BOOK REVIEWS

Selection of books for review is based on the editors' opinions regarding possible reader interest and on the availability of the book to the editors. Occasional selections may include books on topics somewhat peripheral to the subject matter ordinarily considered acceptable.

INFORMATION WEALTH WITH POVERTY POCKETS

Title Action of Ionizing Radiation on Ion-Exchange Materials

Authors E. V. Egorov and P. D. Novikov

Publisher Daniel Davey & Co., Inc., 1967

Pages iii + 251

Price $16.50

Reviewer Jerome Weiss

The authors state in the preface that this book was written to meet the needs of specialized workers in the fields of both ion exchange and radiation chemistry. The book is also intended for use by scientists and engineers working on the application of ion-exchange methods in processing radioactive materials, as well as for those interested in individual aspects of radiation chemistry. Most of these goals have been accomplished and the book does gather together a wealth of information that was formerly widely dispersed in the literature.

The first chapter gives an excellent review of ion-exchange materials and properties, and, consequently, is of value to those wishing to begin ion-exchange studies.

The section of the second chapter on dosimetry is very comprehensive and a valuable addition to the current radiation dosimetry literature. This section is followed by two less successful sections. The radiation of high polymers section is covered rather hurriedly and many generalizations are made. Let the uninitiated beware. Another weak spot in the book is the next section on the radiation chemistry of water and aqueous solutions. Although the authors claim to have covered the published literature up to 1965, it would have been more correct if they limited this claim to the Russian literature. Most of the data given in this section from other than Russian literature are obsolete. Although there has been a great deal of work done in England and the United States on this subject since 1958, there are no recent references in the bibliography.

The remaining four chapters cover the effects of ionizing radiation on cation-exchange resins, anion-exchange resins, other ion-exchange materials including membranes, and finally a speculative chapter on mechanism of radiation-chemical transformation in ion-exchange resins.

The two appendixes are extremely useful additions, one being a description of various ion-exchange materials and the other a compilation of published experimental data on the effect of ionizing radiation on ion-exchange materials.

Except for the shortcomings mentioned above, this volume is a well presented and illustrated reference book that covers an important subject in detail.

Jerome Weiss is a member of the Nuclear Engineering Department at Brookhaven National Laboratory, where he has been since 1951. His primary interests are in chemical dosimetry and organic radiation chemistry. His BA degree (1948) is from Cornell, and his PhD (physical chemistry, 1951) is from Indiana University.

OF WHOM THE BOOK TOLD

Title Manhattan Project: The Untold Story of the Making of the Atomic Bomb

Author Stephane Groueff

Publisher Little, Brown and Co., 1967

Pages xii + 372 + 16 pp. pictures

Price $6.95

Reviewer Charles D. Coryell

Without going into technical details, this book gives a general picture of the wartime production on a ton-per-year scale of ^{235}U and ^{239}Pu, and the resulting "Little Boy" (gun assembled) and "Fat Man" (implosion) nuclear bombs that were used in August 1945. There is the drama of the combination of people like General Groves, scientists, engineers, and industrial magnates who faced repeatedly seemingly impossible tasks—and who then completed these tasks fairly effectively.

The author, a professional newsman from Europe, has been chief of the New York Bureau of Paris Match since 1956. He interviewed 175 Manhattan Project alumni in all; 8 from the army and 52 from university circles, including the 17 from the wartime Los Alamos Laboratory. The remaining 115 are from a fairly representative set of industrial contractors. He even presented personal sketches of several girl operators of the Y-12 "cubicles" who controlled the dials of the smallest units of the electromagnetic separation process. Mr. Groueff

likes to present the issues as a series of personal anecdotes; the experiences of about 120 people appear in this book. These anecdotes, generally quite interesting, are grouped in sets of one to three in a sequence of 53 untitled chapters, presented in rough time sequence.

The book begins on Sept. 17, 1942 with the appointment of Brig. Gen. Leslie R. Groves as head of the Manhattan District of the Army Corps of Engineers, the executive organization for all of the manifold scientific, industrial, and governmental aspects of the Manhattan Project. The author employs a flashback technique to point out basic discoveries and earlier projects for collecting fissionable material. Most of the developments are presented as seen through Gen. Groves' eyes at the times of needed production decision. He was a hard-driving, indefatigable man of enormous capacity for detail, never lacking in self-confidence, who contributed greatly to the achievement of Project goals. However, it was by no means easy to work under him. The book overly glorifies the general as a benign and ever-cheerful boss, a super-whizz of an industrialist among industrialist whizzes.

