Book Reviews

Reagents for Organic Synthesis. Volume 6. Edited by Mary Fieser and Louis F. Fieser. Wiley, New York, N. Y. 1977. vii + 765 pp. 15.5 × 23.5 cm. $29.50.

This volume covers reagent literature published between Aug 1974 and Dec 1975. It includes references to approximately 400 reagents reviewed by Mary and Louis Fieser for the first time, as well as new references to over 400 previously discussed reagents. The synthetic chemist would not want to be without this volume, the sixth of this series.

Staff Review

Saturated Heterocyclic Chemistry. Volume 4. Specialist Periodical Reports. By M. F. Ansell and G. Pattenden, Senior Reporters. The Chemical Society, Burlington House, London. 1977. x + 362 pp. 13.5 × 21.5 cm. $60.00.

The value of the series, "Saturated Heterocyclic Chemistry", to the medicinal chemist is unquestionnable. Volume 4 contains excellent coverage of the chemical literature dealing with these ring systems during 1974, and the major problem is the delay in publishing. Although 3 years old, so much information is provided which will be used by an investigator that this series should be readily available.

This volume follows the previous pattern in which size is the basis of organization with the type of heteroatom providing the subdivision. Fused-ring heterocyclics, ring systems containing two or more heteroatoms, macrocyclics, and bridged heterocyclics are covered. The chapter on medium-sized rings, omitted from Volume 3, reviews the literature of 1973 and 1974. Many examples are taken from the literature dealing with medicinal chemistry. It is a pleasure to read a book which is printed and has clear formulas, although this necessitates the high cost of the book. The nature of the coverage, however, makes it useful chiefly in a library where access to the original references is essential to supplement the text. This is especially true where reference to properties such as ^{13}C magnetic resonance spectra and conformational equilibria is cited without discussion.

Errors in such a comprehensive review of the literature are inevitable, and a number of formulas are wrong, e.g., on p 67 (compound **434**), p 69 (**448**, **450**, and **451**, stereochemical errors), p 75 (**494**), p 230 (**4**), and p 323 (Scheme 10). The requirements for brevity result in some errors such as confusing ring size (p 234) and an incorrect intermediate (p 186). Relatively few are serious and can be corrected by checking the reference.

Such a wealth of information is not very readable but must be extracted with diligence. The major change which would enhance the value of this book would be an index.

The contributing reporters are to be congratulated for their diligence and devotion to a difficult task.

Texas College of Osteopathic Medicine **Gloria G. Lyle**

Fundamentals of Integrated GC–MS. Part III. The Integrated GC–MS Analytical System. By B. J. Gudzinowicz, M. J. Gudzinowicz, and H. F. Martin. Marcel Dekker, New York and Basel. 1976. vii + 603 pp. 23.5 × 15.9 cm. $59.75.

This is the final book of a three-part series comprising Volume 7 of Marcel Dekker's Chromatographic Science series. Parts I and II describe theory and principles of gas chromatography and mass spectrometry, respectively.

The present book concludes the set with three additional chapters: basic vacuum technology and the GC–MS interface, Chapter 7; optimization of the operational parameters of the GC–MS analytical system, Chapter 8; and data presentation by standard TIC/SID/MID and computerized techniques, Chapter 9.

Chapter 7 is divided into two parts, a section devoted to the mathematical development of equations for predicting gaseous behavior from kinetic theory and a discussion of approaches and parameters of GC–MS interfacing. The first section is redundant and can be found in any college physics text. The inclusion of this material and absence of discussions pertaining to various pumping systems (i.e., oil diffusion, ion-pumping, turbo-molecular pumps), advantages and limitations of each, devices to measure and access vacuum, differentiation pumping, and basic elements for maintaining vacuum systems would appear incongruous with the book's intent. The next 125 pp described the design and operational parameters of numerous molecular separators, reflecting the marked interest the area evoked 5–10 years ago. Many of the systems described are outmoded at present but the section does not have historical interest.

