

Contents

Preface v

Acknowledgments vii

PART ONE • The place of minerals in modern society: in which the general organization of the book is discussed and some of the unique characteristics of minerals are examined.

- 1 **An introduction to the mineral world** 3
Fundamental concerns, 4 The changing image of mining, 5 The book in outline, 7
- 2 **Some basic concepts about minerals** 9
The resource base, 11 The commodities, 12 The complexity of mineral supply, 14 The geography of supply, 17

PART TWO • Commodity studies: in which a number of the major mineral raw materials are used to illustrate various aspects and issues of mineral supply and development.

- 3 **The steel industry and iron ore:** in which some indication is given of the complexity of the mineral industry as it relates to a key metal 27
The processes, 29 The location of the steel industry, 34 Raw material transport, 36 Iron ore, 39 Questions of self-sufficiency, 46
- 4 **The alloying elements:** which illustrate some of the ways of responding to the characteristics of fixed location. 49
Manganese, 50 Nickel, 54 Chromium, 59 Molybdenum and vanadium, 62 The pattern in review, 64
- 5 **The base metals:** in which the metals are first discussed individually, and then examined together for a consideration of some aspects of the relationship between government and the mineral industry. 67
Copper, 68 The concept of resources in mineral supply, 72 Lead, 78 Scrap—a major source of raw material, 81 Zinc, 83 The grade of ore and its impact on supply, 86 Tin, 88 Mineral production in developing countries, 91 The base metals and government, 93

- 6 The light metals:** in which it is shown how the producers of these remarkably abundant mineral raw materials are striving to make a larger place for themselves in the metal market. 103
Aluminum, 104 Substitution as a factor in mineral markets, 112 Magnesium, 117 Titanium, 120
- 7 Industrial minerals and rocks:** in which group there are associated a vast array of nonmetallic minerals ranging from diamonds to sand. 123
Sulfur, 126 By-products and pollution control, 129 Limestone, 131 The mineral industry and land use conflicts, 132

PART THREE • The summing up: in which the principal determinants of the patterns of mineral exploitation and use are highlighted, and some continuing uncertainties are recognized.

- 8 Minerals in perspective** 139
Geology, 140 Technology, 143 Economics, 147
Environmental issues, 150 Politics, 152
- List of references 161
- Index 165

