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and Tuttle tend to bear out this point. Although this aspect is mentioned earlier (p. 305) it was not emphasized, nor was it reiterated in the discussion on p. 557. Admittedly, the question of the requirements of the *Neisseria* is a difficult one to answer unequivocally, but some of the available data might have been interpreted in a more positive manner.

Much of the material in Chapter 35 would appear to be an unnecessary addition to this book since the entire subject of the alteration of nutritional requirements by mutation and the use of mutants for studies in biochemistry and biochemical genetics is rightfully the subject of another book equal in length to this one.

The foregoing comments regarding scattered points of specific interest should not in any way be construed as a gross criticism of the overall work. Anyone can "nit-pick" his way through a book. They merely serve to indicate that one can find areas of controversy within the province of microbial nutrition and can find areas that still deserve additional investigation. Few others would have embarked upon the task of writing this book, let alone complete it. Koser has succeeded in collecting in one volume so much of the total information available on the vitamin nutrition of bacteria and yeast that it will undoubtedly serve as a classic sourcebook of information for many years to come.

ALBERT G. MOAT

INSECT VIRUSES. "Current Topics in Microbiology and Immunology," Volume 42.

Edited by Karl Maramorosch. Springer-Verlag New York Inc., New York. \$9.00. vii + 192 p.; ill.; subject index. 1968.

CONTENTS: Inclusion-type insect viruses, Gordon R. Stairs; Non-inclusion virus diseases of invertebrates, C. Vago; Arboviruses, the arthropod-borne animal viruses, Roy W. Chamberlain; The sigma virus infection of *Drosophila melanogaster*, Robert Seecof; Plant pathogenic viruses in insects, Karl Maramorosch; A review of the use of insect tissue culture for the study of insect-associated viruses, James L. Vaughn; Viruses — living insecticides, Carlo M. Ignoff.

CHEMICAL MICROBIOLOGY. Second Edition.

By Anthony H. Rose. Plenum Press, New York; Butterworths, London. \$9.50. xi + 312 p.; ill.; subject index. 1968.

ADVANCES IN MICROBIAL PHYSIOLOGY. Volume 2.

Edited by A. H. Rose and J. F. Wilkinson. Academic Press, London and New York. 63 s. ix + 212 p.; ill.; author and subject indexes. 1968.

CONTENTS: The bacterial photosynthetic apparatus,

June Lascelles; The plasmids of *Staphylococcus aureus* and their relation to other extrachromosomal elements in bacteria, M. H. Richmond; The "life cycle" of bacterial ribosomes, William S. Kelley and Moselio Schaechter; Budding of yeast cells, their scars and ageing, K. Beran; The repair of damaged DNA in irradiated bacteria, B. E. B. Moseley.

ANNUAL REVIEW OF MICROBIOLOGY. Volume 22.

Edited by Charles E. Clifton; Sidney Raffel and Mortimer P. Starr, Associate Editors. Annual Reviews, Inc., Palo Alto, California. \$8.50. x + 596 p. + 1 p. pl.; ill.; author and subject indexes; cumulative indexes of contributing authors and chapter titles, volumes 18 to 22. 1968.

CONTENTS: Prefatory chapter: The lure of the unknown, William H. Taliaferro; The fine structure of blue-green algae, Norma J. Lang; Ecology, physiology and biochemistry of blue-green algae, Osmund Holm-Hansen; Biology and physiology of coccolithophorids, E. Paasche; Cell wall chemistry, morphogenesis, and taxonomy of fungi, S. Bartnicki-Garcia; Biochemical peculiarities of trypanosomatid flagellates, B. A. Newton; The ecology of transferable drug resistance in the enterobacteria, E. S. Anderson; Bacterial cytochromes, Robert G. Bartsch; Foot-and-mouth disease; Howard L. Bachrach; Cholera toxins, William Burrows; Toxins produced by fungi, Douglas E. Wright; On the mechanism of immunity — in defense of evolution, Edward P. Cohen; Replication of RNA viruses, Raymond L. Erikson; Microbiology of winemaking, Maynard A. Amerine and Ralph E. Kunkee; The poxviruses, Wolfgang K. Joklik; The oncogenic DNA viruses: a review of *In Vitro* transformation studies, Paul H. Black; Metabolism of animal cells infected with nuclear DNA viruses, Albert S. Kaplan and Tamar Ben-Porat; Lysogeny: The integration problem, E. R. Singer; Energy-coupling mechanisms in chemolithotrophic bacteria, Harry D. Peck, Jr.; Mathematics of microbial populations, Page R. Painter and Allen G. Marr; Other reviews of microbiological interest; author index; subject index; cumulative index of contributing authors, Volumes 18 to 22; cumulative index of chapter titles, Volumes 18 to 22.



