

MARCH/APRIL 2019

Volume 94

Number 2



Kabwe mine, p. 114



Ariz. pseudos, p. 158

ROCKS & MINERALS

FEATURES

- 113 **2018 Thank-Yous**
- 114 **Minerals of the Kabwe (“Broken Hill”) Mine
Central Province, Zambia**
Malcolm Southwood, Bruce Cairncross, Mike Rumsey
- 158 **Arizona Pseudomorphs and Epimorphs**
Barbara L. Muntyan
- 172 **Canadian Cake Artist Genevieve Finley (b. 1979)**
Susan Robinson
- 176 **The Bruneau Woodpile: An Unusual North
American Fossil Wood Locality in Bruneau, Idaho**
Mike Viney
- 184 **Forty-Fifth Rochester Mineralogical Symposium:
Contributed Papers in Specimen Mineralogy—
Part 1**

DEPARTMENTS

- 109 **Chips from the Quarry**
- 150 **Connoisseur’s Choice: Tarbuttite, Skorpion Mine, Namibia,** *Bruce Cairncross*
- 188 **Who’s Who in Mineral Names: Luca Bindi (b. 1971),** *John Jaszczak*
- 191 **The Where of Mineral Names: Nimite, National Institute for
Mineralogy (NIM), Bon Accord, Mpumalanga Province, South
Africa,** *Bruce Cairncross*
- 194 **Media Reviews:** *Peter Tarassoff, Robert Cook, Christopher J. Stefano*
- 198 **In Memoriam: Jan H. Bernard (1928–2018),** *Jaroslav Hyršl*
- 199 **Museum Notes**
- 201 **Internet Directory for the Earth Sciences**
- 203 **Coming Events**

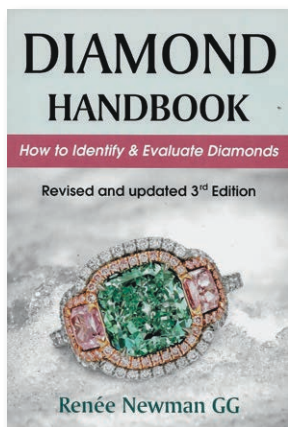


Tarbuttite, p. 151



Nimite, p. 191

ABOUT THE COVER: *Chrysocolla after malachite after azurite, 10 × 19 cm, Bagdad open pit, Yavapai County, Arizona. Courtesy Mineralogical and Geological Museum at Harvard University, specimen MGMH No. 106856; © copyright 2012, President and Fellows of Harvard College. All rights reserved. Jeff Scovil photo. See related article on “Arizona Pseudomorphs and Epimorphs,” beginning on page 158.*



Diamond Handbook, revised and updated 3rd edition, by Renee Newman. International Jewelry Publications, PO Box 13384, Los Angeles, CA 90013. 168 pages; 2018; \$19.95 plus shipping (softbound).

Like other Renee Newman books, the 3rd edition of the *Diamond Handbook* is a wonderfully illustrated and quite useful book that presents diamond from the standpoint of

identification and evaluation—no easy task these days. It is written at a level that is understandable to those of most educational backgrounds and is a handy reference for anyone interested in quality diamond jewelry. It joins a group of other informative Newman books that includes four volumes on *Exotic Gems*, a book on *Rare Gemstones*, and a *Jewelry Handbook*.

