

## BOOK REVIEWS

ROCKS AND ROCK MINERALS. By Richard V. Dietrich and Brian J. Skinner. Wiley, New York, 1979. 319 pages. \$11.95.

Although this recent revision of *Rocks and Rock Minerals* is really a new book, containing some entirely new subjects and a reorganization of older ones, it is clear that it is a member of that succession of excellent books which has served beginners in the field of geology for many years. The first edition, by Louis V. Pirsson, was published in 1908. The second and third editions were revised by Adolph Knopf and appeared in 1926 and 1947 respectively. *Rocks and Rock Minerals* is intended to be both a text-book and a reference for those who need to identify minerals and rocks without relying on laboratory equipment. The premise of the authors is that "all geologists should possess the capability to identify rocks and rock-forming minerals in hand-specimens." About one third of the book is devoted to minerals while the remainder treats rocks.

After a discussion of the classification, composition, and the physical properties of minerals, the individual rock-forming minerals and mineral groups are described. The important silicate minerals, classified according to their structures, are considered first, and these discussions include very recent data, for example, the triple-chain structures represented by the new minerals chesterite and jimthompsonite. There is a minor inconsistency in this section where the discussion, the figure, and the tabulated data begin with simple structures and end with the more complex three-dimensional arrangements, whereas the specific mineral descriptions are presented in the reverse order, ending with the simpler arrangements. Also Table 2-1 contains the error of referring to members of mineral groups as varieties rather than species, for example, muscovite is given as a variety in the mica group. Non-silicate minerals and mineraloids (glass, resin, tar) are considered lastly. Four tables are given for the determination of the rock-forming minerals by their physical properties.

The rocks included in the book are divided into the following categories: igneous and pyroclastic rocks; sedimentary and diagenetic rocks; metamorphic rocks and migmatites; and other rocks (veins, weathered rocks, meteorites, impactites, tektites, fulgurites) and pseudo-rocks (bricks, cinders, slags, terrazzos, etc.).

A serious attempt has been made to follow igneous rock nomenclature agreed upon by the Subcommission on the Systematics of Igneous Rocks of the International Union of Geological Sciences. The root names of sedimentary and metamorphic rocks follow the traditional nomenclature. Following the goals presented in the Preface, the emphasis here is on descriptive petrology, although rock occurrences and uses also are included. This book is not meant to be one about rock genesis, and it obviously is weak in this respect; however, the origins of some rocks are considered briefly, especially in those cases where the classification is genetic. Perhaps the inclusion of diagrams of some important equilibria, like the albite-anorthite system, would be an improvement. Tables for the identification of the common rocks in the field are included at the end of the book.

This is a very attractive volume enhanced by numerous clear and well-chosen figures. The authors have well achieved their goal of presenting a text and references for those who need to learn about the megascopic determination of rocks. No doubt it will receive wide acceptance in those elementary petrology courses

where the emphasis is on field and hand-specimen studies. The relatively low price should further contribute toward its acceptance.

RICHARD S. MITCHELL  
University of Virginia

INTRODUCTION TO EXPLORATION GEOCHEMISTRY, second ed. By A. A. Levinson. Applied Publishing Ltd., Wilmette, Illinois, 1980. xxiv + 924 pages, 255 figures, 65 tables, 1 color plate. \$35.00, \$22.00 to students, (\$18.00 for 1980 Supplement separately).

*Introduction to Exploration Geochemistry* by A.A. Levinson, first published in 1974, has been for many years a standard reference for many geoscientists engaged in geochemical exploration. Since the first edition, exploration geochemistry has burgeoned in importance because of the intensified search for mineral and energy resources. This has led to many major advances in this field during the last six years and is the main reason for the publication of Levinson's completely revised second edition.

The new edition has a novel format in that the first edition is reprinted *in toto* and is followed by a *1980 Supplement* which utilizes the same chapter headings as the original edition. The supplement consists of much new and updated material arranged similarly, and keyed to the topical sub-headings of the original. Thus for each sub-division of the original text there is a corresponding section in the supplement with a page reference to the pertinent material in the 1974 edition. In several chapters entirely new topics have been added. The original edition contains 614 pages, the supplement contains 309 pages—an increase of 50 percent over the volume of the original text.

Economy is one of the advantages of this format. Owners of the first edition can order the *1980 Supplement*, separately bound, for \$18.00, a savings of nearly half of the \$35.00 second edition cost. Furthermore, the publisher offers a special student price of \$22.00. This effort to keep the price of a professional reference within the reach of students is especially commendable. Unfortunately this unique two-part format has eliminated the possibility of correcting the minor errors which are listed in the "Errata" section of the first edition. More serious though, especially in light of the author's statement in the original preface that "this is primarily an introductory textbook," is the need to constantly thumb between the first and second parts of the book. This revision style is an unfortunate choice for a textbook, more so since none of the new material is cross-indexed in the original section.