Chapter 8, up to p 291, concerns chromatographic operation only and it is difficult to understand its separation from Part I of this series. Section G of this chapter, "The GC as a MS Detector", is an odd title inversion of questionable value and since the material pertains to aspects of computer interfacing, the subject matter could well be included in the following chapter in the section, "The Mass Spectrometer as a GC Detector".

Today almost every commercially available gas chromatograph/mass spectrometer system is equipped with a computer-based data system. Therefore, the detailed discussion of early, in many instances entirely outdated and never operational, approaches makes this chapter a historical account of early work. Little of the work described is still surviving in systems representing state-of-the-art instrumentation. This is best demonstrated by the fact that of the 171 references in this chapter, more than half are from the 1960's or even earlier; only four references cover work published in 1974 and none is more recent. To quote almost verbatim specifications of commercial or individually built systems extensively and without any critical comparison is of little help to the reader. At most it saves him going to the original literature for these details, but because of the absence of more recent, much more applicable systems, even this is more detrimental than helpful. An extraordinary amount of space is devoted to the description of available subroutines and pictures of their displays even though these systems have not been available for quite some time. Perhaps the most extreme case is the discussion of the MASH program (p 501), which was a commercial hardware/software package offered by one of the leading computer companies with the best intentions but almost complete lack of success. Here it is described as a package which is available and useful, a greatly misleading impression.

The problem with this book and, in particular, the last chapter is the fact that is has been written by individuals who rely on the literature and manufacturers' pamphlets rather than themselves being involved in the development of the field. This, by necessity, leads to an outdated, noncritical compilation which is more a guide to the early literature than an informative text.

Harvard Medical School **Vernon N. Reinhold**

Massachusetts Institute of Technology **Klaus Biemann**

Hormonal Proteins and Peptides. Volume IV. Growth Hormone and Related Proteins. Edited by Choh Hao Li. Academic Press, New York, N.Y. 1977. xii + 214 pp. 16 × 23.5 cm. $21.50.

Volume IV of this open-ended series continues the hallmark established in earlier volumes, as a critical and detailed presentation of current knowledge of the chemistry and biology of hormonal proteins and peptides. This volume focuses on pituitary

growth hormone (somatotropin) and related hormonal proteins.

Chapters by C. H. Li and by A. J. Rao and J. Ramachandran describe bioassay methods for measuring growth hormonal activities in vivo and in vitro. These chapters identify the hazards of using immunoreactivity techniques, as opposed to bioassay methods, for following hormone isolations or in structure–activity studies. A chapter by T. A. Bewley shows the close chemical relationship between human chorionic somatomamotropin and pituitary somatotropin, in spite of the closer resemblance in biological activity between the placental hormone and pituitary prolactin. One is struck by the great need for X-ray crystallographic data in this area to clarify the conformational determinants for various hormonal effects.

J. A. Clemens and J. Meites describe the complex neuronal and hormonal factors that control secretion of prolactin and emphasize the still unresolved chemical natures of the prolactin releasing factors (PRF) and of the prolactin release-inhibiting factors (PIF) of the hypothalamus. A chapter by J. A. Leathern provides historical perspective on the impact on endocrinology made by the discovery by Philip E. Smith that the mammalian pituitary gland could be removed from the rat without damage to the brain.

This volume, along with its companions, should be read by any chemist or biologist with an interest in the peptide hormones.

University of California, San Francisco **Eugene C. Jorgensen**

Progress in Cancer Research and Therapy. Volume 4. Progesterone Receptors in Normal and Neoplastic Tissues. Edited by William L. McGuire, Jean-Pierre Raynaud, and Etienne-Emile Baulieu. Raven Press, New York, N.Y. 1977. xii + 345 pp. 16 × 24 cm. $25.00.

