series," Seaborg; "Crystal chemistry of the 5f elements," Zachariasen; "Optical properties of some compounds of uranium, plutonium, and related elements," Staritzky and Truitt; and "Slow-neutron and spontaneous-fission properties of heavy nuclei," Huizenga, Manning, and Seaborg.

In general, the book is well written; much of it is, however, detailed listings of preparations and properties. Since most of these data are available only in declassified reports and have not heretofore been subject to critical review, this attention to detail is both necessary and desirable. Considerable care must have been taken in the writing, editing, and printing because only four errors were noted. There is a subject index, but unfortunately no author index.

The title of this book, *The Actinide Elements,* presumably stems from Seaborg's theory that these elements form an Actinide Series akin to the well-known Lanthanide Series. Since some chemists do not agree with this concept, Seaborg presents strong arguments in support of his views. An alternative point of view —that this is a Thoride Series—is ably discussed by Zachariasen in his chapter. Other chapters that were found particularly interesting are those by Connick and Hindman on plutonium chemistry.

These authoritative chapters are a fitting "record" of the quality and quantity of the work done on the Plutonium Project. This book is highly recommended to those interested in the chemical and nuclear properties of these heavy elements.

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Calculations of Analytical Chemistry. Leicester F. Hamilton and Stephen G. Simpson. McGraw-Hill, New York–London, ed. 5, 1954. xii + 340 pp. Illus. $5.

The fifth edition of this well-known textbook retains the best features of the previous editions. Through selective editing, rewriting, and additions by the authors, its general usefulness to teachers and to students of elementary analytic chemistry has been significantly improved.

For the student, the value of such a problem book, used in conjunction with a standard analytic textbook, lies in the fact that an organized approach to the whole area of basic analytic calculations is available in compact form. Example problems worked out to illustrate the principles of calculations for each type of analytic stoichiometry, together with an ample number of selected problems with and without answers, provide a source of self-instruction for the student and an opportunity to test his knowledge and understanding of the subject.

For the instructor, the value of such a problem book stems directly from the above. The obvious benefit is that less time needs to be spent in organized lecture or recitation presentation of problem work, but more important is the fact that, with adequate printed instructional material available, more efficient use can be made of the time given to individual instruction. During some years of using this textbook, it has been my experience that student questions relating to the material covered are individual questions and differ from student to student and from problem to problem. This opportunity for individual instruction allows for a probing of the student's attempt at self-instruction, and it has been my uniform experience that the student who honestly attempts to understand the material presented in Hamilton and Simpson's book has no trouble in mastering the solution of any problem in basic analytic chemistry.

The following material has been added: a chapter on colorimetry; a brief treatment of precision measures, rejection of results, and the use of nomographs; sections on decomposition potentials, overvoltage, polarization, and electrolytic separations; potassium bromate and iodate titrations; and reference is made to antimony electrodes and examples are given to illustrate the calculation of potentials during the course of a redox titration. Rewritten sections expand the treatment of polarography as related to amperometry, and the Latimer convention regarding electrode potentials is now employed.

Problems relating to these subjects have naturally been added, but many long, seldom-used problems have been eliminated. The total problems are some 40 fewer than in the fourth edition. Editing has corrected most of the errors in the previous editions.

Future editions could include a brief treatment of the statistical theory of the distribution of errors, together with appropriate curves to make the presently defined precision measurements more meaningful. It is hoped that the Fe^{+2}, Ce^{+4} example of a redox titration can be eliminated. Too often the student is led to believe that all equivalence half-cell potentials are the average of the respective E^{0} values. Reference is made to problem 16.7 which is so mistakenly solved. The derivation of a universal expression for calculating the potentials and the use of an appropriate example would be desirable in all elementary treatments of the subject.

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Animal Breeding. Laurence M. Winters. With additional chapters by William Rempel and John N. Cummings. Wiley, New York, and Chapman & Hall, London, ed. 5. 1954. ix + 420 pp. Illus. $5.75.

Modern concepts of livestock breeding are clearly presented in the fifth edition of this textbook. The author draws freely on his own experiences in animal-breeding research, particularly with swine. Approximately half of the book is devoted to selection, inbreeding, and crossbreeding, including a chapter on "building superior germ plasm." Emphasis is placed on the use of inbreeding as a tool to aid selection in forming lines. These lines are then used in a crossing program to obtain hybrid vigor.