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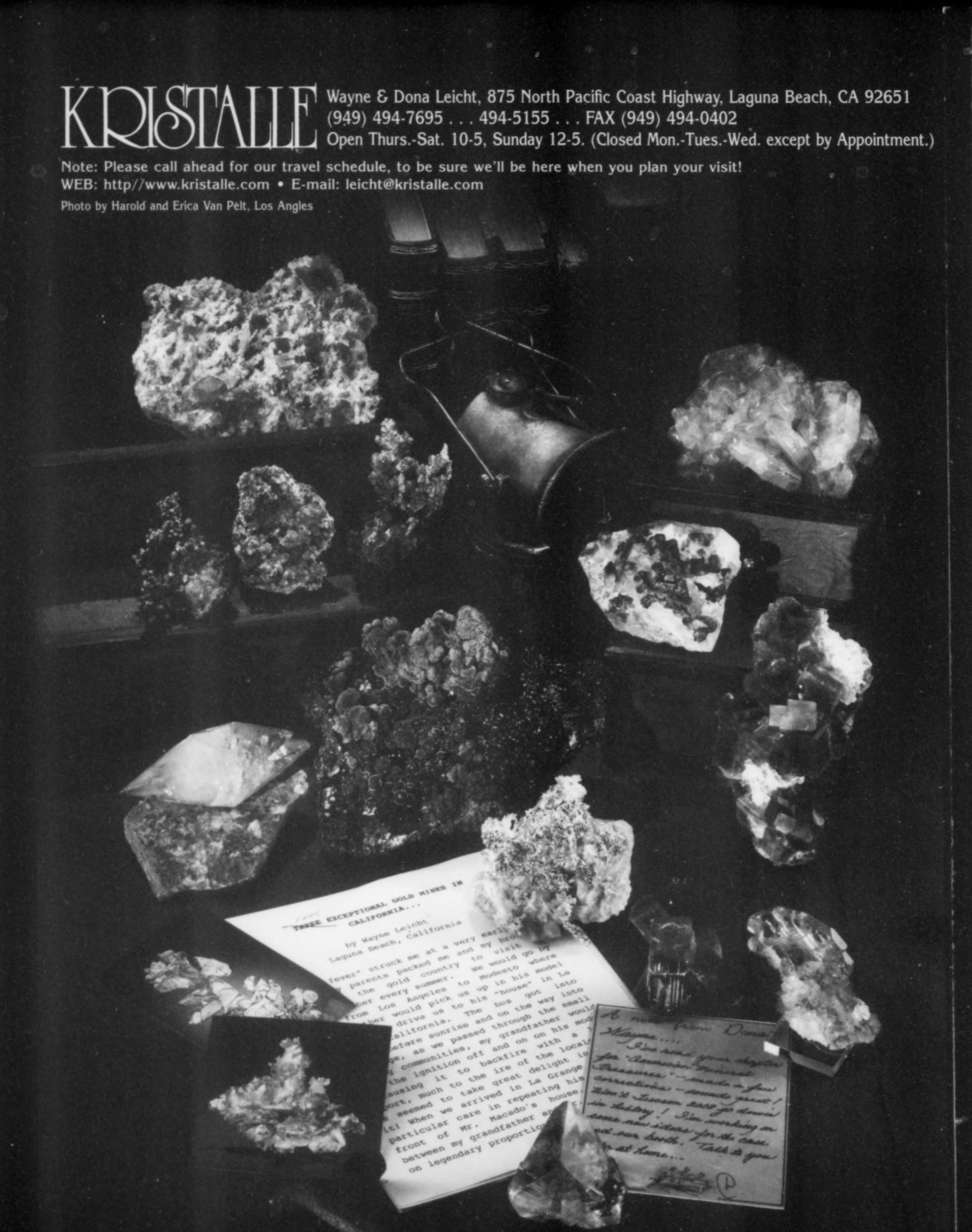

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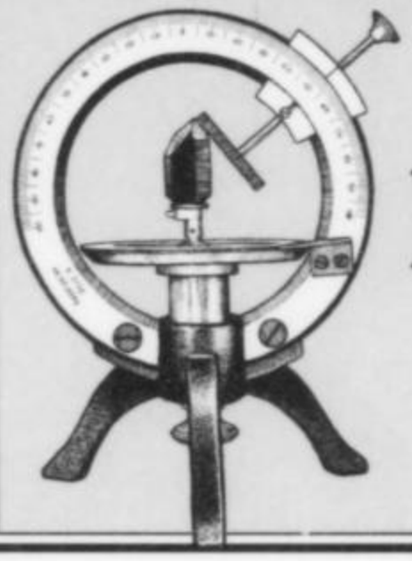

THE MINERALOGICAL RECORD

November–December 2007 Volume Thirty-eight, Number Six

Articles

Columns

COVER: ELBAITE on Quartz, 12 cm, from the Minh Tien pegmatite, Yenbai Province, Vietnam. Frédéric Escaut specimen and photo (courtesy of *Lapis*). See the two articles in this issue, p. 443 and 453.

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notes from the EDITORS

Died, Curtis P. Schuh, 48

The mineral world lost a dedicated historian and bibliologist with the death of Curtis Schuh. He was born Curtis Paul Schuh in Boulder, Colorado on April 16, 1959, and grew up in Broomfield, north of Denver. His father, George Schuh, a retired agent for the Internal Revenue Service, died in 1984 and his mother, Jane Hantschel Schuh, died in 1985. Curtis never married, and lived a solitary life of scholarship and study.

Curtis first became interested in minerals when he was only three or four years old, through the influence of neighbors who enjoyed polishing agates. When he was eight another collector of minerals and fossils who lived a few houses down from his family heard of Curtis's interest and invited him and his mother to see his basement full of specimens; from then on Curtis was hooked. Later he was mentored in his hobby by Drue York, who had homesteaded to Colorado in the 1920's from South Dakota and had developed an interest in minerals. Her daughter, Marrianna B. (Bunny) Kennedy, took up her interest and studied palaeontology. Together they guided Curtis's interest. (Bunny later coauthored, with Richard W. Holmes, *Mines and Minerals of the Great American Rift*.)

Curtis had first become interested in lapidary, especially opals, but he soon changed his direction and concentrated instead on crystallized minerals, which he found absolutely fascinating. He was a young collector when the National Show came to the old Shrine Auditorium in Denver in 1974, and his parents took him to the show. They further encouraged his interest by driving him over to Boulder, Colorado every month for the mineral club meetings.

When his father retired in 1976, he said he was tired of snow and wanted to move to Tucson. So the family packed up the Monday after Curtis's high school graduation in June of 1977 and headed for Arizona. Curtis had heard of the Tucson Gem and Mineral Show through articles in *Rocks and Minerals* and *Arizona Highways*, and had figured that someday he would attend. He was delighted to find that Tucson also had a great University and an excellent library (better than any library in Colorado!).

While still living near Denver, Curtis had purchased a specimen of native silver from Canada that had come with a label that read: "Bideaux Minerals, Tucson, Arizona." After his family settled in Tucson, he discovered that the shop still existed on Washington Street in downtown Tucson. So Curtis and his father went there in late June 1977, and met George Bideaux. During that visit his father also bought him a copy of the *Mineralogical Record*'s Tsumeb Issue and a softcover copy of *Minerals of Arizona* by Anthony, Bideaux and Williams.

Curtis visited the Bideaux shop many times thereafter, and during several of these visits George's son Richard came in; however, George never introduced him! Nevertheless, Curtis must have made an impression on George, because he once asked Curtis to keep the shop open for a week while he and Mrs. Bideaux travelled back east. After he returned he hired Martie Scott to help him with the shop.

In August, 1978 George Bideaux died, and that morning Curtis went down to the shop to see if he could help in any way. That was actually the first time he met Richard Bideaux. After Richard decided to keep the shop open he assigned Martie to mind the store during the week, and Curtis to work at the shop on Saturdays. It was through Richard that Curtis met many people in the mineral world whom he would never have known otherwise, especially when Bideaux Minerals displayed at the Tucson Show. After Bideaux Minerals closed its doors, Herb and Moni Obodda invited Curtis to help out in their Tucson Show booth, where he continued to enjoy the opportunity to meet and talk with mineral people.

Curtis attended the University of Arizona where he earned three different bachelor's degrees, in Systems of Industrial Engineering (essentially a computer degree), Mathematics, and Engineering Mathematics. While still a student in 1979, he had considered becoming a mineralogist, but felt there must be some other way in which he could contribute something to the science. As it happened, he had purchased at the 1979 Tucson Show a copy of the 1832 edition of Comstock's *Introduction to Mineralogy*. He asked Richard Bideaux if he knew of any bibliographies that could tell him about other mineralogy books. Bideaux gave him the address of John Sinkankas's *Peri Lithon* book dealership in San Diego and invited Curtis to his house to see his own books (on a previous visit Curtis had only seen Bideaux's mineral collection). Bideaux had a substanial libary of early books. He took a rutile crystal from his mineral collection and opened to a plate in Gratacap's *Popular Guide to Minerals* (1912), then placed the specimen on the plate. It was clear the pictured specimen and the actual specimen were the same! This made a deep impression on Curtis. A few years later, when Bideaux sold off Frederick Pough's library, he enlisted Curtis to write the catalog and Curtis was thereby able to examine closely the many very rare colored mineralogical books that Pough had accumulated.

Marge and John Sinkankas recommended to Curtis the bibliography in the 7th edition of Dana's *System of Mineralogy*, but the Comstock Curtis had bought was not listed there. He decided at that moment that he would compile a bibliography of mineral books with short annotations. He figured that it would be a 3-to-5 year project, but would be a worthwhile contribution to mineralogy. If he had noticed that the Dana bibliography had books in seven languages, Curtis later said, he might have rethought this idea.

Beginning his research on the project, he soon discovered Ferguson's *Bibliotheca Chemica* (1906), with its long annotations and reference lists. He decided that mineralogy deserved a bibliography of a similar nature, though as yet he had no idea of the long and interesting history of the science. He began to collect books on his own, mostly primary literature and reference books in the history of mineralogy, crystallography, geology, chemistry, botany and general science. Thus he began the laborious process of building his magnum opus, *Mineralogy and Crystallography: An Annotated Biobibliography of Books 1469 to 1919*—a massive compilation which occupied most of his spare time for the rest of his life. It remains unpublished, though he distributed many successive versions to his friends and acquaintances on CD.

Curtis worked for many years in Tucson as the computer support person for a number of local companies, most recently the Muscular Dystrophy Association. He was their trouble-shooter, the person who would be called in when the computers broke down and no one else could figure out what was wrong with them. He liked that kind of intellectual challenge. He also served for many years as voluntary librarian for the *Mineralogical Record*, cataloged the antiquarian portion of the Mineralogical Record Library, and helped locate many needed volumes as they appeared on the book market. Around 1980, as an off-shoot of his bibliography project he developed an interest in using computers to translate languages (i.e., German-to-English). Literally from scratch he programmed several systems over the years.

Curtis was a kind, gentle, intellectual, somewhat introverted soul who was universally well liked. Living alone in his Tucson apart-

ment, he socialized only rarely, and was often out of communication with his friends across the country for weeks and months at a time. Much of this seclusion was the result of his chronic medical difficulties, and he was hospitalized many times over the years, often coming close to death. He never complained about his sufferings but, in the end, the long-term damage to his heart and other organs meant that he had only a short time to live. At our last lunch together a few weeks before his death Curtis seemed comfortable and was not depressed as we discussed our mutual love of obscure historical research. But at last, tired of the long battle and not wanting to linger painfully, he donated his mineral collection to the University of Arizona Mineral Museum and his reference library to the *Mineralogical Record*. After putting his other affairs in order, he drove out into the desert about 10 miles from the famous Tiger mine, where he left a suicide note with his abandoned vehicle and apparently took his own life. He was last seen alive on September 28, 2007; his body has not been found.

Wendell E. Wilson

Biographical Archive

The Biographical Archive at **www.MineralogicalRecord.com** now contains over 1,000 entries, with over 2,700 labels, portraits and historical advertisements posted. New biographies and labels recently added to the Biographical Archive include the following:

The Anglo-American Club
Caroline Louise von Baden
Jean Ballion
Ernst Freiherr von Bibra
Werner Busch
Ernest Chapman
Spencer Clawson
Dabbert Collection
Emmanuel Dagincourt
A. Döbereiner
Carl Droop
Ed. Dunkl
Harry von Eckermann
Heinz Eckert
Hans (?) Erchenbrecher
Jordi Fabre
Percy Fowler
Hugo Francke
Alex Franz
Johannes Fromme
Wilhelm Fuchs
Georg and Alfred Gasser
Oskar Gebhardt
Max Philipp Geipel
H. Gericke
Kalheinz Gerl
Wilhelm Hauchecorne
Heidelberger Mineralien-Comptoir
Henry Heuland
M. Hübler
Eugen Hussak
Carl Infanger
Hans Jaklin
Bob Jones
O. Kanzler
Hugo Kemna
Heinrich Laubmann
Anton Lebherz
Ernst Leisner
F. Leitenberger
C. Lottermoser
Alessandro Mascarini
Ed McDole
Stefan Meier
Alexander Mitscherlich
Fred Parker
C. F. Pech
Fridolin Plant
Robert Pöhlmann
Franz Reichenheim
Anton Resch
Carl Riemann
J. W. Rimington
Paul Roch
F. Rodrian
Roy Rogers
"Sarmatia"
Ernest Schernikow
Carl Schiffner
J. H. Schildbach
Jochen Schlüter
Rudolf Schöffel
Edna M. Scott
Josie Scripps
Carl von Seebach
Hans Seidel
Y. Shibayama
Siegfried Stahn
Hermann Staute
Karl von Steinwehr
Johann Strunz
Franz Thuma
Werner Vogel
Erhard Vortisch
Anton Wichera
Rudolf Zimmermann

It is obvious from this list that we've been working a lot on the early German collectors and dealers lately. Some of the biographical sketches are pretty well filled out, and others are, shall we say, "sketchy," Any assistance from our readers would be much appreciated, especially if you own labels unlike those shown with the posted biographies.

In response to a suggestion from a reader, we have flagged recent entries (previous 30 days) in the drop-down menu and in the site map. It is now easy to scan down the list and see who is new.

Editorial Difficulties

As readers of this journal know, we like to start off each locality article with a little heraldic crest above the title, representing the country, state, province or city in which the locality is situated. Occasionally this poses a political problem, as it did for the Trepča mine article in the July–August 2007 issue. The Balkans are a place where one must step carefully regarding nationalistic symbols.

My first thought was simply that Kosovo (wherein the Trepča mine is located) is still officially a part of Serbia, so I was going to use the longstanding Serbian crest with the two-headed white eagle and shield. However, it turns out that the shield on that crest is quartered with the lion symbol of Montenegro, which is no longer under Serbian control, so the recently (1994) adopted revision with a shield carrying only the four Serbian fire-steels (C-shaped objects) would be more appropriate.

It then occurred to me that the Kosovars may have some enmity against the Serbs (!), and they might be annoyed by seeing a Serbian symbol above an article about the most economically important mine in Kosovo. Then again, the population in the northeastern part of Kosovo where the mine is located is largely Serbian, so maybe there would be no problem after all.

Just to be safe, I consulted with author Jean Feraud and learned that, sure enough, such symbolism would be vigorously objected to in some quarters. The Trepča area is hotly contested because of its economic value. He suggested a crest with the two-headed black eagle on a red background, taken from the flag of the Kosovo Liberation Army. Though graphically elegant, it happens to be identical to the Albanian crest—because the majority of Kosovars are Muslim ethnic Albanians. (The name "Kosovo" actually originates from the word for "black bird.") And, although Kosovo is trying to gain independence, using the symbol of an insurgency group might be deemed inflammatory.

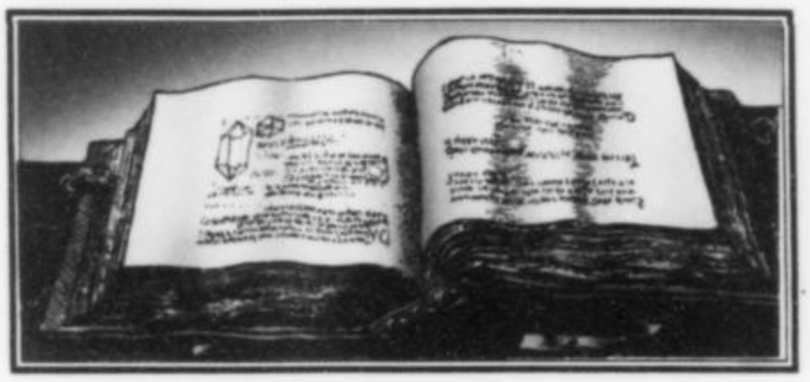
I asked Jean if the town or the mining company had a crest, and indeed the mining company does have one—a black circle with edge details surrounding a crossed hammers symbol. This would be noncontroversial, but graphically a bit bleak looking. So I found the more attractive green-and-black-striped crest for the Trepča Soccer Club (which has a similar logo in the center, except with a soccer ball in place of the crossed hammers), and dropped in the mining company logo. Everyone likes soccer and could surely rally 'round such a crest, right? Wrong. The soccer club is mostly Serbian. I was also warned against awkward color substitutions such as blue. Slobodan Milosevic had tried to change the Kosovo symbol to blue, and he is roundly hated there, so nothing like anything he ever did or proposed could be used.

So I changed the soccer stripes to an all-black field behind the mining company logo, and thought at last that I had hit upon a design that, although rather corporate looking, would not require the presence of U.N. peacekeepers. Author Feraud, however, had meanwhile conferred with his Kosovar friends and coauthors and came forward with what is called the "Dardania" crest, Dardania being an ancient name for Kosovo. That crest has been formally proposed by the President of Kosovo and, although not yet officially adopted, it appears very likely to be adopted formally in the not too distant future. So that's what we went with, and please don't write any outraged letters to us complaining about nationalistic insensitivities—we did our best, really.

