lected, since the value of **3y** would then be greater than **3**. In case III, $k_3/k_4 = 1/40$, **3x** = 0, hence **3y** = 28.4; case IV, $k_3/k_4 = 1/40$, **3y** = 0, hence **3x** = 28.4; case V, $k_3/k_4 = 1/40$, **3x** = **3y** = 14.2; case VI, $k_3/k_4 = 1/40$, **3x**/**3y** = 0.10, hence **3x** = 2.6; case VII, $k_3/k_4 = 1/40$, **3x**/**3y** = 10, hence **3x** = 25.8.

Page 1503 (left-hand column, last sentence in paragraph 2): "It is apparent from these results that the quantity (CN^-/CH_3O^-) should actually be designated as $(CN^-/CH_3O^-)_E$, . . .".

Page 1503 (Table III): For case II the values in the table are $k_1/k_2 = 0.028$, $k_3/k_4 = 0.025$,[b] $k_5/k_6 = 0.22$, and $k_5/k_7 = 8.8$.

Figures 1-3: The concentration of 1,4-DMB should be 0.100 *M*.

Irreversible Inhibition of Δ^5-3-Ketosteroid Isomerase by 5,10-Secosteroids [*J. Am. Chem. Soc.*, **97**, 2576 (1975)]. By F. H. BATZOLD and C. H. ROBINSON,* Department of Pharmacology and Experimental Therapeutics, The Johns Hopkins University School of Medicine, Baltimore, Maryland 21205.

On page 2577, second column, 25 lines down, the equation

$$\frac{\ln(\epsilon)}{[E_t]} = \frac{-k_3}{1 + (K_1/[I])}$$

should read:

$$\frac{\ln(\epsilon)}{[E_t]} = \frac{-k_3 t}{1 + (K_1/[I])}$$

Reference 14 should read: R. Kitz and I. B. Wilson, *J. Biol. Chem.*, **237**, 3245 (1962).

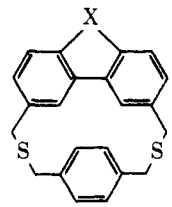
Chemical Consequences of Orbital Interactions. II. Ethylene and Butadiene Bridged Polycyclic Hydrocarbons Containing Three- and Four-Membered Rings [*J. Am. Chem. Soc.*, **97**, 3082 (1975)]. By WILLIAM L. JORGENSEN, Department of Chemistry, Harvard University, Cambridge, Massachusetts 02138.

Equation 3 should read:

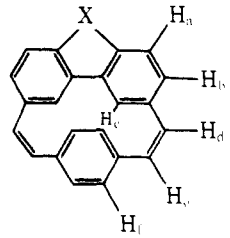
1 + *cisoid*-butadiene → **7** + ethylene

Bridged [18]Annulenes. Dependency of the Ring Current Contribution to Chemical Shift on the Contour of the Annulene Perimeter [*J. Am. Chem. Soc.*, **97**, 1629 (1975)]. By RICHARD B. DUVERNET, TETSUO OTSUBO, JOHN A. LAWSON, and V. BOEKELHEIDE,* Department of Chemistry, University of Oregon, Eugene, Oregon 97403.

Structures **2** and **3** are incorrectly drawn. The correct structures are



2



3

Book Reviews

Geochemical Tables. By H. J. RÖSLER and H. LANGE (Freiberg Mining Academy). Translated from German by H. LIEBSCHER. Elsevier Publishing Co., New York, N.Y. 1972. 468 pp. $27.95.

This book does an admirable job of accomplishing its stated purpose of providing a ". . . source of information about the essentials of geochemistry and a guide to the literature in this field" in order that students and scientists concerned with geochemistry can ". . . familiarize themselves quickly with the special subjects in which they are particularly interested." Part of the motivation for this text is that ". . . it is no longer possible to include the whole subject matter of geochemistry in the syllabi of university courses." In connection with this latter consideration, the broad coverage, even though synoptic, is an especially desirable feature of this book.

Unfortunately the title is not a good choice either in terms of the aims of the authors or the content of the book and may serve to limit the readership. The authors had also intended this book as a text for students, and it seems like an excellent choice, when properly supplemented with lecture material and problems sets, for a one-term, introductory course in geochemistry with appeal to a broad audience, such as geology, natural resources, environmental sciences, and oceanography concentrators. Such students should, however, have a good introductory course in general chemistry. The treatment of atomic properties such as ionic radius, ionization potential, polarization, etc., is particularly useful for the above-mentioned audience of students and professional scientists.

