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.

Peaceful Uses of Atomic Energy, Volume 14: Proceedings of the Fourth International Conference on the Peaceful Uses of Atomic Energy

Editor	International Atomic Energy Agency
Publisher	Unipub, Inc. (1972)
Pages	520
Price	$14.00
Reviewer	A. F. Rupp

The Fourth International Conference on the Peaceful Uses of Atomic Energy was held between September 6 and 16, 1971 in Geneva. The Proceedings, which contain the full texts of the papers presented, consist of 15 volumes. Volume 14 covers the 36 papers under Agenda Item 4.5, "Applications of Nuclear Techniques in Industry and in the Study of Natural Resources." Of the 36 texts, 64% are in English, 11% French, 6% Spanish, and 19% Russian, but abstracts for all of the papers are given in all four languages; discussions are in English. The Conference had an attendance of 4000, including a wide range of professionals in the physical and biological sciences, as well as administrative and business personnel, observers, and journalists. The meeting was said to be broader in scope than the Geneva meetings in 1955, 1958, and 1964, and this is reflected in the general semitechnical nature of papers in Vol. 14. The paper-backed volume itself is of a more convenient size ($6\frac{1}{4} \times 9\frac{1}{2}$ in.) than the awkward hard-backed ($8\frac{3}{4} \times 11\frac{1}{4}$ in.) proceedings of previous conferences.

This is a "non-book" in that it is a collection of individual papers on more or less related subjects. A quick comparison with the other volumes of the *Proceedings of the Fourth International Conference* leads me to believe that Vol. 14 is rather more miscellaneous in nature than the others; however, this is not unusual for radioisotope conferences and tends to point up the question of whether the utilization of isotopes and radiation is a clearly definable, coherent field in itself.

There are several discernible groups of papers: surveys or reviews of past and current isotope technology in the several countries; specific applications in instruments and controls; use of radiation for sterilization of food and medical equipment and polymerization of monomers impregnated into wood or concrete; and tracers in hydrology and sediment movement studies.

Ten papers cover general isotope applications in as many countries. Applications cited are for the most part generally familiar to most persons in radioisotope applications work: industrial radiography, radioactive source fabrication, thickness and tank gauging, radiation curing of polymers, etc. The larger countries, such as the United States, Japan, and the United Kingdom, reviewed newer work on heart pacemakers, isotopic power, and radiation-initiated synthesis of chemicals.

Of particular interest was the Russian paper (P/701) on the use of radioactive tracers in industrial processes. The Russians put radioactive tracers in plant process material much more frequently than is done in United States and European plants, apparently because of less restrictive radiation safety regulations. Readers interested in industrial tracers may wish to get the English translation of this paper.

Other subjects given special attention in one or more papers were sediment tracing and hydrology studies, wood and concrete polymers, tracers in environmental studies, and radiation sterilization of materials.

The references cited for the various papers in almost every case tended to be those of the country from which the paper originated. This could be of value to authors who are interested in building up complete bibliographies covering these subjects.

The *Proceedings of the Fourth International Conference*, Vol. 14, should probably not be considered as a source of original research data, but rather as an overview of nuclear applications work in the countries participating in the conference. Copies should be available for reference, but it is doubtful that individual research workers would choose it for their personal collections.

A. F. Rupp (BS, ChE, Purdue University, 1933) was assigned by the Du Pont de Nemours Company to the University of Chicago Manhattan Project in 1943; he worked at Clinton Laboratories and Hanford on the original graphite reactor and plutonium separations processes. In 1946, he organized the radioisotope program at Oak Ridge National Laboratory, which later also encompassed the stable isotope separations program. He has been director of the isotopes program during its entire existence up to this year and is now a consultant to ORNL. Mr. Rupp is a

member of the American Chemical Society and the American Institute of Chemical Engineers; he is also a Fellow of the American Nuclear Society and the American Institute of Chemists.

