Book Reviews

Prostacyclin. Edited by John R. Vane and Sune Bergstrom. Raven Press, New York. 1979. xiii + 453 pp. 17 × 24 cm. $39.50.

The milestone discovery of prostacyclin by Vane, Moncada, and their collaborators and its subsequent structural elucidation by Johnson et al. have kindled intense interest in many laboratories. To date, over 2000 publications have appeared in the literature dealing with some aspects of its chemistry and potent biological activities. It was, therefore, an opportune occasion when in October of 1978 the leaders of this field gathered at Brook Lodge, Augusta, Mich., and held a 2.5-day workshop under the sponsorship of the Upjohn Co. This book is the outcome of that meeting and serves as an overview of the rapidly advancing science up to that date.

This book is a collection of all the reports given in that conference, as well as a record of the subsequent discussions. The subjects are divided into nine groups, which may serve as nine chapters in a traditional book.

The first chapter, "Prostacyclin in Prospective", by the discoverer of this substance, serves as the introduction. The authors gave a succinct description of the discovery of prostacyclin, its functional relationship with thromboxane A_2, as well as its therapeutic potential.

The second chapter, "Prostacyclin and some Analogs", has three contributors. The authors described some very impressive chemical work, performed entirely by the Upjohn Co., that yielded a number of analogues. Those compounds were designed to provide chemically stable molecules that retain the biological activity. One report has elegantly settled the question of the nature of the metabolite reported earlier by Pace-Asciak.

The third chapter, "Formation of Prostacyclin", has six reports, dealing with the production of this substance in various cell cultures as well as the analytical methods for its detection.

The fourth chapter, "Metabolism of Prostacyclin", covers its topic rather briefly in two well-presented articles. We now realize that even if a chemically stable analogue is produced, we still need to overcome the obstacle of metabolic instability in order to find a therapeutic application of this hormone. A thorough understanding of the metabolic pathway of prostacyclin becomes even more important.

The fifth chapter "Some Other Effects of Prostacyclin", is a collection of five loosely related reports exploring its involvement in bone resorption, in inflammation, and in renal function. The antagonism of the effects of prostacyclin by endotoxin, as well as a novel platelet aggregometer, is also described.

The therapeutic application of prostacyclin in the cardiovascular system holds tremendous promise, and the effect of this substance in that system is the subject covered in the sixth chapter. The massive amount of information by authors like Vane gives excellent coverage of the field. The formation and disappearance of prostacyclin in the whole animal, as well as in isolated tissue, the in vivo antihypertensive effect, and prevention of arterial blockage are discussed. The controversial viewpoint that prostacyclin is a circulating hormone is presented. This section of "Prostacyclin" deserves the closest scrutiny by practitioners in the field.

The seventh chapter is devoted to the very practical application of prostacyclin in the prevention of microaggregation in extracorporeal circulations during hemodialysis, hemoperfusion, and membrane oxygenation. The three articles present a convincing case for its use.

The eighth chapter is an article concerning the toxicology of prostacyclin. When considered as a conventional drug, this compound is shown to be "safe" in spite of its profound hemodynamic and cardiovascular effect.

The ninth chapter deals with the action of prostacyclin in man. The hemodynamic and hypotensive effects of prostacyclin by different routes of administration are reported, as are the effects on other smooth muscle, e.g., uterus and respiratory tract. The last article is the minutes of the discussion of potential therapeutical use of prostacyclin by participants of the conference.

This book is a timely summary of work done in a number of important laboratories around the world and is recommended for researchers in this field. It should not be considered a definitive treatise on the subject, since it necessarily is limited to the interest of the conferees. One wishes that some discussion would be included in such areas as the different receptor sites for PGI_2 and PGD_2. Those of us who have benefited from this publication are eagerly awaiting the appearance of the next volume.

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Cisplatin, Current Status and New Developments. Edited by A. W. Prestayko, S. T. Crooke, and S. K. Carter. Academic Press, New York. 1980. 16 × 23 cm. XV + 527 pp. $30.00.

