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Book review

Gmelin Handbuch der anorganischen Chemie, Hauptwerk, 8th edition, Kohlenstoff (System Nr. 14), Teil D2, Kohlenstoff–Halogen-Verbindungen, D. Koschel, editor-in-chief, Gmelin-Institut für Anorganische Chemie der Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.V., Springer-Verlag, Berlin/Heidelberg/New York, 1974, xvi + 386 pages, DM 520, \$212.20.

In this newest addition to the Gmelin volumes on carbon and its compounds the simplest species and compounds containing carbon and halogen are covered: the carbynes, CX; the carbenes, CX₂ and CHX; the halomethyl radicals, CX₃, CHX₂ and CH₂X; the tetrahalomethanes, CX₄. Included are those species with only one kind of halogen substituent as well as those with different halogen substituents. Although this volume deals with important reactive intermediates of organic chemistry as well as with some important organic compounds, the treatment is directed almost exclusively toward the interests of the physical chemist (especially the spectroscopist) and, in the case of the tetrahalomethanes, also of the chemical engineer. With good justification, the organic chemist is referred to the Beilstein volumes and to appropriate monographs. The main emphasis in this book is on physical data (molecular and spectroscopic properties, thermal and mechanical properties) relating to the species covered, not on the reactions which lead to their generation or those which they undergo.

In the case of the carbenes, the preparative reactions mentioned are those which were effected in the gas phase or at low temperatures in suitable matrices. However, some useful gas-phase procedures, e.g., Mahler's (CF₃)_nPF_{5-n} pyrolyses for CF₂, are not mentioned. The references to carbene generation in solution are carelessly chosen. The only one mentioned specifically for dichlorocarbene (reaction of t-BuOK with (CFCI₂)₂CO) is wrong, and old (1963-1965) reviews are cited where mention of more recent ones would have served the reader better. Perhaps it is the bias toward physical data which is responsible for these shortcomings as well as other errors such as the statement (p. 41) that electron bombardment of carbon tetrachloride yields dibromocarbene.

But it is perhaps unfair to carp about aspects which are outside the main thrust of this volume. The physical data for all of the species covered are presented with the usual Gmelin thoroughness. Every physical measurement ever made on the carbon tetrahalides that has been reported in the scientific literature must be in this volume and the fundamental information on mono-, di- and trivalent carbon halide species has never been so effectively collected in one place before.

Although this book is written in German, an English translation of the table of contents and of the foreward is provided. Also, English translations

of chapter and section headings are found in the margins throughout the book. An index is absent and presumably will be provided in a later volume. The coverage of the literature is complete through the end of 1972 but some later references have been utilized.

*Department of Chemistry
Massachusetts Institute of Technology
Cambridge, Massachusetts 02139 (U.S.A.)*

DIETMAR SEYFERTH