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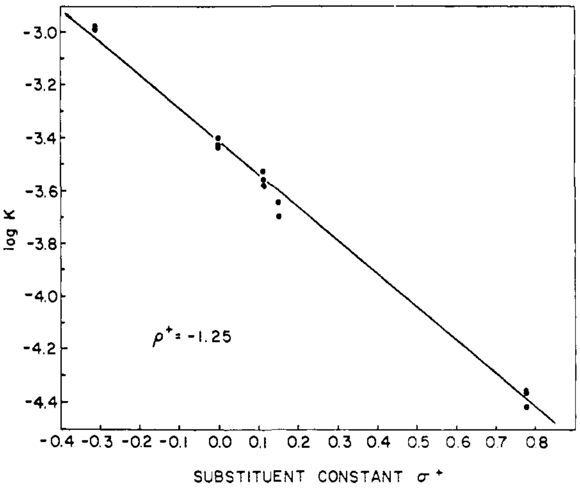
Substitute the revised Figure 3 below for that which appeared in the original article on page 6570.



Self-Reactions of Diethylamino and Diisopropylamino Radicals [*J. Amer. Chem. Soc.*, **93**, 6686 (1971)]. By J. R. ROBERTS and K. U. INGOLD, Division of Chemistry, National Research Council of Canada, Ottawa, Canada.

On page 6687, column one, the twelfth line from the bottom should read

$$i\text{-Pr}_2\text{NN-}i\text{-Pr}_2 \underset{k_{-1}}{\overset{k_1}{\rightleftharpoons}} 2i\text{-Pr}_2\text{N}\cdot \xrightarrow{k_2} i\text{-Pr}_2\text{NH} + i\text{-Pr}_2\text{N}{=}\text{C(CH}_3)_2$$

The next five equations beginning with the sixth line from the bottom should read

$$d[\text{N}\cdot]/dt = -k_1[\text{N}\cdot]^2 + 2k_{-1}[\text{N}_2] - k_2[\text{N}\cdot]^2$$

$$2d[\text{N}_2]/dt = k_1[\text{N}\cdot]^2 - 2k_{-1}[\text{N}_2] = -d[\text{N}\cdot]/dt - k_2[\text{N}\cdot]^2$$

$$2d[\text{N}_2]/dt = -k_2[\text{N}\cdot]^2$$

$$2k_{-1}[\text{N}_2] \approx k_1[\text{N}\cdot]^2$$

$$2d[\text{N}_2]/dt = (2k_1/k_{-1})[\text{N}\cdot]d[\text{N}\cdot]/dt$$

Book Reviews[*]

Annotated Bibliography of Marihuana, 1964–1970. By C. W. WALLER and J. J. DENNY (University of Mississippi). The Research Institute of Pharmaceutical Sciences, University of Mississippi, University, Miss. 1971. vii + 301 pp. $7.00.

This spiral-bound volume lists 1112 papers, each with generally one to three sentences of description, dealing with the chemistry of the plant constituents, synthesis of cannabinoids, analysis, and biological aspects of *Cannabis sativa.* There is also an author index and a thorough subject index.

La Chimie en Solvants Non-Aqueux. By B. TRÉMILLON (Université de Paris). Presses Universitaires de France, Paris. 1971. 239 pp. F 18.

This introductory paperback textbook is concerned primarily with the principles of chemical behavior in nonaqueous solvents: solvation, acid–base properties, electron transfer, and thermodynamics. There is an extensive bibliography of books and papers, but no index.

La Cinétique Chimique Homogène. By R. SCHAAL (Université de Paris). Presses Universitaires de France, Paris. 1971. 166 pp. F 16.

This small-sized paperback volume is a concisely written introduction to the subject. There is a short bibliography, but no index.

Organic Syntheses. Volume 51. Edited by R. E. BENSON (E. I. DuPont de Nemours and Co.). John Wiley & Sons, Inc., New York, N. Y. 1971. xiv + 161 pp. $8.50.

The latest volume in this ever-welcome series will be of special interest to those wishing to prepare aldehydes, for examples of eight different methods are included. There is, of course, the usual wide range of other useful procedures and compounds, of which trimethyloxonium fluoroborate, so valuable for its exceptionally powerful alkylating ability, may be singled out. The changes from the traditional policy introduced with Volume 49 are continued, and one now finds spectrographic data for most products, and short critical discussions of scope and value of the methods. A 27-page supplement lists the procedures that have been submitted but not yet checked, with an offer to provide copies of them for $2 each.

