pletely solved in the abstract and examples are not concerned with the question 'what is the solution?' but rather with the simple matter of what the known solution looks like in the various concrete settings." Although several of the examples are concerned with the solution of simple problems within this more general framework, the book does not successfully relate these new techniques to classical methods, or demonstrate that the approach leads to the solution of new problems and a deeper understanding of old ones. Thus, its value lies primarily in its clear introductory exposition of functional analysis. An extensive list of references is included, and the text contains an abundance of exercises making it suitable as a reference for classroom use.

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One of Our Necessities

Mineral Resources. Geology, Engineering, Economics, Politics, Law. PETER T. FLAWN. Rand McNally, Chicago, 1966. 418 pp., illus. $9.

The circumstance that distinguishes modern industrial civilization from all its predecessors is its dependence upon mineral resources—metallics, nonmetallics, and fossil fuels. These resources are irregularly distributed about the earth; they occur in finite amounts, and most are exhaustible at present rates of consumption in a matter of decades or centuries. In view of the importance of this subject, and the dearth of recent, comprehensive books concerning it, the present book, written by an economic geologist, is particularly welcome.

As is the case with any other subject of comparable complexity, the published data on the world's mineral resources comprise an extensive library. The problem of reducing these data to a meaningful form within the scope of a single volume is therefore formidable. Of necessity, the data must be presented in a statistical form, but what data to present, and in what manner, is dependent upon what theoretical framework one chooses to use. One may use that of physical science, or that of business enterprise and its handmaiden, economics. One's treatment may be based on the physical and chemical properties of matter and energy, the geological occurrence and processes of origination of minerals, and the technological processes of their extraction and utilization, or on concepts of property and ownership, monetary value, and profitability of exploitation. The author of *Mineral Resources* has attempted to combine these two approaches, but in fact the treatment vacillates between them, with the heavier weighting apparently given to the second.

The business-economic framework is dominant in chapters 1, 4, 7, and 8, dealing with Minerals, Mineral Deposits, Reserves, and Resources; Lessons and Laws of Ancient History; Ownership of Mineral Deposits; and Minerals and Government. In these sections one of the more useful discussions pertains to the evolution of mining law in the United States, culminating in the "Law of the Apex," which originated as common law in California in the 1850's but which has by now become one of the most inhibitory influences to exploration in the U.S. mining industry.

The history of mineral exploitation from ancient to modern times is treated in chapters 4, 5, and 6, but so superficially as to be of little use to the otherwise uninformed reader. Obscure geographic place names and the names of mining districts are used extensively, yet only five maps are given in the entire book. Of these, four pertain to anicent Egpyt and the Middle East, and one is a boundary map of the North Sea.

The physical-science framework is used as the principal basis for chapters 2 and 3, on the geology of mineral deposits, and chapters 9, 10, and 11, dealing with modern mining practices, world distribution and reserves of minerals, and future supplies.

To me, the most informative section of the book is chapter 10, which includes tables giving the percentages of world production by geographical region for various minerals and the recent rates of production and "indicated reserves," by producing country or area, for selected key minerals. Of particular significance is the "reserves-production index," defined as the ratio of reserves to annual production. For most key minerals this is measurable in decades. For some, however, notably iron, aluminum, and coal, it is measurable in centuries.

As to the future, the author recognizes the necessity for stabilization of world population, but he has not faced with equal realism the impossibility of a continued exponential growth in the consumption rate of nonreplaceable minerals.

A great asset of the book is the extensive bibliographies given at the end of each chapter. On the negative side, the book suffers from a number of serious defects of editing and publishing. Some of the important tables are so poorly laid out that they are almost unintelligible.

Most of the contents of the book are factual, and the interpretations are characterized by good judgment. A significant exception is the discussion of extraterrestrial sources on pages 381 and 382. Despite the fact that the author had previously dismissed as visionary and impractical recent proposals for obtaining metals from such low-grade terrestrial sources as granites, he has been credulous enough to allot more than a page to a vastly more visionary project, now being financed by the National Aeronautics and Space Administration, pertaining to mining operations on the moon.

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A View of Terrestrial Space

L'Organisation de l'espace. Eléments de géographie volontaire. JEAN LABASSE. Hermann, Paris, 1966. 605 pp., illus. 75 F.

One of the remarkable success stories of the last 20 years has been the rise of France from the physical and psychological ruin of World War II. No small part of the French success has been due to carefully organized public leadership in economic planning. General Charles de Gaulle for the last ten years has so effectively upstaged everyone else on the French scene that we are apt to forget that the foundation for recent French prosperity was effectively laid by others who conceived and implemented the succession of four-year plans that commenced in 1947. Jean Labasse, a geographer, planner, and banker, is an influential member of a group of relatively young men who have provided much of the intellectual motivation for French planning.

Labasse has been interested particularly in regional organization and land-use planning. In *L'Organisation de l'espace* he presents a comprehensive