitled "The Crossroads: The End of World War II, The Atomic Bomb, and the Origins of the Cold War." Beginning with a recommendation that "parental discretion is advised" and concluding that the "dilemma" posed by nuclear weapons "is not about to disappear," the 127-page script is divided into five main "units" with numerous subunits, typically about 200 words in length. The photographs and captions that were to be included in the exhibit are not included, but the script contains a small amount of other illustrative material. Only about a third of the book is given over to the script itself, which is placed between two essays by commentators obviously sympathetic to the original conception of the exhibit. In a 90-page introduction Nobile recounts and comments on the controversy in a punchy style, for instance characterizing Air Force historian Richard Hallion, whose 1993 memo characterizing the text as "a great script . . . obviously based on a great deal of sound research" is quoted on the cover of the book, as "prematurely honest. Faster than you can say Pearl Harbor, he got with the Pentagon program and morphed into an ardent enemy of the Smithsonian." A still lengthier afterword by Stanford University historian Barton Bernstein, who was a member of the exhibit's Advisory Board, summarizes the various views concerning the decision to drop the atomic bomb that were expressed by political and military leaders of the time or have been developed by scholars since the event and gives his own commentary on the Smithsonian events, expressing the hope that though in the short run the opponents of the exhibit defeated the Air and Space Museum's at-

tempt at "distilling the existing scholarship on the A-bomb for public consumption" the controversy itself will bring heightened attention to the issues. Both Nobile and Bernstein (the latter with over 200 notes) cite a variety of source material bearing on the controversy, and the book includes an index to the exhibit script. A note from the publisher states that the work was prepared without any participation from Smithsonian staff.

Katherine Livingston

Books Received

Affine Lie Algebras and Quantum Groups. An Introduction, with Applications in Conformal Field Theory. Jürgen Fuchs. Cambridge University Press, New York, 1995. xiv, 433 pp., illus. \$100; paper, \$39.95. Cambridge Monographs on Mathematical Physics. Reprint, 1992 ed.

Biogeochemical Monitoring in Small Catchments. Jiří Černý et al., Eds. Kluwer, Norwell, MA, 1995. x, 432 pp., illus. \$259 or £166 or Dfl. 395. From a symposium, Prague, Sept. 1993. Reprinted from *Water, Air and Soil Pollution*, vol. 79, nos. 1-4 (1995).

Current Topics in Primate Vocal Communication. Elke Zimmermann, John D. Newman, and Uwe Jürgens, Eds. Plenum, New York, 1995. x, 286 pp., illus. \$89.50. From a congress, Kuta-Bali, Indonesia, Aug. 1992.

Diazo Chemistry. Vol. 1, Aromatic and Heteroaromatic Compounds. Heinrich Zollinger. VCH, New York, 1994. xiv, 453 pp., illus. \$115.

Experiments in Plant Tissue Culture. John H. Dodds and Lorin W. Roberts. 3rd ed. Cambridge University Press, New York, 1995. xiv, 256 pp., illus. \$59.95; paper, \$24.95.

Feminism and Nursing. An Historical Perspective on Power, Status, and Political Activism in the Nursing Profession. Joan I. Roberts and Thetis M. Group. Praeger, Westport, CT, 1995. xxiv, 371 pp. \$65.

Guidance and Control 1995. Robert D. Culp and James D. Medbery, Eds. American Astronautical Society, San Diego, 1995 (distributor, Univelt, San Diego). xx, 580 pp., illus. \$120; paper, \$90. Advances in the Astronautical Sciences, vol. 88. From a conference, Keystone, CO, Feb. 1995.

The History of Accelerator Radiological Protection. Personal and Professional Memoirs. H. Wade Patterson and Ralph H. Thomas, Eds. Nuclear Technology, Ashford, UK, 1994. xiv, 445 pp., illus. \$60 or £33.

Introduction to the Modern Theory of Dynamical Systems. Anatole Katok and Boris Hallett. Cambridge University Press, New York, 1995. xviii, 802 pp., illus. \$79.95. Encyclopedia of Mathematics and its Applications, vol. 54.

The Last Panda. George B. Schaller. University of Chicago Press, Chicago, 1994. xx, 299 pp., illus., + plates. Paper, \$13.95. Reprint, 1993 ed.

Publishers' Addresses

Below is information about how to direct orders for books reviewed in this issue. A fuller list of addresses of publishers represented in *Science* appears in the issue of 26 May 1995, page 1220.

Marlowe and Company, c/o Publishers Group West, P.O. Box 8843, Emeryville, CA 94662. Phone: 800-788-3123; 510-658-3453. Fax: 510-658-1834; 510-658-1934.

Simon and Schuster, 200 Old Tappan Rd., Old Tappan, NJ 07675. Phone: 800-223-2336; 201-767-5000. Fax: 800-445-6991.