

In an important chapter on methods recommended for thermal-neutron radiography, valuable guide lines for efficient procedures are presented. Choice of neutron sources, arrangement of components in the exposure assembly, and ways of securing best resolution are discussed. Comparison of direct- and transfer-exposure results shows that the direct method offers greater photographic speed and thus is often preferred.

Finally, the capabilities and limits of application of neutron radiography are examined critically. Penetrance sensitivity may approach that obtained in x radiography. One problem encountered with neutrons, absent with x rays, is radiation induced in the test object by neutron capture, tending to obscure the image. The book contains many excellent reproductions of actual neutron radiographs that give the reader an opportunity to judge the results. Throughout, ample references to publications are included, conveniently arranged for easy access. The embryonic state in which neutron radiography exists at present is emphasized, so the book should prove an inspiration as well as a guide for persons entering this activity.

L. F. Curtiss was a National Research Council Fellow in physics in the Cavendish Laboratory at Cambridge University from 1922 to 1924. Returning to this country, he continued his fellowship for two years at the National Bureau of Standards and then accepted a position at the Bureau. His work there was concerned with radioactivity and neutron measurements. In 1946, he helped organize the Committee on Nuclear Science of the National Academy-Research Council and served as its chairman until his retirement in 1961. He is the author of Introduction to Neutron Physics published by Van Nostrand in 1959. His PhD in physics (1922) is from Cornell University.

MINING A RICH VEIN

Title The Impact of Science on Technology

Editor Aaron W. Warner, Dean Morse, and Alfred S. Eichner

Publisher Columbia University Press, 1965

Pages vi + 221

Price \$6.75

Reviewer Arthur F. Scott

To trace the social relations of science and technology is always a fascinating historical topic. Just as fascinating—is not more so—is the attempt by contributors to this volume to identify and delineate the important forces at play in our science-oriented society and their complex interactions.

The Impact of Science on Technology is a record of the second Columbia University Seminar on Technology and Social Change, which was attended by 68 participants. The core of the volume is the following set of papers:

- “The Interaction of Science and Technology”—I. I. Rabi
- “The Interaction of Science and Technology: Another View”—Harvey Brooks
- “Government Education, and Civilian Technology”—Alvin M. Weinberg
- “Advanced Technology and American Business: Friends or Foes”—Frederic de Hoffmann
- “Science and the Civilian Technology”—J. Herbert Hollomon
- “Technology and Social Change: A Congressman’s View”—John Brademas
- “Modern Science and Its Implications for the University”—Ralph S. Halford

The editors state that each paper was followed by a “lengthy and vigorous discussion,” which the editors present in a form designed “to preserve the integrity of the dialogue” while at the same time eliminating “all repetitive or extraneous comments.” The third component of the book comprises two brief essays: an “Introduction” by Christopher Wright, Executive Director, Columbia University Council for Atomic Age Studies, and a “Summation” by Aaron W. Warner, Chairman of the Seminar.

Since the speakers at the Seminar are persons who have had considerable experience in matters of policy relating to science and technology, the volume is a rich mine of keen observation and intuitive judgment. The broad scope of the Seminar can be indicated best by outlining the content of the “Summation” chapter that Professor Warner prepared with the purpose of restating “the substance of the discussion within a framework that hopefully will be more closely knit.” Professor Warner’s chapter is organized according to the following scheme:

- Interaction Between Science and Technology
 - Scientific advance as the basis for the new technology
 - Scientists as innovators
 - Factors conducive to technological innovation originating in science
 - Science, technology, and education
- Problems of Civilian Technology
 - Civilian needs
 - Introducing technology into backward sectors of the economy
 - The importance of entrepreneurial skills
- The Direction of Science and Technology
 - The federal government and scientific priorities
 - Industrial responsibility for the direction of science and technology
 - The responsibility of scientists for social innovation

One cannot read this book without coming to the conclusion that the Columbia University Seminar on Technology and Social Change is performing an extremely valuable function in bringing about the probing and discussion of certain important and difficult problems of our contemporary society. The present volume will be of interest to all scientists, engineers, and business leaders who have concern for these problems.