Assessment of Radioactive Contamination in Man

Editor	International Atomic Energy Agency
Publisher	Unipub, Inc.
Pages	698
Price	$21.00
Reviewer	Norman A. Baily

Assessment of Radioactive Contamination in Man contains the thoughts and recent work of the leading experts in this field. The status of research and technology (as of November 1971) with relation to this important problem which arises from the various current uses of radioactive nuclides is well summarized. The volume consists of 45 individual papers and the discussions which followed their delivery. As is stated in the Introduction, the meeting produced very little in the way of new technology. However, much new methodology has been introduced, such being aimed at increasing accuracy, sensitivity, and speed in assessing the degree of radioactive contamination in human subjects.

Dr. Morgan's introductory presentation is excellent and clarifies the reasons for the change from Maximum Permissible Concentration levels in man to the concept of Dose Commitment (rem to critical organ of reference man per μCi intake).

The book is divided into five major sections:

1. Direct Methods of Assessment
2. Indirect Methods of Assessment
3. Body Burden Assessment Programs
4. Distribution Studies and Dosimetry
5. Investigation of Accidents.

In addition to instrumentation and methodology, a considerable amount of actual uptake data and concentration of radionuclides found in man is given in the various papers. This makes the volume a handy reference for engineers and physicists normally expert in other aspects of the field.

Norman A. Baily is professor of radiology and chief of the Division of Radiological Physics and Engineering at the University of California, San Diego. His research spans the areas of dosimetry, radiobiology, and roentgen imaging techniques. He is a diplomate of the American Board of Radiology and the American Board of Health Physics.

Peaceful Uses of Atomic Energy, Volume 9: Isotope Enrichment; Fuel Cycles; Safeguards

Editor	International Atomic Energy Agency
Publisher	Unipub, Inc. (1972)
Pages	536
Price	$14.00
Reviewer	John A. Wethington, Jr.

This volume contains 34 compendia; although a comprehensive review is virtually impossible, a few comments are in order. Each paper endeavors to present "the state of the art" for a particular project in a particular country. In general, the authors have succeeded. The collection of references makes the book worth the price, and considering the present-day cost of books, this volume is a real bargain.

Isotope separation is of major interest to the reviewer. Seven papers deal with this subject and the the costs of enrichment services. The history of secrecy in centrifuge technology, as revealed in some of these papers, is fascinating. In 1960, workers in the United Kingdom, the Federal Republic of Germany, and the Netherlands—at the request of the United States Government—classified all centrifuge research and worked independently of each other. In 1968, workers in the three countries concluded that all were at the same level of achievement, and in 1970 these countries joined together and signed the Amelo Treaty of Collaboration. Commercial plants, owned and operated by the Tripartite Enrichment Organization, are now under construction. So goes secrecy!

Thirteen papers deal with fuel cycles. Lack of interest in thorium is apparent, since only four papers, all from foreign countries, treat this subject. The paper from the KEMA laboratories is the only one dealing with liquid reactors. This interesting area is obviously in a moribund state.

The area of greatest interest in this volume is safeguards analysis, objectives, and techniques. Fourteen papers, roughly 40% of the book, deal with this subject. These papers show that this is rapidly becoming a very active field with problems involving statistical quality control and inventory. New techniques in nondestructive testing are badly needed. The paper describing the U.S. Atomic Energy Commission Nuclear Materials Information System was fascinating, and it reflects the complexity of the problem.

John A. Wethington, Jr. (PhD, chemistry, Northwestern University, 1950), professor of nuclear engineering, has been at the University of Florida for twenty years. During this time, he spent two years at the Puerto Rico Nuclear Center and one year at the Lawrence Livermore Laboratory. His current interests include radiation effects, tritium transport in the environment, and natural radioactivity in the phosphate industry.

Peaceful Uses of Atomic Energy, Volume 12: Nuclear Methods in Food Production; Education, Training, Public Information

Editor	International Atomic Energy Agency
Publisher	Unipub, Inc. (1972)
Pages	531
Price	$14.00
Reviewer	C. L. Comar

As indicated by the title, this volume is comprised of papers presented in the given subject areas,