The AEC: Notes from Inside

Forging the Atomic Shield. Excerpts from the Office Diary of Gordon E. Dean. ROGER M. ANDERS, Ed. University of North Carolina Press, Chapel Hill, NC, 1987. xxxii, 309 pp. $27.95.

President Truman's second term, January 1949 to January 1953, was a watershed in the evolution of U.S. nuclear policy. Those years witnessed a dramatic series of policy decisions in the nuclear field, and the edited office diary of Gordon Dean provides an important historical source for studying their origins and implications. A former law partner of Senator Brien McMahon, who was chairman of the Joint Atomic Energy Committee, Dean joined the Atomic Energy Commission (AEC) in May 1949 and as chairman from July 1950 to June 1953 contributed to an era that "marked a break from a scarcity of atomic weapons and movement toward the atomic plenty of the 1960s and later" (p. 24). Dean's secretary recorded and summarized his office telephone calls during Dean's AEC membership, and Anders has gathered them here, along with various aide-mémoire, to reveal the views and management style of a significant participant in nuclear policy-making. These are not the musings and inner thoughts of reflective man; they are the jottings and matter-of-fact policy reflections of a busy administrator.

Anders does a first-rate editorial job. He provides an excellent overview of context and central themes in a 30-page opening essay. He introduces carefully each of the book's six chapters; indeed, the thoroughness of his prefatory summaries sometimes renders anticlimactic the reading of the diary entries themselves. Anders also retains balance in his commentary. He praises Dean's political and administrative skill as AEC chairman without suspending critical judgment on Dean's policy positions. Anders notes, for example, Dean's simple-minded anti-communism, his general disregard of radiation hazards from nuclear testing, and his lack of concern over how his views might have contributed to the nuclear arms race.

Dean became AEC chairman at the beginning of the Korean war, and his first year, detailed in chapters 2 and 3, proved the most strenuous of the 4-year term. The outbreak of the war stunned Washington and the Truman White House. As one consequence, Dean supported a huge expansion of uranium and plutonium facilities for weapons production, including a new gaseous diffusion plant and an additional three reactors, totalling $1.4 billion and equal in cost to all facilities erected by the Manhattan Engineer District during World War II. He also championed continental nuclear testing to advance fission weapons programs, which Truman approved in October 1950, with tests inaugurated in early 1951. And he supported Edward Teller's campaign for the thermonuclear program. Lesser policy issues also clamored for attention, such as what details to reveal in court about the atomic bomb during the Rosenberg trial. But it is the policy debates over testing and weapons development, not spies or security issues, about which the diary is most revealing.

The book is for the specialist, not the general reader, and among the various bits of information close readers will find intriguing is the claim that intelligence reached Truman in April 1951 that the Soviets would enter the war and combine with the Chinese to drive the U.S.–United Nations forces out of Korea. "For the next few weeks," according to Anders, "President Truman and his advisers had to consider whether World War III was imminent" (p. 107). The first reaction of the Joint Chiefs of Staff to the news was to demand immediate transfer of nine complete atomic bombs to the Air Force. Dean, with official, civilian responsibility for the stockpile, urged a National Security Council discussion before any decision, but Truman took independent action. These are the kinds of issues on which the diary is most useful.

The diary also explores the question of tactical nuclear weapons, the central topic of chapter 4 and a major preoccupation for Dean during the June 1951–January 1952 period. Dean drew no distinction between conventional weapons and tactical nukes and favored their use in Korea. The book also describes elements of a second major expansion in the nuclear program authorized in January 1952 and offers information on Edward Teller's successful struggle, over Dean's objections, for a second laboratory for weapons testing, established eventually at Livermore, California.

The diary's significance wanes as the Eisenhower forces come into Washington, after the Republican election victory of 1952. We observe Dean defending his agency against budget cuts and making ready to enter private industry, first at the investment firm of Lehman Brothers and ultimately as a vice-president of General Dynamics Corporation, a major defense contractor. Unfortunately, Dean's life was cut short by a plane crash in 1958. In the meantime he had been present at the creation of America's nuclear arsenal, and, according to this diary at least, without any doubt as to the aptness of his handiwork.