Warehouse Discoveries!

With close to 100,000 back issues in storage, dating back decades, the warehouse where we have it all stored sometimes loses or mislabels boxes that may not come to light again for years. (Picture

(continued on page 503)



Rumpf's

Ambonese Curiosity Cabinet (1705) and The First Color-Plate Illustrations of Minerals

Curtis P. Schuh*
1201 West Roger Road, no. 10
Tucson, Arizona 85705

Wendell E. Wilson
4631 Paseo Tubutama
Tucson, Arizona 85750

Illustrating the beauty and subtlety of the mineral world in published works has been a daunting challenge since the first woodcut engraving of a tourmaline crystal appeared in Conrad Gesner's De omni rerum fossilium *in 1565. Representation in color was an even greater challenge, demanding the combined skills of engravers and painters, dealing with an unfamiliar subject. Amazingly, the first color plates of mineral specimens to be published were among the very finest in the history of mineralogical literature.*

Introduction

When bibliophiles think of the earliest hand-colored color-plate mineralogies they might think of Johann Ernst Hebenstreit's *Museum Richterianum* (1743), John Hill's *History of Fossils* (1748), Casimir Christoph Schmiedel's *Erz Stuffen und Berg Arten* (1753), Georg Wolffgang Knorr's *Deliciæ naturæ selectæ* (1754), Christian Ludwig Stieglitz's *Spicilegium quarundam rerum naturalium subterranearum* (1769), or even Fabien Gautier d'Agoty's *Histoire Naturelle Règne Minéral* (1781)—which was also the first color-plate mineralogy to have *printed* (rather than hand-painted) colors. Most mineral collectors, even if they aren't also book collectors, are aware of Philip Rashleigh's *Specimens of British Minerals* (1797 and 1802), and of the 550 hand-colored mineral plates in James Sowerby's *British Mineralogy* (1804–1817) and the 168 hand-colored plates in his *Exotic Mineralogy* (1811–1820)—surely the two most ambitious hand-colored publications in mineralogical literature. Less well known, perhaps, is Albert Seba's folio-size four-volume work *Locupletissimi rerum naturalium thesauri* (produced in 1734–1765), possibly because, although it contained 442 large plates of animals and plants, it contained only four color plates devoted to mineral specimens—and these in the last of the four volumes (1765).

The earliest of all publications with hand-colored mineral plates, however, predates the earliest of these by nearly four decades, and its significance in this respect has remained virtually unknown in the mineral world. The book, published in 1705, describes the collection of naturalia assembled by a Dutch merchant and scholar who had lived for many years in Indonesia. And the extraordinary hand-painted engravings are by one of the most prominent illustrators of the 18th century.

*Deceased


EFFIGIES
GEORGII EVERHARDI RUMPHII, HANOVIENSIS ÆTAT^{is} LXVIII.
Cæcus habens oculos tam gnavæ mentis acutos,
Vt nemo melius detegat aut videat:
Rumphius hic vultu est Germanus origine, totus
Belga fide et calamo: cetera dicet opus.
ex tempore pinxit *V. S. Guio Amo.*

Figure 1. **Portrait engraving of Georg Rumpf (1637–1702), published as the frontispiece to his *D'Amboinische Rariteitskamer* (1705). His blindness due to cataracts has been faithfully recorded by the engraver.**

Georg Rumpf (1637–1702)

Georg Eberhard Rumpf (or "Georgius Everhardus Rumphius" or "Georgii Everhardi Rumphii," his traditionally Latinized scholarly name) was a German-Dutch botanist employed by the Dutch East India Company as a merchant and trade representative. He was born in Wölfersheim, Hesse, Germany in the fall of 1637, the eldest son of Anna Elisabeth Keller and August Rumpf, a fortifications engineer and *Baumeister* (architect and superintendant of public works) in the employ of Count Wilhelm von Solms-Greifenstein (1570–1635), the Counts of Hanau and other aristocrats. He spent his early childhood in Wölfersheim, where he received his early education from a locally venerated scholar and from his father August, who taught him mathematics, engineering and drawing. It was not an easy time; the Thirty Years War (1618–1648) was still causing havoc, and the plague of 1635 had reduced the population of Rumpf's hometown from 900 to 54.

Rumpf attended the *Gymnasium* in Hanau, where he enjoyed the study of the arts and "the secrets of Nature" which had intrigued him all his life. He left Hanau at 18, ready to indulge a "burning desire for foreign lands." Unfortunately, in 1646 he ended up being shanghaied on a ship, the *Black Raven*, headed for Brazil

D'AMBOINSCHE
RARITEITKAMER,
Behelzende eene BESCHRYVINGE van allerhande
zoo weeke als harde
SCHAALVISSCHEN,
te weeten raare
KRABBEN, KREEFTEN,
en diergelyke Zeedieren,
als mede allerhande
HOORNTJES en SCHULPEN,
die men in d'Amboinſche Zee vindt:
Daar benevens zommige
MINERAALEN, GESTEENTEN,
en ſoorten van AARDE, die in d'Amboinſche, en zommige omleggende Eilanden gevonden worden.
Verdeelt in drie Boeken,
En met nodige PRINTVERBEELDINGEN, alle naar 't leven getekent, voorzien.
Beſchreven door
GEORGIUS EVERHARDUS RUMPHIUS,
van Hanauw, Koopman en Raad in Amboina, mitsgaders Lid in d' *Academie Curieuſeuse Naturæ*, in 't Duitſche Roomſche Ryk opgerecht, onder den naam van
PLINIUS INDICUS.
TAMSTERDAM,
Gedrukt by FRANÇOIS HALMA, Boekverkoper
in Konſtantijn den Grooten.
1705.

Figure 2. **Title page of the first edition of the *D'Amboinische Rariteitskamer* (1705).**

in an ill-fated attempt to relieve Dutch colonials there. The ship was somehow diverted to Portugal instead, and Rumpf spent the next three years working there for the Portuguese military before returning to Hesse. He worked for a while in Idstein, but in 1651 his mother died, and on December 26, 1652 he set sail on the *Muyden* for the Pacific islands as an *adelborst* ("gentleman soldier"), under a five-year contract with the Dutch East Indies Company, arriving safely in Java after a six-month voyage, on July 1, 1653. He never returned to Europe or saw any of his family again.

He was soon stationed on the island of Ambon in the Malay Archipelago in modern-day Indonesia, where he supported the commercial interests of the company, including the military actions of the Moluccan Wars against local rebels. However, he was disinclined to military duty, and before signing up for a second term he asked to be transferred to the civilian branch of the Company and put in charge of the Company's interests in the northern part of the island of Ambon; his request was granted. He was promoted in 1660, and thereafter lived a comfortable and self-directed life, raising a family with his native wife, Susanna. He started researching systematically the natural history of the island. He described and drew all he saw of the natural world, creating several voluminous manuscripts. Despite the distance over which he was in communication with scientists in Europe, he was a member of a scientific society in Vienna, and even sent a collection of Moluccan seashells to the Medicis in Tuscany.

After going blind from cataracts and glaucoma in 1670, Rumphius continued work on his various natural history manuscripts with the help of family members and hired scribes and artists. In 1674 his wife and child were killed in an earthquake—a terrible blow. In 1687, with his manuscripts nearing completion, many of the illustrations were lost in a fire. Persevering, Rumpf and his helpers started over, finally completing the *D'Amboinische Rariteitskamer* ("The Ambonese Curiosity Cabinet") in 1698 or shortly thereafter. Several of his other works did not appear in print until many years after his death. His *Herbarium Amboinensis,* for example, a catalog of the plants of the island of Ambon, was published posthumously in 1741 and provided the basis for all future study of the flora of the Moluccas. His remarkable work, *The Ambonese Curiosity Cabinet*, with its mineral illustrations, first appeared in 1705, three years after the author's death on June 15, 1702. In time his works became so famous that he came to be called the "blind seer of Ambon" and the "Plinius Indicus."

Illustrations in *The Ambonese Curiosity Cabinet* include specimens of the plants and animals as well as the minerals of the region. The work contains his collected observations on the natural history he observed, arranged in three parts or books. The first is devoted to "soft shellfish," the second to "hard shellfish," and the third (and longest) to "minerals, stones and other rare things," all illustrated with 60 magnificent copper engravings of the specimens he collected. These plates may be separated into the following categories: crabs (12), sea-urchins and starfish (4), snails and mussels (33), and petrifications and minerals (11). There is also an engraved title page, a beautifully engraved frontispiece portrait showing the obviously blind Rumpf, and four engraved vignettes.

Beekman (1992) divides the subject matter covered in the third book as follows: seven chapters on ***metals***, including gold, silver and iron; 13 chapters on ***minerals***, including realgar, orpiment, alum, pyrite, marcasite, gypsum, quartz, alabaster and asbestos; seven chapters on ***gemstones***, including diamonds, rubies, emeralds, sapphires, chrysoberyl, opal and agates; a remarkable 29 chapers on the unremarkable subject of concretions; and a miscellany of chapters on ***"curiosities,"*** including stones with unusual shapes, porcelain, salt, amber, glass, etc., and finally a series of chapters on ***fossils***, including *belemnites*, shells, urchins, gastropods, clams and crabs, and prehistoric Indonesian tools and weapons. Thus most of Book 3 was highly original, dealing with East Indian minerals and objects never before addressed in European literature.

The work is especially interesting as it shows the contents of a typical cabinet of natural curiosities of the early 18th century. Such cabinets were very popular at the time, and were the forerunners of the museums of today. The work also exhibits Rumpf's amazing talent as a naturalist. And although he was in a faraway land, removed from every center of intellectual civilization, he was not totally isolated. Citations in his text show that he corresponded with many other scholars and scientists in the Indies and Europe.

Sadly, Rumpf was forced to sell his collection of shells—360 specimens—in 1682, before any of his books about them had been published. The buyer was Cosimo III de Medici, Grand Duke of Tuscany (1642–1723). In his letter of transmittal Rumpf wrote: "May the Lord . . . favor the passage of these objects and may they arrive safely . . . so that no damage will be done to a treasure which I gathered over many years with much cost and labor and which, in the future, it will be impossible to acquire again."

Rumpf died on June 15, 1702, at the age of 64.

Copies of *The Ambonese Curiosity Cabinet* are almost always found with uncolored plates, and for a very long time, only a single extraordinary copy of the book was known to contain hand-colored plates. It is preserved in the collection of the Plantage Library of the University of Amsterdam. The copy had been colored by the famous naturalist, Maria Sybilla Merian (1647–1717), as is recorded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on the half title by a former owner of the book, **Aernout Vosmaer** (1720–1799), one-time director of the princely zoological gardens at Het Klein Loo near The Hague. In fact, it is now generally assumed that many of the plates for Rumpf's book were designed by this famous naturalist, who was among the greatest illustrators of natural history in her day.

Maria Sybilla Merian (1647–1717)

Maria Sybilla Merian, the artist to whom the Rumpf plates have been attributed, was born in Frankfurt am Main, Germany in 1647, and died in Amsterdam on January 13, 1717. Merian was the natural daughter of a publisher and engraver, and the stepdaughter of a still-life painter. Not surprisingly, she took up flower painting and engraving. She also wed another artist, but it didn't last. Unhappy in her marriage, she moved her daughters to a religious community in the Dutch province of Friesland, then later to Amsterdam. There she made powerful friends and eventually received funds from the government to journey with her younger daughter to Dutch-controlled Surinam in South America. After a cramped, dirty sea voyage, she landed in a hot, wet-and-dry climate. Undaunted, she pursued two of her main passions over the next couple of years: painting and insects. She built large collections which she took back with her to Amsterdam when illness forced her return in 1701. These collections surpassed all others and caused great enthusiasm among the city's scientists.

Merian was also highly interested in flowers and other aspects of nature, especially those which came from exotic locales such as Rumpf's Ambon specimens. So it is no surprise to discover that she had taken an interest in Rumpf's work, and helped with its preparation for publication back in Holland. And it is clear she must have had access to some of the actual specimens, because the coloring of all the plates is very accurate—something impossible to do without having the real specimens at hand. It is known that she produced at least 54 watercolor paintings of Ambon specimens (some of which apparently belonged to other collectors in Europe who had received specimens from Rumpf; one reference says Rumpf's collection ended up with Von Gartner in Vienna), which she probably used as master copies in hand-coloring plates many years later. Those paintings were purchased by Czar Peter the Great in 1717.

The German traveller and Bürgermeister of Frankfurt, **Zacharias Conrad Von Uffenbach** (1683–1735), visited Merian in Amsterdam on February 23, 1711. He recorded this visit enthusiastically in his diary, which was published in 1753–54. He mentions that

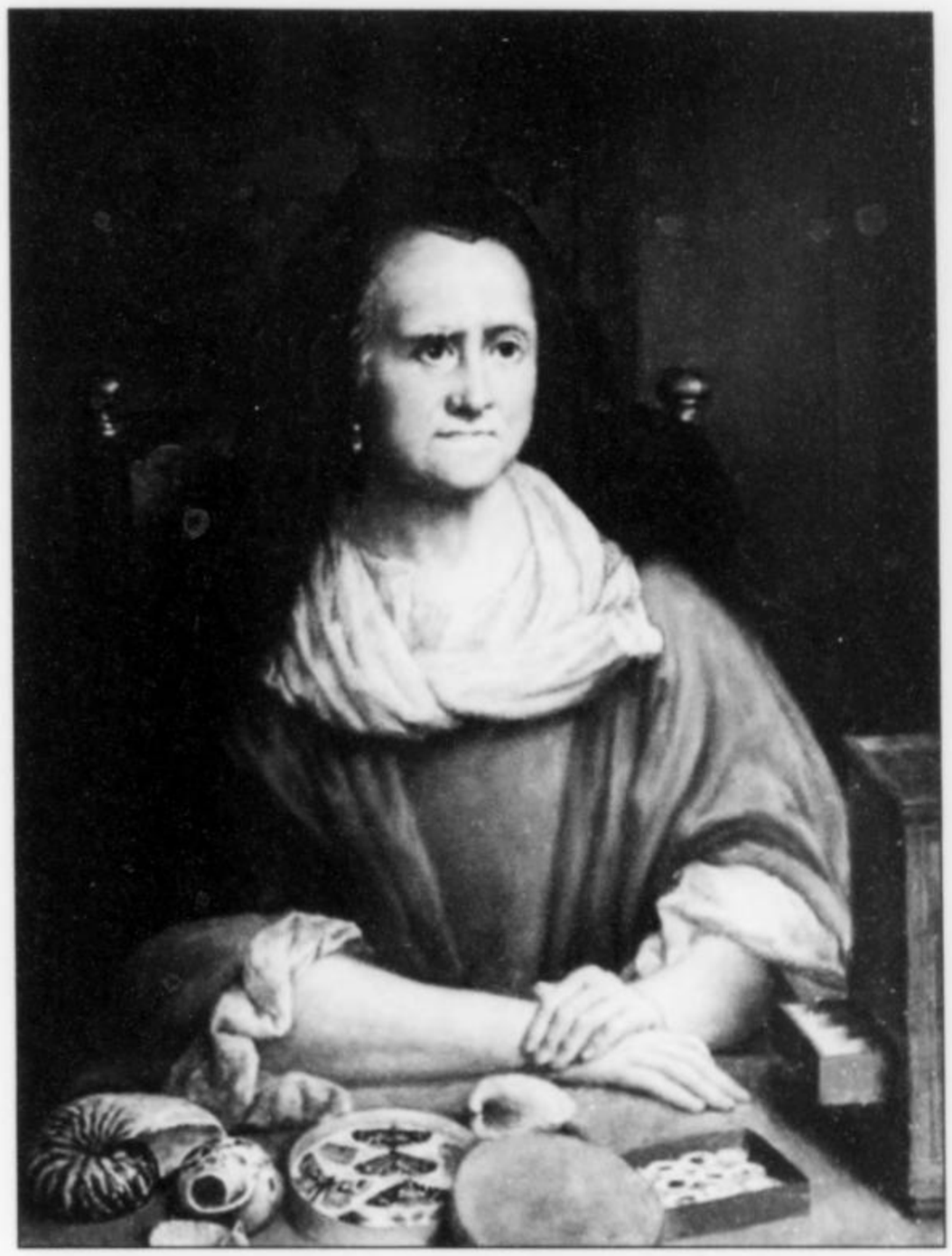

Figure 3. **Maria Sybilla Merian (1647–1717), the famous naturalist and artist who designed and hand-colored the Rumpf mineral plates. Portrait painting by Maler de Bâle.**

it was during this visit to Merian's house that he saw a copy of *The Ambonese Curiosity Cabinet*, superbly colored and printed on large paper, which he considered one of the most beautiful books he had ever seen.

Later in the 18th century, the noted German book collector **Joseph Cobres** also boasted of having a colored copy of the 1705 edition in his library. His copy had the title page and all the plates including the frontispiece portrait of Rumpf hand-colored. He purchased the copy at the Bozenhard Auction, noting its great rarity in a colored state.

So coveted were these few colored copies that in a 1779 auction the Vosmaer copy fetched 240 gold florins (over 26 ounces of gold, equivalent to about $16,000 today), which was a serious amount of money for a book at that time (a good house could be purchased for a quarter of that amount!).

In 1997, a third (or perhaps second, if it was actually the Cobres copy) complete hand-colored copy of the Rumpf book appeared on the market; the bookseller had compared it to the Vosmaer copy and found it to be identical.