Since Rosenberg's discovery in the later 1960's that *cis*-dichlorodiammine platinum(II) (cisplatin), produced in electrolysis of growth media containing ammonium chloride using platinum electrodes, caused a decrease in density of bacteria, there has been a tremendous effort in the investigation of platinum complexes as antitumor agents. This has involved the synthesis of analogues of cisplatin, a study of their biochemistry, and an evaluation of their efficiency in various types of cancer. This book, "Cisplatin", is the compilation of papers which were presented at a symposium held September 27–28, 1979, in Atlanta, Ga. There were 19 preclinical studies presented all the way from physical and chemical compatibility of cisplatin in various diluents and parenteral solutions to interactions of cisplatin and analogues on DNA to ultrastructural studies, to structure–activity relationships to toxicity studies in animals. The 39 clinical studies present data indicating the effectiveness of mainly cisplatin, but some information on analogues on testicular, murine bladder, penile, prostate, ovarian, cervical, endometrial, head, neck, and lung cancers. Cisplatin appears to be particularly effective in testicular, cervical, bladder, and head and neck tumors. The drug, now licensed for use in humans, has some severe limitations. The primary adverse effect is in nephrotoxicity, which is a recurrent theme throughout this book and especially in the clinical studies section. Various techniques, such as hydration, mannitol diuresis, and arterial injection, have been used to reduce nephrotoxicity along with ototoxicity and myelosuppression. There is no mention in the papers presented of the mutagenic activity found by the Ames test for cisplatin with its potential adverse long-term effects. Of course, this is not of serious concern as yet, since the survival rates in many instances are only counted in months. On the molecular level, the concensus, as is generally held today, is that the antitumor drug action is on DNA; however, DNA–protein cross-linking was introduced at least in one paper. There are reports of cisplatin–protein interactions in the overall transport and actions of the drug and especially as involves its toxic actions. Also some direct and indirect evidence is presented for effects on enzyme systems (ATPase activity), which has been an area of active study in our laboratory where some 10–12 enzymes have been shown to be inactivated by cisplatin and many analogues. The aquation of the platinum complexes in water is pointed out with its relationship to chemical activity and toxicity. It is of interest that L-methionine selectively inhibited the cytotoxic effects of cisplatin. Pt(IV) compounds were reported to break Pm-2 DNA in vitro, whereas Pt(II) produced conformational changes in supercoiled PM-2 DNA. It is suggested by one group that an obvious first choice in studying toxicity is to use purified enzyme systems. It is apparent from the wide range of actions of cisplatin that more research is needed on its effects on enzyme systems and metabolic pathways to produce a comprehensive

knowledge about the "side effects" and their irreversibility or reversibility. There are many papers on combination therapies in an attempt to reduce individual toxicities and to obtain synergistic effects. We would have to agree that at the present time cisplatin appears to be an exciting antitumor agent with great promise not only in treatment of cancer but in elucidating the molecular actions leading to the cancer condition.

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Alkaline Phosphatase. By R. B. McComb, G. N. Bowers, and S. Posen. Plenum Press, New York and London. 1979. 17 × 25.5 cm. XVI + 986 pp. $75.00.

Alkaline phosphatases are a group of enzymes which have the capability of hydrolyzing phosphate esters. Although these enzymes have been known for more than 70 years, biochemists still have no clear idea as to their physiological function or their value to an organism. Numerous functions have been suggested for alkaline phosphates, including the hydrolysis of phosphate esters, the synthesis of phosphate esters, and the transport of organic and inorganic molecules. Clinically, the estimation of alkaline phosphatases is widely used to diagnose physiological or pathological processes involving the skeleton, the hepatobiliary system, and the placenta.

This book attempts to bring together the vast biochemical and clinical literature currently available on this group of hydrolytic enzymes. The book is intended to serve as a reference text for clinical chemists, physicians, veterinarians, biochemists, and biologists interested in alkaline phosphatases. Considering the extensive literature available on this subject and its multidisciplinary nature, the authors should be commended for the concise yet complete way they have organized and presented this information.

