ecophenotypic variation in scleractinians; both deserve a wide audience.

Despite its omissions, the volume will have enduring value. Advances in tropical field biology are ultimately dependent upon the vision and energies of the rare scientist who establishes a research station and guides it through the early years of descriptive science. This is particularly true for coral reef research. Reefs are phenomenally diverse, and synthetic studies must rest upon a rich knowledge of taxonomy, distribution, and abundance. Reef scientists must applaud Klaus Rützler, the station's founder, for his efforts and the Smithsonian Institution for its farsighted policy of support for long-term tropical field studies. The establishment of the research station at Carrie Bow Cay and the detailed description provided in this volume cannot fail to stimulate research on coral reef biology and geology.

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Metal-Metal Bonds

Multiple Bonds Between Metal Atoms. F. ALBERT COTTON and RICHARD A. WALTON. Wiley-Interscience, New York, 1982. xiv, 466 pp., illus. $47.50.

The developing chemistry of metal-metal bonds is one of the major factors contributing to the rise of present-day inorganic chemistry. Within the broad spectrum of inorganic compounds and materials that contain metal-metal bonds, those with multiple bonds hold central positions. Cotton's discovery in 1964 of the quadruple bond in $Re_2Cl_8^{2-}$ caused the awakening of a new era in chemistry. If quadruple bonds can exist between metal atoms, what are the possibilities that pentuple and sextuple bonds may be formed, and what, too, for bonds of fractional order, such as 1.5 and 2.5? How short can metal-metal distances become, and how strong are metal-metal multiple bonds? Could a metal-metal quadruple bond be stronger than the triple bond in carbon monoxide? Can metal-metal multiple bonds provide reactive functional groups for inorganic reactions in a manner parallel to that that is well established for C≡C, C≡N and C≡C functions in organic chemistry? Aided by the powerful tools of automated x-ray diffractometers and a multitude of spectroscopic and calculational techniques, Cotton and his co-workers set about studying metal-metal multiple bonds. This is the first comprehensive treatise written on the subject, sometimes referred to as "Cotton chemistry," though the appelation should not denigrate the many significant contributions of others such as Walton.

The first chapter of the book provides a general overview of the subject and traces its development. The second, third, and fourth chapters deal with quadruple bonds, and the fifth chapter deals with triple bonds. The chapters on quadruple bonds are divided into sections by element (Mo, Cr, Re, Tc, W), and the chapter on triple bonds is divided according to electronic configuration ($\sigma^2\pi^4$, $\sigma^2\pi^4\delta^2\delta^{*2}$). Then follow chapters on double bonds and compounds, such as Rh(II) and Pt(III) dimers, with close formal relationships to those with multiple bonds. In each of these chapters, the preparations, derivatizations, and reaction chemistry of the compounds are described. A chapter entitled "Physical, spectroscopic, and theoretical results" discusses structural and thermodynamic data, numerical electronic structure calculations, electronic spectra, vibrational spectra, and photoelectron spectra for the various types of compounds, as well as the diatomic molecule Mo_2.

The book is well structured and written. Each chapter is referenced separately. There is an extensive index, and the table of contents is broken down in considerable detail. Consequently, the book is easy to use as a reference source. It will undoubtedly find its way onto the library shelves of most chemical institutions and inorganic and organometallic chemists. It will be used extensively in graduate-level chemistry courses. Most of all, it will provide a concise historical account of the childhood years of the chemistry of metal-metal multiple bonds.

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