The confluence of good specimen material and exceptional execution by a highly talented artist combine in these rare colored copies to make some of the most beautiful colored mineralogical plates ever produced—not to mention the exceptional renderings of shells, crabs, and other objects of the cabinet. Unfortunately, the book is also perhaps the rarest of all the colored mineralogies, with only the two complete copies known (the Cobres copy having disappeared), plus individual loose plates from a third (or fourth) copy that was broken up at some time in the past. **The Mineralogical Record Library** was fortunate to obtain one of the mineral plates from the broken copy, and it is illustrated here.

Figure 4. **Plate 52 from *D'Amboinische Rariteitskamer* (1705), hand-colored by Maria Sibylla Merian (1647–1717); Mineralogical Record Library. Figures A and B are identified as archeological objects (Mamacur armlets). Identifications of minerals given in the text range from nearly worthless to non-existent. Some of the specimens pictured are thought to be European in origin, obtained by exchange with Rumpf's correspondents. Figure 1 may be a malachite-after-azurite pseudomorph from Chessy, France. Figures 3–6 are quartz. Figure 10 is probably a pyrite crystal group. Figure 7 is probably a quartz, topaz or apatite crystal. Figure 8 appears to be a rhodochrosite from Germany. Figure 9 appears to be a metallic ore, possible containing cobalt. Figure 12 may be a ruby corundum crystal.**

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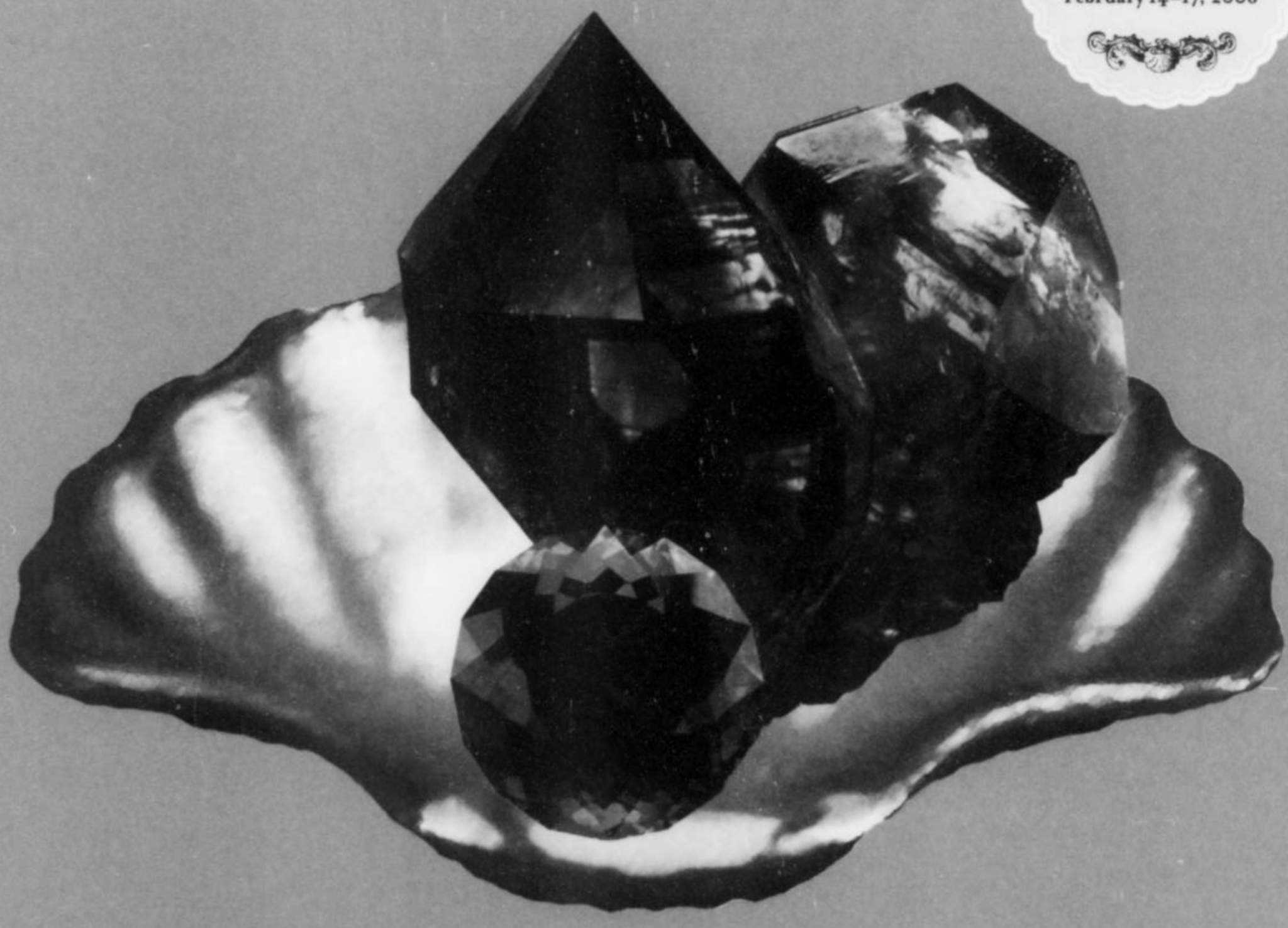

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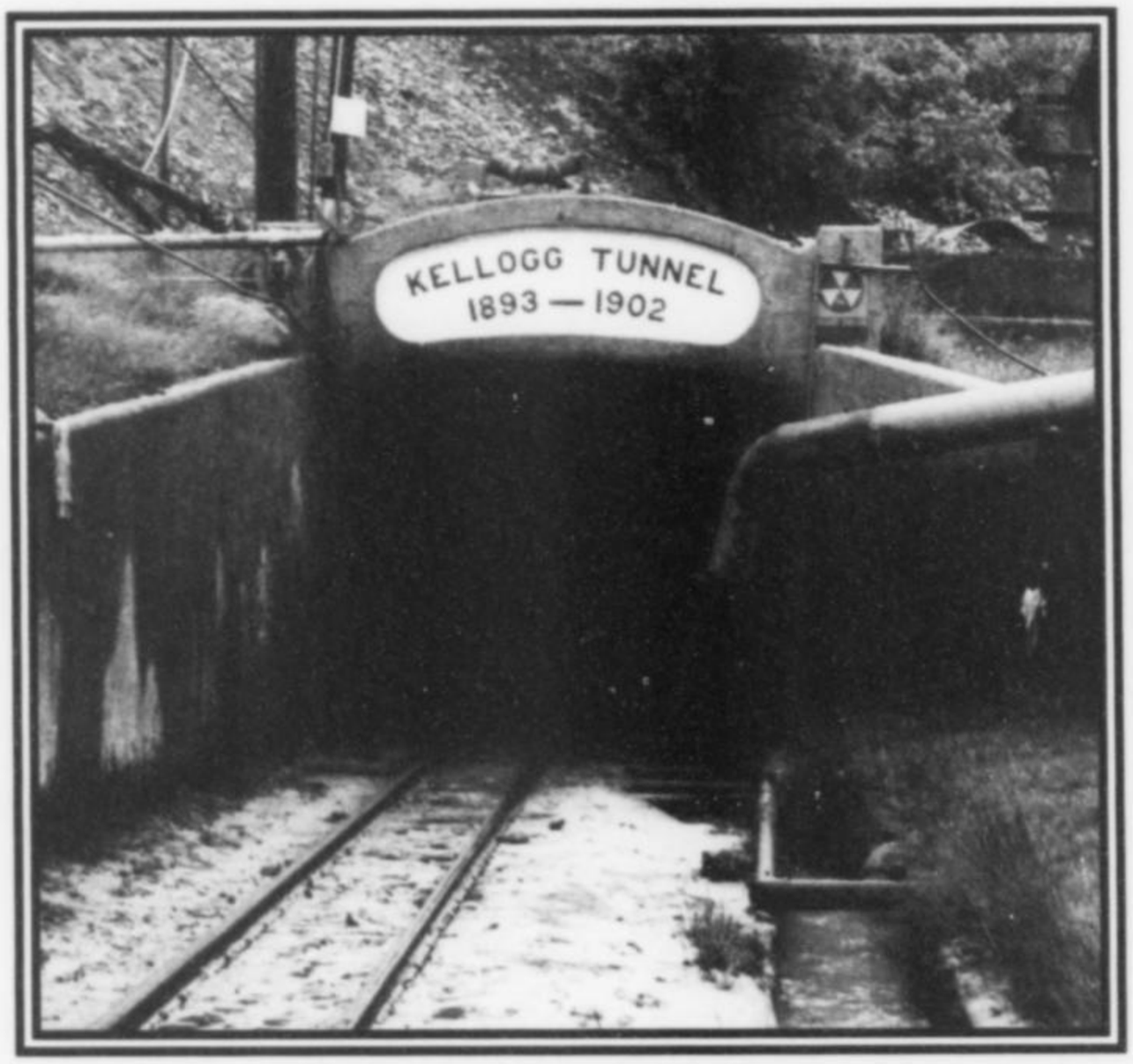

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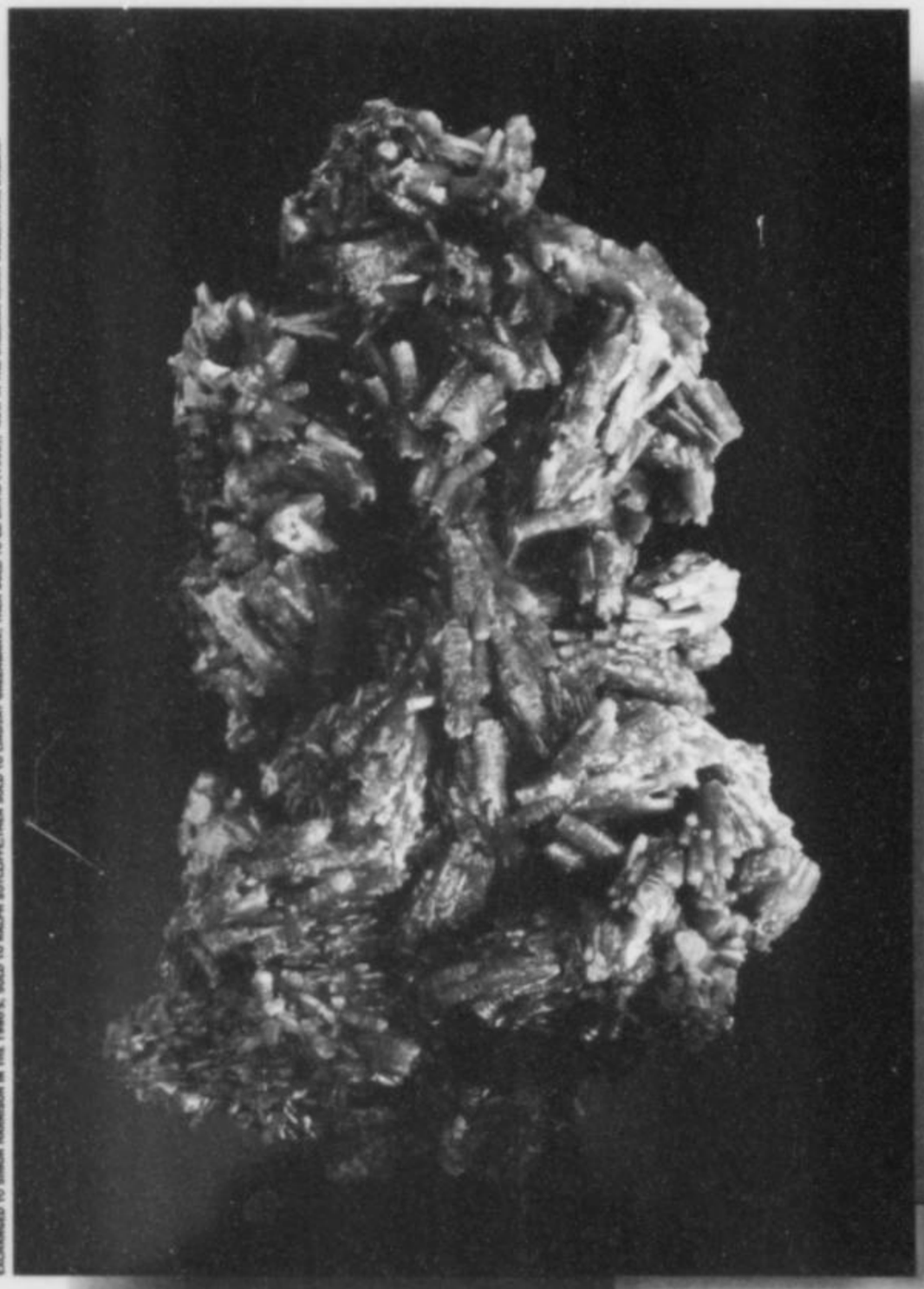

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With best regards,

Ed David

Ed David

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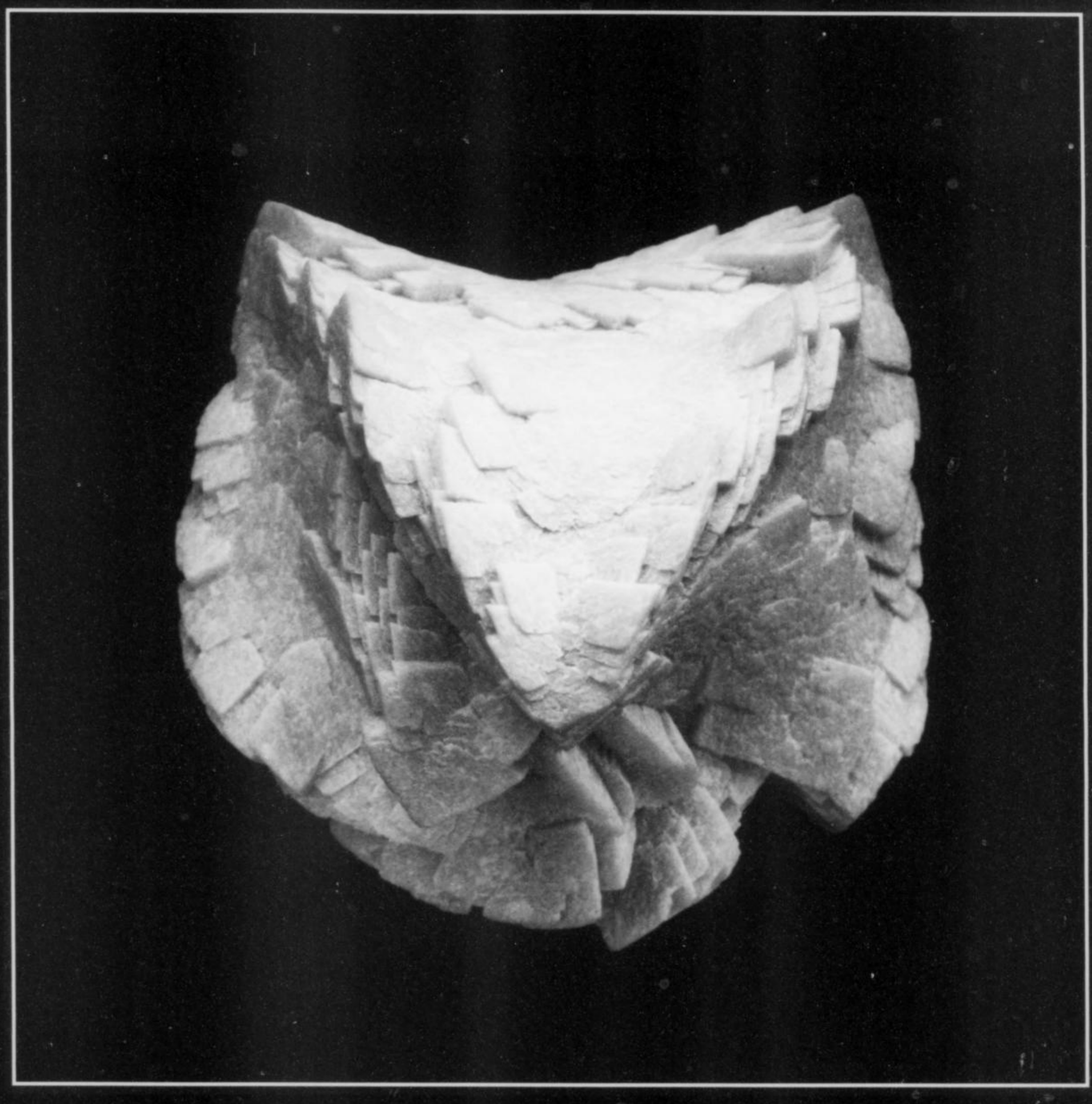

