

NEW BOOKS

Microbiology of Meats

3rd edition. LLOYD B. JENSEN. xvi + 422 pages. The Garrard Press, Champaign, Ill., 1954. \$6.00. Reviewed by J. B. EVANS, C. F. NIVEN, JR., American Meat Institute Foundation.

This book, now in its third edition, retains its position as the only authoritative treatise covering this broad segment of science. This is particularly surprising in view of the great economic importance of controlling micro-organisms in meat products.

The third edition, like its predecessors, contains not only a review of the pertinent literature but also an account of much research carried out by the author and his colleagues that has not been published elsewhere.

The author has done a commendable task of retaining most of the material from the previous edition and incorporating much new material without appreciably lengthening the book. The subject matter has been rearranged and the indexing improved. However, one wonders why the section on green rings in cured sausage has not been included in the chapter on bacteriology of green discolorations in meats. In fact several of the publications discussed under the section on green rings are concerned only with surface greening and green cores.

This book is an excellent source of information on many phases of meat technology. It also contains descriptions of numerous laboratory methods that are useful in studying the microbiology of meat products.

In this connection the discussion of *Staphylococcus* food poisoning would have benefited from a discussion of the use of a selective media containing high salt concentrations and the practical value of the coagulase test in detecting potential food poisoning varieties. We are inclined to doubt the validity of the undocumented statement that the majority of coagulase-positive, *Staphylococcus* strains are not enterotoxin food poisoners.

After reading the book as a whole, one is impressed by the scarcity of truly basic research that has been done in this field, but what a large percentage of the research accomplished thus far has been contributed by Dr. Jensen and his colleagues.

In particular there is an obvious need for much more research integrating the rapidly expanding knowledge of bacterial

physiology and metabolism and the vast empirical knowledge of meat microbiology that is summarized in this book.

Biological Applications of Freezing and Drying

Edited by R. J. C. HARRIS. Academic Press, Inc., New York, 1954. xii + 415 pp. \$10. Reviewed by DONALD K. TRESSLER, Quartermaster Food and Container Institute for the Armed Forces, Chicago, Ill.

Fourteen collaborators contributed one chapter each and two authors collaborated in the writing of another chapter for this new treatise on freeze-drying which is devoted primarily to its application to biologicals. The first chapter is a comprehensive review of the literature on effects of low temperatures on living cells and tissues. A second chapter is a historical review of the development of freeze-drying.

There follows a review of the theoretical aspects of drying by vacuum sublimation. Chapters on various practical applications of freeze-drying follow. These include the freeze-drying of blood plasma and blood products, antibiotics, mother's milk, media for the culture of bacteria and tissues, viruses, bacteria, tissues, specimens for morphological and histo-chemical studies, and foods.

Other chapters are concerned with the effects of residual moisture and its measurement in frozen-dried materials and the application of freeze-drying to electron microscopy. The latter should be particularly interesting to the microscopist for it contains not only a review of the literature but descriptions of several novel techniques which apparently have not been published heretofore.

The chapter on freeze-drying of foodstuffs was written by Dr. R. Gane of the Low Temperature Station for Research in Biochemistry and Biophysics of the University of Cambridge, who is rather pessimistic about its commercial applications to the preservation of foods because of the high water content and relative cheapness of most foodstuffs. Dr. Gane concludes "It may be that the process could better be used as one stage in the dehydration process, either as a preliminary treatment to render tissue porous so that subsequent drying by heated air could proceed rapidly, or, alternatively, as a final stage to achieve the required water content safely." This chapter is only seven pages in length and

is rather sketchy. British work in the field is fairly well reviewed, but the author has not covered the American work adequately.

The book is a valuable contribution, but is of interest primarily to those concerned with the preservation of biological products.

Geochemistry

V. M. GOLDSCHMIDT, Edited by ALEX MUIR, xi + 730 pages. Oxford at the Clarendon Press, Amen House, London E. C. 4. 1954. Reviewed by M. S. ANDERSON, Plant Industry Station, U. S. Dept. of Agriculture, Beltsville, Maryland.

Geochemistry by V. M. Goldschmidt was completed by associates after his death. It is an excellent book; a monumental treatise on the life work of the author. It covers a subject that, as indicated, has been in course of development since 1838.

The book is organized in two parts. Part one deals with general principles of geochemistry and part two with the elements arranged according to conventional classification.

A subject emphasized throughout is the close relationship between modern geochemistry and pure and applied biology. Some of the dominant geochemical factors of our time result from the modern man—agriculture, mining, and industry. Particular emphasis is placed upon the ultimate connection of agriculture with geochemistry. Special attention is also given to the minor or trace elements that have received marked attention for only two or three decades.

The chapter on selenium is especially fine as illustrating one of the elements that may be injurious to plants but more particularly to animals. There are concentrated within a few pages, features relating the geological occurrence of selenium with agriculture. Work of the leading investigators of this subject is carefully reviewed.

Cobalt furnishes another example of the importance of trace elements in agriculture. Cobalt deficiency in geological formations, and in soils, is related to certain ruminant animal diseases. The essentiality of this element in vitamin B₁₂ is an example of one of the many up-to-date characteristics of this book.

Teachers, students, and research workers will welcome this volume to accompany the small number of great contributions on the same subject that have previously appeared.