

Manual of Mineralogy (after James D. Dana), 19th Edition

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Volume 5, Number 4, November 1978

URI: https://id.erudit.org/iderudit/geocan5_4br01

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Publisher(s)

The Geological Association of Canada

ISSN

0315-0941 (print)

1911-4850 (digital)

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Cite this review

Mandarino, J. A. (1978). Review of [Manual of Mineralogy (after James D. Dana), 19th Edition]. *Geoscience Canada*, 5(4), 212–212.

Book Reviews

Manual of Mineralogy (after James D. Dana), 19th Edition

By Cornelius S. Hurlbut, Jr. and
Cornelis Klein
John Wiley and Sons, 532 p., 1977.
\$22.95 (Canada), \$19.95 (U.S.)

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Prof. Hurlbut has been responsible for the 16th, 17th, and 18th editions of the "Manual". Now, he and Dr. Klein have produced the 19th edition of this useful and important book. About 40 per cent is devoted to introductory matters and concepts, 49 per cent to mineral descriptions and associations, and 11 per cent to tables and indexes.

The Introduction (Chapter 1) presents a definition of the term *mineral*, gives a brief outline of the history of mineralogy and discusses the economic importance of minerals. Sections on the naming of minerals and on references and literature of mineralogy are so short that they might better have been omitted. The next two chapters (2 and 3) are an in-depth treatment of crystallography with Chapter 2 forming a clear, solid base of symmetry operations, crystallographic projections, and examinations of the 32 crystal classes. Chapter 3 deals with the fundamentals of x-ray diffraction and gives brief descriptions of some of the single-crystal techniques followed by a more detailed account of the powder methods.

Various aspects of the chemistry of minerals are covered in Chapter 4. A particularly good section deals with the calculation of chemical formulas from analyses, and could have been made more complete by adding an example of a mineral which contains halide or sulphide ions. Other sections in the chapter deal with crystal chemistry, crystal structure, and blow-pipe and chemical tests. Chapters 5 and 6 deal quite adequately with physical properties and optical properties, respectively.

The systematic mineralogy chapters (7 through 10) describe about 200 minerals under the following headings: crystallography, physical properties, composition and structure, diagnostic features, occurrence, use, and similar species. The treatment of most species is quite good under each of these headings, although the reviewer felt that information given under "occurrence" could have been less sketchy. Chapter 11, serving as an introduction to petrology, covers such subjects as phase equilibria, rock types, and veins and vein minerals.

The determinative tables (Chapter 12) are straight forward and based on "yes or no" types of decisions. The tables are preceded by a general outline of their arrangement. The different diagnostic groups are keyed to page numbers of the table but, unfortunately, 21 pages out of 31 are not numbered.

The authors have used some mineral names which have been superseded by others. For example, the following accepted names (with the "Manual" names in brackets) should have been used: chlorargyrite (cerargyrite), bromargyrite (bromyrite), nickeline (niccolite), almandine (almandite), spessartine (spessartite),

grossular (grossularite), hydrogrossular (hydrogrossularite), titanite (sphene), and vesuvianite (idocrase). For the last two minerals, the authors give titanite and vesuvianite as alternate names. Tourmaline is used as a species name, rather than as a group name.

The diagrams, photographs, and other figures are of extremely high calibre. Unfortunately, the form used for many of the captions leaves much to be desired. For example, Figure 1.5 is an illustration of two optical goniometers. One drawing (a) is on a left-hand page (6) and the other (b) is on the right-hand page (7). The caption for both is on page 6. Two errors detected are in Figure 4.25 where a point on a triangular diagram is incorrectly labeled $Wo_{50}En_{40}Fs_7$ instead of $Wo_{50}En_{43}Fs_7$; and Figure 10.16 which is a photograph of crystals of kyanite and *staurolite* (not, andalusite as captioned) in mica schist from Switzerland.

Minor errors notwithstanding, this is an excellent mineralogy text and I heartily recommend it to those for whom the authors intended it, "... students who will do further work in mineralogy as well as for those for whom this will be their only exposure to the subject."

MS received August 31, 1978