JEFF SCOVIL PHOTO

DOLOMITE "FLOATER," 7.8 CM, FROM SHANG BAO, HUNAN, CHINA.
IT APPEARS THAT THE CRYSTAL FACES ARE NON-TRIVIAL MINIMAL
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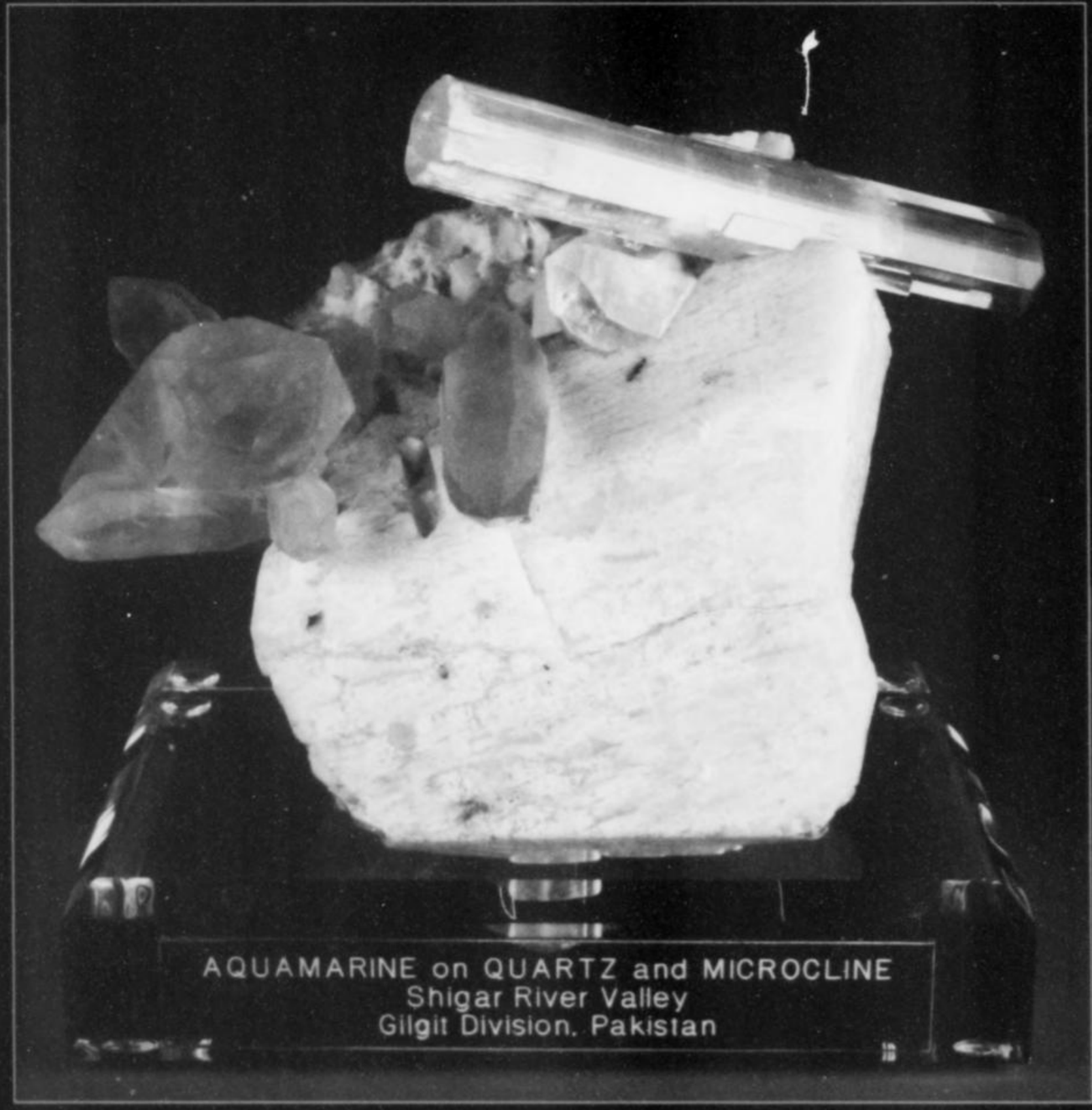

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"It is the touch of French blood in her," I thought as Chien (Ms. Ruby) offered her ruby red cheek for a farewell kiss, "Cam on, Tam bite" (Thank you, Good-bye) I said to her as I left her family's modest home on the outskirts of Luc Yen for the small gray sedan for the return journey to Hanoi. Gentle Vietnamese jazz was flowing inside the car as I opened the door, while a wan sun (the first in a week) attempted to pierce the hazy gray sky. This opened a floodgate of fond, happy memories of spirited, friendly negotiations in the local gem market, a rewarding journey to the tourmaline mine at Minh Tien with Chien and her jovial sister, and a chance to renew old friendships acquired on my first trip to Luc Yen the previous year.

TO HANOI

On December 1st, my journey to Vietnam began when I awoke in my hotel room in downtown Bangkok at 5:00 a.m. to catch the morning flight to Hanoi. I flagged down the first taxi to pass by my hotel and had the misfortune to be picked up by a drug-addled driver. The methamphetamine-fused jockey was as shaky and jerky as his ill-kept vehicle. The only positive point of the journey was that he had agreed to take me to the airport for the meter rate. Every other taxi had a flat rate charged above the meter rate for the ride to the 35 km distant airport, as the drivers were not allowed to pick up passengers there for the return trip downtown.

The flight was delayed for an hour and a half but finally we left a hot, steamy Bangkok to arrive in a heavily overcast, much cooler Hanoi. I grabbed a taxi outside the airport and the driver wove his way around bicyclists and motorcyclists to the Old Quarters of Hanoi, on the edge of Hoan Kiem Lake. Many centuries ago this area had been the center of commerce in Hanoi, with each of its 40-odd street names designated by the traders' or artisans' businesses; e.g. Copper Street, Silk Street,etc. The area had now been rebuilt into small hotels, quaint restaurants, boutiques, and souvenir shops.

The hotel where I had stayed during my previous visit was closed for renovation, so I took a room in a different one a few doors down the street. I was greeted by the typical friendliness that one encounters in the north of Vietnam. Joking with the proprietor about my appearance, I asked if, with my gray-white goatee I resembled the Vietnamese national hero, Ho Chi Minh. "No," she responded, "You look like Lenin." So I, the ultimate capitalist, now resembled the ultimate communist! We both laughed.

I stopped at a shop where I changed a substantial number of US dollars into Vietnamese dong (I remembered that the exchange rate in Luc Yen the previous year had been 3% to 5% less than in Hanoi). Also, I was arriving there on a Saturday night and the one local bank was probably closed on Sunday and I would need some dongs for the morning gem market. At 16000 dong to one US dollar, it did not take too many dollars for me to become a multi-multi millionaire in local currency.

I asked the hotel manager to call my friend in Luc Yen and find out the approximate distance from there to Hanoi. After it was established that it was about 300 km, the taxi fare was fixed at $98. I thought that it was a bit odd that it was not rounded off to exactly $100.

ON TO LUC YEN

Leaving Hanoi, the quaintness of the Old Quarters was replaced by the grimness of the factories and treeless tracts of Soviet-style apartments as we spent the better part of an hour just getting out of the Hanoi metro area. We emerged onto a toll road for a while, only to leave it after a bit. I saw some road signs and was able to place our route on the map. It was a bit circuitous, but generally

Figure 1. **Location map.**

trended in the right direction. I settled back and tried to cram as much Vietnamese into my addled brain as I could from a language guide book and asked my guide (named "Tam") to help me with some of the double vowel pronunciations. I asked a few questions about him and he answered that he was 32, married, and had one six-month-old child. When I asked him if his parents had arranged his marriage, he replied, "My father is 82, he is quite old," which indicated to me that his English proficiency was a bit limited, although somewhat better than my Vietnamese.

I had been having pains in my sinuses from the Hanoi air pollution and I was relieved to find that the air quality was much better as we quietly drove through small villages along the flatness of the Red River Valley. The landscape was dotted with small rice and vegetable plots and stands of corn, ears of which I had seen people roasting on small grills on the streets of Hanoi.

When my eyes started to droop, I rolled over onto the back seat and curled into a fetal position to take a nap; actually this was more comfortable than trying to doze upright, and something which I have done innumerable times on long road trips in Asia.

Forty-five minutes of dozing left my brain as cloudy as the steel-gray sky above. I was hoping to have the driver go directly to Luc Yen, in order to arrive before dark. We would be reaching about 22 degrees north of the equator, and even there dusk came early, about 5:30 p.m., in accordance with the approaching winter solstice.

Around noon there were rumblings from the front seat about hunger, and I knew that we would have to stop, although I would have been quite content to grab a pile of fruit from one of the many stands dotting the marketplaces in each of the small villages that we traversed. I held out until after 1:00 p.m. but then, as we pulled into one of the larger villages on the map, I indicated we should eat. The driver and guide checked the outdoor menus (one or two of the standard dishes would be posted in large letters on a ¾-meter-tall sign out front) and chose a rather nondescript one amongst a group of three. The food seemed to improve everyone's spirits and we took off again, turning onto a new road where we saw the first road signs for Yen Bai. Our turnoff was actually about 10 km before this, so I started to watch carefully because I had been on that road before, while the two natives with me had never traveled there.

At about 2:30 p.m. we finally reached the crossroads town of Yen Binh. The driver asked for directions three different times and the locals always pointed the same way. We eventually reached a crossroad that I recognized as the direct road to Luc Yen, and once the driver reconfirmed this with a local, we were on our way. I checked the odometer and it read 170 km and the map indicated that it was only about 85 km more to Luc Yen. The driver was happy because he was probably going to have time to return to Hanoi that night.

LUC YEN

I pulled out my new GPS device and zeroed in on our location, following along as we snaked ever northward toward the 22nd parallel. Finally, the first sign appeared for Luc Yen, 20 km distant to the east. We crossed a large swampy basin which was the upper reaches of a reservoir on the Chay River and I was surprised to see that we were only about 300 feet above sea level. It was just a short hop to Luc Yen and when I spotted a large quarry where workers were extracting snow white marble from one of the wild shark-fin-like karst towers jutting abruptly up from the flat countryside, I knew we had just 3 km to go. I rechecked my GPS and was amazed to see that I was almost exactly 2,000 miles from my last "waypoint," Chutron in the Basha Valley of Pakistan.

All travel fatigue, tension, and anxiety disappeared as we rounded a corner and I recognized the village square where the gem market was held. I directed the driver to the main road to the hotel and I happily bounced out of the back seat, six hours and 45 minutes after leaving Hanoi. The 64-year-old manager of the six-room guesthouse smiled and nodded his recognition, and his son led us to the first level to give me a choice of rooms.

I called up my contact, Chung, and he came within minutes to the hotel. After a warm welcome, I indicated that I wanted to take a preliminary look at their specimens, but was too fatigued to negotiate on the price until the following day. When we arrived at their open-ended house, partially wood and partially bamboo with a tin roof and open to the elements on two ends, I was warmly greeted by his wife, Chien, whose photo appeared in my *Mineralogical Record* article about An Phu. She led me to their display cases, crammed with specimens of artistically carved marble matrixes dotted with crystals of spinels along with a handful with rubies or

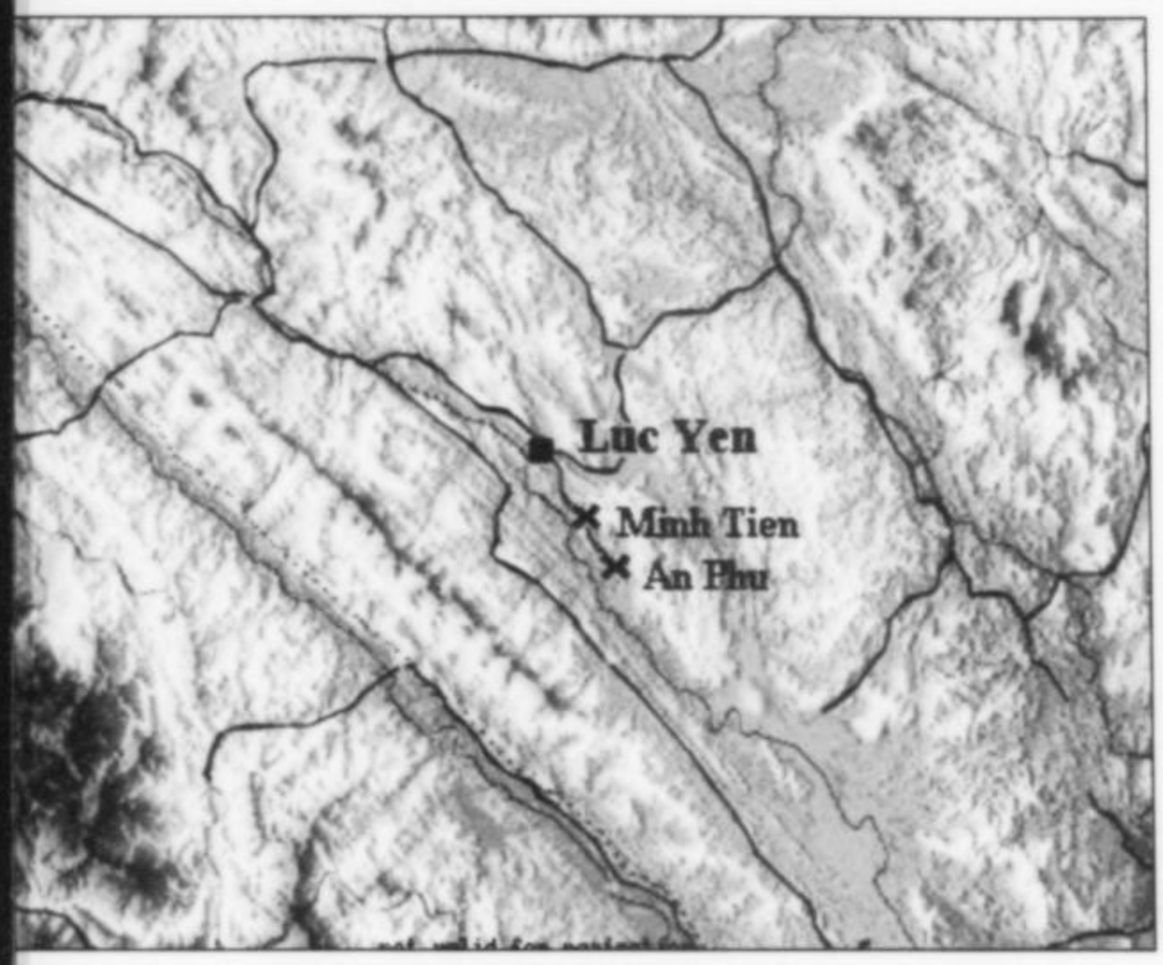

Figure 2. **Topography in the Luc Yen area. Note the close proximity (about 7 km) of the An Phu spinel and corundum locality to the Minh Tien mine.**

chondrodites. There was also a number of specimens with a green amphibole that was probably pargasite or edenite. I turned on my Minimag light to illuminate the dimly lit cases and selected a half dozen specimens for further consideration.

Chien showed me a handful of small selected items and I was really drawn to a bright cherry-red spinel crystal about 1.5 cm across with a small amount of matrix bearing a hole so that it could be strung to wear as a pendant. Her husband then told Tam to tell me that he had a partnership on a very special piece and he produced a very blurry photo on his cell phone. He said that it was a 1-kg Minh Tien tourmaline. It appeared to be one of the "mushroom" varieties and it seemed to be surrounded by a small amount of white feldspar matrix. He stated that it had just been found recently and that it was currently in Minh Tien with one of his partners. He also indicated that it was quite expensive.

I told Tam to tell them to save my selected items for me to view again the following day, and that I was very interested in seeing the tourmaline.

The following morning, after four cups of coffee as fortification, I was ready for the world and specifically for the rigors of negotiations in the Luc Yen gem market. After finishing a breakfast of peanuts and flat rice noodles and broth, I packed my cloth bag with an umbrella, a Minimag light, several loups, and a chelsea filter, and ambled down the main street toward the marketplace about 400 meters away. I passed the early morning village life, today appearing unchanged as it has been for centuries: Women in conical bamboo hats, with coarse black cotton pants, carefully arranging stacks of sweet, green-skinned oranges; vegetable markets heaped with colorful fresh produce arriving before dawn from the surrounding countryside. I watched the negotiation of a man and a young woman vendor, trying to strike a deal on some scraps of what appeared to be a red tree bark. What this was and how it was to be used remains unknown, as my interpreter was still sleeping.

THE LUC YEN GEM MARKET

The gem market was an impromptu affair, with people quietly filing into an open square, with fruit sellers squatting beneath the surrounding trees. The gem dealers went into an unlocked building and grabbed those tiny plastic chairs and a small table each and set them up in the open air. I decided to set up a table for myself, so I walked into the adjoining building and grabbed a larger table (still less than a meter long) and a small red stool and installed myself next to the two lady vendors.

Immediately some vendors came up to me and started to unwrap their merchandise. I was offered many outstretched palms with crystals, predominantly spinel, and a few rubies, nearly all from An Phu, and just a few small tourmaline crystals from the Minh Tien pegmatite. Then a few small, transparent, cuttable yellow gem crystals from Minh Tien appeared. They looked rather like Madagascar orthoclase but with a different crystal shape. The asking price on these was quite high, but I negotiated them down to a reasonable level, the seller appearing not to know what they were or the price that they were worth. It seemed that these were fairly new on the local market, as nobody there attached a name to them. I was pleasantly surprised later when an analysis showed the yellow crystals to be danburite.

This year the quality of the crystals offered to me was excellent and I bargained on various spinels ranging from a pale lavender to a medium purple in color, with single crystals approaching 5 cm across. The highly desirable cherry-red spinels were definitely harder to find, but I managed to buy several, albeit a bit smaller than I would have liked. I was working frantically, and after the tenth purchase, I quit writing descriptions and prices in my notebook as I had determined the local standard price and was too busy counting out tens of millions of dong to pay the sellers to worry about recording everything.

After about two and a half hours had flown by my cloth bag was nearly full with dozens of specimens. I had purchased nearly every good piece that had been offered to me, declining only a few because of their prices, but hoping to get a second chance at them the following day.

