

and -ize and -wise suffixes, and the proper use of some rules of grammar that many of us have long forgotten. Mechanical noise deals with poor quality of copy, overcrowded text, inadequate labeling, and other problems that make even well-written manuscripts difficult to read.

This book will not help the sophisticated writer nor transform an illiterate into an "instant writer." Instead, it is for those of us who "wish to inspect ourselves as writers" with the aim of self-improvement.

*Communicating Technical Information* is a gem of a book.

*Jules B. Godel has been at Brookhaven National Laboratory for over 16 years, where he helped to design the Medical Research and High Flux Beam Reactors. Presently, he is the Mechanical Engineering Section Head at the Department of Chemistry. Would-be authors who have not read Mr. Rathbone's book should note that one of Jules' functions, as Assistant Editor of Nuclear Applications, is to check revised manuscripts (other than his own) for general readability and compliance with suggestions from the Editor and the reviewers.*

#### VALUABLE REFERENCE ON PLUTONIUM

**Title** Analytical Chemistry of Plutonium

**Authors** M. S. Milyukova, N. I. Gusev, I. G. Sentyurin, and I. S. Sklyarenko

**Editor** P. N. Palei

**Translator** J. Schmorak

**Publisher** Daniel Davey & Co., Inc., 1967

**Pages** xiii + 369

**Price** \$21.00

**Reviewer** D. B. James

This volume is the ninth in a series of monographs, "Analytical Chemistry of the Elements." Supported by the Vernadskii Institute of

Geochemistry and Analytical Chemistry of the Academy of Sciences of the USSR, the series is ambitiously intended to include eventually some fifty volumes.

The work is a well-edited combination of the individual efforts of four authors. While the 739-citation bibliography reflects the unfortunate inaccessibility of the Western literature to Russian authors, it provides an excellent compilation of the Russian literature for the Western analyst.

The deplorable lethargy of our system of editing, translating, and publishing is clearly emphasized. Although the Russian manuscript was completed in 1963, the number of references in the bibliography to the literature of 1962 is less than a fourth that of previous years. Thus this work has reached that analyst who does not read Russian nearly five years after it was prepared. Such a waste is unfortunate in our rapidly changing scientific community and prohibitive in a field so vital as plutonium chemistry. The editorial board for the series has promised to publish "in the near

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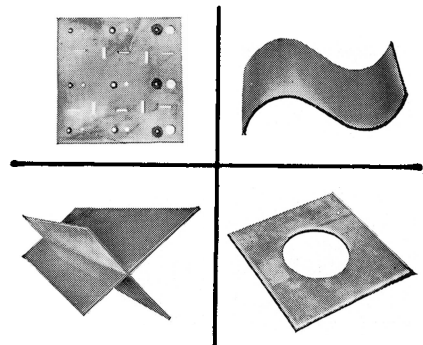
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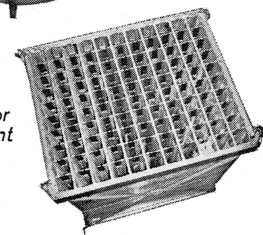
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future a supplementary literature survey." Hopefully, this languor will not also dilute its value.

This book, an excellent source book for the aqueous chemistry of plutonium and its compounds, constitutes a valuable reference for all chemists concerned with the properties of plutonium. Indeed, detailed descriptions of analytical techniques and plutonium-handling procedures are sacrificed to presentations of general information and theory. Unfortunately, security barriers often inhibit the informal avenues of communication that provide for the exchange of these details in other fields.

Chapter I provides a qualitative discussion of the isotopic content and fission-product contamination that results from the synthesis of plutonium in different reactor systems for different time periods. The import of these effects to analytical problems is emphasized. However, the increasingly important techniques of activation analysis and mass spectrometry are not treated.

The account of the preparation and properties of plutonium metal

lacks a discussion of dissolution techniques and problems of containment and crucible contamination. The extensive discussion of plutonium(IV) hydrolytic polymerization is justifiably directed toward the problems this phenomenon presents to the analyst.

An adequate description, apparently based to a great extent on the monograph of Gel'man et al., is presented on the complex chemistry of the aqueous complexes of plutonium. Unfortunately, there is little critical discussion of the wealth of data. For example, three values of the plutonium(IV)-EDTA stability constant,  $1.58 \times 10^{24}$ ,  $1.38 \times 10^{25}$  and  $1.4 \times 10^{26}$ , are reported with no evaluation of the merits of the determinations. An excellent summary of the disproportionation and oxidation-reduction reactions of plutonium in aqueous media is provided.

The overemphasis placed on the precipitation and coprecipitation reactions of plutonium reveals the somewhat outdated nature of this volume. Precipitation reagents are cataloged with little discussion of relative applicability. The treatment

of extractive and ion-exchange techniques is well documented but reflects the application of these operations to processing rather than to analysis, an application that has been extensively developed only in the last few years. The labeling of all ion-exchange operations as "chromatographic" is a poor choice of a word. The sections dealing with coulometry and polarography are presented with great depth and detail, almost too great in view of the relative application of these techniques. The important optical methods have received an excellent treatment. Especially valuable are the detailed discussions of methods, based on reactions with intensely colored, organic reagents, an area dominated by our Russian colleagues.

Individual procedures are given for the determination of hydrogen, boron, nitrogen, fluorine, silicon, iron, nickel, zirconium, niobium and tantalum, molybdenum, tungsten, lanthanum and the other rare earths, thorium, uranium, neptunium, and americium in plutonium and its compounds. Analyses for plutonium alloys with aluminum, titanium, rhodium and platinum, cerium, lanthanum, tantalum, and uranium are detailed, along with methods for the quantitation of the long-lived fission isotopes.

*D. B. James took his BS and PhD degrees at Iowa State University and was associated with the Ames Laboratory. For six years at Los Alamos Scientific Laboratory his research concerned the anion-exchange processing and aqueous chemistry of plutonium. He is now Group Leader of Rare-Earth Research with Michigan Chemical Corporation, at St. Louis, Michigan.*

#### BOOK ANNOUNCEMENTS

Although the following will not be reviewed, it may be of interest to some of our readers:

*Potassium Argon Dating*, compiled by O. A. Schaeffer and J. Zähringer, Springer-Verlag, 1966, xi + 234 pp, \$10.60



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