

Book Reviews

(*Editor's Note: Ray C. Armstrong is Assistant Manager for Operations, Oak Ridge Operations Office of USAEC, in which capacity he supervises the Production, Feed Materials, Reactors, and Research and Development Divisions. Prior to this, he was Manager of the Production Division, and as such he was directly responsible for the management of nuclear materials.*)

Management of Nuclear Materials. Edited by RALPH F. LUMB. D. Van Nostrand Company, Inc., Princeton, New Jersey, 1960. \$16.50. 516 pp., 164 photographs or figures, in addition to approximately 100 tables, many of which are not numbered.

The book is excellently bound, the format is very good and the index, glossary, and table of contents are accurate and useful. Only two minor typographical errors were noted by the reviewer. Although there is an occasional lapse into the text-book method of presentation, the book is basically a reference book and as such is quite well written. There is some repetition of details but no more than would be expected in a work involving so many authors each writing about the same general subject of control over nuclear material.

The author, Dr. Ralph F. Lumb is Director of Western New York Nuclear Research Center, University of Buffalo, and former Vice President, Quantum, Inc. A graduate of Clark University (1947) with an A.B. in Chemistry, he received his Ph.D. from the same University in 1951. After a brief teaching career, Dr. Lumb joined the AEC, where as Chief of the Chemistry and Physics Branch, Division of Nuclear Materials Management, he was responsible for appraising the technical aspects of the management of nuclear materials by AEC Operations Offices and contractors. The author is, therefore, highly qualified as editor for this book, from the standpoint of his first-hand knowledge of the subject matter, his understanding of the problems that confront newcomers to the field of nuclear materials management, and his selection of highly qualified contributors to the separate chapters. The authors of the individual chapters are themselves qualified as specialists in the subjects they discuss.

The primary purpose of the book is to accumulate, in one place, the basic philosophies and practices developed over a period of 13 years by the U. S. Atomic Energy Commission and its contractors in the field of nuclear materials management. This purpose has been achieved in a commendable manner and the book is well worth reading on that account. The presentation is kept sufficiently general by the selection of examples from each major AEC program, while retaining enough specifics from each process to give the reader a reliable picture of the problems he would encounter if his process was limited to, say, fuel element fabrication or recovery of scrap.

This is not a book for the casual reader but will serve admirably as a reference of workable nuclear materials management policies, and will be very useful at the plant management level, as well as the field supervisory level, of organizations undertaking the processing of nuclear materials whether as a Licensee or under contract with the AEC. The reasons for the need for contributions from a variety of professional disciplines, to establish and maintain an effective nuclear materials management function, are clearly evident in the book. The chemist, physicist, accountant, auditor, engineer, reactor technologist, and statistician will find his specialty represented in the book, and not merely mentioned in passing. This characteristic need for a working knowledge on a broad professional front may be disconcerting to the newcomer in the field of nuclear materials management, and to the reader of the book, but it is a reality that is not overemphasized.

The newcomer to the field of nuclear materials management may have some difficulty in scaling down the procedures to less grandiose processes than those described in the book. Even this difficulty is minimized as far as possible by the attention given to explaining the reasons for development of certain records, measurements, or handling procedures. The book will probably be of measurable value to the newcomer, however, since the scaling down that will necessarily be required will be less tedious than developing a reasonable and effective control system from the beginning.

The book adequately illustrates the need for—and demonstrates the practical accomplishment of—a materials management system that is woven into the operating organization, as distinguished from a system that is superimposed as an additional burden on production or research responsibilities.

RAY C. ARMSTRONG
*Assistant Manager for Operations
USAEC Oak Ridge Operations
Oak Ridge, Tennessee*

(*Editor's Note: Dr. Tobias has been employed at Oak Ridge National Laboratory for the past 10 years. He has been interested in heat transfer research, and the measurement of physical properties of reactor materials. In recent years he has been engaged in reactor analysis work.*)

Handbook of Chemistry and Physics. CHARLES D. HODGMAN, M.S., Editor-in-chief; 42nd edition. The Chemical Rubber Publishing Company, Cleveland, 1960. \$12.00.

The Chemical Rubber Publishing Company's Handbook is, as everyone knows, a book which talks of many

things; if no references to shoes or ships are made, the reader can find mention of sealing wax (p. 3299) and of cabbage (p. 1977). He can also examine the differences between the physical properties of chaulmoogra and porpoise oils on pp. 1466-1468— and of 71 other natural fats and waxes. Such items sound a little comical when picked out of the air, but I am sure we have all been grateful at one time or another that such bits of exotic knowledge could readily be found in a book which can still be held in one hand.

The editors are to be commended for their efforts year after year to keep up-to-date. But even though the preface of this edition cites a lengthy list of new tables, I wonder if it is wise or necessary to attempt to publish a new edition every year, a practice which must be something of a hectic, if not desperate, enterprise. There is a certain unevenness in quality about the various sections that could no doubt be removed if more time were permitted to elapse between editions. A little novelty could well be traded for substantial increases in order and accuracy. In 3500 pages there are bound to be misprints at the very least. (I hereby note two—one on p. 289 and another on p. 323—with which I consider I have fulfilled this aspect of my book reviewer's duty.) If, for example, detailed references are given as on p. 1767 for the section on specific rotations of the amino acids, they should be given properly in the table of resistivities on p. 2589, or else omitted. There is also the matter of excessive significant figures. The table of thermal conductivity of organic compounds shows four significant fig-

ures for the data, and one is also instructed to convert from metric to English units using a five digit number. The implied accuracy does not exist. The section on Laplace and Fourier transforms is a copy of the table in Professor Churchill's book on operational mathematics—which is acceptable—but the reader should be referred to either the British Admiralty Tables or better, to the Bateman Project tables for additional information. As for the Fourier transforms discussed, they are not "the" Fourier transform. There are also sections so sketchy as to be nearly worthless, such as the one on approximations. I checked the section on antidotes of poisons and burns with a physician who described it as giving too much information for a layman and not enough for a medical man.

It must, of course, be recognized that if one argued over every decimal point and statement, the book would never get past the table of logarithms and perhaps a tabulation of the density of water between 20 and 30°C. The defects cited above do not seriously impair the general usefulness of the handbook, but they do tend to detract from the authoritative position it should hold. There is no problem here that cannot be worked out in time, and I think the many users of this popular book are willing to wait.

As usual, the handbook appears handsomely and sturdily bound—and really is a *hand-book*.

MELVIN TOBIAS
Oak Ridge National Laboratory
Oak Ridge, Tennessee