The book begins with a very interesting historical account of the events which has led to our current state of knowledge about alkaline phosphatases. Subsequent chapters deal with the properties of alkaline phosphatases, such as their distribution (Chapter 3), their purification (Chapter 4), their structural features (Chapter 5), their reaction mechanisms (Chapter 6), methods of assay (Chapter 7), and the properties of isoenzymes (Chapter 8). Chapter 9 describes the techniques which are currently used to measure alkaline phosphatases in clinical medicine. The chapter is organized by specific organ systems and is devoted entirely to the estimation of this enzyme activity in human biological fluids. In contrast, Chapter 10 is devoted to the estimation of serum alkaline phosphatases in domestic, experimental, and other animals, whereas Chapter 11 describes the use of these enzymes for industrial and analytical purposes. In Chapter 12, the authors attempt to critically evaluate the data available concerning the possible physiological functions of these enzymes.

Scientists specifically interested in the biochemical or clinical aspects of alkaline phosphatases would find this to be an extremely useful reference book and well worth the rather expensive price tag.

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Concepts of Organic Synthesis: Carbocyclic Chemistry. By Bradford P. Mundy. Marcel Dekker, New York. 1979. x + 392 pp. 18 × 26 cm. $24.50.

This is the eighth volume in the series "Studies in Organic Chemistry" (Paul Gassman, Ed.) and represents an outgrowth of the author's short reviews in the *Journal of Chemical Education* several years ago. The book might be described as a "mini-House" ("Modern Synthetic Reactions", H. O. House, Benjamin, 1972) written in a text-book format and with exercises. As stated in the publisher's press release, "the objective is to introduce the student to an interesting class of natural products (terpenes) in addition to fostering an appreciation for the manifold possibilities of synthetic design". As such the book succeeds.

Following a very brief introduction to terpenes, Mundy covers "Conformation and Stereochemistry", "Methods of Ring Formation", "Preparation of Small Rings", "Orbital Symmetry Considerations", "Synthetically Useful Rearrangements", "Terpene Biosynthesis", "Organometallic Chemistry", "Alkylations", "Hydration Methods", "Hydroxylation Methods", "Reductions", "Oxidation", "Halogenation", "Preparation of Alkenes", "Methodologies", and "Selected Examples of Synthesis".

Unfortunately, text coverage is generally out of date (literature examples discussed in the text are usually pre-1973). This disappointment is somewhat ameliorated by the "References and Notes", at the end of each chapter, which contain mention of literature up to 1978. But the fact remains that this more recent material is not integrated into the text and is easily overlooked. Some important developments are entirely missed. For example, the otherwise excellent presentation of sigmatropic rearrangements in synthesis does not mention Evans' (1975) base-accelerated oxy-Cope rearrangement. Even more disappointing is the observation that what should be the two crowning chapters (the last two on "Methodologies" and "Selected Synthesis") are truncated and mediocre at best.

Topics are amply illustrated with examples, figures, tables, etc., and each chapter contains a set of exercises (taken from the literature, with references), generally of the mechanism or predict-the-product type. Mundy writes well and this reviewer found few grammatical errors (subject–verb disagreement on page 23 and incorrect use of the intransitive verb "react" on page 169). In contrast was the finding of many errors in formulas (pages 22, 48, 56, 64, 162, 168, 174, 193, 199, 263, 315, 337, and 369), references (pages 53, 71, and 249), and spelling (pages 116 and 375). These were caught in a fast reading and in a spot check of the references, so there may well be more errors than those listed on the above pages.

The book is attractively printed and the diagrams and formulas are excellent, though perhaps a bit small. Also, although each structure is assigned a number, these are seldom referred to in the text. This leads to occasional clutter in the diagrams. The book is reasonably priced, especially when one considers that an earlier volume of about the same length in this series cost nearly $40.