The data in the tables are not the latest—even at the time of publication—but are adequate for most geochemical purposes. In fact, the tables by themselves are not *the* strong point of this book, but rather it is the introductory material, treatment of elementary concepts essential to understanding and using the tables, and the overall cohesiveness of the text that make it a worthwhile purchase. The treatment of dating techniques is quite good and should enable both student and researcher with no previous exposure to dating techniques to understand and assess the validity of age determination data in the primary literature. The treatment of analytical methods in geochemistry is well balanced and contains a surprisingly large amount of purely practical information such as the purity of commercial graphite electrodes and the availability of standard rocks. The advantages and disadvantages of different techniques are also discussed. The treatment of applied geochemistry as it relates to economic geology and ore prospecting is good.

Even though the treatment of the various topics is abbreviated, the extensive list of references at the end of most subchapters permits the interested reader to go to more authoritative treatments with little effort. This format should be particularly useful to the person starting-up or contemplating a project in a new area. The last chapter on units and sundry measurement techniques is also more complete than one usually finds and is at the same time quite compact. There is also a table of transliterations of cyrillic characters which would be useful to the person who does not read Russian.

This is a well-balanced synoptic treatment of the broad spectrum of geochemistry and is highly recommended for the professional person interested in geochemistry, for the student of natural resources, geology, environmental sciences, and oceanography. It also looks like an excellent text for a one-term, introductory course in geochemistry which is designed to appeal to a broad audience.

B. J. Evans, *University of Michigan*

Source Testing for Air Pollution Control. By H. B. H. COOPER, JR., and A. T. ROSSANO, JR. (University of Washington). McGraw-Hill Book Co., New York, N.Y. 1974. iv + 228 pp. $14.50.

This book provides a good description of the methods currently in use for gaseous and particulate sampling of pollution sources. The book deals almost exclusively with sampling, very little attention being given to methods of analysis. Useful fluid dynamic formulas are presented without derivation and with all parameters carefully defined. The sources of information are fully referenced, but there are no references more current than 1968. The authors have a lucid style of writing, and the material is further clarified by over 100 figures. This book is a useful manual for both governmental and industrial personnel actively involved in source testing, as well as students, engineers, and others desiring an introductory or background knowledge of the subject.

John W. Birks, *University of Illinois*

Chemical Applications of Pattern Recognition. By PETER C. JURS (Penn State University) and THOMAS L. ISENHOUR (University of North Carolina). John Wiley & Sons, New York, N.Y. 1975. vii + 184 pp. $16.00.

The rapidly expanding field of pattern recognition is finding wide application to many chemical problems. The authors of this book are active researchers in the field and were among the first to apply pattern recognition methods to the handling and interpretation of chemical data.

After a brief introduction to the principles of pattern recognition, the remainder and major portion of the book is devoted to examples of chemical applications of pattern recognition techniques, notably the "learning machine" and binary classifiers. The recognition of mass spectra is particularly focussed upon. Other applications are made to infrared and nuclear magnetic resonance spectroscopy. In addition, a computer program illustrating the learning machine technique is provided with sample input data. Most of the pattern recognition methods emphasized in the book as well as most of the examples given are derived from the authors' own work.

This book should be of major value to present and future researchers in the field as well as to the many chemists who routinely deal with the problems of interpreting chemical data.

Joel M. Bowman, *Illinois Institute of Technology*

The Structure of Matter, By JOAN SOLOMON. Halsted Press, John Wiley & Sons, New York, N.Y. 1974. 179 pp. $9.95.

This book presents a refreshing review of the history of scientific thought by tracing the development of man's idea on the nature of matter from the earliest time to recent advances in the study of elementary particles. Although the book is intended for the general public with no science background, it can be educational for young scientists as well. The author's theme is that science has no separate and distinct culture of its own. It has always reflected the general climate of thought in every age. To show this, the author makes numerous quotations both from the original works of great scientists and contemporary literature, art, and philosophy. Many of the pictures and drawings in the text are of high quality and will be helpful to the reader in grasping the essence of each topic being discussed. If we should agree that teaching science in general education is to help students to understand scientific thought and method as a part of our culture, this book can be very helpful in a drive toward that end.

