ing places where it should multiply τ^{-1}: the left side of eq 3; twice near the bottom of p 6970; and in the ordinates of Figure 2. Reference 15 in Figure 2 should be 19a. The second line in eq 2 should begin with $\gamma_{\mathrm{MeSO_4}}$ instead of $\gamma_{\mathrm{Me}}\gamma_{\mathrm{SO_4}}$. In footnote 21, the second last equality should end with $\delta C_{\mathrm{HOMeSO_4}}$ instead of $\delta C_{\mathrm{MeSO_4}}$. The inequality at the bottom of p 6971 should read In > Ga < Al. All numerical results remain unchanged.

Stereochemistry at Trivalent Nitrogen. V. Origin of Sulfur–Nitrogen Torsional Barriers in N-Sulfenylsulfonamides [*J. Amer. Chem. Soc.*, **91,** 2180 (1969)]. By MORTON RABAN and FREEMAN B. JONES, JR., Department of Chemistry, Wayne State University, Detroit, Michigan 48202.

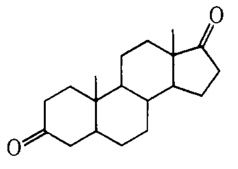
A redetermination of the free energies of activation reported in our communication has indicated that the value reported for one of these compounds is in error.

The free energy of activation for N-isopropyl-2,4-dinitrobenzenesulfenyl-4-nitrobenzesulfonamide (**2c**) is 18.9 rather than 15.6 kcal/mol as reported. This change substantially alters the Hammett reaction constant for series **2** from 3.0 to 0.9.

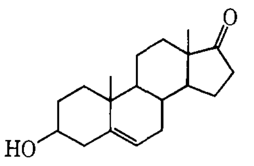
The corrected values are more in accord with expectation and do not substantially alter our interpretation of the phenomena observed.

Nuclear Magnetic Resonance Spectroscopy. Carbon-13 Spectra of Steroids [*J. Amer. Chem. Soc.*, **91,** 7445 (1969)]. By HANS J. REICH, MANFRED JAUTELAT, MARK T. MESSE, FRANK J. WEIGERT, and JOHN D. ROBERTS, Gates and Crellin Laboratories of Chemistry, California Institute of Technology, Pasadena, California 91109.

On page 7452, the formulas for **12** and **13** are both upside down and interchanged. The correct identifications and structures are



androstane-3,17-dione, **12**



5-dehydroisoandrosterone, **13**

Thermolysis of Pentacyclo[4.4.0.0^{2,5}.0^{3,8}.0^{4,7}]dec-9-ene [*J. Amer. Chem. Soc.*, **91,** 7512 (1969)]. By H. H. WESTBERG, E. N. CAIN, and S. MASAMUNE, Department of Chemistry, University of Alberta, Edmonton, Alberta, Canada.

On page 7513, column 2, line 16, "During this process, **2′** was completely equilibrated with **4′′** should read "During this process **2′** was largely, if not completely (calcd for 100% scrambling: 0.67 D at C-1, -8, and -9; experimental error: probably 0.1 D), equilibrated with **4′′**.

On the Probable Intermediacy of Tetrahedrane [*J. Amer. Chem. Soc.*, **92,** 406 (1970)]. By PHILIP B. SHEVLIN and ALFRED P. WOLF, Chemistry Department, Brookhaven National Laboratory, Upton, New York 11973.

There is a regrettable arithmetic error in Table II. In the last column, under calculated % of total activity, 12.9, 61.8, 25.3 actually should read 9.2, 65.6, and 25.2. Fortunately this does not change the argument any. The numbers are basically within experimental error and far away from what might be expected from a random distribution.

Magnetic Resonance Studies of Some Low-Spin d^5 Tris Diimine Complexes [*J. Amer. Chem. Soc.*, **92,** 2343 (1970)]. By RICHARD E. DESIMONE and RUSSELL S. DRAGO, W. A. Noyes Laboratory, University of Illinois, Urbana, Illinois.

Equation 5 should read

$$|-\rangle = -\sin\alpha|0^-\rangle + \cos\alpha[\sqrt{2/3}|2^+\rangle - \sqrt{1/3}|-1^+\rangle] \quad (5)$$

In our derivation and solution of eq 1–8, we inadvertantly used a convention *opposite* to that stated in the text and also opposite to that used by ref 17. We define the axial field to be *negative* if the singlet lies lowest. A negative *v* as found now implies an A ground state in agreement with Figgis. No calculated quantities are affected.

Figure 2 is now a diagram with a *positive* trigonal field by our definition.

In Table II, $\Delta\nu_{6,6}'$ for Fe(4,4′dmb)$_3$(PF$_6$)$_3$ = +3139.

The right-hand side of eq 11 should be preceded by a minus sign.

Book Reviews

Spectroscopy. Edited by D. R. BROWNING, Department of Chemistry, Bristol Polytechnic, Bristol, England. McGraw-Hill Publishing Co., Maidenhead, Berkshire, England. 1970. vii + 183 pp. 14 × 22 cm. $8.50.