Like the original edition, this new volume contains a wealth of new and interesting data. The unusually complete reference section contains over 500 new entries, most of which were published between 1974 and 1980. An extensive section has been added on the mobility of uranium and its daughter nuclides in the secondary environment. This section is especially timely in light of the recent increased emphasis on uranium exploration by industry and government geoscientists. Another new section briefly outlines the problems and potentials of recently developed airborne particulate survey techniques. An added section on geochemical exploration in arid environments recognizes the growing importance of

that 20 percent of the land surface covered by deserts and the special exploration problems that these areas present. The principles of fission track analysis, neutron activation well-logging, and plasma emission spectroscopy which have become increasingly common during the last decade are outlined along with more traditional methods of analysis in the up-dated chapter on "Analytical Methods."

In brief, Levinson's *Introduction to Exploration Geochemistry* is a current, comprehensive text which is remarkably free of typographic errors; it comprises a valuable blend of theoretical considerations and practical applications with numerous well-chosen examples. It belongs on the bookshelves of academic geochemists and is a must for the practicing explorationist.

GEORGE C. STEPHENS  
*George Washington University*

#### STANDARD X-RAY DIFFRACTION POWDER PATTERNS.

By Marlene C. Morris and others. National Bureau of Standards Monograph 25, Section 16, 1979. 190 pages. For sale by the Superintendent of Documents, US Government Printing Office, Washington, DC 20234 (Stock No. 003-003-02128-8), \$5.00.

Section 16 of this publication enumerates data for 86 substances, including 21 minerals: avicennite, bahianite, borax, brownmillerite, chiolite, derbylite, hartite (or bombiccite), hexahydroborite, hopeite, kieserite, liddicoatite, linarite, lovingite, malladrite, palladseite, roscherite, stibiconite, szmikite, trippkeite, vivianite, yavapaiite. Densities and lattice constants were calculated and refractive indices were measured wherever possible.

BRIAN MASON  
*Smithsonian Institution*

#### PETROGENESIS OF METAMORPHIC ROCKS (fifth edition).

By Helmuth G. F. Winkler. Springer-Verlag, New York, 1979. x + 348 pages. \$16.80.

The third edition of this widely-used text was published in 1974 and was extensively and favorably reviewed in this journal (vol. 60, p. 165-166, 1975). The fourth edition, published in 1976, had no substantial changes; some recent research results were incorporated in the text, nine figures were redrawn and five figures added. The preface to this fifth edition states "Major changes are in the chapters on the metamorphism of carbonate rocks, pelitic rocks, and ultramafic rocks ..... 14 figures are new or have been cor-

rected." The extent of these changes is quite modest, however (the new edition has been increased by 14 pages over the fourth edition), and those using the fourth edition may hesitate to purchase the new one. However, for anyone desiring a brief but comprehensive account of metamorphism and metamorphic rocks this book can be highly recommended.

BRIAN MASON  
*Smithsonian Institution*

OFFSHORE MINERAL RESOURCES: International Seminar Proceedings. Bureau de Recherches Géologiques et Minières Document 7-1979, Orléans, France, 1978. 585 pages. Soft cover. Fr. fr. 170, approx. \$34.00.

The International Seminar on Offshore Mineral Resources organized by GERMINAL (Groupe d'étude et de recherche de minéralisations au large—consisting of 12 private and governmental organizations) and B.R.G.M. (Bureau de recherches géologique et minières) was held at Orléans, France October 23-27, 1978 and attended by 160 people from 22 countries. The Proceedings, which constitute a complete record of the Seminar, include the 26 papers presented and the discussion following each. The languages of the conference were French and English, and summaries of the papers and of the Seminar as a whole are presented in both languages.

The Seminar was made up of 8 topical sessions, ranging from the economic and legal aspects of seabed mining to the exploration and exploitation of offshore sand and gravel, placers, metaliferous muds of the Red Sea, the polymetallic nodules, and future techniques in deep sea mining. The papers thus cover nearly the full range of subsea hard minerals of known or prospective economic value.

All the papers focus on operations or studies related to the exploration, evaluation, or production of minerals. For the most part, the authors seem optimistic about the future growth of marine mining of all the kinds of deposits discussed. The majority felt that the nodules—the mining prospects for which were the subject of a round-table discussion—would become minable by the 1990's but that they might not prove as profitable to produce as land deposits of the same metals.

Most of the authors represent companies or government organizations that have not published many of their results, and the papers are therefore a welcome addition to the literature.

V. E. MCKELVEY  
*U.S. Geological Survey  
Reston, Virginia*

## NOTICES

### Mineralogical Association of South Africa (MASA)

The Mineralogical Association of South Africa held its inaugural meeting at Geokongres 79 at the University of Port Elizabeth on the 26th September 1979. The aims of the Association are: to promote the study and application of mineralogy in the minerals industry and related fields; to coordinate mineralogical studies in South Africa; and to promote liaison of South African mineralogists with their colleagues locally and in other countries. At present MASA has approximately 120 members in South Africa, and would like to extend its membership overseas.

Members are accommodated on the following basis: (1) Corporate members of the Geological Society of South Africa (GSSA)

are eligible for Ordinary Membership of MASA, and will be admitted on application. (2) A Student Member of GSSA shall be eligible to become a Student Member of MASA on application. (3) Any person with a real interest in the aims of MASA may become an Associate Member on application and approval by the Executive Committee.

For further information, please contact the Secretary-Treasurer at

MASA  
c/o The Geological Society of S.A.  
P.O. Box 61019  
Marshalltown, 2107  
Republic of South Africa