BOOK NOTICES AND REVIEWS.

Kostychev's Chemical Plant Physiology. By DR. S. KOSTYCHEV, Member of the Russian Academy of Science, Professor in the University of Leningrad. Translated and edited by Charles J. Lyon, Ph.D., Assistant Professor of Botany at Dartmouth College. P. Blakiston's Son & Co., Inc., Phila., 1931. XV + 497 pages. Portrait and forty-five illustrations. 16.5 × 24 Cm. Price $6.00.

"This book is an up-to-date rendition of a volume which appeared in German in 1926 as part one of the 'Lehrbuch der Pflanzenphysiologie.' The first volume was entitled 'Chemische Physiologie' with the implication that the second volume would deal with the physical aspects of plant physiology." The second volume has not yet appeared but the popularity of the first led the author to revise it late in 1929 for this translation. There are "many radical changes in the subject matter."

The title might be misleading so we quote the author, "Chemical plant physiology is often called 'biochemistry of plants' . . . . . It deals only with questions of material transformations in plants." The subject matter is well arranged as follows: "First there is an exposition of the assimilation of the elements required by plants. Then follows the description of the transformations of the assimilated foods in connection with the various vital requirements of plants. Finally there is a discussion of the biochemical processes which furnish energy to plants . . . . . All these processes are treated as chemical reactions."

The titles of the eight chapters will give a better idea of the scope of the work: The Foundations of Chemical Plant Physiology; The Assimilation of Solar Energy by Green Plants and the Primary Synthesis of Organic Compounds; Chemosynthesis and the Assimilation of Molecular Nitrogen; Plant Nutrition with Prepared Organic Compounds; The Mineral Nutrition of Plants; Carbohydrates and Proteins: The Transformation of These Substances in the Plant; Secondary Plant Substances; Respiration and Fermentation.

To those who do not know Dr. Kostychev's attainments, we might say that his work in almost every phase of this field makes him unusually well qualified for such a task. Of the hundreds of references given in the footnotes, at least two hundred must be to original papers by either the author alone or with the twenty-six different co-authors. One does not have to read far to learn that Kostychev has a good historical background of botany and chemistry. Even so he has not overstressed it. Various theories are well developed and handled. The author finishes with his own ideas. This greatly helps the student.

We question the advantage of as much physical chemistry as given in the first chapter. Where the biochemistry of secondary plant substances cannot be explained we would take the opportunity of pointing out more chemical relations; *e. g.*, in the terpenes how oxidation, reduction, hydration, dehydration and rearrangement will lead from one to another. The same can be said for lactic and pyroracemic acids, also succinic, malic, tartaric, and fumaric acids.

Being pharmaceutical-minded we looked in the index for some plant products of interest to the profession. We could not find the following: oleoresin, gum resin, sapotoxin, and sapogenin. The author has evidently called oleoresins, balsams. Under saponins we found the term sapogenin defined.

Great credit must be given the author for backing up so many statements with a large bibliography ranging from the master pioneers to very recent articles. We regret to find that only the senior authors, of the papers cited, are indexed.

The editor has done well. He was especially fitted for the task, having translated in 1927 Kostychev's Pflanzenatmung, 1924. The book is mechanically well done and almost free from typographical errors. It should be warmly received by plant physiologists, biochemists, and allied professions. We hope that it will be revised periodically.—P. A. FOOTE.

Fighting Disease with Drugs.—The Story of Pharmacy. Edited by JOHN C. KRANTZ, JR. Published for the National Conference of Pharmaceutical Research. The Williams & Wilkins Company, Baltimore. Price $2.00.

Reference to this book has been made editorially in this issue of the JOURNAL and this notice is to call further attention to this important volume, because of the opportunity afforded by it for giving good pharmaceutical publicity. Every druggist will want a copy and, probably, after seeing it, more of them for presentation to physicians and friends of pharmacy.