In summary, I can recommend the book to graduate students and advanced undergraduate students in organic synthesis as a book with which to sharpen their synthetic tools and to elevate their perception of organic synthesis.

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Advances in Neurology. Volume 23. Huntington's Disease. Edited by T. N. Chase, N. S. Wexler, and A. Barbeau. Raven Press, New York. 1979. 820 pp. $38.00.

For a century following the classical description of Huntington's disease (HD), research into its cause, prevention, and treatment lay relatively quiescent. In 1972 the First International Symposium on Huntington's disease was held, and the proceedings were published as Volume 1 of *Advances in Neurology*. Considerable attention then was devoted to historical aspects of the disease, to clinical descriptions, and to problems of differential diagnosis. Reports of biochemical explorations of neurotransmitter dysfunction were preliminary in nature. The present volume represents the proceedings of the Second International Symposium held in 1978. That a major reorientation has occurred in the field is reflected by the chapter titles in this book.

The introductory chapter deals with epidemiologic methods and data collected from around the world. The question of where on the 46 chromosomes of man the HD gene lies is explored by investigators reporting on their genetic linkage work. The pathology chapter deals with the current neuropathological status of HD and includes some excellent electron micrographs. The physiology of the basal ganglia is first detailed and then motor unit control is discussed as a possible presymptomatic test. The longest chapter in the book deals with the clinical aspects of diagnosis and neuropsychological and psychiatric aspects of HD. The current investigations of neuroendocrine changes in the hypothalamic–pituitary axis are described in their relation to HD.

The cellular biology of HD fibroblasts is reviewed. The relation of membrane defects and immunology in HD is also covered. An extensive chapter on the biochemistry of HD looks at the role of brain gangliosides, various neurotransmitters, and peptides in HD. The chapter on animal models deals primarily with kainic acid treatment but does mention glutamate and allylglycine experiments. The pharmacology chapter extensively covers GABA receptor binding studies. The final chapter on experimental therapeutics reviews the efficacy of adrenergic and dopaminergic agonists, choline and isoniazid therapy. Unfortunately, nothing is included with regard to structure–activity relationships among these classes, and few chemical structures are illustrated.

In individuals with HD, it is one aberrant gene which causes severe tissue destruction, giving rise to profound and debilitating symptoms in the realms of thinking, feeling, and movement. This volume provides suggestive evidence of the resultant generalized abnormality in cell-membrane structure and function as researchers probe ever closer to the basic defect causing HD. New and potentially more relevant animal models have been developed, and documentation of additional neurotransmitter abnormalities lends hope for development of improved drugs for symptomatic relief. Remarkably, considering the 182 contributing authors, this book presents a concise as well as a comprehensive review of current thinking among scientists working with HD. The overviews presented at the beginning of most chapters is an editorial practice which should be used more often in volumes like these, as it allows readers to be brought quickly up to date and given a perspective on what is to follow.

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Practical Mass Spectrometry. A Contemporary Introduction. Edited by Brian S. Middleditch. Plenum Press, New York. 1979. xv + 387 pp. 16 × 23.5 cm. $29.50.

This volume is aimed toward the novice to the field of mass spectrometry who needs to learn about instrumentation and how MS techniques can be appropriately applied to specific research problems. History, theory, equations, and interpretation of mass spectra are minimized. The chapters result from courses taught several times by the authors—16 authors from academic, industrial, and government laboratories. Topics include: basic mass spectrometry, instrumentation, combination gas chromatography–mass spectrometry, selected ion monitoring, concentration techniques, automatic data processing, collections of mass spectral data, the Mass Spectrometry Data Centre, and the Mass Spectral Search System. Four chapters discuss specific applications of mass spectrometry oriented toward environment, pharmaceutical, petrochemical, and cosmochemical/geochemical research. Problems are found at the end of most chapters and solutions are given at the back of the book.

The novice to mass spectrometry is rendered a valuable service by the authors of this lucidly written and edited volume. Not only are the chapters, and especially the application chapters, densely packed with years of accumulated practical experience, but many appropriate experimental details and the rationale behind those experiments are also presented.

