

### Chlorophyll Organization and Energy Transfer in Photosynthesis.

(Ciba Foundation Symposium 61.) Elsevier/North-Holland Inc., 52 Vanderbilt Ave., New York, NY 10017. 1979. 374 pp. 16 × 24 cm.

This symposium on chlorophyll organization and energy transfer in photosynthesis is a timely update of the basic processes through which plants and microorganisms contribute to the supply of nutritious food, high-quality feed, and fiber. This subject is especially important when one considers that the world population in 1930 reached 3 billion people and that by the year 2000, there will be about 7 billion people in the world. The projected increase underscores the need for a detailed understanding of the conversion of sun energy for sustaining the population growth.

On a more basic level, this symposium covers an important developing area of multidisciplinary science, yielding an updated concept of photosynthetic chemistry and mechanisms. Although many gaps remain in the isolation and characterization of chlorophyll-protein complexes, the symposium addresses itself to the more recent advances in this field.

The topics of the symposium include structure and function in photo-reaction-center chlorophyll, properties of chlorophyll on plasticized polyethylene particles, the preparation and characterization of different types of light-harvesting pigment-protein complexes from certain purple bacteria, chlorophyll-protein complexes of brown algae, P700 reaction center and light-harvesting complexes, resonance Raman spectroscopy of chlorophyll-protein complexes, possible structures for chlorophyll, a diamer in Photosystem I of green plants delineated by polarized photochemistry, effects of ions and gravitational forces on the supramolecular organization and excitation energy distribution in chloroplast membranes, fluorescence of light-harvesting chlorophyll *a/b*-protein complexes, implications for the photosynthetic unit, energy transfer in a model of the photosynthetic unit, dynamics of excitons created by a single picosecond pulse, chlorophyll orientation and exciton migration in the photosynthetic membrane, tripartite and bipartite models of the photochemical apparatus of photosynthesis, picosecond fluorescence from photosynthetic systems *in vivo*, energy transfer and its dependence on membrane properties, quenching of chlorophyll fluorescence and photochemical activity of chloroplasts at low temperature, and transfer and trapping of excitation energy in Photosystem II.

Each topic is followed by an in-depth discussion by the participants, and the symposium is concluded with a general discussion which includes manganese and the evolution of oxygen; the state of chlorophyll in Photosystem I, Photosystem II, and the light-harvesting unit; the Grosser structure of chlorophyll-protein complexes; and comparison of the Paillotin-Swenberg kinetic theory and the Searle-Treswell empirical treatment.

For the most part, the chapters are well balanced and contain a wealth of information. I recommend this book for serious professionals concerned with basic aspects of chlorophyll organization and energy transfer in photosynthesis.

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**Drug Toxicity.** Edited by J. W. GORROD. Taylor and Francis Ltd., 10-14 Macklin St., London WC2B 5WF, England. 1979. 326 pp. 15 × 23 cm.

This volume was compiled from lectures presented at the Aspects of Drug Toxicity Session of the Pharmaceutical Society of Great Britain's Easter School in April 1978. The book is a broad-based basic text in toxicology and is a companion volume to another text, *Drug Metabolism in Man*.

The opening chapter covers the production of toxic substances from the metabolic conversion of drugs and other foreign substances. This discussion is followed by three chapters indicating how these metabolic processes can be modified by physiological and pharmacological factors. Among the topics discussed are age- and species-specific developmental factors, genetics, and dietary factors, with emphasis placed on pharmacokinetic and metabolic considerations.

The theme of proprietary drug toxicity is introduced with a chapter on the influence of formulations on drug-induced side effects and potential toxic manifestations. This discussion is followed by a consideration

of generalized toxicological consequences resulting from drug-induced enzyme induction and enzyme inhibition. Another generalized topic is found in a survey of possible neoplasia induction occurring as a consequence of drug therapy.

