

tions on the future course of research on biological transport processes. The printing is of good quality and easily readable. Illustrations are frequent and clarifying.

As one might expect, the treatment is most comprehensive in areas related to the author's research interests, particularly amino acid transport. However, sufficient attention is given to the transport of other substances to provide the reader with a good introduction to the entire field. Pertinent literature is quoted extensively, and reference is made to most of the currently promising lines of investigation. The mood of the writing is that of a scholarly and personal appraisal of current knowledge about transport processes in living systems. As the author anticipated, "The result can hardly seem to have ideal balance to all the scientific areas now interested in transport." However, Christensen thinks and writes clearly about the matters that he has chosen to treat. For example, I found particularly sensible and timely the critical discussion of the use of the term *permease* to describe a site of membrane penetration.

This book will be of value to those biological scientists interested in or actually working on the subject of the transport of substances across the biological membranes. It will be particularly useful for the instruction of graduate students in this field.

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Infrared Spectroscopy

An Introduction to Infrared Spectroscopy. Werner Brügel. Translated from the German by A. R. Katritzky and A. J. D. Katritzky. Methuen, London; Wiley, New York, 1962. xv + 419 pp. Illus. \$9.

Progress in Infrared Spectroscopy. vol. 1. Herman A. Szymanski, Ed. Plenum Press, New York, 1962. vi + 446 pp. Illus. \$16.

The first of these books is an English translation and revision of Brügel's *Einführung in die Ultrarotspektroskopie*. Since Brügel's book is one of the better books available as an introduction to the rapidly growing field of infrared spectroscopy, it is a pleasure to note the publication of this English edition.

For the most part, this edition is identical to the German second edition, although a few minor changes have been made to bring the book up to date as of 1961. Unfortunately, even some typographical errors have been carried over from the German edition, but errors are few and far between.

The format of Brügel's book follows the logical course of first introducing the theory, then the instrumentation, and finally the experimental techniques that are necessary for infrared spectroscopists. While the book necessarily covers each subject superficially, it does provide the bare essentials necessary for the novice, and it contains many references for those interested in obtaining more detailed knowledge of each subject. The portions on instrumentation are already somewhat out of date in that the latest far infrared instruments and instrumentation are not discussed. It is also unfortunate that Japanese and Russian spectrometers are not described, but I imagine those instruments were omitted because they have not found an international market.

Although Brügel's book seems to have been written for workers in analytical laboratories, or for those specialists in other fields who are primarily interested in using infrared spectroscopy as a supplementary tool, those who are starting on a career in this field will find that it is an excellent introduction to infrared spectroscopy.

The second book, *Progress in Infrared Spectroscopy*, is a collection of lectures given at the advanced sessions of the Fifth Annual Infrared Spectroscopy Institute held at Canisius College (Buffalo, N.Y.) in August 1961.

The lectures seem to have been collected and published without any editing. As a result the volume is a group of poorly organized chapters, and its astronomical price is not warranted. That is not to say the lectures do not contain worthwhile information. In particular, much emphasis is placed on the use of the newly developing field of far infrared spectroscopy. In addition there is an excellent exposition on group theory as it applies to infrared spectroscopy and a well-written review of the "analytical application of absorption spectrophotometry." On the whole, this book seems to be of greatest value as a very wordily annotated, and often repetitious, bibliography on applied infrared spectroscopy.

Progress in Infrared Spectroscopy will undoubtedly find its way into many industrial libraries, even though better books are available at a more reasonable price. The translation of Brügel's book, on the other hand, is an excellent introductory book that belongs in many libraries. Although some portions of its treatment of instrumentation are rapidly going out of date, *An Introduction to Infrared Spectroscopy* contains much material of lasting interest.

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Historical Survey

Nitrogen Metabolism in Plants. H. S. McKee. Oxford University Press, New York, 1962. 728 pp. Illus. \$16.80.

The chapter contents, which are indicative of the scope of this volume's 15 chapters, are sources of nitrogen, assimilation of nitrate, fixation of nitrogen, nitrification, denitrification, assimilation of nitrogen compounds, amino acids and betaines, biosynthesis and breakdown of amino acids, amides, proteins, alkaloids, cyanides and nitro compounds, storage and transport, and the nitrogen cycle.

The book's title is misleading because neither an enzymological approach nor a biochemical point of view is provided. Rather, the book is a treatise on the compounds of nitrogen that happen to occur in plants. Its greatest value is that it summarizes the historical points of view and preserves the early literature. A second value is the thoroughness with which it records the occurrence of unusual nitrogen compounds in plants. There are about 4500 references (225 pages), of which approximately 400 are references to publications prior to 1900.

Anyone concerned with nitrogen compounds in plants will find that this book is a thorough guide to the literature in the classical tradition. Current work is moving too fast to be properly considered, and the stage is hardly set for the excitement of the immediate future in protein synthesis.

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