This book is highly recommended to the newcomer to the field of mass spectrometry.

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Hormonal Proteins and Peptides. Volume 8. Prolactin. Edited by Choh Hao Li. Academic Press, London. 1980. xiv + 231 pp. 16 × 24 cm. $29.50.

This volume in the series of "Hormonal Proteins and Peptides" presents articles on aspects of the biology of the widely investigated hypophyseal hormone prolactin. The first chapter, written by C. H. Li, is about the structural studies of the mammalian hormone, mainly ovine and porcine, and recent work on fish prolactin. The research reviewed is rather exclusively that of Li and co-workers. Chemical modification and spectral experiments suggest biological activity is tolerant of significant conformational changes. Despite progress in isolation and sequence determination of the hormone of various species, much remains to be understood about conformation and structural determinants of the various biological activities. Active fragments specific for one activity over another are important to develop.

The next three chapters are reviews of physiological effects of prolactin where the authors seem to summarize and synthesize the respective topics well for the nonspecialist. The mode of action of prolactin in normal growth and function of the mammary gland is discussed in Chapter 2 by J. J. Elias. The complex interaction of prolactin, estrogen, and progesterone cause lobuloalveolar growth. The process of lactogenesis requires glucocorticoids in addition to prolactin in some animals. Insulin, hydrocortisone or cortisol, and prolactin produce differentiation of alveolar epithelial cells in culture. Secretion depends on the presence of prolactin. The cell biology is well defined, but biochemical mechanisms such as intracellular mediators (cGMP, prostaglandins), membrane receptors involving interaction with estrogen receptors, etc. remain unclear. The role of prolactin in mammary tumor induction and growth is the next chapter by K. H. Clifton and J. Furth. Mammotrophic tumors induced by chronic estrogen secrete prolactin. This is an interesting system to study, but a homogeneous cell type secreting only prolactin has not been possible to obtain. The dose and timing of prolactin, estrogen, and carcinogens on carcinoma or pituitary tumor formation suggest interesting priming and balance effects.

The chapter on comparative endocrinology, by W. C. Clarke and H. A. Bern, catalogues the many effects, yet salient generalities are maintained. The reproductive effects promoting growth and differentiation of sex organs, nurturing physiology including milk ejection, pigeon crop sac, incubation patch, integumentary mucus of teleost fish, and sea horse brood patch are all specializations of epithelial structures. The major role in primitive animals is osmoregulation, controlling sodium and water retention in bladders, skin, and integument of fish. These very same mechanisms are preserved in higher animals. A functional evolution of prolactin is described involving osmoregulatory activity and later the mammary secretion stimulating activity and acquiring of growth promoting effect.

The final chapter, by R. O. Greep, describes the interesting career of F. L. Hisaw who isolated the gonadotropins and showed, among many other comparative endocrinological discoveries, that estrogen stimulates resorption of pelvic bones and the equally interesting career of H. B. van Dyke who discovered FSH and LH, separating the two activities, isolated the first neurophysin, and defined the pharmacological agents oxytocin and vasotocin in the neurohypophysis.

Overall the book is complete with facts such as sequences and includes helpful summary tables complementing the text. However, some areas of research are missing, such as an update on the neuroendocrine role, biosynthesis, and prolactin effect on ovaries.

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Bromocriptine, a Clinical and Pharmacological Review. By M. O. Thorner, E. Flückiger, and D. B. Calne. Raven Press, New York. 1980. VII + 181 pp. 16 × 24 cm. $22.00.

