

the Atomic Energy Commission. The resultant compact volume is authoritative, having been written and edited by members of the staff at the Oak Ridge National Laboratory, a center where an enormous number of radiochemical analyses has been performed. The book is intended to provide the uninitiated with sufficient information for him to plan and commence operation with only limited direct assistance from experts. Clearly not all relevant material could be included in a relatively small guide, and the authors have restricted the more detailed discussions to those subjects that have been incompletely treated in other compilations or have been discussed primarily in scientific journals and reports. Nevertheless, appropriate lists of references are provided throughout.

Although most of the chapters in the book have been written by different authors, the subject has been approached in a systematic and consistent manner. To indicate the arrangement it is convenient to list the titles of the different chapters: (1) "Basic Nuclear Properties and Activation Analysis," by Harley H. Ross; (2) "Reactor Neutron Flux: Characteristics and Uses," by Frank F. Dyer; (3) "Nonreactor Neutron Sources," by James E. Strain; (4) "Radiochemical Separations," by Harley H. Ross; (5) "Radiation Detectors and Counting Statistics," by Richard L. Hahn; (6) "Scintillation Counting Techniques," by James S. Eldridge; (7) "Present Byways and Future Trends in Activation Analysis," by William S. Lyon, Jr.; and (8) "Practical Examples of Activation Analysis," by E. Ricci.

There are two appendices. Appendix A tabulates the theoretically calculated sensitivity for each element and also concentrations of the element found in a wide variety of materials. Copious references to the original investigations are listed. Appendix B presents a brief general survey of safety measures and licensing requirements.

Some features of the book deserve particular mention:

The energy distribution of neutrons in reactors and flux monitoring are dealt with in greater detail than in other books on activation analysis.

A realistic appraisal of the use of 14-Mev. neutron generators is made and limitations as well as advantages are clearly presented.

Brief information regarding the use of semiconductor detectors is given. Although such solid-state devices may not be very useful in activation analysis at present, they possess potential for future development.

The applicability of NaI(Tl) crystal scintillation spectrometry in activation analysis is well illustrated, and factors governing the choice of a multichannel analyzer are given.

In Chapter 8, four well-chosen examples of activation analysis are dealt with in detail. Relevant calculations are presented in full, and the account provides the beginner with a clear insight into "how it is done."

The general standard of the book is high and it would be invidious to select points for criticism. However, I consider that the principle of substoichiometric separations should have been discussed (in Chapter 4). Also, the extension of gamma spectrometry by the use of coincidence techniques could have been mentioned with advantage in Chapter 6.

The printing and production of the volume are good. Proof-reading has been done quite well. (It is perhaps ironical that on page 12, Mg^{28} has been written for Mg^{24} in a subsection headed Errors!)

All persons who are concerned with activation analysis should be glad to possess a copy of this book.

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The Nuclear Properties of the Heavy Elements. Volume I. Systematics of Nuclear Structure and Radioactivity. Volume II. Detailed Radioactivity Properties. Volume III. Fission Phenomena. I and II by EARL K. HYDE, Senior Chemist, and ISADORE PERLMAN, Associate Director and Professor of Chemistry, Lawrence Radiation Laboratory, University of California, Berkeley, and GLEN T. SEABORG, Chairman, U. S. Atomic Energy Commission, Professor of Chemistry, University of California, Berkeley. III by EARL K. HYDE. Prentice-Hall, Inc., Englewood Cliffs, N. J. 1964. I: xv + 407 pp. 16 × 23.5 cm. \$15.00. II: xvi + 698 pp. 16 × 23.5 cm. \$25.00. III: xviii + 519 pp. 16 × 23.5 cm. \$18.00.

The understanding of the properties of nuclear matter is expanding rapidly, paralleling the increasing multiplicity of available high-

speed digital computers and nuclear particle accelerators. The literature on any given topic, as in most fields, tends to be spread in bits and pieces throughout a variety of journals, and to make a bad situation worse, a large amount of significant work is to be found only in laboratory reports which are never quite submitted for publication. The three volumes under discussion represent an attempt to correlate and integrate all the pieces of information, both theoretical and experimental, pertaining to the nuclear properties of the heavy elements; the authors have succeeded in providing a good perspective and in an authoritative manner.

Volume I reviews nuclear stability and nuclear mass equations, the independent particle model, the unified model, and theoretical models of α - and β -decay. The experimental knowledge of these processes is summarized, and the strengths and weaknesses of various theoretical treatments are illustrated with respect to the available experimental data. Volume I concludes with a discussion of general methods of synthesis of radioactive isotopes.

Volume II concentrates on an isotope-by-isotope summary (historical review, methods of synthesis, nuclear properties) of all isotopes of $Z \geq 82$. Not having any favorite isotopes to look up, the reviewer found the chapters on applications of heavy elements to geochronology and on synthesis of the transuranium elements of particular interest.

Volume III starts with a review of several models used to explain certain aspects of nuclear fission, followed by a quite complete summary and correlation of existing data on low, moderate, and high-energy fission, including fission induced with complex particles, mesons, and photofission. In keeping with the thorough and logical correlation provided by the authors, an excellent discussion of spallation mechanisms is also included in Volume III.

The material is presented in a logical sequence; the text has been skillfully woven with a profusion of lucid tables and plates to give "The Nuclear Properties of the Heavy Elements" an uncommon clarity of expression. The documentation is superb.

The authors have succeeded admirably in providing a perspective of the historical development and present understanding of certain features of nuclear matter, as well as pointing out the open problems for future solution. The reviewer looks forward to using Volumes I and III as supplements to the text in his nuclear chemistry course; all three volumes are invaluable as references for chemistry, physics, geology, or radiation biology research libraries.

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Experimental Chemotherapy. Volume III. Chemotherapy of Bacterial Infections. Part II. Chemotherapy of Fungal Infections. Chemotherapy of Rickettsial and Viral Infections. Edited by R. J. SCHNITZER, formerly Chemotherapy Department, Hoffmann-LaRoche Inc., Nutley, N. J., and FRANK HAWKING, Division of Chemotherapy and Parasitology, National Institute for Medical Research, London. Academic Press, Inc., 111 Fifth Ave., New York, N. Y. 1964. xviii + 647 pp. 16 × 23.5 cm. \$22.00 (until Dec. 31, 1964); \$25.00 (thereafter).

It can be predicted with considerable assurance that any chemist or biologist who is seriously interested in chemotherapy will find Volume III, as well as Volumes I and II of this outstanding series, irresistible. The series is outstanding because in it the wealth of otherwise widely scattered information on all important aspects of experimental chemotherapy has been collected, classified, condensed, described in meaningful fashion, and made readily retrievable by means of excellent subject indexes. In recent years, many first rate reviews of the chemotherapy of infectious diseases have appeared and several reviews on the characteristics and uses of specific groups of chemotherapeutic agents have been published. All of this material, and much more, has now been crystallized in three handy volumes. Nowhere else can one expect to find so much information on so many aspects of experimental chemotherapy in such concentrated form. Every medicinal chemist needs these books on his main shelf. The distinguished editors, the authors, and the publishers of this series all merit the highest commendation for a job well done.

In the first volume, parasitic diseases (protozoan and metazoan) were covered by eighteen chapters on the chemotherapy of specific kinds of infections, along with four ancillary chapters on historical aspects, toxicology, statistics, and "drug resistance." In the second volume, the chemotherapy of bacterial infections was dealt with,