Book Reviews

Pharmacology and toxicology of uranium compounds: With a section on the pharmacology and toxicology of fluorine and hydrogen fluoride. (National Nuclear Energy Series, Div. VI, Vols. 1 and 2.) Carl Voegtlin and Harold C. Hodge. (Eds.) New York: McGraw-Hill, 1949. (Illustrated.) Vol. 1: pp. xvii + 524; Vol. II: pp. 525–1084. $10.00.

These volumes are part of the National Nuclear Energy Series prepared as a record of the research work done under the Manhattan Project and the Atomic Energy Commission. They represent the comprehensive experimental studies carried out by a considerable group of investigators in the Division of Pharmacology of the Manhattan Department of the University of Rochester on the pharmacology and toxicology of uranium. Prefaces and forewords outline the history of the volumes, the nature of the problem undertaken, and the proposed attack; only casual mention is made of the peculiar difficulties of war research.

The urgency of the problem—the toxicity of uranium compounds—resulted in the formation of a large organization that sought information of immediate practical value. While the applied science approach was dominant, much work of a more fundamental nature was undertaken in order to understand the nature of uranium poisoning and to provide possible avenues toward diagnosis, prophylaxis, and therapy. The studies utilized several species of animals in order to permit generalization of the conclusions to include man. To encompass the possible modes through which man might become poisoned, experiments were performed with many uranium compounds and the principal modes of experimental exposure: inhalation, ingestion, subcutaneous and intravenous injection, and application to the skin or eye. There are also studies on human exposure to uranium compounds. The characteristic changes of uranium poisoning are presented from clinical, histopathological, and biochemical viewpoints. The distribution and excretion of uranium under various conditions, the nature of acquired tolerance to uranium poisoning, and the effect of uranium compounds on enzymes and proteins were also investigated.

Many of the methods employed were originated or adapted by the Rochester group, and are presented in detail. Most of these might be useful to investigators in other problems in pharmacology and toxicology. This is particularly true of the methods used in the inhalation studies, which are presented in an excellent and exhaustive chapter. Inasmuch as fluorine and hydrogen fluoride are of increasing industrial importance, the chapter on the toxicity of these substances should be especially valuable.

The presentation of the material, both conceptual and factual, is lucid and thorough, and use is made of charts and figures where feasible. Interpretations wander away from facts infrequently, proofreading errors are few, and "scientific shorthand" is kept to a minimum. These volumes were not intended as a textbook, but should be of value to toxicologists and pharmacologists generally. They are the most comprehensive studies on the pharmacology and toxicology of uranium ever published.

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Physikalische Chemie in Medizin und Biologie. (2nd ed.) W. Bladergroen. Basle, Switz.: B. Wepf & Co., 1949. Pp. xxiv + 675. (Illustrated.) 45 Sw. fr.

"Zwischen zwei Stühlen zu sitzen ist sicher keine angenehme Situation," so writes M. Roch, of Geneva, in his introduction to this book. He is referring to the position in which he says many physicians find themselves today in respect to their practice and teaching of medicine as it relates to the applications of physical chemistry. Apparently the basic training of physicians in Switzerland is as devoid of physical chemistry as it is in our own. This book, like many others on the market, has been written mainly in an attempt to rectify this deficit in our medical training program. The author is vice president of Sandoz, Ltd. in Basle, Switzerland.

The first five chapters deal largely with those basic chemical and physicochemical concepts which find an extensive application to biology and medicine. They deal with such topics as the structure of matter, kinetics and energetics, radiations, nuclear physics, and properties of aqueous solutions. Chapter six treats of acid-base equilibrium in the animal body. The next five chapters are concerned chiefly with surface phenomena and colloidal solutions. Two of the five chapters are devoted largely to a description of the basic principles involved and the others mainly to the fine structure of protoplasm, permeability, and osmotic pressure relationships within the animal body. The book concludes with chapters on oxidation reduction potentials and biological oxidations, between which, rather oddly, is sandwiched a chapter on metabolism.

In general, the author appears to have performed a commendable job. His treatment of the various topics is extensive enough to avoid being superficial and he has not refrained from the use of the necessary mathematics. Those who are able to read German with ease will find this book worth consulting when they wish to clarify some aspects of the role of physical chemistry in biology and medicine.

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