

Contents

| | |
|--|------------|
| Preface to the Third Edition | v |
| Preface to the First Edition | vii |
| Chapter 1: MINERAL ECONOMICS AND ITS CONCEPT Concept 2; Scope of study 3 | 1 |
| Chapter 2: PECULIARITIES INHERENT IN MINERAL INDUSTRY | 8 |
| Chapter 3: WORLD RESOURCES OF MINERALS | 14 |
| Africa | 14 |
| Asia | 23 |
| Australasia | 35 |
| Europe | 39 |
| South America and Central America—Latin America | 50 |
| South America | 51 |
| Central America | 57 |
| North America | 59 |
| Caribbean Islands | 70 |
| Indian Ocean Islands | 70 |
| Pacific Ocean Islands | 71 |
| China | 72 |
| U.S.S.R. | 73 |

| | |
|---|------------|
| Chapter 4: FUTURE SOURCES OF MINERAL SUPPLY | 82 |
| Recent Discoveries on the land surface | 86 |
| Technological developments, | 96 |
| Chapter 5: MINING LAWS IN VARIOUS LANDS | 104 |
| Mining Laws in Important Countries | 108 |
| African Countries 108; Asian Countries 110; | |
| Australasia 112; European Countries 112; | |
| Latin American Countries; North America 116. | |
| Chapter 6: MARINE MINERAL RESOURCES AND THE LAW OF THE SEA | 120 |
| Exclusive Economic Zone | 122. |
| Chapter 7: MINES AND MINERALS LEGISLATION OF INDIA | 127 |
| Categories of Minerals for Grant of Concessions | 128 |
| Minor Minerals | 128 |
| Major Minerals | 129 |
| Procedure for Obtaining Mineral Concession | 129 |
| Restriction of area for concessions 131; Period of concessions 131. | |
| Termination, Surrender and Determination of Mining Lease | 132 |
| Royalty and dead rent 132; Surface and water rents 133. | |
| Maximum Quantities Removable Free of Royalty | 133 |
| The Oilfields (Regulation & Development) Act, 1948 | 133 |
| The Mines and Minerals (Regulation & Development) Act, 1957 | 141 |
| Mineral Concession Rules, 1960 | 143 |

CONTENTS

xiii

| | |
|--|------------|
| The Mining Leases (Modification of Terms) Rules, 1956 | 143 |
| Minerals Conservation and Development Rules, 1958 | 143 |
| The Coal Mines (Conservation & Development) Act, 1974 | 144 |
| The Coal Bearing Areas (Acquisition and Development) Act, 1957 | 144 |
| The Atomic Energy Act, 1962 | 144 |
| The Mines Act, 1952 | 145 |
| Mines Rules, 1955 | 146 |
| Coal Mines Regulation, 1957 | 146 |
| Metalliferous Mines Regulation, 1961 | 147 |
| Chapter 8: MINERAL TAXATION AND INCENTIVE MEASURES | 148 |
| Incidence of Taxes | 149 |
| Incentive Measures | 151 |
| Concessions allowed in income-tax 151; Depreciation 153; Rehabilitation allowance 156; Expenditure on scientific research 156; Amortisation of preliminary expenses 156; Deduction of expenditure in prospecting etc. 157; Tax holiday 157. | |
| Depletion Allowance | 158 |
| Sinking Fund | 159 |
| Financial Participation | 159 |
| Simplification of Taxation Laws | 160 |
| Chapter 9: TENOR, GRADE AND SPECIFICATION | 161 |
| Tenor | 162 |
| Grade | 163 |
| Specification | 164 |

| | |
|---|------------|
| Chapter 10: MARKETING | 180 |
| Port Handling Charges | 183 |
| Custom duty 183; Import duty 186. | |
| Chapter 11: METHODS OF ESTIMATION OF RESERVES | 188 |
| Classification of Reserves | 188 |
| Sampling | 193 |
| Spacing of Trenches, Pits, Boreholes and Grooves | 202 |
| Preparation of the Samples for Assay | 203 |
| Processing and Interpretation of Sampling Data | 204 |
| Reserve Calculation | 208 |
| Estimation of Reserve by Exploratory Mining | 217 |
| Economic Considerations in Reserve Estimation | 222 |
| Estimation of Primary Oil Reserves | 226 |
| Material Balance Method | 228 |
| Decline Curve Method | 230 |
| Estimation of Natural Gas Reserves | 231 |
| Chapter 12: FEASIBILITY STUDY | 236 |
| Definition | 236 |
| Important Considerations of a Feasibility Study | 237 |
| Phase I (non ferrous and precious metals) 239; | |
| Phase II 240; Phase III 241. | |
| Chapter 13: PRINCIPLES AND METHODS OF MINERAL DRESSING | 243 |
| Approach to Mineral Dressing | 243 |

CONTENTS

xv

| | |
|---|------------|
| Preparation of the Mineral Samples for Dressing | 245 |
| Methods | 247 |
| Magnetic Separation | 249 |
| Electrostatic Separation | 250 |
| Flotation | 253 |
| Reagents | 259 |
| Collectors | 259 |
| Frothers | 260 |
| Modifiers | 260 |
| Agglomeration | 264 |
| Chapter 14: STRATEGIC, CRITICAL AND ESSENTIAL MINERAL | 269 |
| Classification of Minerals from Military Point of View | 270 |
| Chapter 15: CONSERVATION AND SUBSTITUTION | 289 |
| Metals Scrap Used in U.S.A. during 1976 | 291 |
| Chapter 16: CHANGING PATTERN OF MINERAL CONSUMPTION | 295 |
| Altogether Displacement of Certain Conventional Raw Materials | 296 |
| Use of Altogether New and Unconventional Raw Material Displacing the Conventional Raw Material | 299 |
| Changes in Norms of Consumption | 301 |
| Impact due to synthetics and substitutes | 302 |
| Chapter 17: NATIONAL MINERAL POLICY | 304 |
| Domestic Mineral Policy | 307 |

| | |
|--|------------|
| Chapter 18: GROWTH OF MINERAL INDUSTRY AND THE ECONOMY | 310 |
| Coal | 316 |
| Aluminium | 345 |
| Copper | 349 |
| Haldia | 360 |
| Mangalore | 360 |
| Paradeep | 360 |
| Visakhapatnam | 361 |
| Madras | 361 |
| Marmugao | 361 |
| Chapter 19: QUANTITATIVE TECHNIQUES FOR ESTIMATING MINERAL DEMAND | 378 |
| Introduction: The General Problem of Estimation | 378 |
| Statistical techniques | 378; |
| Judgemental analysis | 385 |
| Selected Bibliography | 387 |