Creation and Detection of the Excited State. Volume 1. Edited by A. A. LAMOLA (Bell Laboratories). Marcel Dekker, Inc., New York, N. Y. 1971. Part A: xiii + 373 pp. $26.50. Part B: xiii + 374–658 pp. $21.50.

The contents of this book would be better reflected by its title if "Electronic" were inserted before "Excited." The book will be of great interest to photochemists but of little interest to workers concerned primarily with vibrationally excited levels of the ground electronic state. The preface makes clear the goal of the series which this volume begins: To bring together, at a level useful to experimentalists, especially students, critical examinations of all the methods which can be used to study electronically excited molecules. Volume 1 is a successful step toward this goal.

The book is a multiple author effort. Part A contains seven chapters covering absorption spectrophotometry, photochemical kinetics and quantum yields, energy transfer, luminescence, triplet esr, and polarized light. Part B comprises six chapters examining electron impact, ionizing radiation, pulse radiolysis, vacuum uv, and vacuum and preparative techniques. The chapters vary somewhat in coverage and in background presumed of the reader. A few chapters could be studied fruitfully by undergraduates and one or two would elude most graduate students. The bulk of the material is at a level easily handled by the average graduate student or by workers not specializing in the field at hand. In most cases, the authors give valuable descriptions of experimental techniques. Tricks and potential pitfalls are pointed out and references to specific equipment are given. The experimental sections are usually preceded by brief developments of the appropriate theory and followed by a few examples of applications of the technique at hand. A few of the chapters stress theoretical development of a technique more heavily than its experimental realization. References seem well chosen and up to date.

George A. Fisk, *Cornell University*

Progress in Physical Organic Chemistry. Volume 8. Edited by ANDREW STREITWIESER, JR., and ROBERT W. TAFT. Wiley-Interscience, New York, N. Y. 1971. vii + 359 pp. $22.50.

There are four chapters in this 8th volume of the series "Progress in Physical Organic Chemistry," each one reviewing experimental material which in one form or another is referred to the Hammett–Taft and other structure–reactivity correlations. The first chapter, by David Holtz, consisting of 74 pages and 231 references, is titled "A Critical Evaluation of the Concept of Fluorine Hyperconjuga-

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[*] Unsigned book reviews are by the Book Review Editor.

tion." This is followed by a chapter of 160 pages with 463 references on "Structure-Reactivity Relationships in Homogeneous Gas-Phase Reactions: Thermolyses and Rearrangements," by Grant Gil Smith and Floyd W. Kelly. The third chapter is by Marvin Charton and is titled "The Quantitative Treatment of the Ortho Effect;" it takes up 84 pages of the book and reviews 181 papers. The shortest chapter is the last one, 17 pages with 27 references, on the "Electron Spin Resonance of Nitrenes" by E. Wasserman.

Of the four chapters the most comprehensive is that of Smith and Kelly, who are particularly and justifiably cautious in their conclusions drawn from the analysis of experimental data whenever such analysis and conclusions are attempted. This article reviews a great deal of organic chemistry and is especially recommended for those "wet" organic chemists who never pay heed to the conditions necessary for the unambiguous definition of a reference state in the investigation and the discussion of relative reactivity.

The first and third chapters have an underlying theme in common in that the authors strenuously (and almost abortively) attempt to make sense of new experimental data which presumably invalidate currently "accepted" models that have been employed in the discussion of the finer details of organic reaction mechanisms in solution. The correlations discussed in these two articles are not unlike those reviewed and dissected so masterfully by Ritchie and Sager in 1964 in the second volume of this series; Ritchie's and Sager's incisive analysis and categorical warnings have been implicitly or explicitly ignored in the articles under scrutiny.

Wasserman's article is rather sketchy but to the point. After a brief discussion of the method of interpretation of the esr data of nitrenes, he reviews the data for several aliphatic and aromatic nitrenes and a few other types and discusses their structural implications. However, his statement with respect to the parallelism of the variation in the values of the zero-field splitting parameters D of the aromatic nitrenes with expected delocalization phenomena is not borne out by his tabulations.

Andrew P. Stefani, *The University of Mississippi*

Progress in Bioorganic Chemistry. Volume I. Edited by E. T. Kaiser and F. J. Kezdy (University of Chicago). Wiley-Interscience, New York, N. Y. 1971. ix + 369 pp. $14.95.

