The first sentence in footnote 4 should read: Cyclohexane, 1.4% by volume (0.13 *M*); acetonitrile, 1.4% by volume (0.27 *M*); temperature, 33 ± 1.5°.

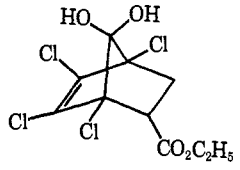
Aminoacylhydroxamates. A Case of Slow Proton Transfer between Electronegative Atoms in Solution [*J. Amer. Chem. Soc.*, **93,** 949 (1971)]. By MARIA L. BADE, Department of Biology, Boston College, Chestnut Hill, Massachusetts 02167.

In Table III, the entry in the fourth column of figures for ν_{5b} should read 307, not 207.

The Synthesis and Chemistry of Tricarbonyl(7-norbornadienone)iron [*J. Amer. Chem. Soc.*, **93,** 972 (1971)]. By J. M. LANDESBERG and J. SIECZKOWSKI, Department of Chemistry, Adelphi University, Garden City, New York 11530.

On page 976, column 1, line 12, the sentence should read: Compounds **20**,[37a] **21**,[37a] and **22**[37b] have been isolated....

Structure **22** should be



22

Footnote 37 should read: (37) (a) D. E. Applequist and J. P. Kliemann, *J. Org. Chem.*, **26,** 2178 (1961); (b) P. E. Hoch, *ibid.*, **26,** 2066 (1961).

Kinetics of Redox Reactions of Oxidized *p*-Phenylenediamine Derivatives. I [*J. Amer. Chem. Soc.*, **93,** 1347 (1971)]. By R. C. BAETZOLD and L. K. J. TONG, Research Laboratories, Eastman Kodak Company, Rochester, New York 14650.

Equation 10 should read

$$\mathrm{d}\ln\left(\frac{\beta(\mathrm{SQ})_\infty + (\mathrm{SQ})}{(\mathrm{SQ})_\infty - (\mathrm{SQ})}\right)\Big/\mathrm{d}t = k_f\left(\frac{(\bar{\mathrm{R}})}{1 + K_R(\mathrm{H}^+)} + \frac{4(\mathrm{SQ})_\infty}{K_M(\mathrm{H}^+)}\right) = k_{obsd} \quad (10)$$

Equation 15 is

$$-R\frac{\mathrm{d}\ln k_{obsd}}{\mathrm{d}\,1/T} = \Delta E = \Delta E_1 - \Delta H_R \quad (15)$$

Equation 22 is

$$\frac{\mathrm{d(SQ)}}{\mathrm{d}t} = k_1(\mathrm{H}^+)(\mathrm{T})(\mathrm{Fe(CN)_6}^{4-}) + k_4(\mathrm{R})(\mathrm{Fe(CN)_6}^{3-}) - k_2(\mathrm{Fe(CN)_6}^{3-})(\mathrm{SQ}) - k_3(\mathrm{Fe(CN)_6}^{4-})(\mathrm{SQ}) \quad (22)$$

Equation 25 is

$$\frac{-\mathrm{d}\ln((\mathrm{SQ}) - (\mathrm{SQ})_\infty)}{\mathrm{d}t} = k_{obsd} = k_3(\mathrm{Fe(CN)_6}^{4-}) + \frac{k_4(\mathrm{Fe(CN)_6}^{3-})}{1 + K_R(\mathrm{H}^+)} + \frac{k_2k_4(\mathrm{Fe(CN)_6}^{3-})^2}{k_1(\mathrm{H}^+)(\mathrm{Fe(CN)_6}^{4-})(1 + K_R(\mathrm{H}^+))} \quad (25)$$

Equation 26 is

$$-R\frac{\mathrm{d}\ln k_{obsd}}{\mathrm{d}\,1/T} = \Delta E_1 + \Delta H \quad (26)$$

Intramolecular Redox Equilibria of Cobalt–Nitrosyl Complexes [*J. Amer. Chem. Soc.*, **93,** 1788 (1971)]. By JAMES P. COLLMAN, PAUL FARNHAM, and GIULIANO DOLCETTI, Department of Chemistry, Stanford University, Stanford, California 94305.

In Table I, compound **3f** should be $CoCl_2(NO)(P(p\text{-}FC_6H_4)_3)_2$. In the right-hand column of page 1789 four lines up from the bottom of the text, Co should read CO.

Book Reviews

Chemical Mutagenesis in Mammals and Man. Edited by F. VOGEL and G. ROHRBORN (Institut fur Anthropologie und Humangenetik der Universität). Springer-Verlag, New York–Berlin–Heidelberg. 1970. xiv + 502 pp. $34.00.