The book is good on people, but presents the Project as a set of industrial ventures. It gives much more personalized pictures of decision-making (but fair ones) than does the official Project history, "The New World 1939/1946" by R. G. Hewlett and O. E. Sanderson, Jr. (Pennsylvania State University Press, 1962). It also ends abruptly with the wartime bombs on Hiroshima and Nagasaki, with no attention whatsoever to broad scientific, industrial, military, or international implications of atomic energy, or to the United States Atomic Energy Commission that followed the Manhattan Project on Dec. 31, 1946. The book is good as far as it goes, but does not give, as its subtitle promises, much previously untold technical information.

Charles D. Coryell, professor of chemistry at M.I.T. since 1946 (PhD, Caltech., 1935), led fission-product chemistry work for the Plutonium Project at the University of Chicago and at what is now Oak Ridge, starting in May 1942, well before the Army formed the Manhattan Project. Three years' residency at Munich, Rehovoth, and Paris plus numerous trips abroad and a warm spirit that is contagious have won him thousands of loyal friends all over the world. Consultantships to three national laboratories and several companies attest to the respect in which he is held in the scientific community. Coeditor, with Nathan Sugarman, of the 2100-page record of wartime research: "Radiochemical Studies: The Fission Products," National Nuclear Energy Series, McGraw-Hill, 1951, Professor Coryell remains very active in nuclear chemistry and radiochemistry.

PRACTICAL NUCLEAR KILOWATTS

Title Nuclear Power Plant Technology

Author J. George Wills

Publisher John Wiley & Sons, Inc., 1967

Pages xi + 323

Price $16.50

Reviewer Edward C. Pandorf

The author, Mr. J. George Wills, is an engineer and writer by training and experience, currently with the Mobil Oil Corporation Research Department. In his Preface, Mr. Wills says that the idea for the book was conceived within the Mobil research organization, presumably for making available a review of the fundamentals of nuclear power and a current "state-of-the-art" report on the nuclear power industry for use both within the Corporation and by the technically oriented segment of the reading public.

Nuclear Power Plant Technology is an easily readable book, requiring a modest technical background and interest in nuclear physics and power plant engineering. Its emphasis is on practical applications rather than design details, but the author is thorough enough in the coverage of specific processes, components, and systems, to give the reader a fairly comprehensive view. The reasons why some things must be done and the choices where alternatives are available are given in such examples as the selection of reactor systems, fuels, moderators, coolants, controls, shielding, siting, and waste disposal.

In my opinion, the author is to be congratulated for resisting the temptation to touch on *every* aspect of nuclear power in this one volume. The descriptions of hardware, systems, and design philosophies are interesting and informative. No attempt is made to document operating experience, except in very specific areas of interest; and economic considerations are omitted almost entirely, because these could easily double the size of the volume.

The book includes a wealth of diagrams, tables, schematics, and photographs to expand on the text and to illustrate details ranging from simple components to cutaway perspectives of Dresden-1, Harwell, Hinkley Point, Piqua, and Indian Point-1. It contains tabulations of the elements, uranium ores, properties of coolants and moderators, radiation dose units and exposure limits, shielding compositions, and worldwide nuclear power plants—operating, under construction, and planned.

The last two chapters of the book cover radiation effects on petroleum products and lubrication recommendations. I found these fascinating since they cover lubrication aspects of nuclear power plant components more thoroughly than any previous exposure I had in this field.

The book concludes with a glossary of nuclear technology which is handy for reference by a part-time nuclear engineer who may occasionally get rusty on terms, definitions, or constants.

Mr. Wills has made a contribution in the intermediate level of nuclear technology which can assist power engineers in obtaining a nuclear orientation, and which may help electric utility companies in their information programs for governmental regulatory agencies and the general public

Edward C. Pandorf has spent 30 years as a mechanical engineer with The Cincinnati Gas & Electric Company, over half of which has involved nuclear power. In 1951 he went to KAPL for one year as a consultant on the prototype power plant for the submarine "Seawolf." In 1952-54 he