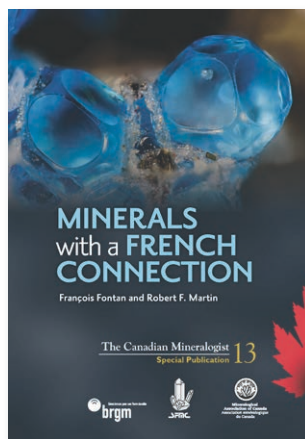
Diamond Handbook opens with acknowledgments and then moves quickly into 13 chapters beginning with “Basic Facts About Diamonds” and ending with “Recutting Diamonds.” The book concludes with a useful glossary; a table of diamond’s chemical, physical, and optical characteristics; a bibliography; and a good comprehensive index. Most chapters are subdivided into specific topics. Included in Chapter 1’s basic facts’ subheadings are how diamonds are formed and where they are found, diamonds remarkable properties, and tips on viewing diamonds. Chapter 2 discusses price factors that include color, weight, clarity (Chapter 5 is devoted entirely to clarity issues), cutting style and quality, transparency, and treatment status. Chapter 4, important to those contemplating an engagement, is titled “Judging Cut (Round Brilliants)” and is subdivided into twelve sections. The first four discuss morphological parts of the stone such as the pavilion and the crown; others present more technical aspects of the cut including star facet length and symmetry. Chapter 6 is a short but interesting treatment of fluorescence in diamonds, a topic of interest to mineral collectors as well as gemstone enthusiasts. Chapters 7 and 8 cover synthetic diamonds and diamond treatments, respectively. Treatment topics include foil backing, coating, irradiation, annealing, high temperature and pressure, and even laser drilling and fracture filling. Chapter 9 covers the identification of imitations, both transparent and black. Judging fancy colored diamonds and antique cuts and jewelry are discussed in chapters 10 and 11, respectively. Eight pages are devoted to “branded diamonds” in Chapter 12, and recutting is discussed in Chapter 13.

The concise writing style and tight organization coupled with abundant illustrations form the strength of this book. Illustrations include more than 350 photographs, most of

which are in color. There are also tables and diagrams, all carefully selected to enhance the particular section they are in. A good indication of how well illustrated the book is can be found in the fact that Chapter 11 alone contains 74 illustrations.

The 3rd edition of *Diamond Handbook* is well edited, printed, and bound. It is filled with practical information and is certainly worthy of a place in any gemstone library. It is obviously a good buy at \$19.95 and, coupled with Newman’s other titles, makes an important part of a rather comprehensive treatment of most gemstones.

Dr. Robert B. Cook
 Auburn University
 Auburn, Alabama



Minerals with a French Connection by François Fontan and Robert F. Martin. The Canadian Mineralogist Special Publication 13. Mineralogical Association of Canada, 490 rue de la Couronne, Québec, QC, Canada G1K 9A9; www.mineralogicalassociation.ca. 588 pages; 2017; CDN \$125 plus \$10 shipping in Canada; US \$125 outside Canada plus shipping (\$16 USA, \$20 overseas) (hardbound).

This book, a joint publication with *Société française de Minéralogie et de Cristallographie*, is about minerals with type localities in France and the French territory of New Caledonia and minerals named after French citizens. It is fitting that France—which produced such pioneer crystallographers and mineralogists as Romé de l’Isle (1736–1790), René-Just Haüy (1743–1822), and Auguste Bravais (1811–1863)—joins the ranks of countries with such compilations. The preparation of the book was initiated by Dr. François Fontan, mineralogist at the Université Paul-Sabatier in Toulouse; following his death in 2007, it was completed by Dr. Robert F. Martin, professor emeritus at McGill University, Montreal, and long-time editor of *The Canadian Mineralogist*.

Minerals with a French Connection begins with a table of contents, a dedication (in French), and a preface (in French and English); the remainder of the book is in English. The introduction (11 pages) provides a brief overview of the development of mineralogy and crystallography in France from the eighteenth century to the present, traces the evolution of Paris’s three renowned mineral museums (illustrated with historical photographs), and surveys previous accounts of minerals discovered in France. This is followed by an intro-

duction to the mineral compilation itself, acknowledgments, and an addendum on two new species that were approved too late to be included in the main compilation.

The core of the book (525 pages) is an alphabetical compilation of minerals in three sections: minerals with type localities in France (123) and New Caledonia (4); minerals discovered elsewhere and named after French citizens (128); and minerals named after French citizens or localities but questionable as species or redefined (6). The last includes the familiar mica biotite, now relegated to a series name.

Each mineral is allotted 2 full pages beginning with its name, chemical formula, symmetry, space group, and unit-cell parameters. This is followed by the name of the type locality or localities, something not always clearly specified by early-nineteenth-century mineralogists, and a brief description of the type occurrence including its geology, associated minerals, and genesis. A description of the type mineral and its crystal structure follows. The next entry is the derivation of the mineral name. Biographical sketches, some more than a half-page in length, are provided for persons honored with mineral names. Here we have some two hundred who's who in mineral names. The next entry gives the location of the type specimen(s) and their reference number(s) where known. This is followed by comments on the chemistry of the type mineral, its relationship to other minerals, or its history. Some minerals, especially those described in the nineteenth century, have a rather convoluted history in their naming and description as a species. The entries conclude with the mineral's International Mineralogical Association status and number; its Dana, Strunz, and mineral group classification; and references. The references are in chronological order from the first mention of the species or first description, to subsequent papers providing additional information on the mineral or its occurrence.

