

## Preface to the First Edition

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**T**he renaissance of inorganic chemistry that began in the 1950s has been propelled by the discovery of new and important classes of inorganic molecules, many of which do not conform to classical bonding theories. Among these landmark discoveries has been the isolation and structural characterization of transition metal compounds that possess multiple metal-metal bonds. From the seminal discoveries in this area in the early 1960s has developed a complex and fascinating chemistry. This chemistry is simultaneously different from but very relevant to the classical chemistry of the majority of the transition elements. Since the synthetic methodologies, reaction chemistries, and bonding theories are now remarkably well understood, we felt the topic had reached a level of maturity sufficient to justify a comprehensive treatise.

The content of this book encompasses all the classes of compounds currently known to possess, or suspected of possessing, metal-metal bonds of order two or greater, as well as some compounds with single bonds that have a close formal relationship to the multiple bonds. Synthetic procedures, reaction chemistries, spectroscopic properties, and bonding theories are discussed in detail for these molecules, and, in addition, we have attempted to place in historical perspective the most important discoveries in this field. Since both of us have worked in this field for many years, much of our discussion inevitably takes on a rather personal flavor, particularly in our treatment of the circumstances surrounding many of the major advances. We have endeavored to cover all the pertinent literature that was in our hands by the end of December 1980. When possible, we have also referred to those key developments that may have emerged during the early part of 1981, while the manuscript was in press.

Throughout the preparation of the manuscript we were fortunate to have the assistance of many friends and colleagues who not only provided us with valuable information on unpublished results, but on occasion critically read various sections of the text and otherwise helped us surmount minor hurdles. We especially appreciate the assistance of Professors M. H. Chisholm, D. A. Davenport, F. G. A. Stone, O. Glemser, and B. E. Bursten. We also thank the various authors and editors who kindly gave us permission to reproduce diagrams from their papers; the appropriate numbered reference is given in the captions to those figures that were reproduced

directly from the literature or were modified so slightly as to retain an essential similarity to those in the original publications. Finally, we appreciate the expert patient secretarial assistance of Mrs Rita Biederstedt and Mrs Irene Casimiro in the preparation of the manuscript.

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