Chien and her relatives indicated that they wanted us to leave so they could show me minerals in private, so I packed up my belongings and bade farewell to the crowd. We then drove a couple of kilometers through the wide, flat, un-harried streets of Luc Yen and arrived at Chien's mother-in-law's house. She was a

Figure 3. **Large, stream-rounded tourmaline crystal from the alluvial diggings associated with the Minh Tien mine. Blauwet photo.**

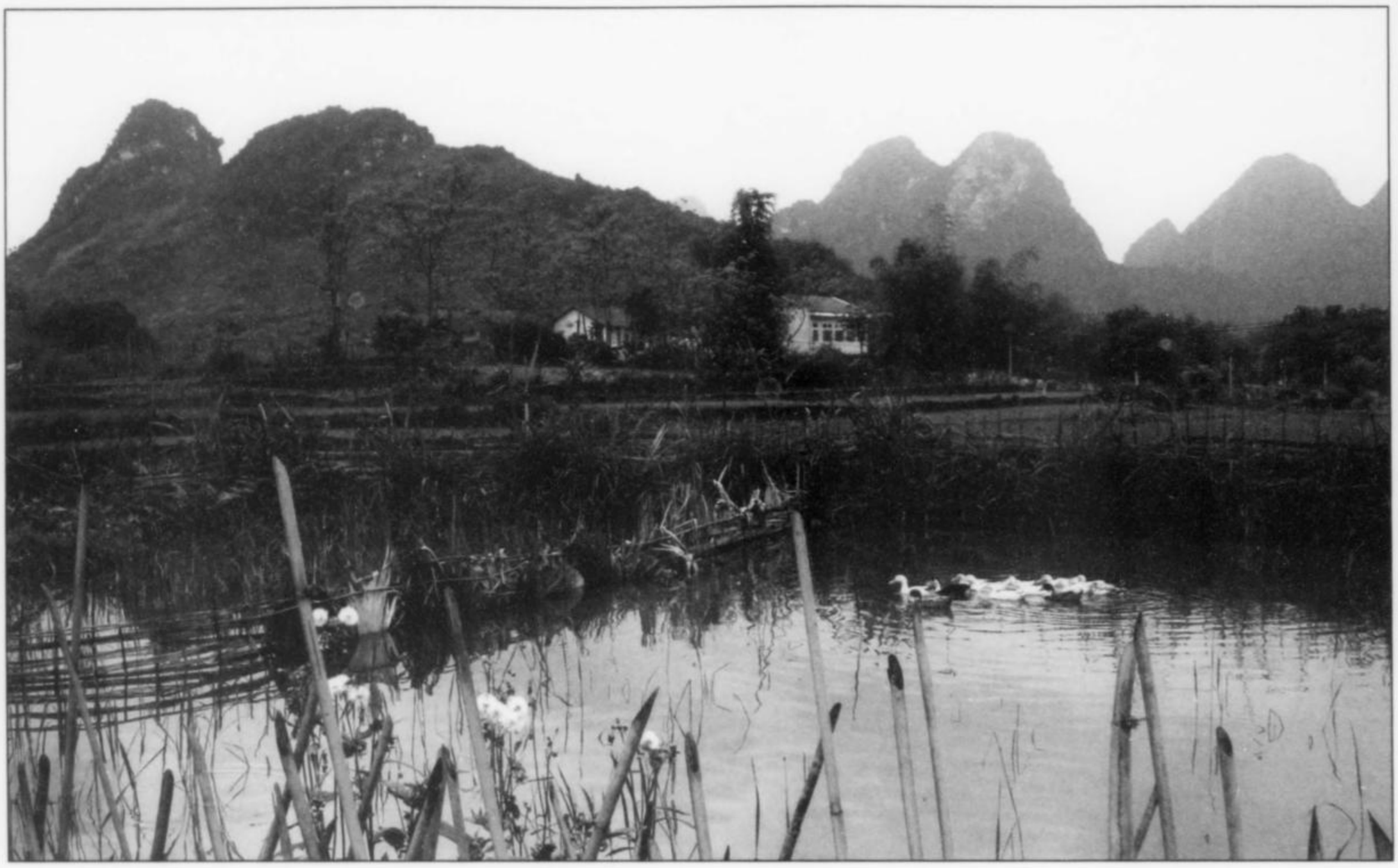

Figure 4. **Picturesque rice paddies and farm beside the trail to the Minh Tien mine. Philippe Russo photo (2006), courtesy of *Lapis*.**

spry, trim, attractive woman that I guessed to be in her mid 50's, self assured and confident, her graying hair pulled back tightly from her face. I was invited inside to be seated at a comfortable couch with a small table in front, with a number of tiny cups of the local bitter green tea, served without sugar or milk. We drank several cups and then she motioned towards a glass-fronted cupboard with two shelves, separated from each other by about a half meter. Inside were several dozen specimens, all of them artistically carved marble spires, similar in shape to the wildly artistic limestone karst towers that protruded from the surrounding flat countryside. There were some excellent specimens: one piece had three or four well-formed red-pink ruby crystals to 2.5 cm on marble and a second piece showed exceedingly sharp, green to slightly lime-green pargasite-edenite crystals. These isolated, 2 to 2.5-cm crystals on marble are razor-sharp, textbook perfect, and lustrous—one of the finest examples of the species that I have seen. I thought to myself, "Boy, I bet the Carnegie or the Smithsonian would love to get a piece like this." I would, too, but my heart sank when I heard the price. I made a few offers and we remained as far a part as the earth and sky.

I gave up for the time being and made offers on several excellent spinels and the ruby specimen. But the old dame knew that she had some of the finest pieces from An Phu and did not need to sell below her wanted price. Other dealers appeared in the broad open front of the house, which was lacking a door.

I successfully negotiated on some more spinel crystals of various colors and glanced at my watch; it was after noon already. I had wanted to go to Minh Tien that day, but would now have to wait until morning. A major goal of the trip was to photograph the tourmaline mine in Minh Tien and to produce a new article for the *Mineralogical Record*, and I did not want to come this far and not be able to reach it. The mine itself was barely a kilometer from the main road going to An Phu, and it would take less than ten minutes to walk to the site.

We moved on to another house where I saw a very sharp prismatic ruby crystal, about 3 cm long, dark red with a hint of purple, and very lustrous. It was embedded in a matrix of marble, which did not have to be trimmed, as it was a perfect small miniature. This was one of the nicest rubies that I had seen from Vietnam and probably rivaled any that I have purchased from Afghanistan, Pakistan, or even Burma for that matter. I asked the price in Vietnamese and was thrilled to learn that it was not unreasonable; I knew that I would be able to purchase it. I counter-offered, and the owner had a brief conversation with the host, then responded abruptly "Okay." I was thrilled, and quickly wrapped the piece in some tissue paper and then packed it into my day pack.

There were several other spinels that were offered to me by a different person, and we were able to agree on a price, so these too were added to the bag. I was also offered some quite large tektites by Chien's sister, Nga. Chien's family then started to show me some more specimens, along with others from several other friends who had stopped by. I indicated that I really wanted to see the big Minh Tien tourmaline and was hoping that it would be shown to me that evening. When I asked the price, one of the men walked outside and took a stick and wrote in the sand "20,000 USD." It was about what I had been expecting them to ask for it, and mentally I was already thinking about what price to give as an initial offer. After dinner and more specimen buying I returned to my hotel and turned in.

I awoke the next morning as the first early gray dawn light started to fill the room. The sky was still as gray and somber as ever. As I walked down the stairs, anticipating more of the magical coffee to stimulate my tired brain, the clouds opened and a steady rain began. I started to wonder about the trip to Minh Tien and whether it

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front: Ulexite; 10.5 cm wide
Extension 16, Boron Open Pit, Boron, California
from the collection of Jim and Dawn Minette
photo © John Smolski

was possible to find a car to rent, as traveling by motor bike would definitely be a soggy, miserably cold affair.

I walked down to the market, and eventually the drizzle stopped and I sat down at a table in the open courtyard. A few small, pink or dark green or a darkish purple tourmalines appeared, and I bought some of them after hard negotiations; as I had found on the previous trip, there were no bargains to be found on this mineral species. Then I was offered a bright pink "nugget" of tourmaline with a fine color, but it was an absolutely rounded alluvial lump with no luster. I shined my Minimag through it and found it heavily included and internally fractured. The owner wanted about 10 million dong and I did not even make an offer, as I really did not know what I could do with the piece even if I had been able to buy it. I was also waiting to see the "killer" new tourmaline that had been hyped so much.

THE MINH TIEN MINE

I glanced at my watch and saw that it was after 9:30 a.m., and that it was time to go to Minh Tien. Chien's husband told Tam that he had work to do, and that Chien and her sister, Nga, would go with us. We went back to the hotel where we had to hire two other motor scooters, one for me and the driver and the other for Tam and his driver. The two ladies rode together on Chien's scooter.

I turned on my GPS device and it was a bit slow to zero in. We turned left out of the hotel and headed in a generally easterly direction, stopping to fill one of the bikes with petrol. We left the small hamlet and moved into truly rural countryside with the intriguing shark-fin-like karst formations dotting the landscape. The upper mountain ranges to the east and south were shrouded in clouds. It looked as if a cold, damp, dreary afternoon was in store for us.

We motored along the road, passing mostly bicycles and pedestrians, an unchanged Asia as if from a century before. At a bit over 5 km we veered right onto a secondary road which rapidly deteriorated to a dirt and crushed stone double lane and then reverted occasionally to a paved cement road about 2.5 meters wide. The native jungle had been mostly cleared, with some banana trees, other small trees, vines and brush scattered amongst small rice and corn paddies.

We had gone only about 4 km more when we ground momentarily to a halt. I checked my GPS and found that we were exactly 9.15 km from Luc Yen, and roughly southeast from the village. We then turned the three bikes onto a narrow dirt trail and jolted barely 200–300 meters along the rough path and then stopped at a large, traditional, open-air house built on huge wooden pillars for stilts.

After the ladies conversed for a few minutes with the two female inhabitants, we took off, continuing down the path on foot. I noticed that Chien was wearing high heels! I found this rather hilarious, especially after seeing how difficult it had been to get to the An Phu mine the previous year. It seemed rather odd to be approaching the legendary tourmaline mine this way. Yet we walked only about four minutes on a relatively flat path through scrub jungle and we suddenly arrived at the mine, or more accurately, the alluvial pits.

A first glance indicated that there were only a few relatively small pits, oval shaped and hardly much more than a meter and a half deep and several meters across, with the brownish red gravel showing no hard rock substrate. I assumed that this was the source for the very alluvially rounded tourmalines that I had seen in the market in Luc Yen. Here there appeared to be no semblance of a developed pegmatite, which I guessed was probably located just above us on the steepening hillside. I GPS'd the coordinates and noted that our elevation was still only 327 feet above sea level.

A young man appeared, whom I estimated to be in his late 20's, and reached into his pocket to produce a specimen nearly 5 cm long. But it was one of the alluvial tourmalines that I had rejected in the market place earlier that morning in Luc Yen! It was extremely rounded with no discernible prism faces, not much luster and was tapered into somewhat of a chisel shape. I asked the price, wanting to buy at least one sample from the mining area, and also because it had an unusual bi-color combination, yellow and a dark reddish purple. The asking price was, as expected, too high. Someone had mentioned to Tam that the Chinese were buying these for carvings or cabochons; I did not know what else would sustain such a high local market for a piece that did not have much value for Western collectors interested in sharp, prismatic crystals.

We negotiated for several minutes and finally reached a price that was equitable for a piece that could be used for a reference collection or analysis. A second man appeared with a bag with a half dozen rounded "marbles" of various colored tourmalines. These pieces had no cutting value and also would only be good for reference. I bought these relatively cheaply, but I did not think that any of my customers would be interested; they would end up as cheap "kid's rocks" at a show, looking like tumbled agate offered in dishes.

I asked if the "marbles" were from here at Minh Tien and was surprised when he said that he had bought them in An Phu. I immediately became concerned about how many locales might exist for tourmaline in the area, but this time having a translator was most helpful. Tam asked him my questions and the answer was that there were very small amounts of alluvial tourmaline found near An Phu in several pits, but that the vast majority and all of the better quality came from this site.

The man who had sold me the first tourmaline then led me up a small hill, and we passed a small reservoir consisting of a bright blue tarpaulin layering a shallow, hand-dug pit barely more than a meter square. The miners utilized this to gather and save drinking water.

We crested the hill and suddenly the main mine appeared before us. It consists of a narrow vertical cleft that had been dug into the steep hillside. My GPS device indicated that it is about 425 feet in elevation above sea level. It was about 6 to 8 meters deep where the miners were currently working, with a flat floor about a meter and a half wide. The miners had worked about 50–60 meters into the hillside and there was a small hole currently being worked near the top of the back side of the mine.

Figure 5. **Prospect pit in alluvium near the Minh Tien mine, where stream-rounded tourmaline crystals have been recovered. Blauwet photo.**

Figure 6. **The Minh Tien mine. Blauwet photo.**

Figure 7. **Tourmaline crystal, 6 cm, from Minh Tien. Paolo Rossi and Fabio Tamahnini specimen; Roberto Appiani photo, courtesy of *Rivista Mineralogica Italiana.***

The walls of this cut alternate in color and texture. Some zones show a hard conglomerate of red gravel and clay, whereas the upper zones are a partially decomposed white limestone that is quite soft. Portions of the pegmatite dike consisting of a decomposed white feldspar are visible below the limestone.

As I walked toward the pit, photographing different angles, I noticed several plate-sized pieces of rock lying in a wheel barrel. One was greenish in color and proved to be massive amazonite. I was thrilled to see this, as there had been reports of translucent to gem-grade pieces of this variety of feldspar from here. When quizzed, the miners replied that they found the sharper prismatic

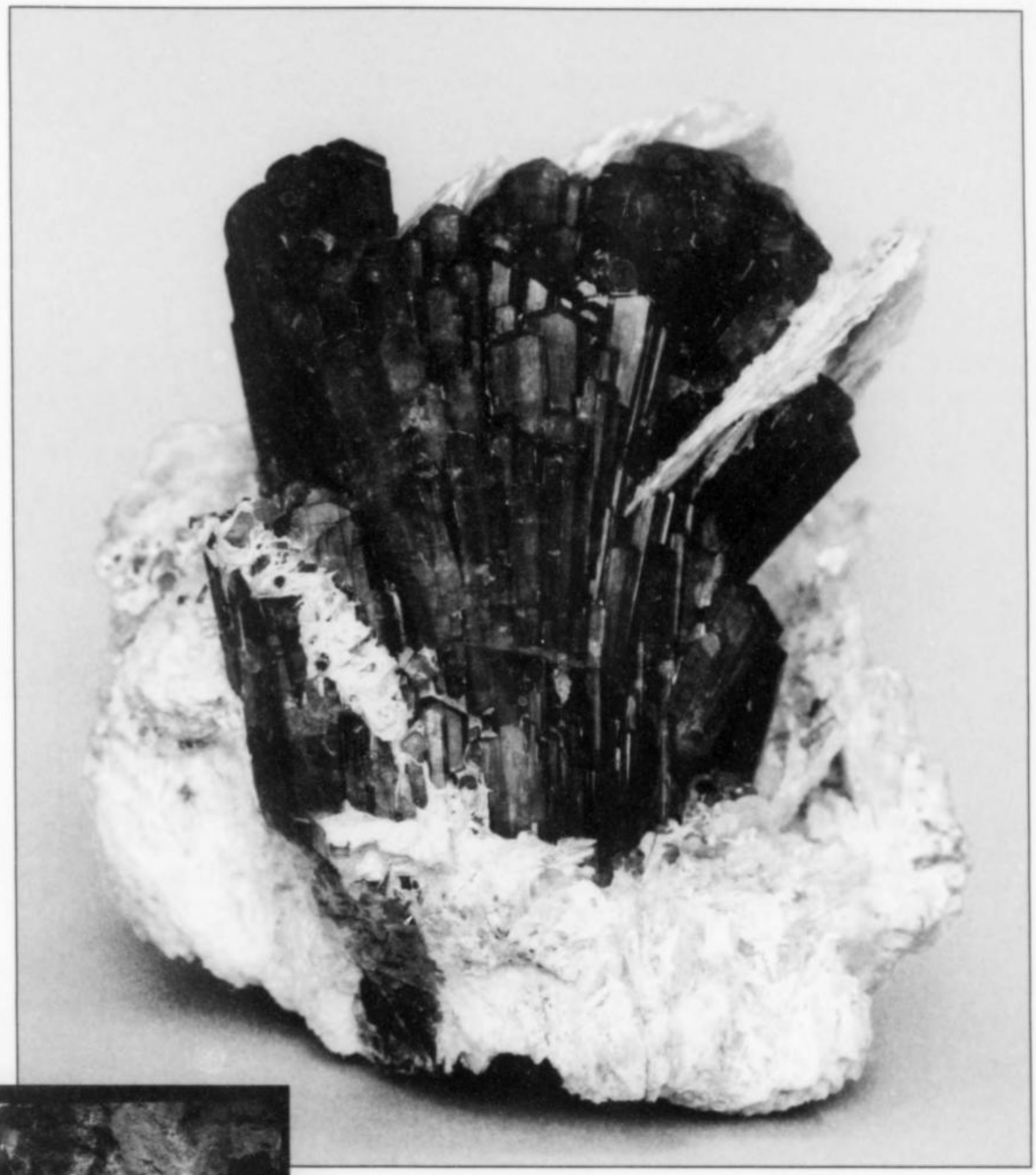


Figure 8. **Tourmaline cluster with white albite, lepidolite and quartz, 12 cm, from Minh Tien. Frédéric Escaut specimen and photo, courtesy of *Lapis*.**

Figure 9. **Excavation where a tourmaline pocket was removed. Blauwet photo.**

tourmaline crystals embedded within these green microcline seams, interspersed with smoky quartz, and that the alluvial specimens were found in the gravels below the mine or within some gravels near the pegmatite at the entrance of the main mine. I did not see any of the amazonite *in situ* in the wall. It apparently had all been extracted, as the miners knew that this was a good indicator for tourmaline.

Only eight or nine people were working the mine; they had started working there about four years ago (in 2002). I was not able to determine how they had known where to start digging, as the area had been covered with scrub jungle, and nothing set it apart from the surrounding countryside. It is quite possible, however, that the deposit was known centuries ago (see inset) and they merely reopened it.