The mineral on the cover of the book, haüyne, honors René-Just Haüy. Among other common minerals with a French connection are anatase, azurite, dolomite, epidote, mimetite, and staurolite. Well-known pegmatite minerals include heterosite, hureaulite, and triplite. Some readers may be surprised to learn that several type-minerals from Mont Saint-Hilaire have a French connection: bussytite-(Ce), bussytite-(Y), lecoqite-(Y), lemoynite, and natrolemoynite. The iconic Mont Saint-Hilaire mineral serandite was also named after a French citizen. A host of secondary minerals have been discovered in France in modern times. The ancient Roua copper mines and the Cap Garonne copper-lead mine account for twenty-three type minerals, mostly copper arsenates. French amateur mineralogists and micromineral enthusiasts have played a prominent role in discovering new species. The mineral afmite is named after the *Association Française de Microminéralogie* (AFM) whose members have discovered twenty-one new species. Gatelite-(Ce) is named after Pierre Gatel, founding member and honorary president of the AFM. Two members of the Micromounters' Hall of

Fame, Georges Favreau and Paul Seel, and his wife, Hildergarde, are also recognized with mineral names.

Numerous photographs are a feature of the book. Each mineral is illustrated by two or more color photographs or, in a few cases, SEM photographs or photomicrographs of polished sections. The majority are photomicrographs chosen to show the mineral's crystal morphology at the type locality, or at other localities if suitable photographs were not available. They are the work of many photographers, some of whom will be familiar to the Mindat.org community and readers of this magazine. A photograph or portrait is furnished for each individual after whom a mineral is named, except for adamite, boulangerite, bournonite, brookite, macquartite, and villiaumite. Mineral localities are illustrated by a scattering of color photographs and interesting old postcards.

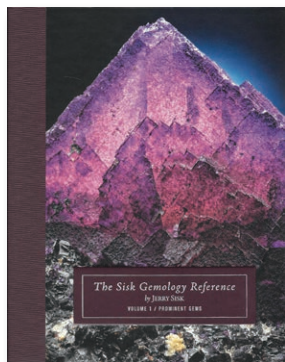
The book ends with 37 pages of appendices and indices. Six appendices list minerals with French type-localities and those named after French citizens, alphabetically, chronologically by the year when first described, and by geographic distribution (departmental maps of France and New Caledonia are provided). Appendix 7 ranks France twelfth among twenty-one countries according to the number of new species discovered in the country (the United States is first, followed by Russia, Germany, Italy, and Canada). Appendix 8 is a listing of obsolete mineral names encountered by authors Fontan and Martin. Three indices are provided for the book: by mineral names including type minerals (indicated by page numbers in bold) and associated minerals appearing in photographs; by the names of persons honored with mineral names; and by type locality (in hierarchical order beginning with country name). The book closes with notes about the authors.

Minerals with a French Connection is printed on glossy, 8.27 × 11.69-inch paper, in the same format as several other volumes in *The Canadian Mineralogist* Special Publication series. At 588 pages, the book weighs a hefty 4.78 pounds. The layout of the mineral descriptions is spacious, beginning with side-by-side photographs of the mineral occupying the full width of the left-hand pages. The headings and text that follow are in separate columns. The quality of the mineral photographs reflects their multiple sources, but many are superb. Those of microcrystals will appeal to micromineral collectors. Portrait photographs have been standardized to near-passport size. For a 588-page book, there are very few typos.

A great deal of meticulous research has obviously gone into compiling the scientific, biographical, and historical information in *Minerals with a French Connection*. The book is very well written and illustrated. It is a reference book, but also one to dip into for a leisurely read about minerals and their names, localities, geological environments (many not familiar to North American readers), and history. It will be of particular interest to collectors of minerals from France

and Europe, and it should join other compilations of type minerals on the bookshelf of mineral museum curators and mineral collectors.