The editors of the volume are to be congratulated on their superb job of editing.

Arthur F. Scott, past chairman of the Department of Chemistry of Reed College, has been teaching chemistry for 42 years. He received his BS degree at Colby College and his PhD at Harvard University. Scott spent a sabbatical leave in 1958-59 at MIT working with graduate students in the Nuclear Engineering Department and the summer of 1959 in the Hot Laboratory at Brookhaven National Laboratory. For two years, 1962-64, he was head of the Special Projects in Science Education of the National Science Foundation. He is currently editor of a serial publication, Survey of Progress in Chemistry. Scott continues to teach at Reed; his research interests involve neutron activation analysis.

A FORMIDABLE ARRAY

Title Biological Effects of Radiation

Author Daniel S. Grosch

Publisher Blaisdell Publishing Co.

Pages 294

Price \$3.50

Reviewer H. M. Parker

This book was written for the author's use in the classroom and is primarily directed at the "undergraduate research participant" with a knowledge of biology.

It is reviewed here in the very different context of its relevance to the general ANS membership. With some reservations, the book can be recommended as an excellent instrument for providing understanding in radiobiology.

The principal reservation is that it is not for those who want to learn radiobiology some Friday afternoon. Nor is it for those who do not have some grounding in the terms of the trade of both biology and biochemistry from standard texts at about the College Outline level.

These two classes of reader are not likely to get past Chapter 4, where on one open page they will be confronted by the formidable array of "pyknotic; karyorrhexic; vacuolated; deoxyribose nucleic acid (DNA); thymonucleohistone and sodium thymonucleate; streaming birefringence; erythrocytes; and one purine base per tetranucleotide," and will perhaps be comfortable only with DNA from the fine coverage in weekly magazines.

For the more persistent reader, there is a sound buildup of the subject from an introduction to the basic physics and physical chemistry through effects at the "Cellular Level" (Part I), to "Tissues and Organs" (Part II), to the "Whole Organism" (Part III), and finally to "Pure and Applied Ecology" (Part IV).

Part I is by far the toughest reading, because the author has struggled to condense a voluminous literature into manageable length. The result is a chopiness of topic

combined with the aforementioned concentration of relatively unfamiliar terms. Close study of the text is worth the effort; many will be stimulated to read more extensively in the useful references with each chapter.

The most outstanding and unusual feature of this part is the author's rejection of dogma. Where there is controversy in a topic, the author states both sides clearly and fairly; where possible, he defines what additional data are needed to achieve resolution. The warnings provided are invaluable to the non-biologist who has neither time nor competence to evaluate controversial results for himself.

Parts II and III are readable and rewarding. Part IV deals with radiation effects on life in contaminated areas, and the beneficial effects in pest control and food treatment. Portions of this seem less well-selected than the rest, especially in dealing with atomic waste disposal. In any case, from the viewpoint of our postulated audience, the story builds to its climax in Part III. Both author and publisher are to be congratulated on making so much available for so little in a paperback.

Herbert M. Parker is presently Consultant to the Director of Battelle Memorial Institute's Pacific Northwest Laboratories in Richland, Washington. Prior to that he was Manager of the Hanford Laboratories for nine years. His academic background was in Physics in England (MSc, F. Inst. P.). After ten years as a radiological physicist, he joined the Manhattan Project in Chicago in 1942, and subsequently headed the radiological sciences program at Oak Ridge and at the Hanford Works, Richland. He has just completed a term as a member of the Board of Directors of the American Nuclear Society.

A DO-IT-YOURSELF REFERENCE?

Title Handbooks of High-Temperature Materials

No. 1 - Materials Index

Author Peter T. B. Shaffer

Pages xx + 740

Price \$17.50

No. 2 - Properties Index

Author G. V. Samsonov

Pages xii + 418

Price \$22.50

No. 3 - Thermal Radiative Properties

Authors W. D. Wood, H. W. Deem, and C. F. Lucks

Pages 470

Price \$17.50

Publisher Plenum Press, 1964

Reviewer W. E. Roake

This set of handbooks is hawked as "... the most comprehensive and flexible guide to the properties and materials of refractory compounds available anywhere." The