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A Chronicle of Medicine

The Changing Humors of Portsmouth. The Medical Biography of an American Town, 1623–1983. J. WORTH ESTES and DAVID M. GOODMAN. Countway Library of Medicine, Boston, 1986 (distributor, Science History Publications, Canton, MA). xviii, 363 pp., illus. $19.95.

A physician and a historian have teamed up to write this medical history or, as they call it, medical biography, of a New England town, Portsmouth, New Hampshire, over 360 years. They focus most particularly on the medical practitioners and medical institutions in the town, following physicians and hospitals through the years. They do not analyze the health care experiences of patients, nor do they try to present a composite picture of diseases or of changing medical problems over time. The context in which medicine was practiced and hospitals were developed and run is an important theme in the book, and so medical public relations as revealed in the local newspapers becomes a significant part of this story.

The authors believe that medical history has suffered from a lack of specific archival data collection, and this book is an attempt to address that need by providing detailed local data over a long period of time. To a great extent the authors are successful in the attempt, and thus Portsmouth becomes significant to a broader audience as a case study of how professional organization, relations between physicians and community, the rise of hospitals, their staffing, administration, and financing, and the role of auxiliary personnel actually unfolded. Particularly when they concentrate on the history of the Portsmouth Hospital do the authors reveal important changes over time and show how

the medical profession learned to maneuver in an increasingly complex world.

The archival digging that was important to the study paid off, and readers will be fascinated by many of the stories uncovered in newspapers, official records, and private papers. Indeed, it is in providing concrete, anecdotal evidence that the book will make its main contribution. For example, the diary of Lizzie Woods, from 1888 to 1898 the Portsmouth Hospital supervisor, provides revealing daily detail about hospital life.

For all its value in providing local examples of national trends, the book is, unfortunately, not fully satisfying as historical scholarship. First, the authors' or publisher's decision not to include notes keyed to the text is frustrating. The authors provide notes at the end of each chapter to indicate their major research sources and to make connections to historical literature, but the lack of references to document particular points will make it difficult for future scholars to build on this study.

A second cause for disappointment in the book as history lies in the authors' frequent use of present-day therapeutic knowledge for comparison with the past. Repeated references to the present make it difficult for the authors to provide a historical context for the events they recount, requiring instead consciousness of a medical march of progress, which somewhat distorts our understanding of the processes of historical change.

The omission of certain aspects of the town's medical "biography," most notably the experience of the people who sought out medical help and advice, is a further limitation. The authors give attention to people around regular physicians, including sectarian practitioners, nurses, and hospital administrators and volunteers, but they say little about patients. The study is lengthy as it is and sources for this group are much more difficult to obtain, but representation of the patients' perspective would have significantly enriched the story.

Estes, whose work is already known and admired among medical historians, and Goodman, whose contribution in local archives work is evident and welcome, have nevertheless made a significant contribution with this book. Portsmouth, New Hampshire, will now enter the growing list of American communities whose medical experiences have been examined carefully and thoroughly by historians. Such local studies continue to be crucial to the collective endeavor of uncovering our medical past.

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Melts in the Earth

Magmatic Processes. Physiochemical Principles. B. O. MYSEN, Ed. Geochemical Society, University Park, PA, 1987. x, 500 pp., illus. $65; to Geochemical Society members, $45. Special Publication no. 1. From a conference, Kona, HI, June 1986.

The objective of *Magmatic Processes: Physiochemical Principles* is twofold: to honor Hatten S. Yoder upon his retirement as director of the Geophysical Laboratory of the Carnegie Institution of Washington and to summarize the current state of research on magmatic processes. The 30 papers that make up the volume succeed nicely in the first task, and they touch on most of the important questions of igneous geology, geochemistry, and geophysics. How are magmas formed and how do melts reach the surface? Are melts deep in the earth similar to those near the surface, or are their properties fundamentally different? What can be inferred about magmatic processes from the igneous rocks and volcanic structures observed in the field? What exactly are the igneous processes associated with subduction zones and the formation of continental crust? Such questions are among the most basic in the earth sciences, and they form the main themes of this book.

