

eggs, vegetables, fruits and grains. The use of enzymes in the textile and paper and the wine and dairy industries and other industries where enzymes are employed is given consideration.

There is also a chapter on "Vitamin-destroying Enzymes" and a chapter on "Microbiological Methods for the Estimation of Vitamins."

Many of these subjects are not discussed in sufficient detail, and in some cases the author has not confined himself to the original objectives.

In Chapter VI—"The Production of Enzymes and Methods of Their Estimation"—methods for the preparation of diastatic enzymes from molds, bacteria and pancreas and also proteolytic enzymes are given, whereas the preparation of yeast enzymes, malt diastase and a number of other preparations are described in other chapters. A more reliable index of the contents within the chapter would be helpful to the reader. The only methods included in this chapter cover proteolytic activity, lipolytic activity and a method for saccharogenic amylase activity. Some of the other methods are given in the chapters describing specific enzymes in more detail. It is believed that it would have been helpful to the reader to group the chapters containing material on the amylases, as this procedure would have made possible a more unified treatment of the subject.

The models of Hanes for the structure of the starch molecules are given. It is believed that it is now quite well established that starch consists of straight-chain amylose and the branched-chain amylopectin, consequently the simple Haworth structure does not represent the most recent conceptions of starch structure. The author seems to have confused the starch liquefying property of α -amylase and the as yet unverified amylophosphatase of Waldschmidt-Leitz and Mayer.

The author has brought together a number of recent developments in the less well-known fields, such as the manufacture of leather, pectin, lactic acid and the retting of flax, which will be of interest to the student.

A discussion of the microbiological assay methods for the six B vitamins is given in the last chapter.

The book should prove to be a useful contribution to the growing field of enzyme technology. The scope of the book is rather broad and, consequently, the treatment given each subject is in many cases too brief, but the reader can cover the field more thoroughly by making use of the excellent collection of references given at the end of each chapter.

The printing of the book is satisfactory and the errors are relatively few. The binding is suitable for a book of this type.

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QUANTUM CHEMISTRY

Quantum Chemistry. By HENRY EYRING, JOHN WALTER and GEORGE E. KIMBALL. 390 pp. New York: John Wiley and Sons. 1944. \$5.00.

"IN so far as quantum mechanics is correct, chemical questions are problems in applied mathematics. In spite of this, chemistry, because of its complexity, will not cease to be in large measure an experimental science, even as for the last three hundred years the laws governing the motions of celestial bodies have been understood without eliminating the need for direct observation." This quotation from the preface expresses well the authors' point of view. The presentation is directed to the graduate student level on the assumption of the standard training in physics, mathematics and chemistry. It is excellent. The material is well arranged and each subject lucidly and thoroughly presented. The number of errors is small for the type of material presented. The reviewer has found about a dozen, of which all are typographical in nature. Separate chapters are devoted to the differential equations involved in ordinary quantum mechanical problems, radiation theory, the general principles and applications of group theory, statistical mechanics and electric and magnetic phenomena. A set of carefully selected references is given in an appendix for each of the major subjects treated. The historical development of the quantum theory is described in the first chapters with a clear tracing of the transition from the "old quantum theory" to the "wave mechanics," authoritative references to classical papers being given. The fundamental postulates of the quantum theory then are stated with no attempt to rationalize away their wonderful mystery. The more difficult points are treated patiently and carefully. The properties of the spin operators and their eigenfunctions are presented only after a thorough treatment of the general angular momentum operators. The rather irritatingly complicated derivation of the second order perturbation equations ordinarily given is alleviated somewhat. It is a pleasure to find group theory in its fundamental and applicable forms treated in a book on beginning quantum mechanics. The same remark applies to the chapter on statistical mechanics. In short any one who masters this book certainly will have gained a good acquaintance with theoretical chemistry and physics.

The book does not fulfil, however, a widely recognized need for a general presentation of the more qualitative aspects of the quantum chemistry. Certain techniques exist and are used generally for applying quantum principles to ordinary problems. In general these center around the Uncertainty Principle and the Correspondence Principle, the first of which is

treated briefly, and the second of which is hardly mentioned. These approaches are generally useful to any one, because the more exact mathematical treatment is so difficult, and they are doubly useful in introducing beginners to the theory. In this respect the

book is insufficient. It may be impossible to accomplish both ends in one volume.

