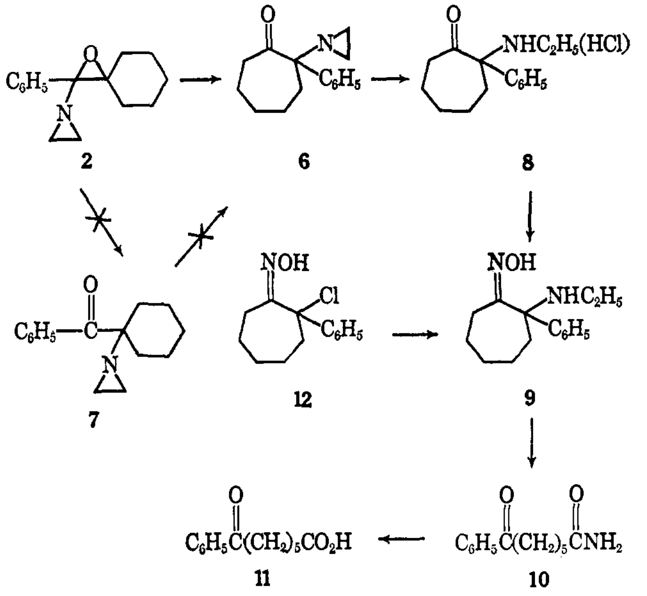

enimine on an epoxy ether, 2-methoxy-2-phenyl-1-oxaspiro[2.5]octane,[6] in 84% yield (bp 102–105° (0.01 mm), n^{25}D, 1.5502). After **7** was subjected to the same rearrangement conditions, most of the starting material (55%) was recovered unchanged and an examination of the infrared spectrum of the crude reaction mixture provided evidence that no detectable amount of **6** was formed.

Upon hydrogenation in ethyl acetate at atmospheric pressure in the presence of 10% palladium on carbon, **6** was selectively reduced to 2-N-ethylamino-2-phenylcycloheptanone (**8**), characterized as its hydrochloride (85%), mp 233–235° dec, pK_a' = 7.70 (50% methanol). Ketone **8** was converted to the corresponding oxime **9** (64%), mp 105–106°, pK_a' = 8.75 (50% methanol). Synthesis of **9** was also achieved by the action of ethylamine on the known 2-chloro-2-phenylcycloheptanone oxime[9] (**12**). Structure **9** was further confirmed by the formation of 6-benzoylhexanamide (**10**) (60%), mp 107–108°, when the oxime was subjected to Beckmann degradation conditions using polyphosphoric acid. On treatment with aqueous alcoholic sodium hydroxide **10** was hydrolyzed to the known 6-benzoylhexanoic acid (**11**) (90%), mp 82–83°. The identity of **11** was established by mixture melting point determination with an authentic sample.

All new numbered compounds have analyses and spectral data consistent with their structures.

Acknowledgment. The authors are grateful to Dr. K. Grant Taylor for helpful suggestions.

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[9] D. Ginsberg and R. Pappo, *J. Am. Chem. Soc.*, 75, 1098 (1953).

Calvin L. Stevens, P. Madhavan Pillai
Department of Chemistry, Wayne State University
Detroit, Michigan 48202

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Additions and Corrections

Catalysis of α-Hydrogen Exchange. I. The Reaction of Isobutyraldehyde-2-*d* with Tertiary Amines and Oxygen Bases [*J. Am. Chem. Soc.*, **87**, 5050 (1965)]. By JACK HINE, JAMES G. HOUSTON, JAMES H. JENSEN, and JULIEN MULDERS, School of Chemistry, Georgia Institute of Technology, Atlanta, Georgia.

