

fined and laboratory tests for assessing the potential utility of these drugs are outlined. The actions, uses, and side-effects of the clinically useful agents are also described. The chemical aspects of neuromuscular blockade are not discussed here but will be the subject of a chapter in Volume 3 of the series.

The chemistry, pharmacology, mode of action, and clinical applications of the 2-halogenoalkylamine class of adrenergic blocking agents are fully and lucidly treated in Chapter 4. Although the clinical utility of these drugs has been limited, the relationship of their unique chemical properties to their pharmacological actions continues to intrigue the chemist and biologist. Thus the discussion of structure-activity relationships in this chapter, which up-dates earlier reviews of this topic, is particularly worthwhile.

The last chapter presents a concise account of the complex subject of anaphylactic reactions and the relationship of these laboratory phenomena to allergies. Very little chemistry is discussed here for, apart from the antihistamines and bronchodilators which are used with limited success, effective drug therapy of allergies is almost entirely lacking. This chapter is written in a way that permits the chemist who is unfamiliar with the subject to gain some knowledge of the principles and problems involved in a field where further research on several fronts is sorely needed.

All chapters are uniformly well written and, although the subjects are not treated in the exhaustive manner of the Progress in Drug Research series, provide thorough summaries of the status of these fields. The literature through 1960 appears to be well covered and some 1961 references are included. The printing and appearance of the book are excellent, although a disconcertingly large number of minor typographical errors are found in Chapter 4.

This volume is highly recommended not only to those chemists and biologists directly interested or active in the fields under discussion but to all workers who maintain a general interest in synthetic drugs and their modes of action.

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**Chemical Carcinogenesis.** By DAVID B. CLAYSON, M.A., Ph.D., Lecturer in the Department of Experimental Pathology and Cancer Research, the University, Leeds. Medical Book Department, Little, Brown and Co., Boston 6, Mass. 1962. 16 × 24 cm. 467 pp. Price, \$15.00.

This careful and critical review of chemical carcinogenesis will be of much use to all interested in the field. The collation of data alone in this field would be very worthwhile, and the thoughtful evaluation further increases the worth. The author's association with the group at the University of Leeds, long working with chemical carcinogenesis, adds much to the practical worth.

The problem of chemical carcinogenesis is covered under four general headings: its relevance to cancer in man, the experimental methods available, types of chemical shown to be carcinogenic, and the theories that have been advanced. An additional service which the author provides is to give a number of structural formulas, particularly when multiple names have been given to the same substance. This work is of material help to all those interested in carcinogenesis and is an almost essential companion to the catalog of chemical carcinogens of Shubik and Hartwell.

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**Brookhaven Symposia in Biology. Number 15. Enzyme Models and Enzyme Structure.** By Biology Department, Brookhaven National Laboratory, Brookhaven National Laboratory, Associated Universities, Inc., Upton, L. I., N. Y. 1962. ix + 337 pp. 17.5 × 25.5 cm. Price, \$3.50.

This volume contains the proceedings of a symposium held at Brookhaven in June, 1962. There are 17 papers, contributed by invited speakers, transcripts of the discussion which followed each paper, and two pages of good photographs of participants in informal poses.

The papers cover a wide range of subjects. Some of them deal with basic chemical and physical studies which affect the enzymologist's thinking, though they do not deal with enzymes directly or even with enzyme models. Among these are a paper on side-chain interactions in myoglobin crystals, by J. C. Kendrew, and a paper on general aspects of electron transfer in solution, by H. Taube.

A second category comprises papers which are progress reports on the work being done to elucidate the structure of specific enzymes. For example, there is a paper by B. S. Hartley which

gives a partial amino acid sequence of chymotrypsinogen, in which 224 of the 242 amino acid residues are at least tentatively located.

A third category of papers deals with studies of organic reactions (in the absence of any enzyme) which might serve as models for enzymic processes. An example is provided by a paper by W. P. Jencks on phosphate ester cleavage.

Finally, there are, of course, papers which deal directly with studies of enzyme catalysis. These include, for example, a general paper by R. A. Alberty on the interpretation of steady state kinetic data, one by D. E. Koshland, *et al.*, on the mechanism of action of chymotrypsin, one by H. Beinert, *et al.*, on the application of low temperature optical and electron paramagnetic resonance spectroscopy to the study of oxidative enzymes, etc.

The book as a whole can be recommended not only to enzymologists, but also to "outsiders," who are not themselves active in research in enzymology, for it represents an up-to-date cross section of what the modern enzymologist does and what he is interested in learning from others. The price is only \$3.50, and it is worth that much for the photographs alone.

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**The Thermochemical Properties of Uranium Compounds.**

M. H. RAND, M. R., D. Phil., Senior Scientific Officer at the Atomic Energy Research Establishment, Harwell, and O. KUBASCHEWSKI, Dr. phil. not., Dr. phil. habil., Senior Principal Scientific Officer at the National Physical Laboratory, Teddington. Oliver and Boyd Ltd., Tweeddale, 14 High Street, Edinburgh 1, England. 1963. 19 × 25 cm. 96 pp. Price, 30s.

This useful book has collected under one cover a wealth of information on the thermodynamic properties of uranium compounds (including alloys). It will be useful for libraries and for research groups involved in uranium and heavy element technology. The data are well referenced and tabulated and easy to locate. The authors have done more than merely to record existing data, but have used various chemical observations to help estimate new thermochemical functions where none now exist. Finally, there is a section illustrating a variety of uses to which such data can be applied.

Unfortunately there are some curious omissions and oversights. Very little complex ion (including hydrolysis) data are included, and in general aqueous species get rather poor coverage. In this respect, the volume is not as useful as previous summaries of the chemistry of uranium and the actinides. On page 12, a statement is made that there are no heat data available for the  $UO_2^{2+}(aq)$  ion. Yet both Latimer and the Bureau of Standards list a heat of formation (involving an estimated entropy). Still another oversight has resulted from apparently not noticing the latest values on the heats and free energies of formation of  $U^{4+}(aq)$  and  $UCl_4(c)$  from this reviewer's own laboratories. These kinds of oversights are perhaps a little too numerous throughout the book, and tend to detract somewhat from an otherwise satisfactory endeavor.

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**Theory and Applications of Ultraviolet Spectroscopy.** By H. H.

JAFFÉ and MILTON ORCHIN, Professors of Chemistry, University of Cincinnati. John Wiley and Sons, Inc., 440 Park Avenue South, New York 16, N. Y. 1962. xv + 624 pp. 15.5 × 23.5 cm. Price, \$15.00.

The authors have set for themselves the task of writing a book which begins as a primer in valence theory and which works its way up to interpretation of electronic spectra of complex molecules, both organic and inorganic. No particular background is assumed for the reader, the first three chapters (70 pages) treating such topics as light absorption laws, classification of the electromagnetic spectrum, elementary description of atomic orbitals, and Hückel MO description of simple molecules. The views in these the next three chapters are more or less standard.

The next six chapters (125 pages) represent an introduction to the fundamentals of molecular electronic absorption spectra including a very elementary account of character tables and symmetry representations, promotion schemes, and term levels for several key molecules ( $H_2$ , ethylene, butadiene, benzene, and formaldehyde), intensity theory, Franck-Condon principle, transition polarizations, excited state geometry, MO and VB descriptions of excited states, chromophore theory, and theory of substitution and solvent effect. Some of these topics are covered in quite some detail; *e.g.*, intensities, Franck-Condon