Dr. Peter Tarasoff
Beaconsfield, Québec
Canada



The Sisk Gemological Reference by Jerry Sisk. 3 vols. in slipcase (vol. 1, 436 pages; vol. 2, 302 pages; vol. 3, 301 pages). American Collectibles Network, Inc. (dba Jewelry Television [JTV]; order online through JTV). 2016; \$199.99 (hardbound).

This 3-volume set of gem and mineral reference books memorializes the work of Jerry Sisk, an originator of television gemstone sales. Each volume is a stand-alone publication that develops a certain theme. Each contains good information about gems and gemstones in their broadest definition and is highlighted by fine photographic depictions of mineral specimens, gemstones, and jewelry. Volume 1 treats gem properties as an introduction and then covers what are considered the major gems including some synthetics. Volume 2 repeats some of the same introductory material as in volume 1 but deals with rarer and unusual gem materials, some of which would not fall into the gem category except under unusual circumstances. Volume 3 treats minerals and gems categorized by their crystal system. Fine mineral specimens are illustrated throughout, and the value of this volume is in its mineral photography rather than its treatment of gemstones.

Volume 1, *Prominent Gems*, consists of 57 sections beginning with introductory materials that include information about Sisk, a foreword, acknowledgments, and a 36-page chapter on gemstones and their properties. There follows an alphabetical description of gems and gem materials beginning with Abalone and ending with Zoisite. There are various subsections as appropriate such as under beryl, the feldspar and garnet groups, and even diamond, which has individual sections on fancy colored diamonds and famous diamond replicas. Included are varieties of glass, cubic zirconia, and artificial emerald and ruby. Fundamental data are presented in a standard format for each gemstone type making the book relatively easy to use as a reference. Each gemstone type is illustrated with both rough and finished stone illustrations. For some major types, world maps showing the distribution of occurrences are presented. The volume closes with a series of gemstone property charts and spectra illustrations, a list of contributors, a bibliography, and an index.

Volume 2, *Noteworthy Gems*, as mentioned, repeats much of the introductory materials found in the first volume but then presents 107 materials, most of which are naturally occurring mineral species, that have been fashioned into gems.

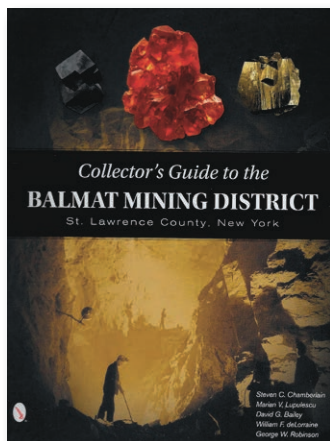
Many would be considered unusual if used for gems, such as acanthite, colemanite, galena, linarite, proustite, and phosphyllite, for instance. Non-mineral materials discussed include jet, ivory, YAG, GGG, and strontium titanate. As with volume 1, a consistent useful format is followed for each material augmented with uncut and cut stone illustrations. The volume closes with a listing of terms and contributors, a bibliography, and an index.

Gallery of Gems is the title of volume 3. After a somewhat condensed version of the now more or less familiar introductory materials, the book presents gemstones and gems based on their crystallography after first discussing organic and amorphous materials. The treatment is classical, beginning with isometric gems, although traditional hexagonal minerals are divided into the "Hexagonal Crystal System" that includes apatite and beryl and the "Trigonal Crystal System" that includes such species as tourmaline, corundum, and quartz. The volume closes with sections on "Gems as Rocks" and "Lapidaries and Their Arts." The volume seems to reflect a conscious effort to include as many nontraditional minerals as gems as possible, and species such as gypsum, witherite, sulfur, vanadinite, and proustite are covered. The closing list of contributors from the mineral world includes The Arkenstone, Collector's Edge Minerals, Green Mountain Minerals, The Obodda Collection, and Jim and Gail Spann.

The *Sisk Gemological Reference* is a somewhat pricey set of what are intended to be reference works. Volumes 1 and 2 collectively present a good gemstone database and together form a useful set. Volume 3 is an at times redundant treatment of many of the materials covered in the first two volumes but has value as a stand-alone title because of its excellent illustrations and the inclusion of fringe gem materials. The production quality is high with good photography and printing. The uniformity of high photographic quality is surprisingly good considering the large number of contributors that include Jeff Scovil, Jim Wells, Tom Spann, Patrick Pohnel, Joe Budd, Mark Mauthner, Kreis Jewellery, Lydia Dyer, and others. Editorial work is generally good, and the accuracy of technical data is high. Collectively the set of books is a nice tribute to someone whose promotional efforts made gemstone knowledge far more widely dispersed than before gems were routinely sold through the medium of television. To this end, Jerry Sisk has helped educate the masses and will continue to do so through this set of books.