In this paper an incorrect value for the van der Waals radius of argon was used. The distance 2.45 A, at which the energy of repulsion is 11.2 kcal/mole, is 64% of 2 times 1.91 A, the atomic radius for argon listed by G. Pannetier, "Noveau Traité de Chimie Minérale," P. Pascal, Ed., Vol. 1, Masson et Cie., Paris, 1956, p 941. With this change, eq 2 becomes

$$E_r = 0.112\left(\frac{d_0}{d}\right)^{11} - 0.175\left(\frac{d_0}{d}\right)^{7} + 0.06 \qquad (2)$$

The energies of repulsion (calculated without allowance for molecular distortion) are only 32% as large as those calculated originally, but they are still considerably larger than the experimental values. None of the qualitative conclusions is affected by this change.

A Molecular Orbital Theory of Optical Rotatory Strengths of Molecules [*J. Am. Chem. Soc.*, **88**, 4157 (1966)]. By YOH-HAN PAO and D. P. SANTRY, Bell Telephone Laboratories, Inc., Murray Hill, New Jersey, and Carnegie Institute of Technology, Pittsburgh, Pennsylvania.

On page 4158, eq 1.2 should read

$$\psi_i = \sum_{\mu} \chi_\mu C_{\mu i} \qquad (1.2)$$

On page 4159, line 10 of column 1 should read *M* is the magnetic moment operator. Equation 2.9 should read

$$\langle\psi_j|\mathbf{m}|\psi_i\rangle = -i\sum_{\mathrm{A}}[\{(C_{s\mathrm{A}j}C_{x\mathrm{A}i} - C_{x\mathrm{A}j}C_{s\mathrm{A}i})\mathbf{x} + (C_{s\mathrm{A}j}C_{y\mathrm{A}i} - C_{y\mathrm{A}j}C_{s\mathrm{A}i})\mathbf{y} + (C_{s\mathrm{A}j}C_{z\mathrm{A}i} - C_{z\mathrm{A}j}C_{s\mathrm{A}i})\mathbf{z}\} \times \mathbf{R}_{\mathrm{A}}W_{\mathrm{sp}}{}^{\mathrm{A}} + (C_{y\mathrm{A}j}C_{z\mathrm{A}i} - C_{z\mathrm{A}j}C_{y\mathrm{A}i})\mathbf{x} + (C_{z\mathrm{A}j}C_{x\mathrm{A}i} - C_{x\mathrm{A}j}C_{z\mathrm{A}i})\mathbf{y} + (C_{x\mathrm{A}j}C_{y\mathrm{A}i} - C_{y\mathrm{A}j}C_{x\mathrm{A}i})\mathbf{z}] \quad (2.9)$$

On page 4161, second column, the first sentence should read: The equatorial proton of carbon atom 2 lies in a negative octant, and almost in the plane *B*. The octant rule predicts a small negative rotation for H_7 in methylcyclohexanone. On page 4162, line 5 of column 1, delete the words "shown in Figure 3."

Stereochemical Consequences of Methoxyl Participation. The Stereochemistry of the Cyclization of 5-Methoxy-2-pentyl Brosylate to 2-Methyltetrahydrofuran [*J. Am. Chem. Soc.*, **89**, 73 (1967)]. By ERNEST R. NOVAK and D. STANLEY TARBELL, Department of Chemistry, University of Rochester, Rochester New York 14627.

Add the following sentence to the last paragraph in the second column on page 74: If this assignment of configuration is correct, the [+]-2-chloro-5-methoxypentane is formed from the (*R*)-brosylate **3b** by a process involving *one* inversion. On page 76, revise the last sentence of the first paragraph under Discussion of Results to read as follows: Attack of chloride ion at C-5 of the methoxonium ion yields the 5-chloro-2-methoxypentane, the latter with (*R*) configuration, because removal of the chlorine yields (*R*)-2-methoxypentane.

A New and Convenient Alkylation and Acylation of Pyridine N-Oxides [*J. Am. Chem. Soc.*, **89**, 1537 (1967)]. By R. A. ABRAMOVITCH, MAITREYI SAHA, and ELIZABETH M. SMITH, University of Saskatchewan, Saskatoon, Saskatchewan, Canada, and R. T. COUTTS, University of Alberta, Edmonton, Alberta, Canada.

On page 1538, the structures just above the Acknowledgment should be numbered VII.

