this property. All the important data accumulated prior to 1947 are presented, with emphasis on the interpretation of the facts when discovered, and the gradual evolution from them of the later formulas. The accepted strychnine structure was published by Woodward, Brehm, and Nelson in September 1947, and it is regrettable that this could not have been included to give the first complete story of this remarkable alkaloid. The tables to the chapter list the properties of hundreds of derivatives and represent a vast amount of labor.

Although the editors state in their preface that the pharmacology of the alkaloids will be included, this phase of the project had to be abandoned because of difficulty in assembling contributors.

When completed, this projected series will constitute the most exhaustive and authoritative reference work on alkaloids, and the plan to issue periodic supplements enhances its value.

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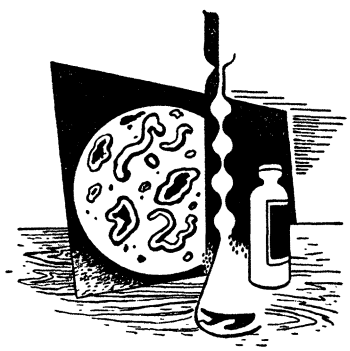

Chemical Activities of Fungi. Jackson W. Foster. New York: Academic Press, 1949. 648 pp. $9.50.

Every scientist interested in mold metabolism will find it extremely convenient to have available *The Chemical Activities of Fungi.* Nowhere else are as many facts concerning the chemistry of fungi as conveniently arranged. The author, experienced in both the academic and commercial aspects of his subject, has been able to use tools other than the scissors and paste pot.

A list of the 19 chapter titles would constitute a sound synopsis of the book. There are chapters dealing with the chemical nature of mold mycelium, with mutations, with trace element nutrition, and with methodology. Chapters are devoted to each of many of the most important mold products, such as penicillin, citric acid, gluconic acid, and others. Little of importance is omitted.

A writer, freshly liberated from the strait jacket of conciseness prescribed by modern scientific journals, is likely to make full use of his freedom. The present work is probably an example. Reactions become "incriminated" (p. 401), or "motivated" (p. 156); enzymatic effects are "aggravated" (p. 463), and difficulties are "circumnavigated" (p. 599). Much space is occupied by games of intellectual solitaire played by the author. A few examples of these may be given. In the chapter on citric acid, 12 pages are consumed in the erection and demolition of theories concerning citric acid formation before the mechanism finally approved is introduced. On pages 181 to 183 one finds a scholarly examination of definitions of reserve storage material. On page 245 begins an interesting three-page discussion of the familiar concept that seemingly new characters acquired by mutants are in reality due to loss of other characters. Such passages—and they are many—may require space, but will certainly prevent the book from being characterized as a dull compendium. Implicit in the criticism that inordinate space is given to the author's speculations is the appreciation of his ability to produce something more than a catalogue.

Throughout the book are numerous expositions of older concepts. These are first supported in an erect posture, then either knocked down or left to collapse. Although an occasional visit to the graveyard of forgotten theories is both useful and diverting, the mass exhumation often believed essential by authors of scientific books seems more likely to confuse than to instruct. The volume is, of course, not free from mistakes. In a comprehensive treatment of a large subject, occasional errors and inconsistencies serve to identify the work as that of a man rather than of a punch card machine. There are many ideas and conclusions with which this reviewer finds himself in disagreement. This is characteristic, for most readers, of all books in which ideas are to be found. The percentage of the author's ideas to which the reader will take exception will probably be small.

The reader of *Chemical Activities of Fungi* will find it an excellent guidebook to the original literature, and a serviceable textbook. He will find oracular pronouncements, wordy morasses, valuable data, and stimulating ideas. He will probably conclude, with the author, that the work is "an authoritative, critical book integrating and evaluating the field" (p. vii).

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Advances in Enzymology and Related Subjects of Biochemistry, Vol. IX. F. F. Nord, Ed. New York-London: Interscience, 1949. 760 pp. $9.00.

The ninth volume of this stimulating series of books, like its predecessors, offers a thorough review of a few selected topics. The choice of subjects is not made with the purpose of complete coverage in the field of enzyme chemistry. Instead, each topic considered is given a critical and relatively leisurely examination that embodies much of the reviewer's own opinions. This personal approach, in conjunction with the thoroughness of the treatment, forms the major strength of these volumes. It enables the reviewer to develop his subject not only from the standpoint of present developments but with the important inclusion of past history and its influence on the development of the concepts with which he, but not necessarily the reader, is so familiar.

The 12 reviews presented range in subject matter from the industrial biosynthesis of fats through histo- and cytochemistry, to the metabolism of semen. It is clear that not all of these will be of universal interest. Neverthe-

less, in these days of ever increasing specialization within the science of biochemistry, a volume such as this is of considerable value in stimulating the broad viewpoint so absent in modern production line research.

