The nontechnical reader, for whom this book is intended, should indeed be interested and enlightened by it, and for that purpose the work is a worthwhile endeavor. The book may also clarify some thoughts for more specialized investigators along certain lines of activity in this general field and indicate to them the nature and magnitude of the problems in competing potential methods for sea-water demineralization.

GEORGE O. G. LOF

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Titanium and Titanium Alloys. John L. Everhart. Reinhold, New York, 1954. v + 184 pp. Illus. $3.

This book is published as a "pilot" book, and it contains 184 pages in small-book form, 4½ by 6½ in. It represents a well-selected coverage of the published literature on various phases of the technology of the metal that has appeared in recent technical magazines and in company publications. Everhart summarizes recent literature on forming and fabrication, joining, machining and grinding, and applications, as well as on physical and mechanical properties.

The book should prove useful to those not familiar with developments in titanium but whose diversified interests require a general understanding of the progress being made with this metal. Unfortunately the author lacks working contact with the metal, and he offers only information appearing in the literature, some of which is conflicting and left unresolved.

The many references cited allow easy access to original articles and offer the reader the source of significant information on work accomplished in the various fields covered.

BENJAMIN S. MESICK

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Biological Effects of External X and Gamma Radiation. Part I. Raymond E. Zirkle, Ed. McGraw-Hill, New York–London, 1954. xxvi + 530 pp. Illus. $7.25.

The work reported in this volume was part of a large radiobiological program pursued during World War II at the Metallurgical Laboratory, University of Chicago, and the National Cancer Institute. Although the range of topics is quite wide, all the investigations were primarily directed toward an understanding of radiobiological actions on mammals and on man in particular. This book brings together in one volume many scattered reports that have not been previously available to many. It presents the reports with much detail as to methods and results.

The effects of long-continued total-body irradiation on mice, guinea pigs, and rabbits are reported by Lorenz, Heston, Jacobson, Shimkin, Eschenbrenner, M. K. Deringer and J. Doniger, Schweisthal, Miller, Hagen, and Sacher. Hematological effects are covered more specifically in chapters by Jacobson, Marks, Simmons, Hagen, Zirkle, Sacher, Pearlman, Gaston, Block, Allen, Sanderson, Milham, and Kirshon. Biochemical studies of irradiated animals are reported in chapters by Barron, Muntz, Dickman, Singer, Wolkowitz, Wattenberg, and Schwartz.

The effects of x-rays on immunity are discussed by W. H. and L. G. Taliaferro. There is also a chapter by Simmons, Jacobson, Pearlman, and Prosser on the effectiveness of drugs in preventing or alleviating x-ray damage. The final chapter is on the methods of exposing animals to x-rays by Hagen and Zirkle.

Among other reasons, the book is of value since it represents the type of data on which much of our "acceptable exposure" concepts are based.

TITUS C. EVANS

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Advances in Cancer Research. vol. II. Jesse P. Greenstein and Alexander Haddow, Eds. Academic Press, New York, 1954. xi + 530 pp. Illus. $11.

This volume is of considerable interest to the biochemist and to the geneticist, as well as to the physician.

Alexander elaborates on the reaction of carcinogenic substances with macromolecules, and Badger elaborates on the relationship between the chemical constitution of carcinogens and their tumorigenic activity. In my opinion the terms "carcinogen" and "carcinogenic" are often inadequate, and they should be replaced by "cancerogen" and "cancerogenic." The geneticist will find a great deal of information in Law's chapter, and the physician will find the other contributions helpful.

Berenblum sees in cancer pathogenesis a two-stage-mechanism. The first stage (initiation) is sudden and probably due to cell mutation, while the second stage (promotion) is gradual, converting a dormant cancer cell into a tumor. The cancer cell is hidden among the great multitude of nonneoplastic cells of which the precancerous lesion consists.

Brues develops the role of ionizing radiations in cancerogenesis as well as in therapy. Two chapters are devoted to chemotherapy—a comprehensive one by Stock, and a chapter on nitrogen mustards by Klopp and Bateman. In a very informative chapter, Oberling and Guering deal with the virus problem; in another chapter, Fenninger and Mider deal with metabolism in cancer. Craigie covers many details on the survival of tumors in the frozen state.

To each chapter a comprehensive bibliography is appended. The volume is an excellent reference book; it shows the development of experimental cancer knowledge and points to some problems that are to be tackled in the near future.

SIGISMUND PELLER

New York, New York