Dr. Robert B. Cook
Auburn University
Auburn, Alabama





Collector's Guide to the Balmat Mining District by Steven C. Chamberlain, Marian V. Lupulescu, David G. Bailey, William F. deLorraine, and George W. Robinson. Schiffer Publishing, 4880 Lower Valley Road, Atglen, PA 19310. 2018; 128 pages; \$34.99 plus shipping and handling (hardbound).

This new Robert Lauf-edited offering in the popular

Schiffer Publishing's monograph series on mineralogy answers many collector-oriented questions concerning this historically important mining district. The five authors comprise a team of experts perfectly suited to the task, and the result of their efforts is a useful, well-illustrated reference. The district, located in St. Lawrence County, New York, is known for its long-productive zinc mines with their sphalerite-dominated ores and associated calcite and cubic magnetite. Less well-known are its talc mines and their accessory silicates, some of which are well crystallized and quite colorful. The district also hosts the type localities of two minerals, donpeacorite and turneaureite.

The book opens with a foreword by Editor Lauf, acknowledgments, and an introduction that puts the district into its proper historical and collecting perspective; it contains two maps that show the relative positions of the talc-zinc district with respect to other noteworthy county localities including Pierrepont (tourmaline) and DeKalb (diopside). This and subsequent chapters contain closing set-off boxes containing literature cited within particular sections.

Chapter 1 summarizes the history of talc and zinc mining in the district. It contains mine-specific data that document the national and worldwide importance of its talc mines spanning the period 1874–1994, after which talc production declined and essentially ceased by 2008. The discovery of zinc ores in 1838 with their ultimate successful production from the Edwards mine in the early 1900s and subsequent expansion to include the nearby Balmat mines is covered in the latter half of the chapter. Individual sections point out specific specimen occurrences and are highlighted with good historical photographs.

Chapter 2 presents a brief overview of the district's geology. It describes the ore-related specifics and includes two useful geologic maps. A detailed stratigraphic column of the Upper Marble section, host to most of the districts' talc and zinc ores, is also shown. The chapter closes with a short section pointing out the effects of regional metamorphism.

The meat of the book is contained in Chapter 3, the descriptions of the district's minerals separated into those of the talc mines followed by those of the zinc mines. Species are arranged alphabetically within each section. Excellent

color photographs of most species occur throughout this 98-page chapter, with the more important collector minerals illustrated several times to present a comprehensive picture of varying morphologies and associations. Of particular interest are calcite, lazurite, magnetite, sphalerite, and evaporates including anhydrite and halite.

Chapter 4, "Informed Speculations," discusses three interesting phenomena in the district. These are the odd manganese-rich pods or zones encountered in both the talc and zinc deposits, the chromium anomaly encountered in the American and the adjacent Gouverneur Talc No. 1 mines that is reflected by chromium-rich silicates, and the exceptionally fine cubic and tetrahedral magnetite crystals found in the Balmat No. 4 zinc mine. Each topic is reasonably discussed and potential explanations for their occurrences are presented.

The Collector's Guide to the Balmat Mining District is an excellent addition to any library with a concentration on geographic mineralogy. The book is a fine, comprehensive treatment that is well worth the price. As with all Schiffer publications in this monograph series, it is well edited, photographs are crisp with true color rendition, and the binding is tight.

*Dr. Robert B. Cook
Auburn University
Auburn, Alabama*

Coming Soon

- **Cookes Peak Mining District, Luna County, New Mexico**
by Philip Simmons
- **Quartz Crystals from the Devil's Den Locality, Mount Tabor, Rutland County, Vermont**
by Douglas Robinson and Robert Clements
- **Vonbezingite, Wessels Mine, Kalahari Manganese Field, Northern Cap Province, South Africa**
by Bruce Cairncross
- **Behind the Scenes at *Le Règne Minéral*: Louis Dominique Bayle, One Man's Passion**
by Dona Lee Leicht
- **Tattoos as Mineral Art**
by Susan Robinson