

mental equation occurs twice. A number of other errors occur; as p. 26, that the δ rays obey the light laws; p. 39, that U X dissolves in the *ether* layer, in the separation by Crookes' method and p. 55 that thorium occurs chiefly in Ceylon. However, the story of radioactivity is inherently so interesting that, in spite of these errors, the book will not disappoint the reader who wishes to learn the present state of our knowledge of radioactive transformations and suspected transmutations.

HERBERT N. MCCOY.

Outlines of Organic Chemistry. By F. J. MOORE, PH.D., Associate Professor of Organic Chemistry in the Massachusetts Institute of Technology. New York City: John Wiley & Sons. 1910. pp. ix + 315. Cloth, \$1.50.

The book is the outgrowth of a series of lectures given to students whose principal work is in Physics, Biology and Sanitary Engineering. It differs from most elementary texts in that a few of the customary subjects are omitted and in those subjects considered only a few compounds are taken up, but these are discussed fully and clearly. Its aim seems to be "to teach not much but well." The almost complete absence of empirical formulas is noticeable.

Typographical errors incident to a first edition are found in formulas on pages 47, 94, 159 and 184. Most teachers of chemistry will object to oxidation or reduction reactions being written with the symbols O_9 or H_4 where ordinary oxidations or reductions are being described, pages 112, 251, 254, 261, 264, 266, 272, 281, 284 and 293. The formula for an isocyanide, page 74, and the spelling of the plural of formula, page 84, should be changed to agree with modern chemical usage.

Organic chemistry is being recognized as a subject of general interest and for the needs of the average students in the short courses, which are being given in increasing numbers by the American colleges and universities, this text will be found to serve excellently.

RALPH H. MCKEE.

Handbuch der landwirtschaftlichen Bakteriologie. By DR. F. LÖHNIS. Berlin: Gebrüder Borntraeger. 8vo. viii + 907 pp.

The development of agricultural science, like that of any other science, is marked by the appearance, from time to time, of books that summarize and interpret the data scattered in current publications. The present volume may be deservedly included in this list of important books, both for the unusual richness of the reference material contained in it and for the scholarly interpretation of the almost endless array of facts dealing with some of the agricultural relations of bacteria.

The five divisions of the book are arranged as follows: (1) Occurrence and Activities of Microorganisms in Foodstuffs, 97 pp.; (2) Occurrence and Activities of Microorganisms in the Retting of Flax and Hemp and in the Fermentation of Tobacco, 16 pp.; (3) Occurrence and Activities

of Microorganisms in Milk and Milk Products, 310 pp.; (4) Occurrence and Activities of Microorganisms in Barnyard Manure, 73 pp.; (5) Occurrence and Activities of Microorganisms in the Soil, 280 pp; Index, 115 pp.

No attempt is made by the author to discuss the bacteriology of water, sewage and sewage disposal. Evidently these topics appeared to him as belonging properly to the domain of sanitation, rather than that of agriculture. Similarly the rather extensive body of facts relating to bacteria pathogenic to higher plants is not considered by the author. While this may appear unfortunate to some of us, it must be admitted that he had good reason for this omission, since any discussion of plant-pathology from the bacterial standpoint alone must of necessity remain incomplete and one-sided. To secure completeness, one would have to consider the more or less distinct field of mycology, a task that would be hardly pertinent and far from simple.

To the American student this volume will prove of especial interest, because of the very satisfactory review of American data. The author deserves much credit for the thoroughness of this part of his work, particularly since he had to depend for his material almost entirely on the Experiment Station Record. Incidentally this achievement may be regarded as a splendid compliment to the editor and staff of the Experiment Station Record. For instance, the reference material on ensilage; on the numbers and kinds of bacteria in milk as influenced by handling and treatment; and on the ripening of hard and soft cheeses is reasonably complete. The same may be said of much of the soil-bacteriological work of the Delaware, North Carolina and New Jersey Experiment Stations.

Everything considered, the Handbook should prove serviceable to every student, teacher and investigator in the domain of agricultural bacteriology. All of these will feel indebted to the author for the many hours of tedious searching in books and journals that he will have saved them. They will, no doubt, appreciate also the helpful discussion of methods and culture media that represents one of the valuable features of the book.

JACOB G. LIPMAN.

Laboratory Exercises in General Chemistry. WILLIAM MARTIN BLANCHARD, Professor of Chemistry, Depauw University. The Chemical Publishing Company: Easton, Pa. pp. 88. Price, \$1.00.

This is a laboratory manual in general chemistry "arranged to meet the needs of college students who have had no previous training in chemistry." While there is little original material in the book, the experiments are well chosen and carefully written and include a number of quantitative experiments. To perform those given will require about six hours a week during the college year.

C. W. BALKE.