The articles themselves are well written, by authorities in the various fields, although a few might have been deleted to avoid repetition or published more profitably elsewhere. The section on histo- and cytochemistry, for example, is dealt with in great and useful detail by its author elsewhere in book form. The review on enzyme activity in frozen vegetable tissue is extremely specialized and probably of little use to the average reader. In general, however, the subjects have been wisely chosen and this volume will occupy, with its fellows, an important place in any library of general biochemistry.

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Chemical Constitution and Biological Activity. W. A. Sexton. London, W.C.2, Engl.: E. & F. N. Spon, 1949. 412 pp. 55s. net.

For countless generations, in attempting to study the essence of nature and natural phenomena, scientists have been drawn to the problems of structure and its functional concomitants. Aristotle, in the *Metaphysics,* stated that if we search for the elements of existing things without distinguishing the many senses in which things exist, we cannot find them. One of these senses in which things exist is that derived from their acting on or being acted upon by other elements, and although Aristotle felt it impossible to discover what "acting" or "being acted on" is made of, in recent years it is this very aspect of scientific inquiry that has advanced considerably—particularly in one of its most complex aspects, that of interaction in the living organism.

The present volume has been designed to provide a glimpse into the many problems involved in the relationship between the chemical constitution of substances and their action upon living cells. It is made up of two sections: the first, a brief consideration of some of the chemical compounds and processes that play a general role in biological activity; the second, short discussions of subjects "chosen as far as possible in order to provide illustrations of the principles outlined in the earlier chapters." The latter include vitamin B_{12}, various growth factors, choline and its derivatives, cancer problems, and antigens and antibodies.

Of necessity in a book of this nature, there must be many omissions. Perhaps it would be more effective to limit one's dissertation in this field either to a more or less complete discussion of the fundamental principles involved, or to a few of the specific topics now being assiduously investigated. As it is, from either the chemist's or biologist's point of view the book is sketchy and sometimes disturbingly incomplete. Critical examination of some of the discussions reveals certain peculiarities—for example, the complete acceptance of some questionable concepts concerning the role of acetylcholine in nervous system activity. The meagerness of such sections as that on surface-active agents cannot go unnoticed, nor would one object to mention of other points, such as Pauling's theory of enzyme specificity, changes in electronic configuration, and the biological variables involved in the structure-activity relationship.

Admittedly, integration of our knowledge in this borderline field of biochemistry is essential, and is indeed a monumental task for any one author. Despite its inadequacies, this book should help investigators in many fields of research to broaden their outlook, and to cross some of the imaginary walls erected between so many fields of inquiry. Although the bibliography stops at 1947, the work demonstrates an ever strengthening trend in investigation leading rapidly to the acceptance of physicists, chemists, and biologists in each other's laboratories.

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Metabolism and Function: A Collection of Papers Dedicated to Otto Meyerhof on the Occasion of His 65th Birthday. D. Nachmansohn, Ed. New York: Elsevier Publ., 1950. 348 pp. $7.00.

Investigators in the fields of biological science are indeed fortunate to have available this collection of 38 papers written by friends, associates, and former students of Prof. Meyerhof, on the occasion of his 65th birthday. Among these distinguished investigators are five who have won the Nobel prize. The various authors bring together and organize research evolving from the important researches of Meyerhof, Warburg, and Hill. The guiding and fundamental work of these masters is reflected and interwoven in each paper.

Building on the foundations of Pasteur, Buchner, and Harden and Young, Meyerhof developed many fundamental principles, such as the extraction of the glycolytic enzyme system from muscle, the discovery that some phosphorylated compounds are rich in energy, and the clarification of the Pasteur reaction. These discoveries have made possible exact measurements and have stimulated biochemistry and physiology for a generation, and will continue to exert their influence as these sciences develop.

The book begins with an excellent tribute to Prof. Meyerhof by his pupil, David Nachmansohn. The papers are then arranged in four groups: Part I, Muscle; Part II, Nerve; Part III, Drug Action; and Part IV, Intermediate Metabolism. Most of the papers have a concise summary in three languages. All but two papers have a selected list of references at the end.

Part I. Muscle. The first paper, by A. V. Hill, "A Challenge to Biochemists," begins with the charming history of his friendship with Meyerhof, and leads gradually into a discussion on the course of events in normal muscular contraction which he and Meyerhof did so much to develop and which he summarizes very concisely.

Through all the papers that follow and in many of the references cited, we see the development of the Meyerhof-Warburg-Hill discoveries. The paper by Hans H. Weber, entitled "Muskelproteine," reviews information on muscle proteins and presents new facts on L-myosin and actin. M. Dubuisson, in "Modifications dans la structure physico-chimique de l'édifice contractile au cours du cycle