In 1974, scientists at Roussel-Uclaf (France) reported the synthesis and favorable biological properties of a new synthetic progestin, R5020 (17,21-dimethyl-19-norpregna-4,9-diene-3,20-dione). Unfortunately for many progestin receptor studies, progesterone binds to cortisteroid binding globulin (CBG) and has about 5% of testosterone's androgenic activity.

In contrast, R5020 is quite selective for progesterone receptors. It also has high binding affinity and a 7–8S peak on sucrose density gradient centrifugation in all species studied. These properties made [^{3}H]-R5020 a very attractive compound for laboratories studying progestin receptors. In 1976 Roussel (Canada) invited investigators using [^{3}H]-R5020 to a symposium to discuss their work and progress in studying steroid receptors. Their 21 contributed papers, with extensive figures and footnotes, make up this volume. Several excellent studies on estrogen receptors are also included.

The volume begins with an introduction and overview by W. L. McGuire, J. P. Raynaud, and E. E. Baulieu. In this opening chapter, one paragraph summary is given for each of the contributed papers. J. P. Raynaud follows with an excellent introduction to the strategy for design of steroids for specific receptor studies and an overview of the biological and biochemical properties of R5020. Thereafter follow papers on "Estrogen and Progestin Receptors in Normal and Cancer Tissues", "Estrogen and Progesterone: Their Relationship in Hormone-Dependent Breast Cancer", "Nuclear and Cytoplasmic Progesterone Receptors in the Rat Uterus", "Progesterone Receptors in Normal Human Endometrium and Endometrial Carcinoma", "Regulation of Hormone Receptor Levels and Growth of DMBA-Induced Mammary Tumors by RU16117 and Other Steroids in the Ray", "Interactions of R5020 with Progesterone and Glucocorticoid Receptors in Human Breast Cancer and Peripheral Blood Lymphocytes *In Vitro*", "Estrogen and Progesterone Receptors and Glucose Oxidation in Mammary Tissue", and other topics.

This volume will be invaluable to anyone studying progesterone or estrogen receptors. Tables and figures are clearly and carefully drawn, and each author has provided extensive footnotes. Biological procedures and experimental methods are included in detail. Last, but certainly not least, the editors have provided a complete subject index at the end of the book.

Oregon State University **Dwight S. Fullerton**

New Drugs Discovery and Development. Volume 5. Edited by Alan A. Rubin. Marcel Dekker, New York and Basel. 1978. x + 313 pp. 15.5 × 23 cm. $35.00.

This book focuses on drug evaluation methodology. It is concerned especially with the reliability and relevance of currently available laboratory assays to the process of bringing new drugs into the clinic. Nine subjects are presented by authors who are now or were recently closely associated with pharmacology testing programs in one of the U.S. or Canadian pharmaceutical companies. There are four chapters on the central nervous system (major and minor tranquilizers, antidepressants, and analgesics), three on the cardiovascular system (antianginals, antihypertensives, and antiarrhythmics), and chapters on antiarthritics and antiallergics. Most were well worth reading. I particularly liked the antianginal chapter by John H. Stump and Vernon G. Vernier and the one on antidepressants by Dewey H. Smith, Jr., and Vernon G. Vernier because they did a nice job of presenting pharmacology assays in the context of both the clinical diseases and their biochemical attributes insofar as they are understood.

A book of this kind presents a state of the art review of largely published testing methodology. The authors by their emphasis and explicit evaluations indicate something of their approach to finding clinically active drugs. Of course, each laboratory evolves its own research strategy in the light of many alternatives. The basics for success, however, are to focus on an assay which is reliable and which reflects as closely as possible the relevant pathological defect and to have decided on a minimum of secondary tests to discern whether or not a clinical contribution is likely in the light of current therapy. More and more it seems to this reviewer there is an effort to target advances on improved perceptions of the basic mechanisms underlying a disease. In addition, these hypotheses often lead to broader pharmacological advances in the clinic than were foreseen in animal testing.

Merck Sharp & Dohme Research Laboratories **Arthur A. Patchett**