domain is the set of positive integers and whose range is contained in p-dimensional Cartesian space; the convergence of such sequences is treated in the fourth chapter. The typical function is one whose domain and range are contained in p- and q-dimensional Cartesian spaces respectively.

There are more than 500 well selected problems, with hints and answers for the more difficult ones; 33 of the problems are projects consisting of connected sequences of exercises which develop a part of the theory. For example, the text treats only Cartesian spaces, but the projects include brief introductions to metric spaces, linear spaces, and normed linear spaces.

The printing is good, and typographical errors are rare.

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Mineralogy

Aspects of Theoretical Mineralogy in the U.S.S.R. A collection of papers translated from the Russian. M. H. Battey and S. I. Tomkeieff, Eds. Pergamon, London; Macmillan, New York, 1964. viii + 507 pp. Illus. $30.

The 35 papers here translated were published between 1943 and 1960, but mostly between 1954 and 1959, in Soviet scientific journals. They can be divided into three groups, dealing, respectively, with the meaning of the term *mineral*, the classification of minerals, and the correlation of their physical and chemical properties.

The first group of six papers deals with the definition of the term *mineral*. They may be collectively oversimplified to the point of saying that a mineral is a phase in the Gibbs' phase-rule sense. This is usually qualified by requiring it to be a solid, natural phase, but liquids (rarely also gases), and artificial phases are recognized by some mineralogists. A. S. Uklonskii even includes some inhomogeneous objects like "colloidal and amorphous minerals . . . [that] are made up cryptocrystalline aggregates." D. P. Grigor'yev (1943) examines current definitions and finds them "static" or "dynamic," a distinction based on the verb used in the definition—that is, "minerals exist" versus "minerals develop"; he prefers the latter usage. He also includes fluids such as liquid oil-droplets and gases in otherwise void openings like negative crystals or in the channels where helium is seeping from the ground, and dispersoidal or colloidal objects such as incrustations of opal and the "monomineralic aggregate," geyserite. Grigor'yev describes how this new definition affects the objectives of mineralogy, and, in the last article of this section, he answers to his satisfaction, and to that of many others, the question, "What is a mineral?"

In the second section, on the classification of minerals, Uklonskii's classification (1948) is primarily by economically important elements; but minerals with several elements present are not uniquely classified. This tends to emphasize associations of elements more than the conventional crystal-chemical classifications like that of *Dana's System of Mineralogy* (1898; ed. 7, 1944), which in modified form is adopted by Kostov (1954), Bokii (1956), Povarennykh (1955–1956), and Barsanov (1959), whose classifications seem to have much in common.

The third section contains somewhat more specialized papers dealing with melting temperatures, solubilities, hardnesses, compressibilities, magnetism, and optical properties; in many of these papers the approach is distinctly theoretical, starting with known crystal structural details and inferring the physical properties.

Most papers in this book will be of considerable interest to mineralogists only; some will interest the solid-state physicist, and a few should appeal to chemists.

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Practical Handbook

Waterfowl Tomorrow. Joseph P. Linduska, Ed. U.S. Department of Interior, Washington, D.C., 1964 (order from Superintendent of Documents, Washington, D.C.). xiv + 770 pp. Illus. $4.

Waterfowl Tomorrow is a practical handbook for waterfowl specialists as well as a mine of information for sportsmen and lay readers. Prepared by the U.S. Department of Interior "with the assistance of officials and representatives of State, Provincial, and National Governments. . . ," it is profusely illustrated with several hundred excellent and well chosen photographs. Each chapter is prefaced by an artistic drawing by Bob Hines. More than 100 American and Canadian authors contributed the 69 chapters that make up the bulk of the book.

Multiple authorship inevitably results in considerable duplication. Many facts (for example, goldeneyes nest in cavities) as well as topics (pollution and pesticides) are repeated in various chapters, but on the whole the book seems to have been carefully planned, skillfully prepared, and well edited. Some of the repetition, moreover, is probably intentional, for a major theme —loss of habitat by drainage, drought, pollution, and changing land use—is driven home in nearly every chapter.

Most chapters portray a gloomy situation, yet manage to end on an optimistic note. Can we—in the face of exploding populations, increasing demands for food and fiber, use and misuse of our wetlands—preserve enough land to produce waterfowl in quantities adequate for future hunting? The verdict seems to be that, with adequate vision, research, and careful management, we can.

Although *Waterfowl Tomorrow* is not a comprehensive technical treatise on the family Anatidae, it is surprisingly comprehensive from the management standpoint. In addition to expected chapters on predators, diseases, nesting success, and the like, there are chapters on topics which at first glance might seem only remotely related to waterfowl: glaciation, geology, water, weather, farming practices, fires, cattle, and carp, to mention only a few. These topics are not summarily dismissed but are treated in great detail by experienced personnel. According to the brief biographical sketches appended (a very useful feature since so many of the authors will be unknown to many readers) nearly all of the authors have had from 10 to 20 or more years of experience in the fields they are writing about.

All in all, *Waterfowl Tomorrow* will be a useful handbook for everyone interested in the subject, for it covers a vast background of information otherwise available only from experience or in the thousands of published papers dealing with waterfowl.

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