Physics Today

Handbook of the Physicochemical Properties of the Elements

G. V. Samsonov and Michael E. Straumanis

Citation: Physics Today **21**(9), 97 (1968); doi: 10.1063/1.3035172
View online: http://dx.doi.org/10.1063/1.3035172
View Table of Contents: http://scitation.aip.org/content/aip/magazine/physicstoday/21/9?ver=pdfcov
Published by the AIP Publishing

forthright, honest and fair statement.

Toward the end of his life Compton, along with other distinguished men who had developed the atomic bomb, found it essential to express himself on nuclear testing. This was and still is a highly complex matter. The statements on this subject could well be studied today by those now in responsible positions relating to questions of nuclear testing.

Two sentences from the text will perhaps give a deep insight into Compton's attitudes and achievements. In the introduction, signed by people who knew him well, are the following lines: ". . . Such men as he are more rare even than genius . . . 'allumeurs d'âme' . . . kindlers of the spirit . . .," and the closing words of Vannevar Bush's forward, "Let me say that knowing him furnishes me with one of the most cherished of my memories, and that his friendship gave me an enhanced optimism as to the ultimate destiny of the human race."

* * *

Robert Shankland is Ambrose Swasey professor of physics at Case Western Reserve University.

Physics with chemistry

HANDBOOK OF THE PHYSICO-CHEMICAL PROPERTIES OF THE ELEMENTS. G. V. Samsonov, ed. Trans. from Russian. 941 pp. Plenum Data Corp., New York, 1968. $40.00

by Michael E. Straumanis

This handbook is a collective work written by 30 contributors (ten among them are women) and edited by G. V. Samsonov, who is director of the Laboratory of Metallurgy of Rare Metals at the Academy of Sciences of the Ukrainian SSR, Kiev. The first part of the handbook (pages 7–446) deals with physical properties of elements, such as the atomic, crystallographic, nuclear, thermodynamic, thermal, electrical, magnetic, optical, mechanical and electrochemical properties. The second part (pages 457–856) gives some chemical characteristics of the elements: their electrochemical potential, reactions with various reagents, corrosion behavior of metals, reaction with gases (H_2, N_2, O_2), with boron, carbon, silicon, phosphorus, sulphur, selenium and tellurium. Finally the toxicity of the elements and their reactions with refractory materials is given. All this information is presented in the form of tables with very little text. 2598 references, mostly in books and journals of the USSR, on 84 pages conclude the book. There are no subject and no author indexes.

Although it is claimed that the volume was updated and revised by the editor, many of the newer data are missing such as recent experimental densities and room-temperature thermal-expansion coefficients for some elements. It is also not mentioned that the atomic-weight table (IUPAC, 1961 revised values) is based on C^{12}.

Was it necessary to translate the book? It is said on the dust cover that the book would be valuable to teachers, graduate and undergraduate students, and to researchers in physical and engineering sciences as well. I doubt this possibility because we have good reference books. The *Handbook of Chemistry and Physics*, which contains information on more than 3500 pages, is steadily revised, covers nearly all the tables of the book under review and is, in addition, much lower in price. However, for those solid-state scientists who need quick information on the chemical behavior of elements, the translated handbook may be useful because of the unique combination of physical tables with the chemical properties of elements.

* * *

The reviewer works in the field of solid state and corrosion of metals at the Graduate Center for Materials Research at the University of Missouri, Rolla.

Science, society and culture

SCIENTIFIC PROGRESS AND HUMAN VALUES. Conf. proc. (Cal. Inst. of Tech., Pasadena, Oct. 1966). Edward Hutchings, Elizabeth Hutchings, eds. 219 pp. American Elsevier, New York, 1967. $7.50

by R. Bruce Lindsay

In these days a celebration of any sort at an academic institution usually involves a conference devoted to a consideration of some human problems. The common pattern brings together a group of scholars and scientists, recognized experts in their respective fields, and allows each to hold forth on the relevance of his discipline to the fundamental topic at issue. At a time when there is much soul search-