Without going into details of an extended review a list of the contributors and their

subjects are given: James H. Beal has written the *Introduction;* A. R. L. Dohme tells of the *Dawn of Pharmacy;* E. F. Kelly of the *Source of Drugs;* Heber W. Youngken discusses *Drugs from the Vegetable Kingdom;* William J. Husa writes on *Drugs from Mineral Sources;* John F. Anderson tells of Bacteria-Made Drugs and Vitamins; Roger Adams and Oliver Kamm tell of *Drugs Made by Man;* Ernest H. Volwiler writes on related lines of the former; James C. Munch tells *How Drugs Are Made Uniform;* Robert L. Swain writes of *Drugs, the Law and Public Health;* W. Bruce Philip has prepared a chapter on *The Corner Drug Store* and John C. Krantz, Jr., presents *The Outlook of Pharmacy in the Era of Science.*

The volume contains twenty-six illustrations—portraits of laboratory procedures, of some of those who contributed to the story of pharmacy, to its history, and pictures illustrating the story of drugs. The completion of the book, it seems to us, marks an important event for pharmacy.

Structure Symbols of Organic Compounds. By INGO W. D. HACKH. First edition, viii + 139 pages. P. Blakiston's Son & Co., Inc., Philadelphia. Price $2.50.

This book gives a complete description of the system of structure symbols or chemical shorthand which the author has successfully used for several years with many types of students. The author states that more organic chemistry can be covered with the average class in a given time with the aid of this notation, which is adaptable to both the older and newer concepts of structure.

In the first chapter, the fundamental concepts of atomic and molecular structure are briefly and clearly stated. The second chapter includes a description of the structure symbols. In this system the chemical symbols H, C, O and N are eliminated, these elements being indicated by lines. For example, a point where two lines cross represents an atom of carbon, and a point where a line terminates represents an atom of hydrogen. Double and triple bonds are appropriately indicated. In electronic structural formulas electrons are indicated by dots. In the third chapter, the structural formulas of about 1000 organic compounds are shown in the author's notation. The author does not include a critical review of structure symbols in general, but readers wishing information of this nature will be particularly interested in the bibliography at the end of the second chapter.

It appears that much time and effort would be saved by the general use of a system of chemical shorthand. A notation of this kind might be considered as an extension of the use of the benzene ring. No one would think of discarding the benzene ring. Likewise it seems fair to assume that one familiar with the notation described in this book would not give it up after becoming accustomed to its use.

Examples are given of the application of the notation in research in the prediction of substitution reactions. While the book is intended primarily for students and teachers, it is of interest likewise to the research man or any one interested in a concise notation for organic compounds.—WILLIAM J. HUSA.

An Introduction to Practical Bacteriology. By T. J. MACKIE, M.D. and J. E. MCCARTNEY, M.D. Publishers, Wm. Wood & Co., New York. Price $3.50.

This is the third edition of this book on Bacteriology and should be in the library of everyone who has any routine bacteriological work to do. It is arranged in twenty-three chapters, each written in a very understandable way by two authors who are well known in their field.

The authors have succeeded well in writing a book that contains the more important things in bacteriology without unduly increasing the number of pages. They are to be commended upon the fact that they use Bergey's Classification throughout, and have not neglected any branch of bacteriology, including also a section on "Bacteriological Examination of Water and Milk and the Testing of Antiseptics;" another chapter is devoted to "Tropical Organisms" and various pathogenic streptothrices and mycoses have been given due consideration. The section on the "Malaria Plasmodia" is especially well written and "Filterable Viruses" take up a chapter; bacteriophage is not neglected. Each organism is taken up following a definite method of presentation, which makes it useful as a ready reference, and a folded chart of biochemical reactions of various bacilli is convenient for routine work.

There are a few criticisms that might be offered, such as suggesting an enlargement of the chapter on "The Physiology of Bacteria." The chapter on "Immunity" would be better