pleteness. Mathematics and mathematicians live in them, and not infrequently lend themselves to genuine drama. The presentation of the whole is admirable. It is flowing and graceful and often characterized by a genuine and delightful humor. A feature which will be prized is the author's almost invariable practice of labelling all investigators and notable publications with their nationality and dates.

The publishers of the book are to be thanked for an attractive and legible volume. The author deserves recognition and high praise for a significant and timely work. Many the scientist who has come to realize, to his humility, that his vaunted work would in his absence have soon been accomplished by another. One may safely venture that no other would soon have written this book had Mr. Bell not done so.

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RADIOLOGIC PHYSICS

Radiologic Physics. By CHARLES WEYL, S. REID WARREN, JR., DALLETT B. O'NEILL. xvii + 459 pp. Springfield, Illinois: Charles C Thomas. 1941. $5.50.

THE book is divided into two parts: "(1) The theory and practice of electrical engineering as applied to radiological apparatus. (2) The theory and application of radiation physics with reference to x-ray diagnosis and x- and gamma-ray therapy." The first part includes chapters on electric circuits; electrical measuring instruments; transformers, generators, motors and distributing systems; electronics; electromedical apparatus. The second part deals with radiant energy; x-rays and matter; radioactivity and nuclear physics; measurement and control of x-rays and gamma rays; physical aspects of the use of x-rays for therapy, fluoroscopy and roentgenography.

The authors have adopted the analytical method in the presentation of the different subjects discussed, starting with the simplest concepts and gradually working towards the more complex ones. The book is intended as a text for students of radiology and as a reference book for the practicing radiologist and others. Exhaustive treatment of the great many topics discussed is not claimed by the authors. In general a judicious choice of the material included and details omitted has been made. There are some original and ingenious explanations of the operation of apparatus and the fundamental principles involved.

Bearing in mind that the book is intended primarily for radiologists, the desire on the part of the authors for pedantic accuracy and completeness is rather unfortunate. It conflicts with the requirement of simplicity and here and there leads to explanations which are too involved for the radiologist but too superficial for the physicist. An example of this may be found in the discussion of the standard free air ionization chamber on p. 291 *et seq.* Explanation of the operation of such items as the induction motor could have been left out to advantage. At times statements are qualified at length when a few words would have sufficed. As an illustration consider the statement on p. 320: "The quality of the γ-rays produced by a radioactive substance is independent of the amount of the substance that is used (whenever the number of atoms of radioactive material is large enough to produce γ-radiation that is continuous with time from the practical point of view)." The qualifying clause (which this reviewer has put in parenthesis) could very well have been omitted or at any rate replaced by the phrase "in radium therapy."

The disintegration constants of the uranium series on p. 262 are not the latest values, as given, for instance, in Rasetti's "Elements of Nuclear Physics." There are very few misprints. The type and paper, as well as the numerous illustrations, are excellent. The style and language are typical of the better engineering texts.

The authors are to be congratulated for the vast amount of time and effort spent in the preparation of this book, which, in spite of some shortcomings, successfully fills a gap in radiological literature. For the first time it is now possible to get a comprehensive view of the radiological armamentarium from a single volume. The book will be most useful particularly to the small, but rapidly increasing, group of physicists and engineers interested in radiologic physics.

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SPECIAL ARTICLES

CHEMISTRY OF ENERGETIC ATOMS PRODUCED BY NEUTRON CAPTURE

SOON after the discovery of the neutron production of artificial radioactivities by Fermi and his coworkers, Szilard and Chalmers[1] in England observed that a considerable part of the radioactive iodine (I^{128}) produced by irradiation of ethyl iodide with slow neutrons could be removed by the simple process of extracting with water or an aqueous solution of iodide ion. The explanation of this phenomenon was clear almost from the first. It was well known that throughout the periodic table nuclei differed in mass

[1] L. Szilard and T. A. Chalmers, *Nature*, 134: 462, 1934.