These organism-directed discussions are complemented by a series of papers dealing with the effects of drugs and other biologically active substances on specific organs and organ systems. The systems covered include the liver, the lungs, blood and blood-forming organs, the nervous system, the fetus, the optic system, and the skin. Two final chapters cover the development of potentially useful drugs from chemicals toxic to connective tissue and the development of untoward effects during treatment with radiopharmaceuticals.

This text is a balanced blend of the theoretical and practical aspects of drug toxicity. Each chapter is adequately referenced to provide interested individuals with sources of more detailed information. This book provides a well-organized introductory approach for newcomers to the field of toxicology and points them in the direction in which this field is moving.

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**Comprehensive Organic Chemistry.** (A series of six volumes.) Edited by Sir D. BARTON and W. D. OLLIS. Pergamon, Oxford, England. 1979. 18.5 × 27.5 cm. Price \$1250. Vol. 1: edited by J. F. STODDART, xiii + 1227 pp. Vol. 2: edited by I. O. SUTHERLAND, xiii + 1329 pp. Vol. 3: edited by D. N. JONES, xv + 1323 pp. Vol. 4: edited by P. G. SAMMES, xiii + 1228 pp. Vol. 5: edited by E. HASLAM, xv + 1205 pp. Vol. 6: edited by C. J. DRAYTON, xv + 1628 pp.

The intent for publishing a work of this magnitude, encompassing over 8000 pages, was to provide a comprehensive and readable "work reflecting the current rapid development of modern organic chemistry." The result was perhaps not so much a comprehensive treatment of organic chemistry, as one would find in an encyclopedic series, as it is a comprehensible one, as hopefully stated by the volume editors. In addition to the anticipated treatment of the synthesis and reactions of organic compounds, the series attempts to relate the present development of organic chemistry to such developing subjects as biochemistry, inorganic chemistry, molecular biology, medicinal chemistry, and pharmacology. In this regard, the series was intended to be useful to those who employ the methods of organic chemistry in the study of both natural and synthetic compounds and their function in biological reactions. However, the presentation of organic chemistry as an intrinsic science also has been accomplished, and those facets of the subject that are essential to its present level of development are emphasized and adequately covered. E. Haslam states that the strength of organic chemistry does not lie in its naivete but in its rich diversity; this aspect of the science certainly is evident from the scope of topics selected for treatment.

An enumeration of the contents of the series should be of value to specialists and generalists alike. The treatment is based primarily on functional group chemistry but is presented throughout with the underlying mechanistic considerations. No separate section is devoted to theory, which the editors feel will "age" perhaps more quickly than the facts. The topics covered are arranged in 30 parts. Volume 1 includes a brief treatment of nomenclature and stereochemistry, followed by detailed discussions of hydrocarbons, halogen compounds, alcohols, phenols, ethers and related compounds, and aldehydes and ketones. The second volume is concerned with nitrogen-containing compounds, carboxylic acids and derivatives, and phosphorus compounds. Volume 3 treats organic compounds of sulfur, selenium, tellurium, silicon, and boron and organometallics.

Volume 4 involves heterocyclic compounds and gives a well-selected coverage of both common and uncommon heterocycles. Volume 5 is concerned mainly with compounds of biological importance: nucleic acids, amino acids, proteins,  $\beta$ -lactam antibiotics, enzyme catalysis, lipids, carbohydrates, synthesis of macromolecules, bioorganic chemistry including photosynthesis, and biosynthetic pathways. Volume 6 consists of formula, subject, author, reaction, and reagent indexes. This volume includes additional references, not specified in the text, for some of the subjects. About 20,000 references are cited in Volumes 1-5, and the literature up to mid 1978 generally is covered.

For a contemporary coverage of the entire subject of organic chemistry

and its interrelations with biochemistry, this series perhaps should be the first source consulted. Further detail may be located in monographs on specific topics; but for a comprehensive view of any general topic in organic chemistry, this series should be quite useful. Although the authors were faced with a formidable problem of selecting the most important topics, the series overall has a sufficient balance of new and old information to be of value for some time. For a relatively complete treatment of developments during the past two decades, this series probably is unchallenged by any single work; it represents a reasonable compromise between specialization and encyclopedism.

