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Book Reviews

Handbook of Radiochemical Exercises. By An. N. Nesmeyanov, V. I. Baranov, K. B. Zaborenko, N. P. Rudenko, and Yu. A. Priselkov. Translated from Russian by E. Kloczko, translation edited by R. W. Clarke. Pergamon Press, New York (1965). 448 pp. $12.00.

It is difficult to determine from examining this book what it represents in terms of the scientific level of Russian radiochemistry. The work itself is a more-or-less standard approach to the teaching of radiochemical techniques in that it includes sections of text material and practical exercises. The five major headings include "Equipment for Radiochemical Laboratories," "Nuclear Radiation and Methods for its Measurement," "Decay and Growth of Radioactive Isotopes," "Production and Properties of Radioactive Isotopes," and "Applications of Radioactive Isotopes as 'Labelled Atoms'." The practical exercises include descriptions of 89 experiments to be performed by users of the book, although the preface outlines suggested sequences of experiments to be followed by special interest groups. Thirteen appendixes are included with lists of reagents, apparatus, protective clothing, decay curves, exponential functions, and tables of multiples of 16 and 64.

It is the last two appendixes that give a clue as to the level of sophistication of the book, since scales of 16 and even 64 are rarely seen in Western counting rooms. Actually, the tone of the entire book is suggestive of pre-World War II radiochemistry. There do not appear to be any significant references to original papers dated later than 1950, and the majority of references are to Russian literature between 1935 and 1939. There are a few references to various collections of non-Russian papers published in Russian in 1952-54. The only non-Russian textbook in radiochemistry referred to is the first edition of Friedlander and Kennedy, which apparently was translated into Russian in 1952.

It is uncertain whether this time lag represents the difficulties in Russian translation of English works, whether it represents the time lag in English translations of contemporary Russian volumes, or whether it represents the equipment and techniques actually used in the contemporary Russian academic community. If the last is the case, it is evident that a great amount of scientific exchange is still needed.

It is hard to evaluate the equipment used in the same way. Educators in the United States have excellent budgets for apparatus when compared to that available in many other countries. However, the selection of equipment described and of the apparatus used in the experiments is considerably out of date by our standards. About 25 pages include descriptions and operating instructions for electrometers—string, quadrant, Compton, "binant," and torsion types. Some nine pages are devoted to gas counters, although three lines suffice to distinguish proportional and Geiger-Müller counters. One page each covers crystal counters and photomultiplier tubes. Nine lines are used to describe a spinthariscope, and 20 lines are devoted to scintillation counters. A group of excellent autoradiograms are included in the several pages describing this technique.

The extensive group of practical exercises include some interesting experiments, in addition to many of the standard variety. Many of these experiments make use of natural radioactive materials, although some 20 of them employ radioisotopes, such as ^{32}P and ^{24}Na.

The text material in the early sections of the book suffers from a very strong aura of inaccuracy and lack of precision. Again, this may be a translational problem, but reference to "radioactive radiation," the roentgen as a unit of absorbed dose, the use of "rutherford" for disintegration rate, etc. suggest questions as to how closely this book represents what is actually being taught to contemporary Russian students.

In summary, this is not a book that would have a significant place on the bookshelf of a working scientist in the West. If the reader is interested in comparative studies of scientific educational approaches, it is a most interesting example. If this book represents an actual example of cultural and scientific insulation, let us hope for an era of free interchange of scientific information throughout the world.

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About the Reviewer: An early worker in the radioisotope and radiation field, Dr. Ralph T. Overman has been active in a variety of research and educational activities in the nuclear field. He was associated with the thermal diffusion uranium separation project and the Oak Ridge National Laboratories during and after World War II and in 1948 established the Training Division of the Oak Ridge Institute of Nuclear Studies. In that position, he was responsible for training nearly 6000 scientists and educators in radioactive techniques until his resignation from the Institute in 1965. He now heads his own consulting firm in Oak Ridge, Tenn. He is a Fellow of the American Nuclear Society and has published two books in the field of radioactivity and experimental radiochemistry.

Refractory Ceramics for Aerospace. By J. R. Hague et al. The American Ceramics Society, Inc. Compiled by Battelle Memorial Institute (1964). $8.00.

This handbook, in spiral-bound notebook form, contains thermal and mechanical data on approximately 600 compounds with melting temperatures above 3000°F. The main