The great variety of the contributions is a fitting tribute to Hatten Yoder's far-ranging interests during his 38-year career at the Geophysical Laboratory. As might be expected, due emphasis is given to phase equilibria pertaining to igneous rocks, both their experimental determinations and their geological applications. (Some of the authors are: D. C. Presnall and J. D. Hoover; P. J. Wyllie; D. H. Green, T. J. Falloon, and W. R. Taylor; K. Yagi and H. Takeshita; and M. L. Sykes and J. R. Holloway.) Yet the physical properties of silicate liquids (C. T. Herzberg; C. M. Scarfe, B. O. Mysen, and D. Virgo), of partially molten rock (D. L. Turcotte), and of magma chambers (R. T. Helz; M. P. Ryan; G. Brandeis and C. Jaupart) are also discussed at length. In addition, there is a good representation of numerical studies involving phase equilibrium and fluid dynamical models (S. Clark, F. J. Spera, and D. A. Yuen; M. S. Ghiorso and P. B. Kelemen; H. Nekvasil and C. W. Burnham). Notably missing are observational data pertaining to the application of radiogenic or noble-gas isotopic techniques and theoretical studies of the molecular modeling of silicate melts. However, these omissions are largely amended by the diversity of laboratory and field studies that are described (D. G. Fraser and W. Rammensee; A. Navrotsky; D. B. Dingwell; F. R. Boyd and S. A. Mertzman; D. K. Bailey and R. Macdonald; W. G. Ernst). Furthermore, several of the papers are really compact reviews that emphasize recent results (for example, D. L. Anderson; I. Kushiro; H. P. Taylor; B. O. Mysen).

The quality of the papers is generally high, with a few notable exceptions. However, some of the leading scholars in igneous research are not included, nor is their work adequately represented. These deficiencies weaken the impact of an otherwise stimulating book. A particular strength of this volume is its illustration of the geophysical approaches used to study igneous processes: in the field from the outcrop to the global scale, in the laboratory, and through modeling studies. This appropriately reflects the current trend of making geophysical studies as important to understanding magmatic processes as geochemical and geological studies have been in the past. In this regard, *Magmatic Processes* succeeds well in summarizing the present directions of igneous research.

The book is one of the most impressively produced proceedings volumes that I have seen. Considerable effort must have been put into the preparation and typesetting of the papers as well as the compilation of an extensive index. Yet it was produced in well under one year.

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Books Received

Constraints Theory and Relativistic Dynamics. G. Longhi and L. Lusanna, Eds. World Scientific, Singapore, 1987 (U.S. distributor, Taylor and Francis, Philadelphia). xvi, 351 pp., illus. $56. From a workshop, Florence, Italy, May 1986.

Contemporary Moral Controversies in Technology. A. Pablo Iannone, Ed. Oxford University Press, New York, 1987. xvi, 336 pp., illus. $29.95; paper, $12.95.

Fourth International Conference on Emerging Nuclear Energy Systems. G. Velarde and E. Mínguez, Eds. World Scientific, Singapore, 1987 (U.S. distributor, Taylor and Francis, Philadelphia). xiv, 481 pp., illus. $90. Madrid, June–July 1986.

Genetic Improvement in Yield of Wheat. Edward L. Smith, Ed. Crop Science Society of America and American Society of Agronomy, Madison, WI, 1986. x, 114 pp., illus. Paper, $18. From a symposium, Atlanta, GA, Nov. 1981. CSSA Special Publication no. 13.

International Meeting on Advances on Phase Transitions and Disorder Phenomena (Amalfi, Italy, June 1986). G. Busiello *et al.*, Eds. World Scientific, Singapore, 1987 (U.S. distributor, Taylor and Francis, Philadelphia). x, 577 pp., illus. $79.

Leslie Peltier's Guide to the Stars. Leslie C. Peltier. AstroMedia, Milwaukee, WI, and Cambridge University Press, New York, 1987. xiv, 185 pp., illus. Paper, $11.95.

Niels Bohr. A Centenary Volume. A. P. French and P. J. Kennedy, Eds. Harvard University Press, Cambridge, MA, 1987. xvi, 403 pp., illus. Paper, $14.95. Reprint, 1985 ed.

Partial Differential Equations of Hyperbolic Type and Applications. Giuseppe Geymonat, Ed. World Scientific, Singapore, 1987 (U.S. distributor, Taylor and Francis, Philadelphia). x, 178 pp., illus. $37.