been treated from a different viewpoint by Gunnar Myrdal in *Rich Lands and Poor, the Road to World Prosperity* (1958).

Malthus was one of the first to analyze the problem of world population and food supplies. Stamp is the latest. *Our Developing World* is very good in its treatment of land, population, and agricultural resources, less so in its treatment of energy and mineral resources. It is written not for the specialist in population or agriculture but for the layman and the specialist in other fields who lacks background on this most urgent of problems.

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Principles of Mineralogy. William H. Dennen. Ronald, New York, 1959. v + 429 pp. Illus. $7.50.

During this last year there has been a rash of new textbooks and new editions of old established works on mineralogy. These include, in addition to the book here reviewed, the following: *Mineralogy* by Kraus, Hunt, and Ramsdell (McGraw-Hill, New York, ed. 5, 1959); *Dana's Manual of Mineralogy* by C. S. Hurlbut, Jr. (Wiley, New York, ed. 17, 1959); and *Mineralogy, Concepts, Descriptions, Determinations* by E. G. Berry and Brian Mason (Freeman, San Francisco, 1959). Recently it was announced that a fifth volume would be published: "Elements of Crystallography and Mineralogy" by F. Alton Wade and Richard B. Mattox. Of the first four, two are essentially traditional in their approach (the two revised editions), but the other two contain numerous innovations of treatment and organization.

This volume by Dennen is divided into two parts: part 1, "General principles," and part 2, "Mineral descriptions." It contains no identification tables but has mineral and subject indexes. Part 1 begins with a chapter on symmetry; in essence, it is a chapter on crystallography, but it lacks many of the standard features. It does not deal with such subjects as the representation of crystals by projections or the determination of crystal faces by means of goniometry. Chapter 2, entitled "Fundamentals of crystal chemistry," considers the architecture of atoms (including nuclear progression, electronic cloud, and quantum states), periodic classification, intrinsic atomic properties, bonds and bonding, and the size and shape of atoms and ions. In chapter 3, which is vaguely entitled "Mineralogical relations," Dennen discusses chemical variation in series and groups and geometrical variations (polymorphs, twinning, and crystal imperfections). In "The physical characteristics of minerals" (chapter 4) he describes not only the several physical and optical properties of minerals but also includes a section on electrical, magnetic, and thermal properties as well as a discussion of crystal growth and habit.

Most of the standard chemical tests for the important elements as well as a discussion of the use of the blowpipe are presented in chapter 5; on page 154 of this chapter there is an extraordinary illustration—a line drawing of a student using the blowpipe as seen from a point directly overhead. Such topics as classification of matter, number and abundance of minerals, mineral classification, and mineral interrelationships are discussed in chapter 6. Emphasis here is on the description of the structures of the ionic species, with a great many drawings of crystal structures.

Part 2, involving mineral descriptions, has but one chapter. The breakdown is by the conventional system of classification: native elements, sulfides, sulfosalts, halides, oxides, hydroxides, oxygen salts (8 subdivisions), and finally silicates. Each species is described under the following headings: crystallography, structure, habit; physical properties; distinctive properties and tests; association and occurrence; alteration; confused with; variance; and related minerals. Some 150 species are described; yet the mineral index lists approximately 600 mineral names. Although most of the names are to be found in the section on mineral descriptions, they are mentioned but briefly as minerals related in various ways to those described in greater detail. There are no drawings of crystals and no photographs of specimens. The section does include representations of the structures of some of the species and a few reproductions of pencil drawings of crystalline groups or crystals. The lack of significant illustrations and the omission of reference to specific deposits, classical or economic, represents a most unfortunate feature, because this tends to impart a degree of abstractness or unreality to the mineral descriptions.

The book, which is "intended for an introductory college course in mineralogy," may serve well as a text for such a course intended for embryonic physicists, chemists, and crystallographers, but it seems inappropriately organized to interest and stimulate beginning mineralogists and geologists.

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Les Mekhadma. Etude sur l'évolution d'un groupe humain dans le Sahara moderne. Arts et Métiers Graphiques, Paris, 1960. 224 pp. Illus. + maps.

Les Mekhadma is a study of a largely sedentary (though formerly pastoral nomadic) Arab tribe caught up in the whirl of the Saharan oil boom. The study is devoted mainly to descriptions of experiments carried out by a team of specialists from PROHUZA (Centre d'Etudes et d'Informations des Problèmes Humains dans les Zones Arides). The experiments involved a great variety of procedures designed to select, mainly by psychometric means, the most able local candidates for employment in an oil field. Also included are a brief history of the Mekhadma, a summary description of their culture, and a rough sketch of the adult male physical type.

The primary objectives of the project were to develop aptitude tests applicable to Saharan native laborers and to learn enough about Mekhadma culture to be able to counteract, at least to some extent, the disruptive effects of sudden and violent contact with European oilfield culture. Therefore, the sociological and psychological sections are slanted strongly by economic emphasis, and they reveal very little concerning either personality or culture beyond those elements whose practical importance seemed obvious to the investigators.

It is regrettable that the authors could not present more information concerning social and political structures, physical anthropology, and health and disease among the community as a whole. But this was not entirely their fault. On the one hand, they were feeling their way in the semidarkness of an almost completely new field of investigation, and they prudently avoided biting off at the start more than they could reasonably expect to chew; on the other hand, their professional enthusiasm was strictly channeled by