

## **SOMETHING FROM AND FOR ALMOST EVERYONE**

*Title* Industrial Radioisotope Economics, Technical Reports Series No. 40

*Publisher* IAEA, Vienna, Austria, 1965

*Pages* 549 + 27

*Price* \$11.50

*Reviewer* Alan Beerbower

This is not an easy book to review in the conventional manner, as it consists largely of reports from the 25 participating nations. These are followed by a series of seven "Technical and Economic Summaries" by individual authors, each of whom takes an international look at his specialty. Onto this is tacked a prediction of future trends indicated by present research, a panel discussion of "Obstacles to an Increased Use of Radioisotopes," and a brief conclusion. One might instead write a review on each of the four main sections, and this is, in fact, what is attempted here.

Section II, The National Reports, including the Introduction, Conclusions and the Questionnaire (Appendix I) are the necessary hardware, and can only be regarded as reference material. No one with an ordinary mind would be capable of reading straight through these reports and coming to any conclusion except that "there is a lot going on." To a person with a specific interest in a given country, that report will be found to be remarkably complete, concise, and to the point. For example, take Argentina (as first in line), and you obtain a fine picture of rapid and healthy growth in a country where the pace of such progress is greater than might be expected. This is illustrated in three tables and a summary. However, continuing through the alphabet to Yugoslavia becomes unbearable, as each country has naturally arrived at the same solutions to the same problems. The Introduction does a good job of reducing these reports into a common basis.

Section III, on the other hand, is eminently readable. Here each expert author has undertaken to analyze Section II in terms of a specific group of applications. The results are most impressive; the analysis is technical as well as economic, and anyone who is interested in the design, selection, or use of radioisotope equipment can find a wealth of information. If published alone, this section would constitute an excellent text for a course in current practices. All the articles, of course, also carry complete economic analyses from Section II. Not all, however, are equipped with bibliographies; these vary from none on gauging, to 104 on tracing. One problem area should be mentioned: The article on "Massive Irradiation" is not only short (eight pages) but seven of the pages are in French. It would seem that a translation of this one section could and should have been provided, especially since most of the applications cited are in English-speaking countries. On the whole, these articles are very

adequate, and location of the specific item wanted is not too difficult; nevertheless, one obvious improvement would have been the inclusion of an index.

Section IV, unlike the previous articles, is not international in scope but merely presents the USAEC program and its implications for future applications. A few pages of discussion at the end do broaden the viewpoint. Perhaps no one person in the world could give a truly international picture, and E. E. Fowler was certainly a good choice to present what is undoubtedly the largest program in the participating countries.

Section V presents a transcript of a panel discussion, including several of the authors of the above articles, on the obstacles to greater progress. It is not easy to read, nor to find specific points; like all such transcripts, it is disjointed and redundant. A condensation would have served the purpose far better (but I would not care to have to be the one to prepare it). Certainly, several important points are available to the diligent reader.

The Conclusions (Section VI) are admirably brief and to the point; the "Global Savings from Radioisotope Use" of between \$296 and \$400 million is adequately explained and qualified as to its uncertainties. The fact that 1961, 1962, and 1963 figures have had to be used is taken into account.

To summarize, one might consider that we have bound together a weighty reference source, a text book on modern uses of radioisotopes, and an economic analysis of the global situation. One or another of these aspects should certainly appeal to virtually every reader of NUCLEAR APPLICATIONS.

*Alan Beerbower has been employed since 1936 by various affiliates of the Standard Oil Company (N.J.) in New Jersey and Maryland, and has been at the Esso Research and Engineering Company in Linden, N.J., since 1958. He became Radiological Safety Officer at the Baltimore Refinery in 1954, where he carried out an extensive program; he is now one of the five such officers at Esso Research. He is co-authoring a book for early 1966 publication on "Radioisotope Engineering" (Reinhold Publishing Co.). A 1935 graduate of California Institute of Technology, he also has a Master's degree (chemical engineering) from Columbia University.*

## **THE PHENOMENOLOGY OF FRICTION**

*Title* Friction and Wear of Materials

*Author* Ernest Rabinowicz

*Publisher* John Wiley & Sons, Inc., 1965

*Pages* x + 244

*Price* \$12.00

*Reviewer* James M. Galligan

This book presents, in a condensed form, a phenomenological description of friction. The author, beginning with a brief description of mechanical properties of materials and the various strength properties associated with materials, covers in an informal manner the various aspects of wear, friction, adhesion, and lubrication.

