

## REVIEWS

**Methodenlehre der therapeutisch-klinischen Forschung.** By P. MARTINI, G. OBERHOFFER, and E. WELTE. 4th ed. Springer-Verlag, New York, N. Y., 1968. viii + 495 pp. Price \$37.00. (In German)

The 4th, new, and completely revised edition of the original book of the late P. Martini is the legacy of this pioneer of exact clinical-therapeutic research. The three basic requirements for meaningful research are reliable clinical standards, the exclusion of secondary complicating factors, and the use of mathematical comparisons for the objective evaluation of clinical results. The discussion of these aspects is the thematic center of the book of Martini, Oberhoffer, and Welte. The large amount of scientific information is very well organized and clearly written.

After an interesting historical review the fundamentals of clinical therapeutic research in the experimental phase and the unity of clinical and experimental research are discussed in Chapters 2 and 3. In particular the causality and expediency of medical research and especially the common necessary suppositions in experiments are treated. In a special, very instructive chapter, important co-factors ("Mitursachen") in therapeutic problems are described. In particular the exclusion of these disturbing factors and the role of side effects in clinical research are characterized. A large part of the book deals with the problems of statistics, data processing, and documentation. It is up-to-date and presented in such a way that it is easily understandable even for nonspecialized readers. The fundamental principles of statistics, the influence of variables on the mean value and deviation, data processing, and programming as applied in clinical research are presented. The largest part of the book is concerned with the special methodology of clinical-therapeutic research in selected diseases such as scarlet fever, diphtheria, malaria, hepatic and lung diseases, high blood pressure, heart insufficiency, kidney and gastric diseases, and many others. These discussions are particularly oriented toward the selection of reliable clinical standards and the application of mathematical comparisons. The influence of individual, collective, and psychological factors in some special organ diseases are also discussed.

The appendix contains instructive statistical tables, computer programs, and a detailed literature index and also a separate author register. This arrangement appears to be effective and useful. The copiously equipped book is recommended to everyone working in the field of medical research and data processing.

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**Aromatic Nucleophilic Substitution.** By JOSEPH MILLER, in *Reaction Mechanisms in Organic Chemistry*, monograph 8. Edited by C. EABORN and N. B. CHAPMAN, Elsevier Publishing Co., 335 Jarvan Galenstraat, P.O. Box 211, Amsterdam, The Netherlands, 1968. xi + 408 pp. 14.5 × 22 cm. Price \$23.50.

This monograph represents a comprehensive review and interpretation, both quantitative and qualitative, of a multiplicity of aromatic nucleophilic substitution reactions including  $S_N^1$ , activated  $S_N^2$  and benzyne mechanisms, charge-transfer and covalent complexes. These mechanisms as well as a brief summary of side reactions, kinetic evidence, and energetics of substitution reactions are introduced in Chapter 1 (26 pp.). Chapter 2 (11 pp.) considers the  $S_N^1$  mechanism in greater detail; Chapter 3 (18 pp.) similarly discusses the benzyne or elimination-addition mechanism. The last Chapter 9 (23 pp.) considers less common aromatic  $S_N$  reactions while Chapter 7 (73 pp.) summarizes and interprets results obtained when studying nucleophilic substitution in nonbenzenoid aromatic systems. Comparison is made between homo- and heterocyclic organic systems; heterocyclic systems are desirably categorized as  $\pi$ -excessive and  $\pi$ -deficient. Considerations of inorganic and other nonbenzenoid aromatic systems (tropylium ions, quinones, etc.) conclude Chapter 7.

While the entire monograph is well written, this reviewer found Chapter 4 (72 pp.) concerning substituent effects in aromatic  $S_N$  reactions to be presented in a particularly interesting and informative manner. Pan-activating substituents, which is a term introduced by the author to "denote a substituent which is able to activate electrophilic, nucleophilic and radical substitution in an aromatic ring to which it is attached," are discussed along with a consideration of the effects of most functional groups on  $S_N$  versus  $S_E$  reactions. Hammett and related treatments, Dewar's proposal concerning the mode by which a substituent may affect a distant reaction center, the effect of *o*, *p*, *m* and two or more substituents on aromatic  $S_N$  reactions are topics discussed in a complete and concise manner. Substituents are classified into eight groups dependent upon their chemical nature; the influence of each group of functions is comparatively discussed when they are bonded *p*, *o*, and *m* to the leaving group.

Chapter 5 (40 pp.) dealing with the leaving group, Chapter 6 (30 pp.) concerning the nucleophile, and Chapter 8 (47 pp.), which considers the medium (solvent), catalytic and steric effects, are very informative and are of interest to synthetic as well as theoretical chemists. Subjects discussed in these chapters are treated quantitatively and qualitatively in terms of aromatic  $S_N^1$  and  $S_N^2$  reactions. Chapter 8 also considers photo and metal ion catalysis. Experimental results, along with their interpretation, are presented in all chapters. The monograph is well referenced into 1967 and is not only of value to the practicing chemist, but to the student who is presently studying theoretical organic chemistry on a graduate level.

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**The Chemistry and Physics of High Energy Reactions.** By ERNEST J. HENLEY and EVERETT R. JOHNSON. University Press, 6411 Chillum Place, N.W., Washington, D.C., 1969. vi + 475 pp. 15 × 23 cm. Price \$18.50.

This volume is intended to provide a coherent textbook as an easy entry for the novice in the field of radiation chemistry. The material is presented in thirteen chapters in a high level, mathematical manner. Material is presented on units, radiation, radioactivity, and general nomenclature; interaction of radiation with matter; radiation sources; and radiation dosimetry. Other topics include radiation chemistry of gases, solids, water, and aqueous systems, as well as the effects of radiation on liquid hydrocarbons, polymers, and radiation-induced polymerizations.

Throughout the book the authors insert numerous example problems which are very useful for the comprehension of concepts. Also included are a multitude of tables and figures containing significant data. The text is broad in scope, rather cursory on certain topics, but provides excellent in-depth information on many areas of radiation chemistry. Although it is the stated intent of the authors to limit references, additional citations in areas discussed briefly would be helpful to the reader.

In summary, this book is a complete, well-prepared text which is most valuable as a reference or textbook for the radiation chemist and as a reference for the radiobiologist.

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**Pharmaceutics—Galenic Pharmacy.** By ERIK SANDELL, translated from Swedish by R. PAMELA ZACHARIAS. 364 pp. 16 × 23 cm. May be obtained by payment through international money order addressed to E. Sandell, postal giro account number 15 84 49, Postgirokontoret, Stockholm 1, Sweden.

Professor Sandell intends to present a "basic course in Pharmaceutics and Galenic Pharmacy and . . . to direct more specialized