Bromocriptine is the exciting and very useful prototype drug of the new ergoline dopamine agonist class. The authors of this volume are eminently qualified to review the history and current status of this agent. E. Flückiger is the "father" of bromocriptine and M. O. Thorner has done much of the basic endocrinological work with the drug. D. B. Calne, on the other hand, has been associated with the elegant more recent application of the drug in Parkinsonism. There is no question that in bromocriptine we have an exceedingly useful drug in dopamine-related disorders. In the following chapters the authors pull together and critically review data on the drug from literally hundreds of cited original

papers: (1) "The Interrelationship of the Nervous and Endocrine Systems and the Role of Dopamine Agonist Drugs", (2) "The Pharmacology of Bromocriptine", (3) "Bromocriptine Therapy for Hyperprolactinemia and Suppression of Puerpural Lactation", (4) "Bromocriptine Therapy for Acromegaly", (5) "Bromocriptine Therapy for Parkinsonism", (6) "Adverse Reactions to Bromocriptine", and (7) "Future Indications for Bromocriptine".

The chapters are uniformly well-written, making the volume a valuable addition to the literature of dopamine agonist drugs. The volume is directed mainly to clinicians, but it should be of value also to medicinal chemists. For specialists in the field, other reviews are available: D. Parkes, *Adv. Drug Res.*, 12 (1977), and B. Hökfelt and S. J. Nillius, *Acta Endocrinol.*, 88, Suppl 216, (1978).

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The Organic Constituents of Higher Plants. 4th Edition. By Trevor Robinson. Cordus Press, North Amherst, MA. 1980. iv + 352 pp. 22 × 28.5 cm. $13.75.

The fourth edition of this text, review or reference work—it would serve equally well as either—follows the format and the almost conversational style of its predecessor. While it is "directed primarily toward botanists and pharmaceutical chemists" (Preface, page ii), it will function just as well to introduce the organic chemist to the vast array of natural compounds produced by the chemical factory we know as the Plant Kingdom. The selection of some of the topics is, admittedly, the author's personal one, although most of those compound types of importance to the medicinal chemist are included. Of particular note is the extensive bibliography consisting of 2200 citations of original publications, over half of which are new to this edition. At the price, no chemist interested in compounds of natural origin, especially one who teaches in this field, should be without it.

Staff

Noncatecholic Phenethylamines. Part 2. Edited by A. D. Mosnaim and M. E. Wolf. Marcel Dekker, New York. 1980. xv + 365 pp. 15 × 23 cm. $55.00.

This book, Part 2 of a monograph on noncatecholic phenethylamines, presents the current knowledge of the possible biochemical, physiological, and pathological functions of three amines: tyramine, octopamine, and phenethanolamine. These amines are found in both vertebrate and invertebrate tissue. While in the latter case there is strong evidence suggesting that they are active neurotransmitters, comparable evidence is lacking for vertebrates. In addition, the concentration of these amines in the vertebrate nervous system has been found to be low and, consequently, they are difficult to measure accurately. However, the brain concentration has been shown to rise substantially after the administration of certain drugs and in certain pathological conditions, suggesting that these amines may have clinical significance.

The book contains 14 chapters, which cover such topics as the neurochemistry of the noncatecholic amines, including their uptake, release, metabolism, and postsynaptic effects in mammalian brain; the function of these amines in the invertebrate nervous system; the possible role of these amines in a variety of pathological conditions, including neuropsychiatric disorders; and recently developed methods that can be used for the measurement of these amines in biological tissue. Each chapter contains a review of the literature on the specific subject matter in addition to the experimental results. The chapters are well organized, each beginning with an outline of the subjects discussed, and, in general, are written clearly. The bibliography covers articles mostly through 1977, although there are a few 1978 references cited.

Although the role of these amines in normal and pathological function is still inconclusive, many of the studies that are presented should direct future research in the area. I can recommend this volume to neuropharmacologists and nerochemists interested in the field of neurotransmission.

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Antibiotics and Chemotherapy: Current Topics. Edited by R. N. Gruneberg. University Park Press, Baltimore. 1980. xi + 219 pp. 16 × 24 cm. $27.50.