These topics are more than adequately covered and illustrated with helpful sketches; much of the viewpoint is substantiated through the use of many graphs. Of special interest to the readers of this journal might be the coverage of the use of radioactive tracers to follow the wear process.

What is disappointing and not covered to any extent is the role that modern research techniques, such as low-energy electron diffraction, have played in unraveling many of the features of surfaces. The use of this technique, as well as others, could be quite helpful in bringing a more theoretical viewpoint to this subject.

If one wishes to have an up-to-date book on the phenomenology of friction, this book, in spite of its outlandish price per page, would be quite helpful, but it cannot serve as more than a text; i.e., it is not a research volume.

*James M. Galligan is a metallurgist serving as an Associate Professor in the Henry Krumb School of Mines, of Columbia University. He came to Columbia as an Assistant Professor after research assignments at the University of California, United States Steel, and the University of Illinois. He has published a number of papers in his field. He received his PhD from the University of California in 1962.*

## ESPECIALLY FOR ENGINEERS

*Title* Defects and Failures in Pressure Vessels and Piping

*Author* Helmut Thielsch

*Publisher* Reinhold Publishing Corporation, 1965

*Pages* xviii + 427

*Price* \$15.50

*Reviewer* Robert Baldwin

Having spent the last several years working on the design, construction, and inspection of the process systems for a reactor, I found this a most pertinent book.

The book has the thesis that, in most cases, defects can either be avoided by proper design or can be detected and eliminated prior to placing equipment in service. To this end, just about every conceivable failure is discussed from the viewpoint of cause, detection, and prevention.

Had I studied this book five years ago, some rather painful experiences might have been avoided, others better understood, and some of our equipment would

have been more confidently designed. Perhaps it is because the author speaks so directly to my experience that I feel this is a worthwhile book; but I doubt that my experience is unique. In any event, there has been a need for some time for a book that deals, from the engineer's point of view, with all the various aspects of materials for process equipment.

If you have ever had a pipe or vessel failure, the odds are that in this book you will find why the failure occurred and how it could have been avoided. Also, you will be relieved to find that you can get your information without the assistance of an interpreter to translate specialist's jargon. It is all there in plain, straightforward language with thoughts organized in a logical manner.

At no time did I feel that what was being discussed was really just theoretical stuff and of interest only to the researchers, the metallurgists, or the welding engineers. I was reading about my world, the world in which an equipment failure puts others out of work, and might even endanger the physical well-being of a number of people. In case the reader's experience does not supply examples of failures, the author gives examples of failures and their consequences in the most sparse and undramatic language. The understatement is very effective and the moral clear, though unstated.

For all its virtues, this is no book for the overly cautious engineer. The thought of all that could go wrong with piping, so ably documented, would drive him from the field.

*Robert Baldwin is a Mechanical Engineer assigned to Brookhaven National Laboratory's High Flux Beam Reactor (HFBR) Project. He has held this position for the past six years. Prior to this, he worked with the LMFR Project at BNL. Baldwin came to Brookhaven from AMF where he spent eight years as a Development Engineer and Product Engineer working on a variety of tobacco processing machinery, radar, and ordinance equipment. His engineering education was received at West Virginia University and in the Navy V-12 program at MIT.*

## A LOT ABOUT PRACTICALLY NOTHING

*Title* Practical Vacuum Techniques

*Authors* William F. Brunner, Jr. and Thomas H. Batzer  
(Sponsored by USAEC)

*Publisher* Reinhold Publishing Corporation

*Pages* x + 198

*Price* \$8.25

*Reviewer* George H. Bancroft