The jovial workers were taking a lunch break and were drinking the bitter green tea from tiny cups and smoking rough Vietnamese tobacco in a 70-cm-long bamboo water pipe. They claimed that work was hard and slow, and that they had recovered only a total of 3 to 4 kilograms of tourmaline in the past year. As one of the workers strummed on a guitar, the others showed me the handful of simple tools—wooden and metal chisels and several splitters and hammers—that they used to excavate the rock. There was a Chinese-made generator that they used for drilling holes in the harder rock, but it was not in use that day, perhaps because of the

high price for diesel fuel or because they were currently working softer rock, and the machine was not needed.

The work looked hard, production was small, and the volume of material removed from the mine was smaller than I had expected. I realized that the relatively high price of tourmaline here may be due to the limited production and the work and time involved. They said that they did not have any other tourmaline to sell, other than the mediocre pieces that I had already purchased. They did produce a 20-cm plate of massive, bright green amazonite microcline interspersed with some smoky quartz and with a portion of white feldspar attached. I was not interested in the piece, as it was not well-crystallized and it was too heavy to easily justify the shipping cost for a reference specimen. But I went to the wheelbarrow and removed a small portion of a much poorer quality amazonite for analysis and they allowed me to put it into my pocket.

Figure 10. Massive amazonite microcline from the Minh Tien mine. The miners consider amazonite to be an indicator that a tourmaline pocket is nearby. Blauwet photo.

Figure 11. Tourmaline crystal, 11.5 cm, from Minh Tien. Paolo Rossi and Fabio Tamahnini specimen; Roberto Appiani photo, courtesy of *Rivista Mineralogica Italiana*.

Figure 12. Tourmaline crystal, 6 cm, on albite and lepidolite, from Minh Tien. Paolo Rossi and Fabio Tamahnini specimen; Roberto Appiani photo, courtesy of *Rivista Mineralogica Italiana*.

I wandered around and above the mine to take some photographs. I found a well trodden path coming off the backside and enquired if this led to another mine, but they said that there was only this one in Minh Tien. Not sure if they were hiding something from me, I ventured down the path. But it only led to piles of broken limestone overburden which had been removed; basically the mine dump. We lingered and enjoyed the company of the cordial crew, and I was glad this time that I had an interpreter, so I could ask basic questions without paging endlessly through my Vietnamese language book.

We had a short discussion with the two sisters and decided to continue onward to An Phu. We descended to the original pits, where I noticed Chien negotiating a short, steep gravel hill in her high heels. I had to laugh again and point at them and her ever smiling face flashed an even bigger smile. I checked my watch and

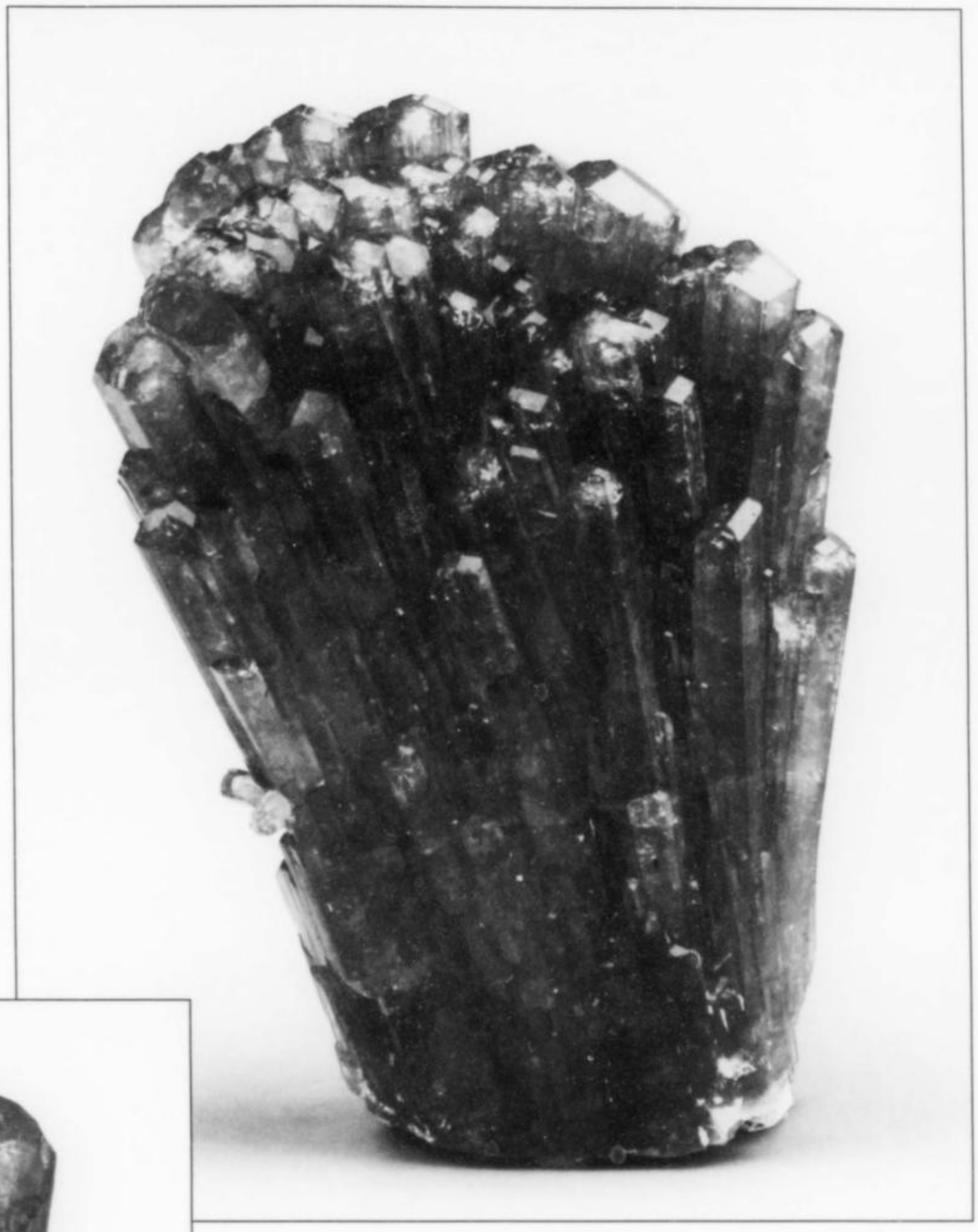
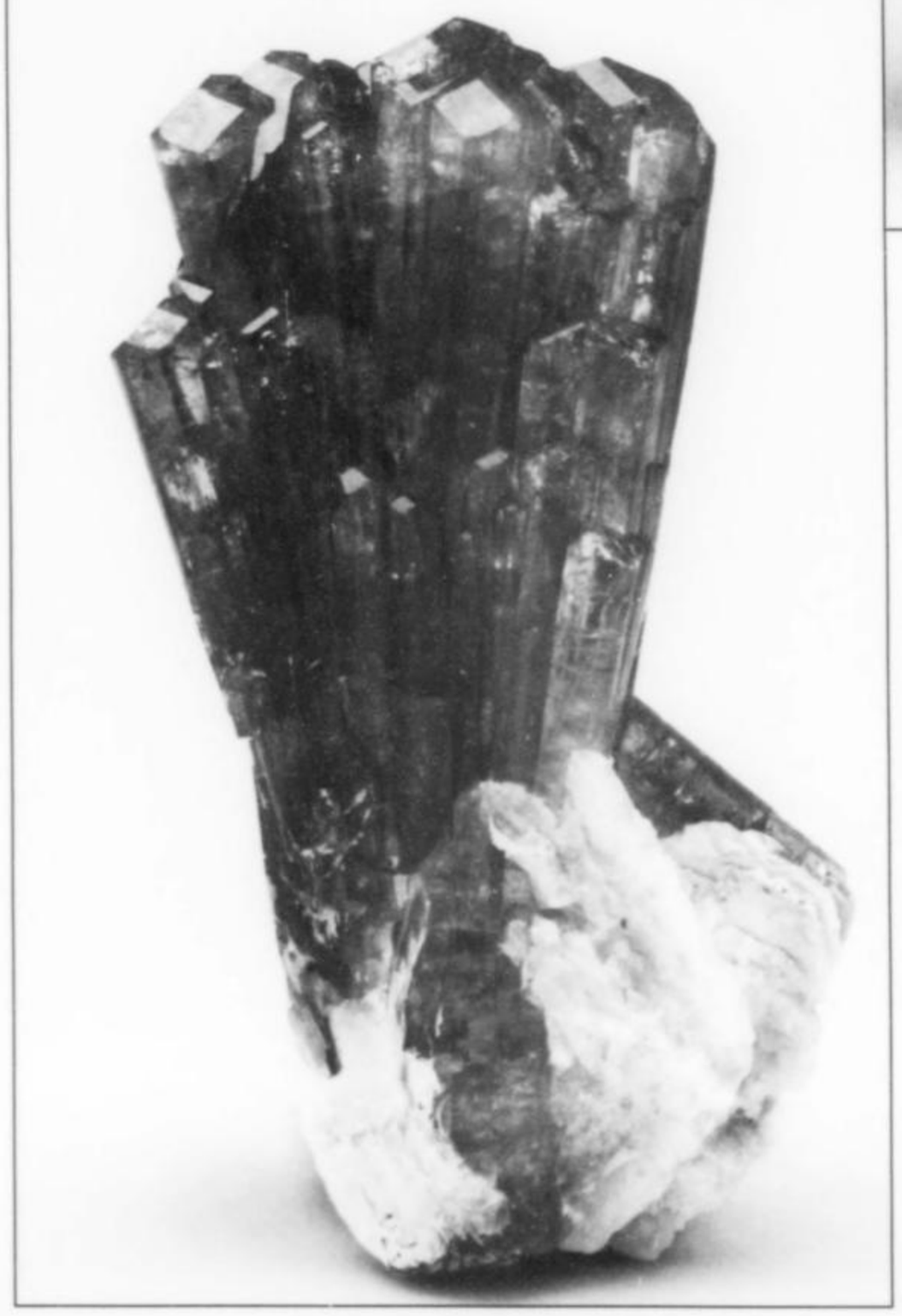


Figure 13. **Tourmaline crystal cluster, 11.5 cm, from Minh Tien. Paolo Rossi and Fabio Tamahnini specimen; Roberto Appiani photo, courtesy of *Rivista Mineralogica Italiana.***

Figure 14. **Tourmaline crystals on albite, 9 cm, from Minh Tien. Paolo Rossi and Fabio Tamahnini specimen; Roberto Appiani photo, courtesy of *Rivista Mineralogica Italiana.***



we returned down the easy path, arriving in less than four minutes at the large traditional house where we had parked the bikes. The woman owner invited us inside and we walked up the steps to a very large, single open room perhaps 15 by 20 meters. It was devoid of almost all furniture, but a fireplace and makeshift kitchen with its pots and pans and utensils occupied one end, while at the other side there was a television set which seemed conspicuously incongruous for this remote area.

We said farewell to the owner and then hopped onto the bikes and motored down the narrow trail back to the main road. We continued on past scattered houses and school children walking home from school carrying their books and sitting stools.

It was less than 8 km to An Phu and we stopped at a restaurant on the edge of this small village. I checked my coordinates and found that we had climbed up to about 900 feet in elevation and were almost directly south of Minh Tien, which was close as the crow flies, but longer by road because of a horseshoe bend.

We then revisited the An Phu mine, and afterward returned to Luc Yen. There I asked again about the big Minh Tien rubellite, which I still had not seen in person. I thought that I was to be shown it at a house in Minh Tien, but that had not happened. Chien informed me that the 1-kg specimen was in Luc Yen.

We scootered over to a slightly more upscale part of the village and pulled up to a sizable house. The owner had the demeanor and

mannerisms of a respected businessman, and performed the ritual making of the green tea. He washed the pot of the old remnants and swirled the waste into the small porcelain cups to clean them, then dumped the contents of each into a small waiting plastic garbage can. He then added fresh green leaves to the pot and added hot water from the ever-present 2-liter insulated jugs. His daughter was about 10 or 12 years old and practiced a little English with me, the first that I had heard from a Luc Yen native.

After sipping the tea, I enquired about the tourmaline through Tam. It had indeed been found at Minh Tien. He reached into an ornate wood and glass cabinet and pulled some respectable specimens out and set them on the table in front of me. None were bad, but only one stood out: a dark reddish purple crystal that looked like it might be liddicoatite. It is a stocky, blocky crystal that appears to be about 6 × 6 cm. I asked the price and it was less than I had expected, but then again I had expected that I would not be able to touch it.

Finally the grand unveiling ritual began for the "killer" tourmaline, with a repeated explanation that the color was better in daylight. The owner went to a back room and returned with a small box with a hinged lid. Whenhe opened the lid, I saw an alluvial lump of tourmaline surrounded by a white cloth. I hid my disappointment and told them that it had nice color. It was a dirty bubble gum pink with one small yellow zone near one termination. It was so weathered that it was actually a little hard to determine the direction of the *c* axis. My imagined immaculate tourmaline "mushroom" in white feldspar turned out to be an internally fractured, rounded, lusterless lump surrounded by a white cloth "matrix."

The next day I packed my belongings, putting the wrapped minerals in a sleeping bag stuff sack in which I had been carrying my clothes and sweater, and deposited it in my duffel bag. The bag now weighed over 25 kg, and the hotel owner's thin son struggled as he carried it to the car. I paid my bill, which was over 1 million dong, and said goodbye to the owner and his family.

We journeyed to Chien's for a last goodbye, a fond friendship having developed between a kind, honest woman and her family and myself, even though they did not speak a word of English. We finished with last minute instructions of how I could be reached in case of a major new find and of my next expected arrival in Vietnam and I left the open-ended house as the sun fought to break free from the habitual shroud over Luc Yen.

I was elated; another fine mineral buying trip had drawn to a close with a new mine visited, a wonderful selection of minerals in my bag, and fondly renewed friendships. I felt an affinity to this area; it was my type of place; a rural mountainous region with an exotic landscape, filled with a gentle, peaceful people. I reflected how difficult and dangerous Pakistan had become and how, after more than 50 trips, even that place could be boring despite its spectacular views.

I had similar feelings about northern Vietnam as I had when I had journeyed to Mogok in northern Burma in the late 1990's. Geologically, Mogok is quite similar to Luc Yen, with a bit of Wild West edge and the perpetual optimism of miners hoping to open a major pocket. Apparently few foreigners were coming to this region and I had been particularly welcomed and respected for trying to learn their language and customs. Also the extended family really appreciated the *Mineralogical Record* article on An Phu that I had given to them, and Chien particularly enjoyed seeing the photo of herself with her mineral cabinet. As I happily mused over memories, I vowed that this place would again be in my future, as I had found a new home along the endless road that I have traveled.

Once again a special thanks is extended to Chien and her family, without which this article could not have been produced, and to Bill Smith for reviewing the manuscript. Thanks again!

[***Editor's Note:*** A longer, unabridged version of Dudley's text can be found on our *Axis* website.]

Tourmaline
from the
Minh Tien Pegmatite
Luc Yen Mining District, Yenbai Province, Vietnam

Wendell E. Wilson
The Mineralogical Record
4631 Paseo Tubutama
Tucson, Arizona 85750

The Minh Tien pegmatite, located a few kilometers southeast of the town of Luc Yen in northern Vietnam, has yielded large and attractive divergent clusters of pink and raspberry-red to yellow-green and yellow-orange tourmaline (elbaite, rossmanite and possibly liddicoatite) in recent years. The first published reference to a specimen from the occurrence (though the site is not named) may well date back to 1795.

THE AVA TOURMALINE

Between 1811 and 1820 James Sowerby (1757–1822) published a series of installments of descriptive text with hand-colored engravings of mineral specimens from countries outside of Great Britain, calling it *Exotic Mineralogy*. The illustration shown here was issued July 1, 1817, and depicts a tourmaline specimen in the British Museum which is essentially identical in habit and similar in size and color to the recently found specimens from the Minh Tien pegmatite; in addition, the coloring pattern of red ("rubellite") capped by a yellow-orange to pink zone may well be distinctive. Sowerby writes as follows about the specimen:

> Although Rubellite is only a variety of Tourmaline, it is such an interesting one, that I have thought a figure of the most famous specimen yet known in the world, would be acceptable: it is that presented to Col. Symes by the King of Ava, in whose territories it was found. From Col. Symes it passed into the Grevillian collection, with which it was purchased, having been valued at £500 (I was told that it was once valued by an eminent Oryktognost at 1000 guineas), for the British Museum, where it now stands, the pride of the mineral collection. It consists of a scopiform group of nine-sided prisms, terminated by trihedral pyramids, the prism in the centre of the group is the longest; on three sides of this the surrounding crystals are gradually shorter, forming a rugged trihedral pyramid. . . . The interior of the mass is a deep reddish purple colour, and so intense as to be almost opaque; but the surface is of a yellowish brown colour; and between the two [zones] the crystals are transparent, and of a pink colour.