Chang Lyoud Kong, *Marshall University*

Plant Carbohydrate Biochemistry. Edited by J. B. PRIDHAM (University of London). Academic Press, New York, N.Y. 1974. xiii + 269 pp. $18.50.

This volume contains papers presented at the Phytochemical Society Symposium of April 1973 and in general is a well-balanced and up-to-date source for information on carbohydrate biochemistry in plants. Fourteen of the sixteen chapters deal with higher plants while algae and fungi have one chapter each.

The greatest strength of this book is that most of the articles do not simply present pathways of carbohydrate metabolism that may be possible, but they consider relative importance and interrelatedness, cytological localization, and regulation. In these respects it demonstrates that plant biochemistry is now well into a third stage of maturity where the first two were exemplified by the questions, "What compounds are present in plants?" and "What are the metabolic maps for these compounds?" Now we are ready to tackle the wholeness of metabolism as it really occurs in vivo.

Several chapters deal with the expected, "classical" areas of carbohydrate metabolism such as carbon dioxide fixation (D. A. Walker), starch synthesis and breakdown (D. J. Manners; M. A. R. de Fekete and G. H. Vieweg), cell wall polysaccharides (P. Albersheim; D. H. Northcote; C. L. Villemez; H. Kauss), the pathways of glycolysis and gluconeogenesis (T. ap Rees, S. M. Thomas, W. A. Fuller, and B. Chapman), and sucrose metabolism (D. R. Davies). Somewhat more off the beaten track is a penetrating chapter on the α-galactosidases of higher plants (J. B. Pridham and P. M. Dey) and a useful review of plant glycolipids (B. W. Nichols).

I want to single out for special mention two chapters because their contents are not readily available in any other place. Plant polyols are considered by B. E. Stacey in a way that brings out the significance of these neglected compounds, which must be recognized as major products and active metabolites in a wide variety of plants. Most of them seem to be in equilibrium with corresponding ketoses, and this interconversion could serve as a mechansim for regulation of NADPH and NAD concentrations. The other chapter getting special mention is one on glycoproteins by N. Sharon. One class of plant glycoproteins, the lectins, has been receiving much attention from zoologists and medical researchers because of their specific binding to cell membranes and mitogenic activity. Sharon gives a useful summary of known lectins that overlaps with other available reviews of them, but he also deals with several other types of glycoproteins such as enzymes, allergens, and structural proteins; thus this chapter would be a good starting place for anyone interested in seeing what is known in this relatively young area.

There are a few topics in carbohydrate metabolism that this book neglects completely or nearly so. Three that occur to me are the pentose phosphate pathway, ascorbic acid, and the cylitols. (The last are not considered in the chapter on other polyols.) Another inconvenience is that plant names are completely neglected in the otherwise quite adequate index. Finally, I take this opportunity to call attention to an ambiguity that is gradually permeating all the literature on plant cell wall carboydrates. Much valuable information has been obtained from the use of cell cultures of *Acer pseudoplatanus*, a tree which in England goes by the common name of "sycamore"; but to an American "sycamore" means the unrelated genus *Platanus*. For this reason the misleading phrase "sycamore cell cultures" must be abandoned.

Trevor Robinson, *University of Massachusetts*

High Modulus Wholly Aromatic Fibers. Edited by W. B. BLACK (Monsanto Textiles Co.) and J. PRESTON (Chemstrand Research Center, Inc.). Marcel Dekker, Inc., New York, N.Y. 1973. xi + 372. $22.50.

This book is inappropriately titled. It contains little or no information about high-modulus fibers in general, but a great deal about Monsanto's X-500 class of polyamide-hydrazide fibers. And for those specifically interested in polyamide-hydrazides the information is of value. About one-half of the book is a direct contribution by Black and/or Preston, both widely recognized as the progenitors of this class of materials. Black's excellent introductory section is followed by several good chapters dealing with the synthesis of polyamide-hyrazides. Later chapters, however, dealing with some special technological applications of X-500 fibers, may be of less interest to readers in general. Specifically, the sections on composites, tire cord, and ballistics protection are too restrictive to be of much real value, and the conclusions therein are subject to change as more materials are evaluated.

The major shortcoming of the book is that it deals primarily with but a single fiber, an experimental one at that. The work at DuPont is totally ignored, receiving only a structural formula on page 5. At least one chapter on these materials should have been included, or else the title should be changed to reflect a limited scope.

Kenneth J. Smith, Jr., *State University of New York College of Environmental Science and Forestry*