Of the environmental factors which undoubtedly have mutagenic effects and which are clearly now the concern of all mankind, only ionizing radiation has received relatively thorough study. By contrast, extant information which has been derived from adequate mammalian test systems as to the cytological and genetic effects of the staggering number of agents that comprise our environment, and are administered to the human body, occasionally or chronically, is alarmingly meager. The gravity of the situation is underscored by the recognition that a change of a single codon in a gene can result in mutation with a pathological manifestation. Moreover, only a single molecule, *e.g.*, an alkylating agent or a competitive substrate, would suffice to effect such a change.

It is the editor's hope, as indicated in the preface, that the book will stimulate interest in chemical mutagenesis relative to the human being. With the development of the requisite methodology, it is no longer necessary to extrapolate conclusions from so-called simple systems to humans. Rather, the effects on mammals can be examined directly.

This work is, in essence, a collection of the various papers presented at a symposium in Mainz, Germany, held in October 1969, as part of the annual meeting of the "Gesellschaft für Antropologie und Humangenetik." The collection, augmented in scope by the inclusion of several additional chapters, consists of thirty articles by twenty-four contributors. Careful perusal of the first three chapters, which defines the problem, evoked reactions from this reviewer ranging from initial annoyance to subsequent admiration.

The translation (German to English) of Chapter 1, "Biochemical Mechanisms of Mutation," frames the contents in a clumsy rhetoric and is the source of irritation. Fortunately the authors of the other chapters have employed the services of a translator. Chapters 2 and 3, by contrast, are well written and contain a veritable wealth of information. In point of fact, the final chapter of this section,

"Mutagenic Substances in the Human Environment" (Chapter 3) provides an exhaustive list of mutagens, complete with an excess of 1000 references, that constitute a potential hazard to the human.

The second section, "Research Methods," devotes fifteen chapters to descriptions of suitable mammalian test systems. The first of these describes the technically simple "Dominant Lethal Method" by which it is possible to prove the induction of mutation in mammalian germ cells in all stages. Comparison with the cytogenic analysis of early cleavage stages is included. The Multiple-Loci Method, which suffers from the disadvantage that a large number of offspring must be observed in order to find mutations, is the subject of the next chapter.

In addition to the genetic experiments that examine the direct effect of a chemical on the germ cell, *i.e.*, on the progeny, a description of the use of bone marrow smears in experimental mutagenic research is presented in Chapter 10 as a means of evaluating the danger to exposed individuals.

The potential and limitations of lymphocyte cultures are discussed in Chapter 12 relative to the induction of chromosome aberrations by chemical mutagens in a routine screen. In the test system, chromosome breakage in somatic cells in culture is analyzed and scored.

Among other techniques described for the testing of mutagenicity is the use of point mutations in mammalian cell cultures (Chapter 13) and cytogenetic analysis of ascites tumor cells. The methodologically practical but theoretically disputed ascites cells are finding wider use. Still another practical procedure for evaluating potential mutagenic agents is "the host-mediated assay" described in Chapter 15. Agents such as methylnitrosoamine were found to be active *in vivo* despite lack of activity *in vitro*. Moreover, the method demonstrates the ability of laboratory animals (and man) to metabolize a compound to a mutagen and as well to detoxify other potential mutagenic agents.

The third section of the book is devoted to "Findings and Applications." Two chapters (19 and 20) are devoted to the "Activity of Alkylating Agents" in spermatogenesis. Chapter 26 summarizes the present state of knowledge relative to "Virus-Induced Chromosomal Alterations in Mammals and Man," which includes a reasonably complete table of alterations elicited by a variety of viruses.

Chapter 27 is devoted to the problem of "Statistical Examinations in Human Populations" relative to mutation. The factors which must be considered in such an analysis are elucidated in terms of two examples, the rather broad category, cytostatics, and the specific agent, caffeine. The significance of the former derives from the fact that cytostatic therapy is becoming increasingly successful in prolonging life of cancer patients. Accordingly, if the trend maintains, the propagation of treated patients will probably also increase. To date, the use of cytostatic therapy indicates "only an insignificant increase in the genetic risk for the population." Moreover, the authors report no evidence of noticeable mutagenic effect of caffeine on the human being.

The succeeding chapter examines the methodological difficulties of the "Monitoring of Human Populations." The author concludes that the task of monitoring "is subject to difficult and as yet unsolved methodological problems."

The editors' "Concluding Remarks" comprise the final chapter in which they reflect on some practical and theoretical aspects of mutagenesis. Using the cyclamates as one example, they point out the difficult problems that attend each new situation.