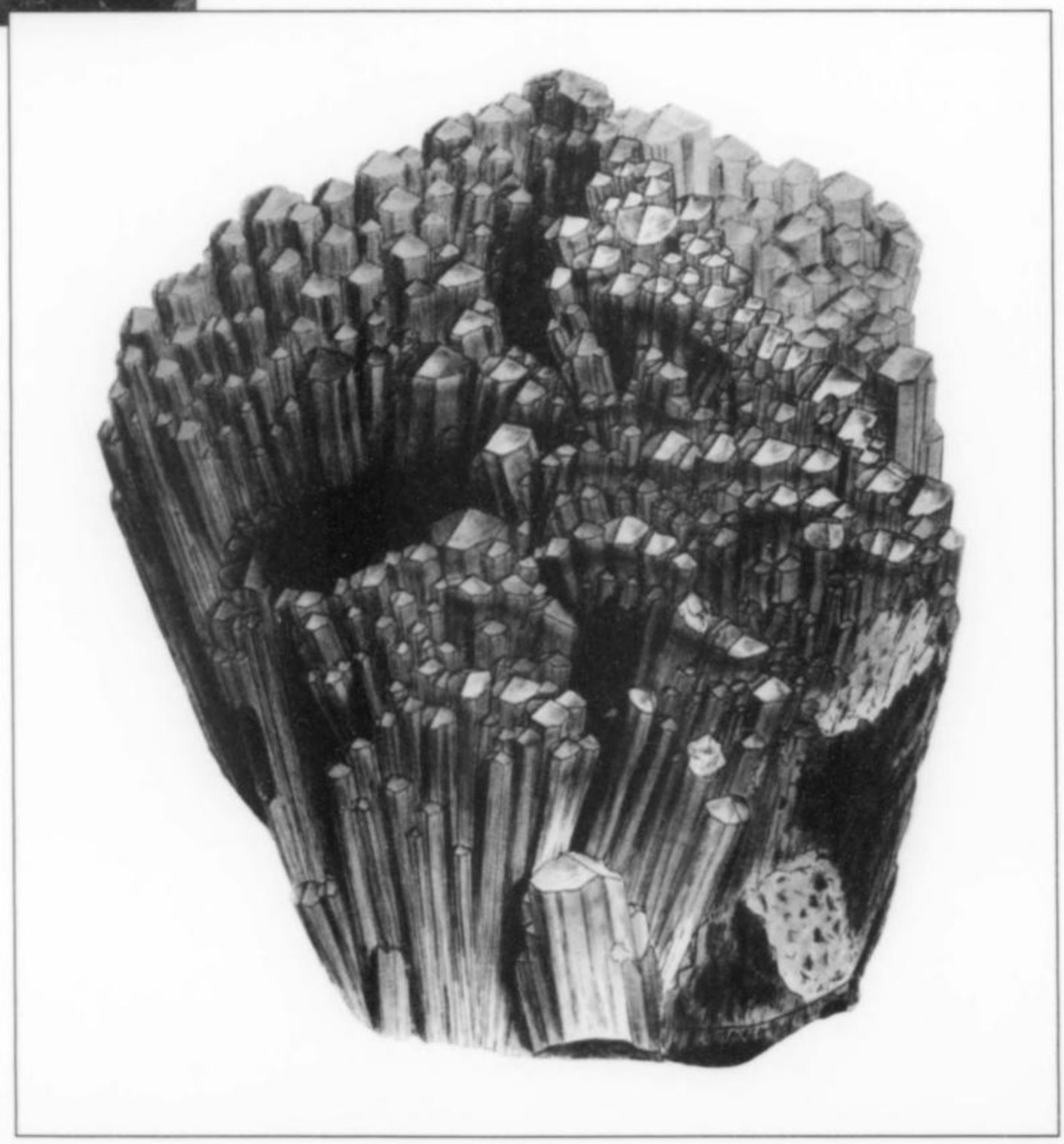
Because Sowerby illustrated all of his specimens natural size, we can measure the actual size directly from the hand-painted illustration as 19.3 cm.

Ava was an ancient capital city of Burma dating to at least the 14th century. Following the British conquest of Lower Burma during the second Anglo-Burmese War in 1852–1853, Upper Burma was generally referred to as the "Kingdom of Ava." King Shembuan Mia Shean Minderagee Praw ruled there from 1781 to 1819, and it was he who presented the tourmaline to Col. Symes. A tremendous earthquake in 1841 did extensive damage to the city, and it was abandoned; another earthquake in 1939 completed the destruction. The Ava palaces were all destroyed, and today only archeological ruins remain of the ancient capital, now called Innwa.

"Col. Symes," the original recipient of the tourmaline specimen, was Major Michael Symes of the British 76th Regiment, who was an agent of the Governor-General of India at the time. In 1800 he published *An Account of an Embassy to the Kingdom of Ava, sent*

Figure 1. **Ruins of a palace or temple in the ancient city of Ava (now called Innwa) in Burma, perhaps the very place where King Mindergee Praw presented the Ava tourmaline (a large Minh Tien elbaite and liddicoatite cluster) to Major Michael Symes in 1795.**

Figure 2. **The Ava tourmaline (attributed to the Minh Tien pegmatite in modern-day Vietnam), as illustrated in James Sowerby's *Exotic Mineralogy* (1817).**



by the Governor-General of India, in the year 1795. In it he mentions the tourmaline specimen:

> The form of receiving the presents, which were brought to me as a return for those that had been given, occupied a considerable portion of the last days. One of the three boxes that had been sent by the King contained amber in large pieces, uncommonly pure; another, a mass of stone of considerable size, in appearance resembling the chrysoprase; and the third, a large and beautiful group of crystals, rising from a matrix of amethyst, in the form of prisms, mostly hexagonal or pentagonal, slightly striated on the surface, and terminated at one end by a pyramid composed of three rhomboidal planes. It was a very curious production of nature, and doubtless, coming from such a quarter, must have been accounted of great value.

The "amethyst" referred to by Symes was surely just reddish purple tourmaline. The "chrysoprase" may well have been amazonite microcline from the same deposit. A letter from the King to Sir John Shore, the Governor-General of India whom Symes was representing, also refers to the gifts he presented, including "to Captain Symes, a precious stone, called Mobee, weighing three viss and forty tackall." One viss equals 1.633 kg, and a tical is a hundredth of that, so the "Mobee" weighed 5.55 kg, or about 12 pounds.

The "Grevillian collection" to which Sowerby says the specimen passed was that of Charles Francis Greville (1749-1809), English statesman, botanist and mineralogist. He collected minerals for more than 36 years, eventually building a collection of nearly 15,000 specimens. His collection was curated by the Count de Bournon, and was sold to the British Museum in 1810 for £13,727 (Wilson, 1994). The Ava tourmaline is still on exhibit there today.

Figure 3. **A 15-cm tourmaline cluster collected at the Minh Tien pegmatite in 2004–2005. Paolo Rossi and Fabio Tamagnini specimen; Roberto Appiani photo, courtesy of *Rivista Mineralogica Italiana*.**

RECENT FINDS

The Minh Tien mine, despite its early history, was virtually unknown to the modern mineral world until June of 2004. Local miners (probably inspired by the productivity of the nearby An Phu corundum/spinel locality; Blauwet, 2006) prospected there and broke into a substantial pocket measuring about 1 × 1 × 1.5 meters (Russo and Escaut, 2006). It proved to contain attractive, pastel-red tourmaline crystals with lepidolite and amazonite microcline. Several hundred loose crystals up to 8 cm in size were recovered, as well as a large 3-kg matrix specimen and 20 beautiful cabinet specimens of tourmaline on quartz crystals and lepidolite. Most of the loose tourmaline crystals show flat attachment points where they grew on large muscovite books up to 20 cm across. The crystals form subparallel, diverging clusters which are wider at the top than at the base, capped by a multiplicity of small, individual rhombohedral terminations (usually a dominant first-order and a subsidiary second-order rhombohedron, the latter forming rectangular faces separating the faces of the former).

After this initial pocket had been cleaned out, the owner of the pegmatite brought in additional workers in an attempt to locate more pockets. At first their efforts were unsuccessful; however, in August 2005 they encountered a second, even larger pocket measuring about 1 × 1.5 × 2.5 meters, at a depth of about 6 meters. The crystal habit of these specimens is similar to that of specimens from the 2004 pocket, but the pink portions of the crystals have a more intense color, grading into a deep raspberry-red. About 80 lustrous, single crystals measuring 5 to 18 cm were recovered, plus several very impressive matrix specimens that certainly rank among the finest in the world for the species.

Since March of 2006, six local miners have continued to work the pegmatite, but have found very little. Alluvial deposits downhill and downstream from the pegmatite have yielded some heavily stream-rounded crystals, but because they are insufficiently gemmy to be faceted, they have little value. Considering the relatively small size of the pegmatite and the primitive mining methods being used, it is uncertain whether additional tourmaline pockets will be found.

COMPOSITION

Chemical analyses of different specimens of tourmaline from Minh Tien have given varying results. Russo and Escaut (2006) wrote as follows (my translation) concerning the composition of the tourmaline:

> The first chemical analyses of the dark-pink to pastel-red tourmaline crystals at the University of Milan showed that the transparent pastel-red to greenish yellow zones are sufficiently calcium-rich to be called liddicoatite. The darker core portions, which occur only in some crystals, are a more sodium-rich elbaite.
>
> Additional new analyses (by X-ray diffraction, EMS, and Atomic Absorption Spectroscopy) conducted at the Hanoi University of Science and the Resarch Institute of Geology and Mineral Resources of Vietnam indicated that the pegmatite minerals are enriched in alkali metals; this applies particularly to tourmaline (Li), albite (cleavelandite), amazonite microcline (Rb) and lepidolite (Li, Rb, Cs).

Tamagnini (2007) contradicted this description as follows (my translation):

> In the past the tourmaline from this locality has generally been sold (including on the Internet) as liddicoatite. However, there has never been an analysis published, and the source of the identification has never been cited. It seemed therefore appropriate to send some study specimens to the laboratory of the Natural History Museum of Milan for investigation. Fragments representing the center (core) of the crystals and the periphery of the prisms of tourmaline, as well as fragments representing the various colors, and fragments from the two terminations (analog and antilog) of crystals, have been analyzed via microprobe EDS. Preliminary results indicate elbaite, nearly pure to weakly calcian. Only a few fragments from the most peripheral areas of some crystals

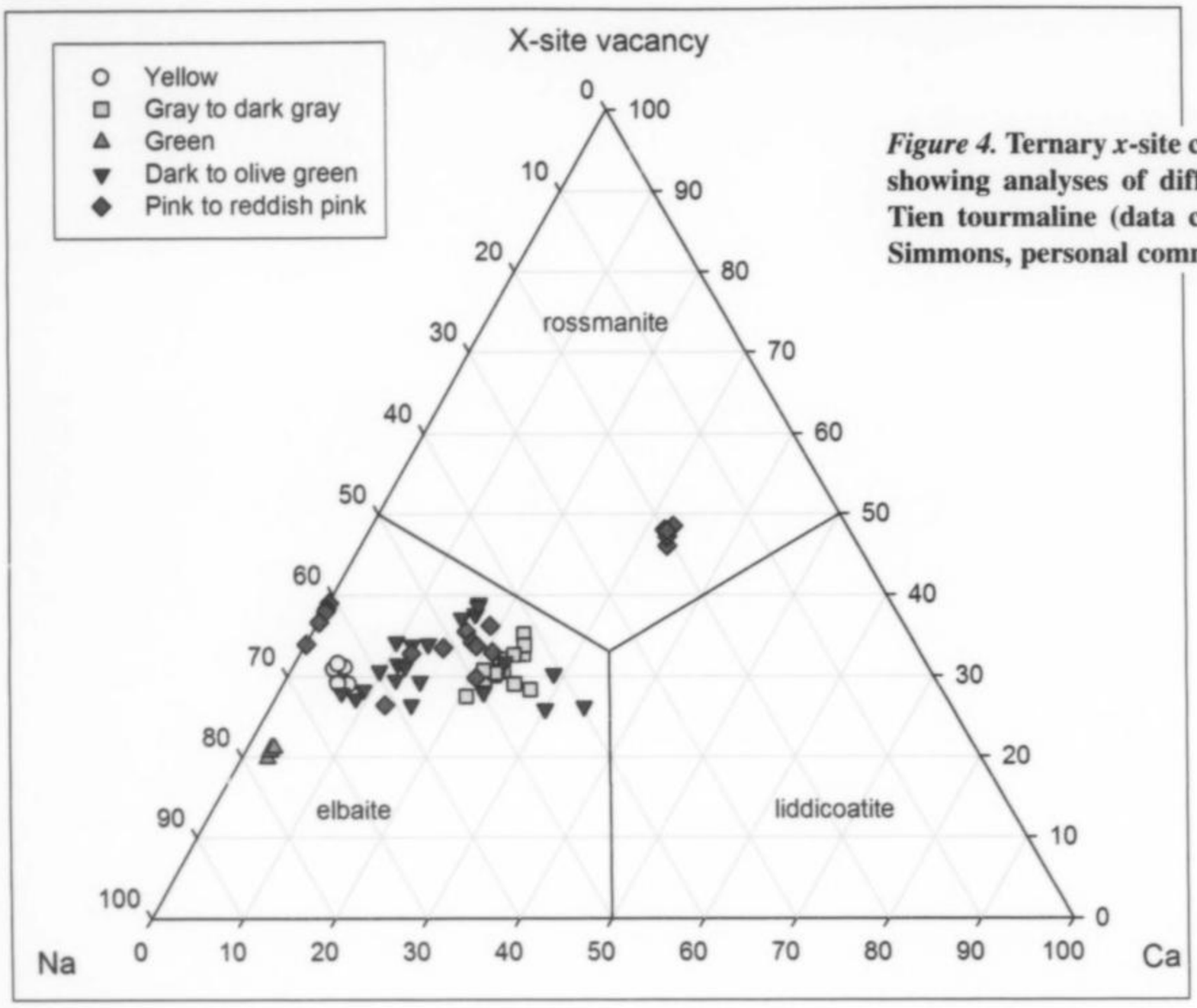


Figure 4. **Ternary *x*-site compositional diagram showing analyses of different colors of Minh Tien tourmaline (data courtesy of Wiliam B. Simmons, personal communication).**

Table 1. **Chemical analyses of tourmaline samples from the Minh Tien pegmatite, Vietnam.**

	Elbaite Pink	Elbaite Yellow	Elbaite Gray	Elbaite Green	Elbaite Olive	Ross-manite Pink
SiO_2	36.62	36.68	36.35	36.35	36.52	36.65
TiO_2	0.03	0.01	bdl	0.14	0.26	bdl
B_2O_{3calc}	10.97	11.01	10.75	10.85	10.82	11.04
Al_2O_3	42.17	42.61	38.07	39.15	38.83	42.70
Bi_2O_3	bdl	bdl	0.01	bdl	0.01	bdl
V_2O_3	bdl	bdl	bdl	bdl	0.01	bdl
FeO	0.13	0.15	0.57	4.88	3.40	bdl
MnO	0.46	0.02	6.08	0.53	2.18	0.02
MgO	bdl	bdl	bdl	0.03	0.04	bdl
CaO	0.65	0.33	1.32	0.16	0.94	1.93
ZnO	0.01	0.03	0.02	bdl	0.01	bdl
Li_2O_{calc}	1.95	1.98	1.46	1.53	1.53	2.07
Na_2O	1.77	2.09	1.47	2.45	1.67	0.65
K_2O	0.02	0.03	0.02	0.04	0.02	0.01
H_2O_{calc}	3.24	3.25	3.31	3.12	3.21	3.23
F	1.16	1.17	0.85	1.32	1.11	1.22
Subtotal	99.17	99.36	100.28	100.85	100.55	99.51
O=F	0.49	0.49	0.36	0.55	0.47	0.51
Total:	98.69	98.87	99.92	100.29	100.08	99.00

Analyzed with an ARL-SEMQ electron microprobe, using an accellerating voltage of 15 kV, a beam current of 15 nA, a spot size of 2 mm, and 100-second count times for each spot.
bdl = below detection limit
In addition, Cu, Pb, Ba, Cr, Sc and Cl were analyzed for but were below the detection limit.
Contents of B_2O_3, Li_2O and H_2O were calculated by stoichiometry.

show an enrichment in calcium, and the amount is insufficient to indicate the presence of liddicoatite.

William B. Simmons (personal communication), of the University of New Orleans Department of Earth and Environmental Sciences, recently analyzed samples of several different colors and found that nearly all are **elbaite**, $Na(Al_{1.5}Li_{1.5})Al_6(BO_3)_3[Si_6O_{18}](OH)_4$. A few pink to reddish pink samples, however, proved to be the tourmaline species **rossmanite**, $\square(LiAl_2)Al_6(Si_6O_{18})(BO_3)_3(OH)_4$. The peculiar thing about rossmanite is the low occupancy of the *x* site (□), and an increase in the ratio of Al to Li in the *y* site. As can be seen from the ternary diagram (Fig. 4), an analysis which focuses solely on the Na:Ca ratio in order to distinguish between **liddicoatite** $Ca(Al_{1.5}Li_{1.5})Al_6(BO_3)_3[Si_6O_{18}](OH,O)_4$ and elbaite (idealized end-member formulas are shown here) will point toward liddicoatite, with Ca indeed predominating over Na. However, it is important to take the *x*-site vacancies into account—which can be done by simple calculation—because the identification of results showing Ca>Na can shift to rossmanite as shown in the plot. In fact, many of the elbaite analyses show significant vacancies in the *x* site and plot surprisingly close the the elbaite/rossmanite boundary. This is not to say that all previously identified liddicoatite is actually rossmanite, but since the numbers from those analyses have not been published, and it is not known whether vacancies were taken into account in interpreting those results, the liddocoatite identification requires confirmation. Simmons' analytical data are shown in Table 1.

