Thermal Analysis, (5) Reaction Kinetics and (6) Applications to Chemical Problems. The author concentrates primarily on experimental methods with a limited discussion of experimental equipment. The potential and limitations of "Differential Thermal Analysis" techniques to chemical studies are clearly defined.

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About the Reviewer: Dr. Arthur D. Tevebaugh is currently a Senior Chemist in the Chemical Engineering Division of Argonne National Laboratory. He formerly worked at the Knolls Atomic Power Laboratory and the Research Laboratory of the General Electric Company, and at Iowa State University on the Manhattan Project. In addition to experience in the field of nuclear-reactor chemistry, he has worked in the areas of inorganic polymers, fuel cells, and thermoelectric materials.

Technique of Inorganic Chemistry, Volume Two. Nuclear Chemistry. by Noah F. Johnson, Eugene Eichler, and G. Davis O'Kelley. Interscience Publishers. 190 pages. $8.00.

The authors define Nuclear Chemistry as the use of chemical techniques in the solution of nuclear problems, and Radiochemistry as the use of radioactive species to solve chemical problems. Many of the principles and experimental techniques of these two fields overlap, and this book will be useful to both groups of investigators. In the last ten years the most striking changes in nuclear chemistry have been in the type and complexity of instrumentation used for the detection of nuclear radiations.

The longest and best chapter of the book, comprising about half of its entirety, deals with the detection and measurement of nuclear radiation (Chapter VI). Quite detailed information is presented on all the major counting methods in use today, including a clear exposition of the basic physics underlying the operation of these instruments. The authors give an excellent discussion of the principles, construction, and uses of semiconductor detectors. Another useful feature of Chapter VI is the section on auxiliary electronic components. The treatment is brief, but serves to guide the reader to what is available in amplifiers, scalers, pulse-height analyzers, and coincidence circuitry.

Another highlight of the book is the chapter on the production of radionuclides. For those unfamiliar with the subject, the authors explore such practical matters as the preparation of accelerator targets and their cooling, and they survey the intensities and energies of the available charged-particle sources. Details are given of pile-irradiation techniques, including drawings of pneumatic-tube sample carriers in use at Oak Ridge, and devices for handling irradiated solutions.

We believe that the authors might well have included more information on the production of monoenergetic charged particles and neutrons, since so much work is being done with these sources. Some discussion could also have been given to the measurement of neutron flux, both monoenergetic and thermal, and to the use of semiconductor detectors for the study of charged-particle reactions in an accelerator beam. All of this has of course been discussed elsewhere, but this book might have served as an introduction to these current problems, and a source of the relevant literature.

The treatment of the remaining subjects in the book is concise and clear. The chapter on radioactive decay covers the growth and decay laws adequately, and explains the various decay processes in a lucid manner. The chapter on interaction of radiations with matter is intended to enable the reader better to understand the basis for the material in the later sections on counting, sample preparation, and absorption corrections. This is accomplished in a concise, clear presentation. Chemical separation techniques are sketched very briefly to acquaint the reader with new procedures, and to point out new problems that an experienced chemist might encounter on first working with carrier-free samples.

The cost of the book, $8.00 (four cents per page) seems rather high.

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