It is the opinion of this reviewer that this book contains much that is valuable and praiseworthy. Certain chapters are excellent and are followed with well-annotated bibliographies. The size of the volume (502 pp) is remarkable considering the survey encountered between its cover. Despite the typographical errors that escaped detection, the work is well produced and the editors are to be congratulated for providing a useful contribution to an understanding of the effects of chemical mutagens on humans.

Jerome P. Horwitz, *Michigan Cancer Foundation*

Chemical Technology. An Encyclopedic Treatment. Volume 2. Nonmetallic Minerals and Rocks. General Editor, T. J. W. VAN THOOR. Barnes & Noble, Inc., New York, N. Y. 1971. xxviii + 828 pp. $40.00.

Although the title indicates the scope of the work is "encyclopedic," Volume 2, dealing with nonmetallic minerals and rocks, is distinctly selective in its coverage. The twelve chapters describe, in order: (1) rock-forming minerals and rocks; (2) lime, cement, and concrete; (3) abrasives; (4) adsorptive materials; (5) clay and ceramic products; (6) glass; (7) natural graphite; (8) diamond and other precious stones; (9) solid mineral fuels; (10) carbonization of coal; (11) other carbonization of products; and (12) energy. The various natural nonmetallic raw materials, rocks and minerals that are included, are described with respect to their chemical nature, physical properties, crystallography, geological and geographical occurrences, mining and recovery, and preparation and utilization. In general, descriptions of all but the geology of the materials range from adequate to excellent. The geological coverage is, for some, notably skimpy and, in places, not modern. The grouping of some of the materials is interesting but locally awkward, *e.g.*, the placement of fluorite as a rock. The chief flaw is in the lack of coverage of some materials (phosphates, nitrates, salt, sulfur, potash minerals, oil shale, asphaltic sandstones, for example) and abbreviated coverage of others (borates and barite are listed only under their contribution to glasses).

Geologists reading this book will benefit from its sections on uses and technology, but nongeologists will derive but minor value from the geological descriptions.

E. Wm. Heinrich, *The University of Michigan*

Chemical Technology. An Encyclopedic Treatment. Volume 3. Metals and Ores. General Editor, T. J. W. VAN THOOR. Barnes & Noble, Inc., New York, N. Y. 1971. xxxi + 918 pp. $40.00.

Unfortunately, there still persists in the thinking and usage of scientists and technical personnel, other than those in geology and mining, the antiquated restriction of the term "ore" to natural aggregates of minerals from which a *metal* can be extracted profitable. In fact, however, "ore" is generally applied to any mineral aggregate from which a metal, a nonmetallic element, or even a particular mineral may be concentrated. Thus it is perfectly in order to speak of a kyanite quartzite as an "ore" for kyanite or of a pegmatite as a potential feldspar ore.

In this volume of the series, "ore" is applied only in its ancient meaning, and actually the discussion of the mining and processing of such ores receives exceedingly short rations (one short chapter). This, then, is in fact a survey in the field of metallurgy and should so have been titled. In this area it is excellent, complete, and modern, summarizing the nature and properties of metals in general, the technology of iron and steel and of many nonferrous metals (lithium and the rare earths are two conspicuous omissions), the casting, deformation, cutting, joining, surface treatment, and corrosion of metals, and the properties of metal powders and composites.

E. Wm. Heinrich, *The University of Michigan*

Micromethods for the Clinical and Biochemical Laboratory. By HERMANN MATTENHEIMER (Presbyterian-St. Luke's Hospital, Chicago). Ann Arbor-Humphery Science Publishers Inc., Ann Arbor, Mich. 1970. 232 pp. $18.75.

This is a revised translation of the second German edition. It is a manual and does not contain references. Complete directions are given for equipping and operating a laboratory utilizing microbiochemical methods, suitable for clinical use, biochemical research, and measurement of enzyme activity. The methods are stated to have received extensive testing in the author's laboratory.

M. C. W. Smith, *University of Michigan*

Primer of Immunoelectrophoresis, With Interpretation of Pathologic Human Serum Patterns. By PIERRE C. ARQUEMBOURG, J. E. SALVAGGIO, and J. N. BICKERS (Louisiana State University). Ann Arbor-Humphrey Science Publishers, Inc., Ann Arbor, Mich. 1970. 83 pp. $8.25.

This book should be useful to individuals wishing to learn the fundamentals of immunoelectrophoresis. It begins with a chapter concerned with the theory of precipitin reactions, followed by two chapters discussing electrophoresis, immunoelectrophoresis, and nomenclature. Excellent illustrations are included in the detailed treatment of materials and procedures. Chapters 5 and 6 deal extensively with the identification of major proteins in human serum and the interpretation of pathologic patterns. The bibliography contains 202 references.

M. C. W. Smith, *University of Michigan*