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THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE THE CLEVELAND MEETING

PROGRESS is being made in the preparation of programs for the Cleveland meeting, which will be held from September 11 to 16. Some of the important features and information regarding sessions of a number of sections and societies follow.

Dr. Isaiah Bowman's address as retiring president of the association is scheduled for Monday evening, September 11. Dr. Bowman has returned from his conferences in London and reports that his address has been written.

On Tuesday evening the annual Sigma Xi address will be delivered by Dr. Edwin J. Cohn, of the Harvard Medical School, on "Blood and Blood Derivatives," a subject of the highest medical importance, especially during the war period, to which he has recently made far-reaching contributions.

On Wednesday evening the annual Phi Beta Kappa address will be delivered by Dr. Harlow Shapley, director of the Harvard College Observatory. Dr. Shapley has selected as his subject "A Design for Fighting."

For Thursday evening arrangements have been completed for an illustrated lecture on the National Geographic Society-Smithsonian Institution Archeological Expeditions to Southern Mexico by Dr. Matthew W. Stirling, chief of the Bureau of American Ethnology and leader of the expeditions, and Mrs. Stirling.

Several important symposia are being organized on various phases of international cooperation in science after the war by Dr. Gardner Murphy, professor of psychology in the College of the City of New York; Lawrence K. Frank, chairman of the association's Committee on Science and Society, and Dr. Howard R. Tolley, chief of the Bureau of Agricultural Economics of the Department of Agriculture. Mr. Frank is also organizing a symposium on "Research after the War: The Need for a National Policy on Research."

The Section on Mathematics (A): Sessions on Tuesday afternoon and Wednesday morning for addresses by retiring vice-presidents.

The Section on Chemistry (C): Sessions on Thursday and Friday, mornings and afternoons. Symposia on catalysis and chemotherapy.

The Section on Geology and Geography (E): Sessions each day from Monday through Thursday, mornings and afternoons. A symposium on quartz, sessions on recent

geological research on the Eastern Interior Region, and the retiring vice-presidential address by Dr. M. M. Leighton on "Present Knowledge and Problems Concerning Glacial History of Illinois."

The Section on Zoological Sciences (F): The American Society of Zoologists will meet on Tuesday, Wednesday and Thursday. On Monday the American Society of Parasitologists will hold two sessions for papers and on Tuesday morning a joint session with the American Society of Parasitologists will be devoted to a symposium on "Parasitology in Relation to the War."

The Section on Botanical Sciences (G): The Section will meet on Tuesday afternoon with the session to be devoted to a program of papers by Dr. G. M. Smith, Stanford University, Dr. W. J. Robbins, New York Botanical Garden, and Dr. R. E. Cleland, Indiana University, retiring vice presidents of the Section. Section G will join with the Section on Agriculture (O) on Thursday morning for a session on "Nutrition—Some Current Views," with papers by a microbiologist, a plant breeder and a plant physiologist. The Botanical Society of America and the American Society of Plant Physiologists will hold sessions on Tuesday, Wednesday and Thursday, several of them jointly with other groups. The Mycological Society of America and the Sullivant Moss Society will also hold sessions.

The Naturalists' symposium on "Biology and Human Progress" will be held on Thursday afternoon. The Ecological Society of America will meet from Tuesday to Thursday. A joint session with the Section on Education (Q) on Wednesday morning will be devoted to a symposium on "The Teaching of Ecology" and "Ecology in General Courses in Biological Science." The Genetics Society will meet Tuesday through Thursday for invitation papers and demonstration papers, and will hold joint sessions with the American Statistical Society, the American Society of Zoologists and the American Society of Naturalists. On Friday and Saturday the National Association of Biology Teachers will hold business meetings and sessions for invited papers.

The Section on Anthropology (H): Sessions on Friday morning and afternoon and Saturday morning.

The Section on Psychology (I): The section will join with the American Psychological Association and the American Association for Applied Psychology on Monday and Tuesday for sessions that will be devoted almost wholly to organization problems. Section I will hold a joint session with the Section on Education (Q) on Tuesday evening.