BOTANICAL SCIENCES

PLANTS, MAN AND LIFE.

By Edgar Anderson. University of California Press, Berkeley and Los Angeles. \$1.95 (paper). xiii + 251 p.; ill.; subject index. [Reprinting of a 1952 edition.] 1967.

This volume is essentially a reprinting, rather than a new edition, of *Plants, Man and Life*, published by Little Brown and Company in 1952 [see *Q.R.B.*, 28:166, 1953 for review]. No changes have appeared in the text, but a preface, an epilogue and a short glossary have been added, and the original list of suggested readings has been increased from 10 to 24 titles. Long out of stock and hard to get even in used copies, this most stimulating work on the relationship between man and his useful plants is now, fortunately, easily and inexpensively available to the ever growing number of students exposed to college courses attempting, in one way or another, to stress this basic relationship.

Plants, Man and Life needs no new reviews because it is not new and it was carefully and enthusiastically reviewed when it first appeared. There is little that I could or would want to add to these earlier favorable reviews. The author has stated that his narrative essays are "an outgrowth of Oakes Ames' course in economic botany" at Harvard University. As a student of Ames and as the present teacher of this, the oldest course in economic botany in the United States, I want only to say how much we need Anderson's thought-provoking stimulation in today's teaching of the whole topic of plants and human affairs.

Anderson might, of course, have brought some parts of his text up to date (e.g., on the origin of maize); he might have elaborated on the growing importance of plants in the development of modern medicine; he could have included a few more very important recent works in the list of suggested readings. To have attempted to do so, perhaps, might have delayed or even prevented the reappearance of a book truly needed and which has, in its fifteen years of existence, reached and encouraged many who are now leaders in anthropological, botanical, and geographical research and thinking.

RICHARD EVANS SCHULTES

TEXTBOOK OF THEORETICAL BOTANY. *Volume III.*

By R. C. McLean, W. R. Ivimey-Cook, including *Genetics* by Kenneth Lewis. John Wiley & Sons, Inc., New York. \$19.25. viii + p. 2205-3313; ill.; indexes of palaeobotany, genetics and physiology. 1967.

The third volume of *Textbook of Theoretical Botany* is devoted to paleobotany, genetics and physiology. Like its predecessors, it is long (1,108 pages), and it has a hefty price (\$19.25). The first two volumes were devoted to morphology, anatomy, and classification, so the shelf of botanical information represented by this textbook reflects truly herculean efforts by the authors.

Readers in the U. S. may be surprised that the topics in this volume were bound between the same

covers, since very few courses cover more than one of the topics. The author's statement that "each section may be regarded as a separate text" might fail to ease the burden of students who buy the book for its 400 pages of paleobotany or its 193 pages of genetics. It will be surprising, however, if students will want to buy the book at all, because much of it is hopelessly out of date. The genetics section (by Kenneth Lewis) is devoted largely to classical aspects of the subject, and while much of this detailed lore is undoubtedly worthy, it is unlikely to find a spot in today's crowded undergraduate curricula. DNA is not mentioned until near the end of the genetics section, and the reader is left with little awareness of the current ideas and information in molecular biology.

The section on physiology is divided into discussions of water relations, general metabolism, and growth and reactivity. They differ in their degrees of datedness. The almost 50 pages on photosynthesis do not seem to include information beyond about 1960. For example, Arnon's work is not mentioned. The description of the chloroplast is both dated and eccentric. The explanation of nucleic acid metabolism could have been made in the late 1950's and the relationship between RNA synthesis and protein synthesis probably would not have been made then. One of the best examples of the book's devotion to ancient history is the treatment of plant growth regulators. The kinins (now cytokinins) are disposed of in two short paragraphs, but two pages are given to the "calines." Fortunately, the shades of auxin a and b are not exhumed.

One wonders about the rationale for the creation of a tome of this sort in areas where the half-life of new information is so short. The effort to produce this book must have been enormous, but to place it in the hands of a student would be an act of considerable mischief. One last puzzle concerns the use of the word "theoretical" in the title of the book, because explanation and/or justification do not arise from its contents.

W. M. LAETSCH

PLANT ANATOMY.

By A. Fahn; translated from the Hebrew by Sybil Broido-Altman. Pergamon Press, Oxford, London, Edinburgh, New York, Toronto, Sydney, Paris, Braunschweig. \$11.50. viii + 534 p.; ill.; author and subject indexes. 1967.

This book was originally written in Hebrew for the use of college students in Israel. Accordingly, many of the examples cited are plants native to the Middle East. There is no indication of the date of publication of the original Hebrew edition, but it must have appeared about 1963 since there are no literature citations after this date.