This is the first of a series of volumes which are expected to appear at one to two year intervals. Due to the sustained rapid growth of bioorganic chemistry, comprehensive treatments of the area soon become obsolete. For this reason, the Editors have adopted the format of presenting up-to-date in-depth treatments of important topics in bioorganic chemistry, providing a forum for challenging new ideas and stimulating, perhaps controversial, discussions. Reflecting the Editors' conception of bioorganic chemistry, the emphasis of this new series will be on the understanding of biological reactions at the level of organic reaction mechanisms.

The first of three topics discussed in this volume is entitled "Intramolecular Catalysis," contributed by A. J. Kirby and A. R. Fersht. This section presents the most important advances in intramolecular catalysis since the extensive review of Bruice and Benkovic. A variety of interactions between numerous functional groups in a range of environments are surveyed to give a deeper understanding of why intramolecular reactions proceed so rapidly, a prerequisite to understanding why enzymic reactions proceed so much more rapidly (82 pp, 208 references).

The second topic, authored by Gordon A. Hamilton, discusses "The Proton in Biological Redox Reactions." The main thesis of this chapter is that nearly all biological oxidation-reduction reactions involving hydrogen transfer occur with the hydrogen being transferred as a proton and not as a hydrogen atom or a hydride ion as often suggested. The author's contention is that such reactions are not unlike nonredox enzymic reactions; therefore, the role of acid and base groups in the catalysis of such redox reactions is emphasized. Using chemical intuition and correlations of large numbers of reactions, the author presents credible arguments supporting proton transfer mechanisms (75 pp, 166 references).

The final contribution to this volume by Joseph E. Coleman is concerned with "Metal Ions in Enzymatic Catalysis." This excellent discussion opens with a consideration of metal ion-protein equilibria, relating stability and kinetics of metal ion binding to the nature of the coordination complex of metalloenzymes. The utility of absorption spectroscopy (principally uv-visible d-d transition and charge-transfer spectra of the metallo complexes), circular dichroism, and electron paramagnetic resonance for the study of the physiochemical properties of metalloproteins is discussed, including a number of specific examples which best illustrate each technique. Applications of magnetic susceptibility measurements, nuclear magnetic resonance, and Mössbauer spectroscopy are also briefly considered. Metal ion specificities in the catalysis of enzymatic reactions are discussed in relation to appropriate model systems. The chapter concludes with a summary of the present state of knowledge of the catalytic mechanisms of several hydrolytic and oxidative metalloenzymes (186 pp, 503 references).

A subject index in addition to an author index to the referenced literature enhances the usefulness of this well-illustrated book. This new series should prove very helpful to those trying to keep abreast of the rapidly developing area of bioorganic chemistry.

Dennis E. Tallman, *North Dakota State University*

The Theory of Optical Activity. By Dennis J. Caldwell and Henry Eyring (University of Utah). John Wiley & Sons, Inc., New York, N. Y. 1971. viii + 244 pp. $14.95.

This book contains eight chapters, six of which are devoted to the theoretical foundations of optical activity and related phenomena in molecules. Of the remaining two chapters, one describes the reduction of the general equations for three specific cases—the carbonyl chromophores, benzene derivatives, and transition metal complexes; the other chapter offers an extremely cursory glance at experimental data and theoretical comments on the data. A modest bibliography is given at the end of the book. The text refers neither to the sources of experimental work nor to books and articles that may illustrate and amplify the discussion.

The authors do not state for whom this monograph is intended. A general reader interested in finding a compact presentation of the basic theory or explanatory discussion of concepts is certainly going to be disappointed by this book. A student of theory may find this book of some limited value.

The presentation of the theory is often quite distracting from the smooth flow of ideas. For example, on page 113 the authors use a nonorthogonal set of orbitals in a Slater determinant and explain at length that the orbitals that go into forming different electronic states need not be orthogonal; but in the very next page they abandon the idea of using a nonorthogonal basis. (During this discussion the reader has to find out for himself the meaning of the symbol S, since, as the determinants are written, S cannot be an overlap integral of orbitals.) Other examples in which a concept is introduced and later abandoned without being used can be found in the text.

A student unfamiliar with quantum chemistry and related areas will not be able to understand the authors' presentation easily. A student familiar with the theory, while he will find some sections interesting, may not see in this work a volume of lasting use. For example, the six-page discussion of group theory (pp 88-94) is too cursory to enlighten the uninitiated, nor will it serve as a ready reference for those already familiar. Similar criticisms could be leveled against several other sections.

For the above reasons, this book can only be recommended as a supplementary reference for those who are already familiar with the theory of optical activity.

G. Krishna Vemulapalli, *University of Arizona*