To the medicinal chemist, the extensive treatment of the newer methods of organic synthesis will be of great interest. Volume 5, which comprises naturally occurring compounds, enzyme catalysis, and biosynthetic pathways, should be of interest to all pharmaceutical scientists. Although relatively few examples of detailed mechanisms of enzyme catalysis are included, or known, the present understanding of the underlying factors is discussed well. The coverage of sulfur chemistry (vol. 3), usually deficient in most general texts on organic chemistry, is remarkably complete. The nitrogen heterocycles (vol. 4) also are given a more extensive treatment than some topics.

This series can be recommended for libraries in pharmacy colleges and in the pharmaceutical industry; the cost of the volumes, of course, would deter the individual purchaser. It is hoped that revisions of this series will be made, retaining the stated goal of keeping the science of organic chemistry comprehensible to those who use it.

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**Computer Assisted Studies of Chemical Structure and Biological Function.** By A. J. STUPER, W. E. BRÜGGER, and P. C. JURIS. Wiley, One Wiley Drive, Somerset, NJ 08873. 1979. xi + 220 pp. 16 × 23 cm. Price \$23.50.

This book provides a convenient introduction to pattern recognition techniques. It is very well written and sufficiently referenced to allow interested persons access to pertinent literature for more in-depth studies. Preprocessing and classification methods are summarized. Various means of generating molecular descriptions also are described. The methods are applied to tranquilizers and sedatives and to musk and trigeminally active odorants.

This book describes some of the methods used in pattern recognition studies. However, it is inappropriate to view the book as a "how-to-do-it" introduction to pattern recognition. While the algorithms are available, the most appropriate application of these algorithms to biological data still is a developing area. This book should stimulate additional research in this regard.

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**Antibiotics: Isolation, Separation, and Purification.** Edited by MARVIN J. WEINSTEIN and GERALD H. WAGMAN. (Journal of Chromatography Library, Vol. 15.) Elsevier/North-Holland Inc., 52 Vanderbilt Ave., New York, NY 10017. 1978. 769 pp. 16 × 24 cm. Price \$84.75.

At first glance, this 15th volume of the Journal of Chromatography Library appears to be an ambitious attempt to describe the isolation, separation, and purification of most of the known antibiotics. The publication contains 17 chapters, each of which is devoted to a group of chemically related antibiotics. Each chapter was written by a different contributor. The editors selected the authors for their competence and knowledge in their respective areas.

The book covers therapeutically useful drugs such as the penicillins, cephalosporins, griseofulvins, lincomycins, macrolide antibiotics, peptide antibiotics, tetracyclines, 2-deoxystreptamine-containing antibiotics, and actinomycins, as well as groups of less well-known antibiotics such as the ansamycins, siderochromes, streptothricins, polyethers, and marine and plant-derived antibiotics.

The contribution by scientists who are knowledgeable in their respective fields is the strength of this publication. However, multiple authorship often leads to variations in the format of the chapters and to unevenness in the depth of the discussions of the antibiotic groups. All of the authors cover in one form or another the subject matter of this volume; in many cases, useful additional information concerning the chemistry, physical characteristics, and therapeutic uses of the antibiotics is included.

The book is not encyclopedic in its coverage; although the naturally occurring penicillins are described, the semisynthetic penicillins are not included. The antitumor drugs, which are considered to be antibiotics in this country, also are not included. Discussions of polymyxin and bacitracin are not among the polypeptide antibiotics. Coverage in some areas appears to be sparse. The contributor for the tetracycline antibiotics included only 52 references for this important class of antibiotics, whereas the author of the streptothricins chapter made reference to 225 publications.

Overall, the publication brings together a lot of useful information, especially in the areas of the less well-known antibiotic groups.

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The price indicated in the April 1980 issue for Catecholamines: Basic and Clinical Frontiers, Vols. I and II (Pergamon Press) was \$200.00 per volume. It should have been \$200.00 per two-volume set.