

BOOK REVIEWS

HANDBOOK OF MINERALOGY, VOLUME III. Halides, Hydroxides, Oxides and VOLUME IV. Arsenates, Phosphates, Vanadates. By John W. Anthony, Richard A. Bideaux, Kenneth W. Bladh, and Monte C. Nichols, Mineral Data Publishing, Tucson, Arizona; Vol. III: 1997, 628 p., \$100 (\$75 for MSA members); Vol. IV: 2000, 680 p., \$108 (\$81 for MSA members).

These, the third and fourth installments in the five-volume series, cover the halides, hydroxides, and oxides and the arsenates, phosphates, and vanadates, respectively. Reviews of the first two volumes have appeared in the *American Mineralogist* (vol. 77, p. 1122 and vol. 81, p. 524) and reviews of the first three volumes have appeared in several other journals. My examination of volumes III and IV indicates that they are very consistent with the earlier volumes in the style and quality of their presentations.

The organization is simple and straightforward. One page is devoted to each known mineral in alphabetical order. Each page is headed by the mineral name and idealized formula. Descriptive information follows, arranged under the headings: crystal data (including details of the habit), physical properties, optical properties (including orientation), cell data, X-ray powder pattern (7 strongest lines with intensities), chemistry (empirical and calculated analyses), occurrence (type of deposit), association (i.e., other species commonly found with this species), distribution (important localities), name (significance and origin), type material (institution where it is deposited) and references (for the data provided).

Among the criticisms of the volumes in this series that have been made by most previous reviewers are the following. (1) There is no indexing, cross-referencing, or classification system. (2) There are no synonym and variety names provided. (3) The format does not allow sufficiently detailed treatment for those species of greatest mineralogical importance. (4) The data provided are not explicitly associated to the references from which they came. (5) Chemical analytical data is often split into hard-to-follow columns.

Although all of these criticisms are to some extent well taken, the authors have addressed them fairly well through their web site, www.mineraldata.com. I will not belabor them here because they are more than offset by the glowing remarks made by virtually every reviewer. The consensus is that the volumes of the *Handbook of Mineralogy* are essential references. While certainly not particularly useful as teaching texts, these volumes are extremely valuable compilations of fundamental mineralogical data that are remarkable for their high standard of accuracy and lack of typographical errors.

With volumes III and IV now published and Volume V (Borates, Carbonates, Sulfates) promised in 2001, the *Handbook of Mineralogy* will soon be complete. Unfortunately, with mineralogy moving along at a steady pace, by the time you place the last volume on your shelf, the earlier ones will already be somewhat dated. For those intent on staying constantly up-to-date, I recommend that you also get one or more of the commercial mineralogical computer databases, such as MINERAL from Aleph Enterprises or MDAT from Systematik in der Mineralogie. Regular updates are offered for these databases and they also have the advantage that they are extensively searchable. On the latter point it is worth noting that, following the publication of the last volume of the *Handbook* series, the authors intend to publish an index to the entire series. They already offer a computer database for the *Handbook* series that is searchable on chemical elements. Perhaps they will eventually make the final index, or even the *Handbook* series itself, available in computer database format.

I noted with amusement that one reviewer called the price of Volume II “very reasonable,” while another commented on its “high price.” The total price for the entire set will probably total over \$550, which is certainly not a trivial sum. At the same time, considering the quality and utility of these publications, it is certainly not unreasonable. Also worth noting is that the *Handbook* series is available at 25% off the regular list price, if ordered through the MSA Business Office. At that rate, I would go so far as to call it a bargain.

ANTHONY R. KAMPF
Los Angeles County Museum of Natural History
Los Angeles, California 90007

ENVIRONMENTAL MINERALOGY, Edited by David J. Vaughan and Roy A. Wogelius, 2000. EMU Notes in Mineralogy, Vol. 2, 434 p. Eötvös University Press, Budapest.

Environmental mineralogy is touted in the opening chapter of this book, one of a series to be produced from Short Courses sponsored by the European Mineralogical Union, as the science of minerals found in systems within the “critical zone” near the surface of the Earth. This is the zone that figures so importantly in the sustainability of human life: systems such as soils, modern sediments, aerosols, and even the biota. This large piece of *terra firma* thus claimed by the editors as lying

within the purview of the emerging discipline of environmental mineralogy, immediate liaison is made with the techniques of pure mineralogy, molecular environmental science, and computational modeling at all relevant spatial scales. Were this eclectic offering not enough to capture the inquiring reader, a veiled hint of impending redundancy is then appended to warn classical mineralogists that they better get on board, lest they be found with nothing to do as the infant century rolls on.

Is this an offer we cannot refuse? Is the book truly revisionist, or is it only mutton dressed as lamb? Not to worry. Your reviewer is here to attest to the fact that *Environmental Mineralogy* is a thumping good read that deserves wide attention for the new research agenda its exceedingly well-written chapters have put forward. To be sure, with such an all-encompassing purview, the book serves its wares from a broad buffet with all the ebullience and surfeit of a Mozart opera, but this means only that the reader is advised to study first those chapters of greatest interest.

The organization of the book is tutorial. It begins with a long, ambitious chapter on methodology that emphasizes, in a chatty, "how-to" style, selected recent approaches to quantitative mineralogy based on X-ray spectroscopies and high-reso-

lution microscopies, along with some new computational chemistry techniques. Next comes a quartet of set pieces on minerals and their characteristic behavior in soils, marine sediments, microbial communities, and tropospheric particles. These chapters alone are worth the price of the book, serving through their wholesome 150 pages to introduce the principal research themes of environmental mineralogy as currently practiced. Lastly come the applications chapters, weighing in at nearly 170 pages and covering everything from landfills to archeological digs to the vagaries of human health perpetrated by mineral deposition. These chapters, like the desserts on a French menu, should be sampled, but not consumed all at once.

This book can be highly recommended as a fruitful selection of material that makes an excellent introduction to mineralogy in one of its modern incarnations. Although possible to adopt as a supplementary textbook, it is probably more useful as an organon for self-study.

GARRISON SPOSITO

*Division of Ecosystem Sciences
University of California
Berkeley, California 94720-3110, U.S.A.*