This book is the fourth volume of the "Current Status of Modern Therapy" series published by the MTP Press of Lancaster, England. It focuses on the areas of antibiotics and chemotherapy which are experiencing rapid change. The topics which are covered in this volume are: the chemotherapy of infective endocarditis, prophylactic antimicrobial drug therapy, the cephalosporin group of antibiotics, anaerobic infections and their treatment, the chemotherapy of gonorrhea and nonspecific genital infections, combinations of antibacterial drugs, and antibiotic prescribing policies. Four of these chapters focus on a particular clinical disease state, its causes, and the drugs used in its treatment. Two of the chapters approach the subject matter from the point of view of the drug(s) and the diseases for which they are used. The last two chapters deal with the development of antibiotic-prescribing policies which could result in better and safer therapy. Each of the chapters contains a number of references to the current literature through 1979.

The general orientation of the chapters can be appreciated by considering the chapter entitled "Prophylactic Antimicrobal Drug Therapy", which is divided into three major divisions: (1) Features of Rational Chemoprophylaxis, (2) Absolute and Provisional Indications for Chemoprophylaxis, and (3) Uncertain Indications for Chemoprophylaxis. This book should prove to be most useful to clinicians, educators, clinical pharmacists, and others involved in clinical applications.

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Hydrophobic Interactions. By A. Ben-Naim. Plenum Press, New York and London. 1980. 16 × 23 cm. xiii + 311 pp. $32.50.

The concept of hydrophobic interactions is vitally important to the comprehension of many biochemical and chemical processes in aqueous solution. This book describes the origin and consequences of hydrophobic interactions with as much explanation and information as is at present available, while pointing out the areas in which there are still unanswered questions. It is important to note that hydrophobic interactions are a result of the relatively strong water–water hydrogen bonds which have to be broken to enable a hydrocarbon group to be inserted into the liquid. In spite of the name "hydrophobic interactions", the hydrocarbon–water interactions (Debye and London forces) are actually stronger than the hydrocarbon–hydrocarbon interactions (only London forces). It is the unfavorable free-energy change (mainly a result of an unfavorable entropy effect), when a "hole" is made in the hydrogen-bonded water structure which forces the inserted hydrocarbon groups to come together.

The concepts are presented in an attractive and descriptive manner with the necessary statistical thermodynamic background. More complex theoretical derivations are presented in appendixes.

The chapters have the following titles: "Introduction and Fundamental Equations" (chapter 1), "Very Dilute Solutions and Hydrophobic Interactions" (chapter 2), "Pairwise Hydrophobic Interactions" (chapter 3), "Hydrophobic Interactions among Many Solute Particles" (chapter 4), and "Temperature and Pressure Dependence of the Hydrophobic Interactions" (chapter 5).

The author is a recognized authority on hydrophobic effects and has carefully chosen examples from the world literature to develop his arguments. The possibility of solvophobic interactions in solvents other than water is also considered. The tables and

clear line diagrams well illustrate the material. Many of the examples include the behavior of the side chains of proteins and polymers and also micellar aggregation. Additional attractive features are the author's personal views and suggestions for future experimental work at the end of each chapter.

The book will be a valuable addition to the libraries of biochemists, medicinal chemists, pharmaceutical scientists, and, indeed, to all chemists with an interest in aqueous solutions. The monograph represents a good read in the physical chemistry of aqueous solutions and is attractively presented at a price which should place the book within the purchasing power of dedicated students as well as of established scientists.

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Peptides: Structure and Biological Function. Proceedings of the 6th American Peptide Symposium. Edited by E. Gross and J. Meienhofer. Pierce Chemical Co., Rockford, Ill. 1979. xxxi + 1079 pp. 15 × 23 cm. $45.00.

For over a decade, the proceedings of the American Peptide Symposium have reflected the dynamic growth of physical, chemical, and biological studies of peptides. The surprising variety of polypeptide structures with diverse biological activities has made this field a truly interdisciplinary area of biochemical research. This volume chronicles the sixth symposium, which was held in June 1979 at Georgetown University, Washington, D.C., and attended by over 600 scienties from 2 dozen countries. K. Hoffman delivered a fitting tribute to the late V. du Vigneaud, the 1955 Nobel laureate in chemistry. As recipient of the second Alan E. Pierce Award, R. B. Merrifield summarized his current research on solid-phase peptide synthesis.

