

BOOK REVIEW

EMERALDS OF THE WORLD, EXTRALAPIS ENGLISH #2: THE LEGENDARY GREEN BERYL. Alfredo Petrov and Günter Neumeier (translators). Christian Weise Verlag, Munich, and Lapis International, East Hampton, Connecticut, 2002, 100 pp. \$24 (\$72 for four issues)

Here is a book that any serious mineral collector may contemplate having in their library, or better yet, resting on their coffee table. The color plate photography of this book is just that breathtaking. Although the editors don't state a specific goal for this English-edition book, they do state a few of the issues that are tackled by the various authors. These questions include: What is emerald, how does emerald form, where is emerald found, where are the richest deposits located, is it possible to determine the origin of an emerald, what separates green beryl from emerald, how are emeralds created in the lab, and how can they be recognized? All in all, the authors do an admirable job of answering all those questions and a fair bit more. Much more impressive is the extraordinary translation job done by Alfredo Petrov and Gunther Neumeier. I certainly could not find any errors (spelling or otherwise) with this special-format book.

The major sections of the book are: (1) Beryl and Emerald: Word from India, (2) Emeralds on Display, (3) Emerald: Mineralogically a Beryl, (4) The Origin of Emerald, (5) World Emerald Occurrences, (6) Columbia: The World's Top Producer, (7) Brazil, (8) Africa, (9) Asia, (10) U.S.A., (11) Gemology of Emerald, (12) What is Emerald, (13) Emerald Treatments, (14) Mineral Specimen Enhancement, (15) Laboratory Emeralds, (16) What is the Price of an Emerald, (17) A Cut Named for Emerald, and (18) References. Loosely, the book falls into three major realms and does so very nicely. The first four chapters give a brief synopsis of the known history of emeralds, some of the most famous cut and natural specimens, a mineralogic definition for the beryl variety known as emerald, and the petrogenesis of most generalized emerald occurrences. Chapter five covers the overall world occurrences in succinct detail, with the following five chapters (six through ten) covering specific regions in greater detail. The rest of the major chapters (eleven through seventeen) relate to various aspects of the gemology of emerald. The exception to this format is chapter fourteen, Mineral Specimen Enhancement.

The first chapter (Beryl and Emerald: History and Myth) actually has a different title from that in the index. This minor inconvenience aside, the content is rich in history, tales through the ages and a wonderful color plate of the Mogul Emerald. "Emeralds on Display," which is the second chapter, places a strong emphasis on description of European and Middle Eastern museums. This is understandable and provides a good sampling of the

world's emerald treasures. The third chapter, on the mineralogy of emerald, is succinctly captured with a gray information box on page 11. The text in this chapter could use more references, especially on the subjects of the crystal structure and the origin of color in emeralds. Once again, the photographs of the various beryl crystals in this chapter are outstanding, with scales included and information on the owners and photographers. These data are well appreciated. "The Origin of Emerald," discussed in chapter four, is a very nice discussion of the issue and brings home the point that this is a controversial subject. There could have been more emphasis on why there are three types of "schist without pegmatites" occurrences. Obviously the authors wanted to differentiate the three types of schist without pegmatite, but the rationale was not clear in the text.

The next six chapters, dealing with locations of emerald sites, are tremendous. Starting with Chapter 5 (Emeralds of the World) the authors walk the reader through all the famous (and not so famous) occurrences of this beautiful gemstone. The chapter is extremely informative, with notes on the geology, matrix, chromophore elements, similar deposits, solid inclusions, and relevant references. The illustrations are stunning and there are notes on significant new finds. Chapters 6–8 (Columbia, Brazil, and Africa) are all well composed and very informative, going into further detail on significant emerald deposits and their histories. All the chapters are illustrated with wonderful color plates. Chapter 9, Emeralds from Asia, has all the same good attributes as the previous chapters. In addition, this chapter covers much of the political background, which has caused significant problems with emerald supplies over the years (fascinating details concerning the power that minerals can hold). The final "occurrence" chapter, titled "New finds in North Carolina" was great fun for this American reader. More coverage from occurrences beyond the "Rist Mine" would have made this chapter even better.