Book Reviews

The Chemistry of Technetium and Rhenium. By R. D. PEACOCK, Professor of Inorganic Chemistry, The University of Leicester, Great Britain. American Elsevier Publishing Co., Inc., 52 Vanderbilt Ave., New York, N. Y. 1966. 137 pp. 14 × 22 cm. $10.00.

Although one book and six review articles on one or the other of the elements technetium and rhenium have appeared during the period 1957–1964, a critical discussion and comparison of the chemistry of these two metals, last published in one volume 10 years ago (in French), is now most welcome. Despite the rarity of these two elements (technetium has only recently become available in weighable quantities at a price of about $200/g), there have been over 500 citations in the literature about them and interest is increasing. This no doubt is due in part to the chemical novelties discovered through this group such as the first demonstration of Lewis base properties for a transition metal in its complexes (in the reaction $(C_5H_5)_2ReH + H^+ \rightarrow (C_5H_5)_2ReH_2{}^+$), the unique ions $TcH_9{}^{2-}$ and $ReH_9{}^{2-}$ containing only transition metal to hydrogen bonds, the polynuclear halogenometalate $Re_2Cl_8{}^{2-}$ whose diamagnetism can best be explained by a *quadruple* bond between rhenium atoms, and the first polynuclear carbonyl hydrides, $H_3Tc_3(CO)_{12}$, $H_3Re_3(CO)_{12}$, and $HRe_3(CO)_{14}$. (The latter was characterized too recently to be included in this monograph; another recent discovery in this group is the rare trigonal prismatic coordination for $Re(S_2C_2Ph_2)_3$, the first known molecular complex to display this geometry.)

In the present monograph the literature is well covered through 1963 with some references to later work appearing in scattered portions of the text A general bibliography and further references (through June 1965) are presented in two appendices which will be useful to the reader. The first two chapters in the text deal with the discovery, isolation, and general properties of the two elements. A systematic survey is presented in the next eight chapters, under the following headings: Oxides; Oxoacids and Oxosalts; Halides and Oxide Halides; Complex Halides, Complex Oxide Halides and Complex Hydrides; Chalcogenides and Compounds with Nonmetals and Metalloids, Alloys; Complex Cyanides and Related Compounds; Carbonyls and Organometallic Derivatives; Compounds with Group V and Group VI Ligands. Seven figures are scattered throughout these chapters summarizing related chemical reactions in a schematic way; these will also be a help to the reader. A chapter on analytical methods and three appendices (two mentioned above and one containing notes on the laboratory handling of technetium) conclude the text. A subject but no author index is available.

In the area of organometallic chemistry and polynuclear carbonyl hydrides, the coverage of the literature was incomplete, and the cited references suffered from more than the average typographical errors. Furthermore this reviewer takes issue with the heading "M-C**," first column of infrared frequencies in Table 28 (p 105). These are alleged to have been assigned by the original workers to the M–H frequency. In the first place, no such assignment was proposed by those authors, but even so the substitute chosen for it is little better. In all likelihood the absorptions in question are mixtures of the several characteristic modes, the M–CO and M–H deformation as well as the M–C stretching vibrations, which fall in this range of energy.

The discussions of many subjects are extremely brief, and only a moderate number of tables of data are supplied. I do not believe a specialist would find this book useful as a desk copy. However, for others it should be valuable as an introduction to the literature. In this respect it is only somewhat more up to date than a monograph on precisely the same subject matter (by R. Colton) which was published a short time before (in a competing series on inorganic chemistry from Interscience). Such duplication is wasteful and of no advantage to the scientific community. The present divided and competing efforts are even more regrettable since they come from two former coauthors (R. Colton and R. D. Peacock, "The Chemistry of Technetium," *Quart. Rev.* (London), **16**, 311 (1962)). There ought to be some mechanism either between publishers or between authors to combine such efforts for the benefit of the readers and produce one work of greater scope and usefulness; for the present, at least one of these two monographs should find a place in any library specializing in chemistry.

Herbert D. Kaesz

Department of Chemistry, University of California
Los Angeles, California 90024