This substantial book contains 13 papers on high-pressure liquid chromatography and other modern techniques of peptide analysis, 11 papers on isolation, purification, and characterization of peptides, and 21 papers on studies of peptide conformation. Peptide synthesis is represented by 34 papers on peptide bond formation, functional group protection, and solid-phase methods, by 36 papers on the synthesis of biologically active peptides, and by 11 papers on the semisynthesis of small proteins.

Other studies of peptide biology include 24 papers on peptides affecting the central nervous system, 17 papers on peptides that mediate ion transport, 10 papers about peptides with chemotactic, antitumor, or immunologic activities, 7 papers on peptides in reproductive physiology, and 7 papers concerned with the interaction of peptide hormones with their cellular receptors. Recombinant DNA technology and its potential for the biosynthesis of pharmacologically important peptides are also discussed.

The peptide community owes a debt of thanks to E. Gross and J. Meienhofer for the timely publication of a well-edited summary of the Sixth American Peptide Symposium. This book, like its predecessors, captures the spirit and practice of modern peptide studies. It will be a useful addition to chemical, biological, and personal libraries.

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Books of Interest

Liquid Chromatography of Polymers and Related Materials. Part II. Volume 13. By Jack Cazes and Xavier Delamare. Marcel Dekker, New York. 1980. viii + 262 pp. 16 × 23 cm. $35.00.

Membrane Fluidity (Biophysical Techniques and Cellular Regulation). By Morris Kates and Arnis Kuksis. The Humana Press Inc., Clifton, N.J. 1980. xii + 445 pp. 16 × 23.5 cm. $44.50.

Recent Developments in Chromatography and Electrophoresis. Volume 10. By Alberto Frigerio and Malcolm McCamish. Elsevier Scientific, Amsterdam and New York. 1980. x + 340 pp. 16 × 23 cm. $68.25.

Current Chemotherapy and Infectious Disease. Proceedings of the 11th International Congress of Chemotherapy and the 19th Interscience Conference on Antimicrobial Agents and Chemotherapy, Boston, MA, Oct 1–5, 1979. Volumes 1 and 2. By John D. Nelson and Carlo Grassi. The American Society for Microbiology, Washington, D.C. 1980. 1797 pp. 18 × 26 cm. $75.00.

The Molecular Basis of Microbial Pathogenicity. Dahlem Konferenzen. Life Sciences Research Report 16. By H. Smith, J. J. Skehel, and M. J. Turner. Verlag Chemie, Weinheim, Deerfield Beach, FL, and Basel. 1980. 357 pp. 15 × 21 cm. $27.50.

The Renin–Angiotensin System. Advances in Experimental Medicine and Biology. Volume 130. By J. Alan Johnson and Ralph R. Anderson. Plenum Press, New York. 1980. x + 307 pp. 17 × 25.5 cm. $37.50.

High-Performance Liquid Chromatography. Advances and Perspectives. Volume 1. By Csaba Horvath. Academic Press, New York. 1980. xi + 330 pp. 16 × 23.5 cm. $35.00.

Casarett and Doull's Toxicology. The Basic Science of Poisons. Second Edition. By John Doull, Curtis D. Klaassen, and Mary O. Amdur. Macmillan, New York. 1980. 777 pp. 18.5 × 26 cm. $29.95.

Biological Effects of Alcohol. Advances in Experimental Medicine and Biology. Volume 126. By Henri Begleiter. Plenum Press, New York. 1980. xiii + 832 pp. 17.5 × 26 cm. $75.00.

Lithium Effects on Granulopoiesis and Immune Function. Advances in Experimental Medicine and Biology. Volume 127. By Arthur H. Rossof and William A. Robinson. Plenum Press, New York. 1980. xiv + 475 pp. 17 × 25.5 cm. $47.50.