The remaining chapters on gemology were especially well written and informative to a novice such as myself. Chapter 11 (Gemology of Emerald) had a reasonable discussion of color change, but the section on cation substitutions in the beryl structure was not well formulated. The treatment of optical properties would have been better if it had provided a mathematical correlation between "total impurities" and n_o . The debate in Chapter 12 over "What is Emerald" was nicely posed between Lawrence Conklin (with vast amounts of personal experience) and Dietmar Schwarz/Karl Schmetzer (who called for a simple, quick, non-destructive, and objective method to qualify emeralds). The latter authors' proposal to use spectral analysis with distinctive Cr/V absorption bands has strong merit. Emerald Treatments, as described in Chapter 13, was quite informative and just a bit shocking as to how good and how potentially pervasive such

treatments can be. Chapter 14, the Four R's (Reinforcement, Repair, Restoration, and Reconstruction) summarizes the guidelines put forth by the Carnegie Museum. A wonderful description of mineral specimen enhancements is presented in this chapter, but the discussion would have been enhanced by pointing out in the accompanying photographs where work had been done on the pieces. Emerald synthesis, described in Chapter 15, is a very interesting topic to this neophyte gemologist. The authors did an excellent job of describing the history and processes involved. The references included were especially nice, considering that these were well-guarded trade secrets for so long. Finally, the chapter on emerald pricing was a nice touch for the true aficionados out there, considering how subjective this subject can be. The reference chapter seemed quite inclusive. The memorial to John Sinkankas, who was slated to be an editor of this book, was heartfelt and very touching.

Once again, all serious amateur mineralogists, mineral dealers, and precious stone jewelry dealers should consider adding this excellent book on emeralds to their collection. They certainly couldn't go wrong with the wealth of information collected in this monograph.

FLORIE CAPORUSCIO
2708 *Plazuela Serena*
Santa Fe, NM 87505

HANDBOOK OF MINERALOGY, VOLUME V. Borates, Carbonates, Sulfates. By John W. Anthony, Richard A. Bideaux, Kenneth W. Bladh, and Monte C. Nichols. Mineral Data Publishing, Tucson, Arizona; 2003, 813 p., \$130 (\$97.50 for MSA members).

Finally, the long wait is over! Thirteen years after the publication of the first volume of the *Handbook of Mineralogy*, this popular mineral reference is complete. Volume V (Borates, Carbonates, Sulfates) is a very satisfying capstone to this monumental project. The previous volumes have received uniformly positive reviews (e.g., *Am. Min.* 77, 1122, *Am. Min.* 81, 524 and *Am. Min.* 86, 954) and Volume V deserves no less. Indeed, it is admirably consistent in style, content, accuracy, and production quality with its predecessors.

For those who are not familiar with the Handbook, it can best

be described as a concise, up-to-date reference summarizing the critical descriptive data for each and every known mineral species. Each of the five volumes is devoted to a different portion of the mineral kingdom. Within each volume species are arranged alphabetically. The descriptive data are grouped 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).

An enumeration of the five volumes with publication dates and prices:

Volume I: Elements, Sulfides, Sulfosalts, 1990 (reprinted 2003), \$100 (\$11 shipping)

Volume II: Silica, Silicates (two books), 1995 (reprinted 2003), \$150 (\$20 shipping)

Volume III: Halides, Hydroxides, Oxides, 1997, \$100 (\$11 shipping)

Volume IV: Arsenates, Phosphates, Vanadates, 2000, \$130 (\$15 shipping)

Volume V: Borates, Carbonates, Sulfates., 2003, \$108 (\$11 shipping)

Full Set – volumes I, II, III, IV and V, \$588 (\$30 shipping US, \$45 shipping non-US)

A 25% discount (except shipping) is offered to members of the Mineralogical Society of America, the Clay Minerals Society, and the Geochemical Society.

Volume V is now the most up-to-date printed reference of its type on the borates, carbonates, and sulfates. Yet, as we step incrementally back through this series, it must be recognized that the steady march of mineralogical research has made each earlier volume a bit more out-of-date. At this writing, responsibility for revisions of the *Handbook of Mineralogy* has been accepted by the Mineralogical Society of America, now the copyright owner.

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