Electronic, infrared, Raman, mass, nmr, esr, and atomic emission, absorption, and fluorescence spectroscopy, all in 183 pages! This is rather like a tour of "Fourteen Foreign Countries in Ten Days"; it can be done in the sense that the visitor can say afterwards that he has been there, and has learned some names to throw around. But apart from this, unless the guide has gone to special pains to explain some item to him, all that the tourist is likely to be left with is a confused jumble of impressions and of people talking in strange languages on every side throughout the trip.

In a tour, at least the guide is likely to remain the same person throughout, whereas in this book, the ten chapters are independently contributed by six different authors. This leads to differences in the quality of writing and minor confusions and contradictions. For example, one author says (p 25) that vacuum spectrometers have to be used below 2000 Å because of atmospheric absorption, while another (p 138) gives the wavelength more correctly as about 1860 Å. The better chapters occur later in the book, where authors concentrate, properly, on explaining and illustrating selected basic technical points in the limited space available to them. But the value of these sections is still diluted by attempts to mention as many different aspects of each topic as possible and by the need to introduce fundamental formulas without proper explanation. The latter difficulty is not solved in the earlier, more general, chapters, in which quantum mechanics is given a couple of pages and vector models even less. One wonders what students will make of the explanation given on p 17 for the Franck–Condon principle: "...during the short time of an electronic transition the *electrons* have no time to change their positions..." (my italics). Also there is the statement on p 25 which should put a lot of research workers and instrument manufacturers out of business, that spectrographs are now hardly ever used for absorption spectra.

According to the Preface, the book should provide a suitable introduction to spectroscopy for use in what are mainly low-level courses in England in general chemistry and instrumental methods. On the contrary, I feel the book would benefit most those who have majored in a good course that has included some quantum mechanics and who are looking for a summary of the present state of the art as far as technical and instrumental aspects of applied spectroscopy are concerned.

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Topics in Stereochemistry. Volume 4. Edited by ERNEST L. ELIEL, Professor of Chemistry, University of Notre Dame, Notre Dame, Indiana, and NORMAN L. ALLINGER, Professor of Chemistry, Wayne State University, Detroit, Michigan. Wiley-Interscience, John Wiley and Sons, Inc., 605 Third Avenue, New York, N. Y. 1969. ix + 269 pp. 15.5 × 23.5 cm. $18.50.

A renaissance has been taking place in the field of stereochemistry; the editors and authors of this series, "Topics in Stereochemistry," have chronicled this rebirth most effectively. The present volume continues the high quality and critical selection of subjects found in the previous three volumes. It will be reviewed by considering each of the four chapters separately.

In "The Stereochemistry of Cyclohexyl and Vinylic Radicals" by Osamu Simamura, Tokyo University (38 pp), problems related to the stereochemistry of cyclohexyl and vinyl radicals are considered according to their manner of generation, either by homolytic cleavage (in such processes as the Hunsdiecker reaction), hydrogen abstraction (uv irradiation and autoxidation), or free-radical additions (to cyclohexenes, allenes, and acetylenes). Subjects such as the stereochemical stability and involvement of common intermediates, cis/trans product ratios, conformation control, and anchimeric assistance are considered. The treatment is thorough but not exhaustive, with a minimum of theoretical discussion which could well have been supplemented by a broader summary of the scope of the reactions considered.

The second chapter on "Geometry and Conformational Properties of Some Five- and Six-Membered Heterocyclic Compounds Containing Oxygen or Sulfur" by C. Romers, C. Altona, H. R. Buys, and E. Havinga, The University of Leiden (60 pp), is a scholarly treatment of the state of conformational determinations for these heterocyclic types. The emphasis is entirely upon molecular geometry and physical measurements. It is an excellent discussion of the contributions of nmr, ir, Raman spectra, dipole moment determinations, and X-ray diffraction studies and the interplay and limitations of these methods in the solution of conformational problems.

In "The Stereochemical Analogy Model—A Mathematical Theory of Dynamic Stereochemistry," E. Ruch, Institut. für Quantenchemie der Freien Universität Berlin, and I. Ugi, University of Southern California (28 pp), present their abstract mathematical development for the treatment of stereochemical problems. They have been alone in this field and their previous publications have been in German; thus the appearance of this current review is a welcome addition to the stereochemical literature. It should bring this theoretical treatment to the attention of a much wider audience, which it deserves and which should result in definitive experiments to further test its applicability to real problems. The authors begin with an introduction of stereochemical terms and point out the need for predicting the stereochemical outcome of stereoselective reactions, which does not depend upon a guess concerning the conformations of competing diastereomeric transition states. They then give detailed mathematical derivations of their "Stereochemical Analogy Model" based upon group theory and advanced algebraic formalizations; a complete comprehension of these derivations is not possible without a facility in this area. Nevertheless, the result of the derivation is a reasonably simple relationship which defines the product ratio of a stereochemical process as a function of parameters which are accessible by experimentation.

The final chapter, "Chirality Due to the Presence of Hydrogen Isotopes at Noncyclic Positions" by D. Arigoni and E. L. Eliel, Eidg. Technische Hochschule, Zürich, Switzerland (118 pp), is a beautiful exposition of the use of compounds which are chiral by virtue of deuterium substitution and the use to which they have been put in the study of organic chemical and especially biochemical studies. This chapter will have the greatest appeal of the four for the structural organic chemist.

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