AMAZONITE

At the IMS-sponsored Cambridge, England Meeting "Frontiers in Mineralogy" in late June of 2007, Robert F. Martin (representing Maria Sokolov and Jeffrey Patterson) presented a paper on "The unusual 'noble' amazonitic orthoclase in the Minh Tien 'hybrid' granitic pegmatite, Luc Yen district, Vietnam." They reported

analyses revealing a significant lead level in some tourmalines. Their abstract, which contains interesting genetic information as well, is as follows:

> Among all the occurrences of amazonitic K-feldspar in the world, that found recently in the Minh Tien granitic pegmatite, Luc Yen district, Vietnam, is quite unusual on several counts. Perhaps the most obvious distinction in some of this material is its transparency, which led to the qualifier "noble", and thus its potential as a semiprecious gem. The transparency is due to the lack of exsolution lamellae in some samples. To explain the preservation of orthoclase instead of microcline, one must propose a pegmatitic fluid that was likely carbothermal rather than dominantly aqueous, and one that escaped at a high temperature, certainly above the field of stability of microcline, *i.e.*, above 450ºC. The wallrocks consist of Cambrian marble, evaporitic sequences and pelitic material metamorphosed to the upper amphibolite facies. The area is exploited for gem-quality corundum (ruby and sapphire). Previous investigators have documented the inception of partial melting at between 40 and 23 Ma, as a result of decompression of the deep crust during regional left-lateral shearing. Our preliminary data on the composition of the transparent green orthoclase (donated by the GIA) indicates up to 0.81 wt.% PbO and, on average, 14.17% K_2O, 1.43% Na_2O, 0.65% Rb_2O, and a level of Cs (above 750 ppm) that saturated the detectors. Other notable levels of enrichment are 101 ppm Ga, 448 ppm Li, 49 ppm Th, 54 ppm Nb, 98 ppm Ta and 67 ppm Y. Calcium, Ba, Sr, La and Ce are close to the detection limits. Preliminary analyses of color-zoned tourmaline from the same pegmatite indicate bluish liddicoatite containing up to 6.8% PbO zoned to pink, Pb-free elbaite. The pegmatite, obviously highly fractionated, began its life as a NYF pegmatite, indicative of an extensional tectonic regime. It later became contaminated by the wallrocks, which caused a late influx of Ca, B, and H_2O, which catalyzed exsolution and loss of transparency locally. Minh Tien offers an example of a so-called hybrid pegmatite in which part of the early assemblage has somehow survived the customary deuteric stage.

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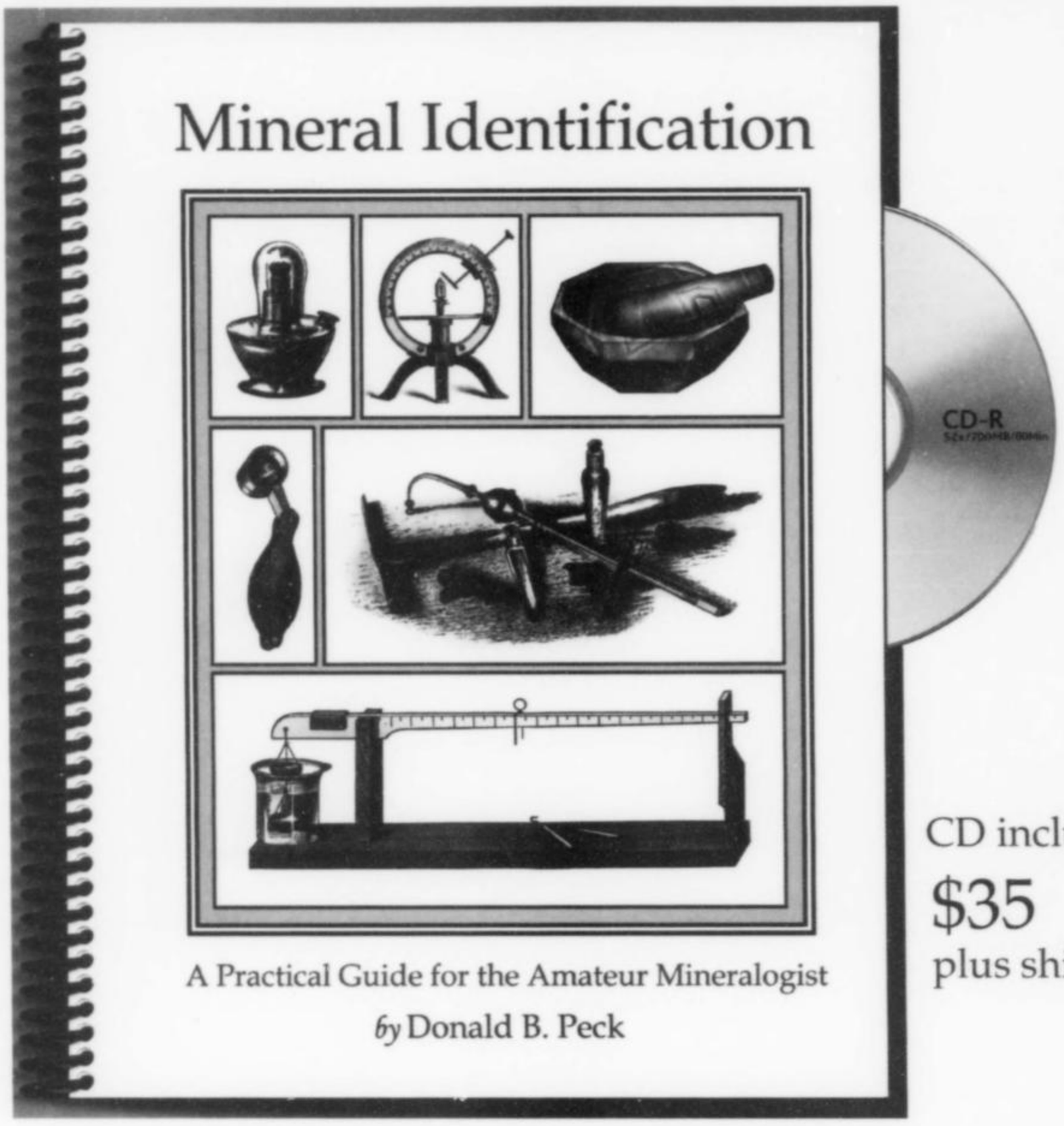

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John Grieger started a mineral business from his Pasadena home in 1930 and grew to be one of the principal suppliers of mineral specimens and lapidary materials in southern California. His wealthy friend and collecting partner, Thomas Warner, bankrolled the operation for a few years following the Depression, but was primarily interested in building his own fabulous collection of pegmatite gem minerals.

John M. Grieger (1910–1981)

John Miller Grieger was born in Indiana on June 17, 1910, the son of Emma Miller (1883–1955) and William John Grieger (1883-1961), a clothing merchant and insurance/real estate salesman who owned his own business. John grew up in Michigan City, Indiana, until his family—including his sister Ruth and brother Phillip—moved to Pasadena, California in 1924. One of his teachers at Pasadena High School, Edwin Van Amringe, taught a course in geology at the junior college level, and Grieger became so interested that he was made a lab assistant, and was soon hooked on mineral collecting. He attended the California Institute of Technology for a year, though he did not receive a degree.

By 1930 (at the age of 20) Grieger felt confident enough to start his own mineral and lapidary business, selling specimens from a converted garage at his family's home at 405 Ninita Parkway in Pasadena. He lacked cash for buying specimens, so he collected great quantities of howlite nodules in Tick Canyon, cut and polished them using his homemade lapidary equipment, and traded them to mineral dealers in Europe, receiving European mineral specimens in exchange.

Grieger's March 1933 ad in *Rocks & Minerals* offered a free booklet entitled *The Gems of San Diego Co., California* (written by E. V. Van Amringe), as an introductory premium for new customers. His first ad in *The Oregon Mineralogist* in December 1933 offered a stock of several thousand terminated California tourmaline crystals. In 1933 he also offered his first mail mineral auction of "choice crystallized minerals" and gem material; the auction was apparently not successful and was not repeated. His June 1934 ad in *Rocks & Minerals* proclaimed: "John M. Grieger, Dealer in choice cabinet specimens and California Gem Minerals and Gems, 405 Ninita Parkway, Pasadena, California." In October of that year he published an article in *The Oregon Mineralogist* entitled "San Diego County, California—gem mines not exhausted."

Figure 1. **John M. Grieger in 1936.**

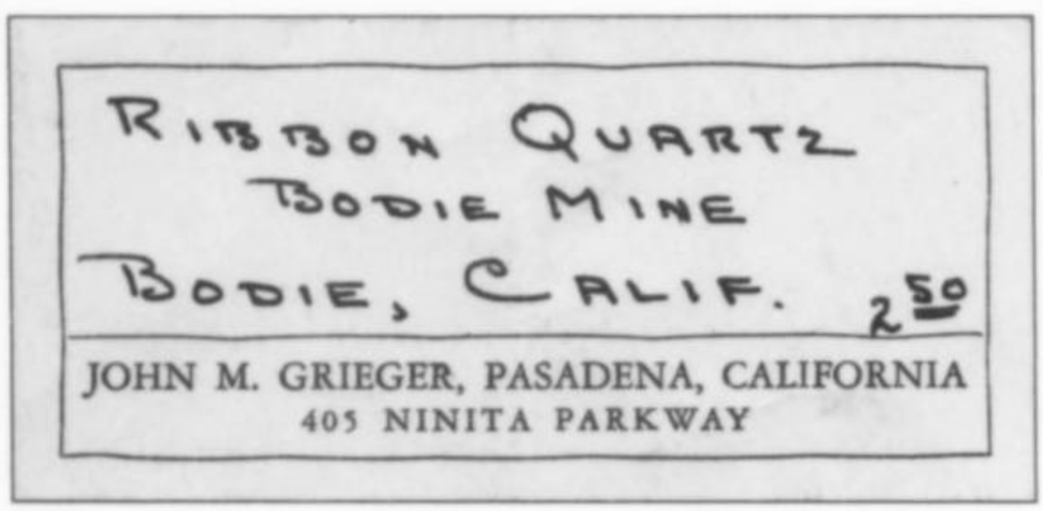


Figure 2. **Label from John Grieger's personal collection (1920's–1936).**

Field collecting was an important source of specimens for Grieger in his early years. In the spring of 1935 Grieger and his younger collecting partner, Thomas W. Warner Jr., spent eight weeks in Pala, California making an exhaustive survey of the local gem pegmatites, and intensively mining three claims for kunzite spodumene. He visited the White Queen claim, the original locality for kunzite, was given a personally conducted tour by pioneer pegmatite miner Fred Sickler, and was allowed to collect on Sickler's dumps. By 1936 Grieger was considered to be one of the leading distributors of mineral specimens, mineralogy books and gem materials in the West.

Grieger's first love was always crystal specimens, and his early ads in the 1930's dealt almost entirely with collector crystals and specimens, but the economics of running a business meant that he eventually had to deal predominantly (though not exclusively) in gem rough and lapidary equipment. He opened an "outdoor mineral shop" adjacent to his indoor facilities, with bins for inexpensive specimens and lapidary material; the finer specimens were kept indoors.

Thomas Warner (1915–1955)

Thomas W. "Tommie" Warner was born in Toledo, Ohio in February 1915, and in 1921 moved with his family to Pasadena, California. He was the son of Nettie and Thomas W. Warner, Sr. (1874–1947), one of the founders of the Borg-Warner Corporation

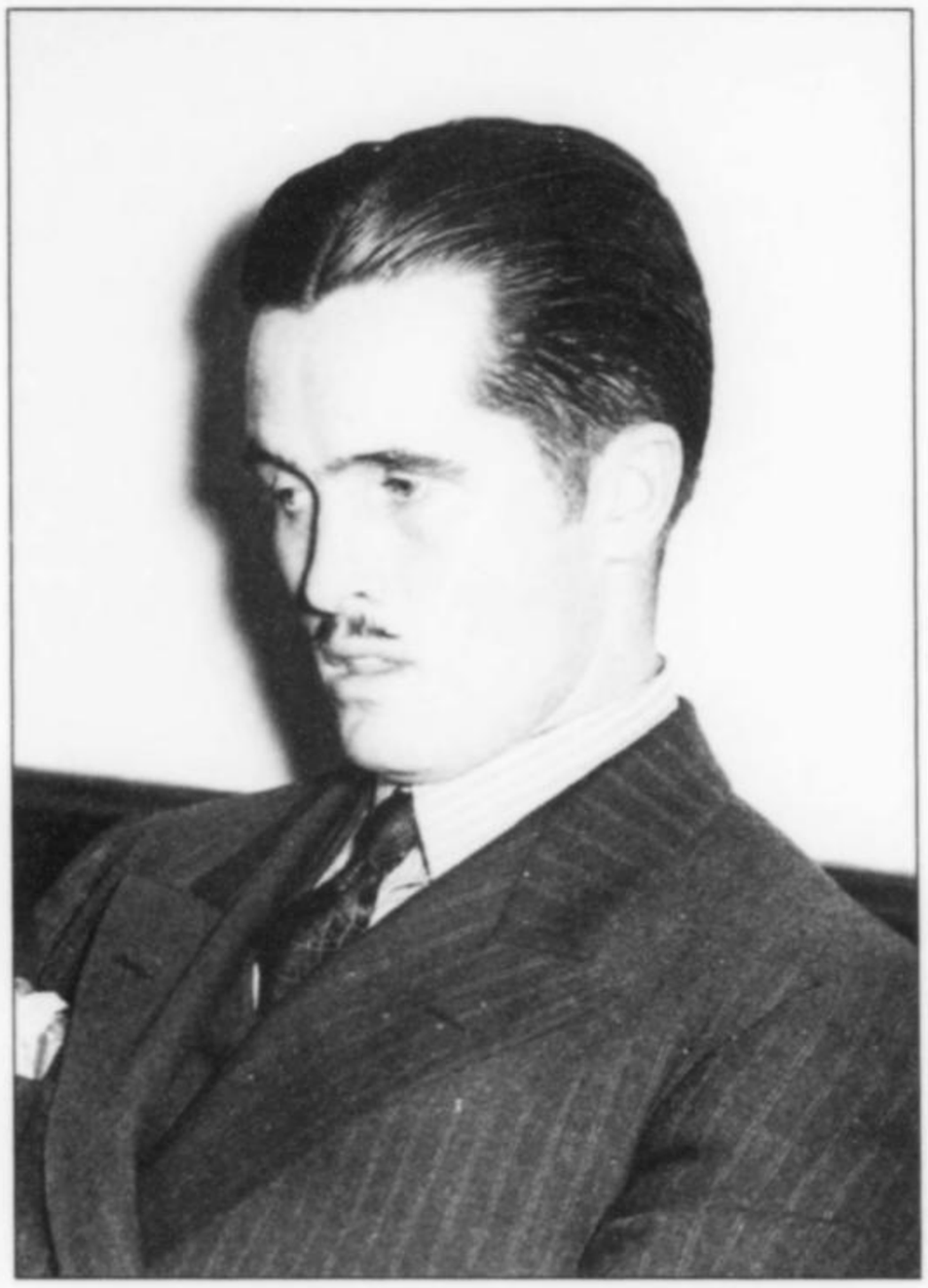


Figure 3. **Thomas W. Warner, Jr. in 1937. (AP Images photo.)**

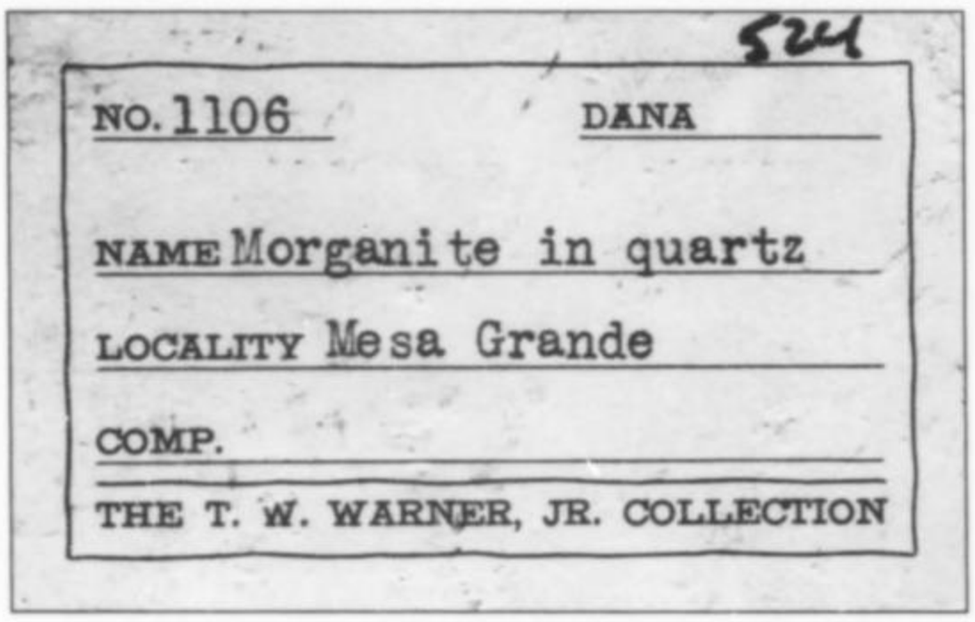


Figure 4. **Label from Thomas Warner's personal collection (1930s–1955).**

in 1928, a long-time Director of General Motors and a very wealthy man; the Warner home in Pasadena was valued at $300,000 in 1930 and had three live-in servants. Warner (Jr.) collected California pegmatite minerals, especially tourmaline. In the spring of 1935 (as mentioned above) he and his collecting partner, John Grieger, spent eight weeks in Pala, California making an exhaustive survey of the local gem pegmatites, and intensively mining three claims for kunzite spodumene.

In March 1935, A. E. Van Amringe described Warner's large and extensive collection in an article in *The Mineralogist* entitled "World's best tourmaline collection." Bear in mind when reading this description that Warner was only 20 years old at the time. Even considering that it was a money-is-no-object collection, it seems remarkable that such a large collection could have been built by a 20-year-old.

> It has recently been the privilege of the author to examine in detail the amazing gem and mineral collection of Mr. Thomas

W. Warner, Jr. of Pasadena, California. Housed in a special room lined with lighted display cases and shelves, walls adorned with frames of beautiful cut gems, the accumulation is enough to bring forth cries of admiration and tears of envy from the lover of minerals. Each one of the 5,500 specimens is especially selected and beautifully displayed. Mr. Warner specializes in tourmaline, and the greater portion of the collection consists of this mineral, although other material is shown. So far as can be learned, the Warner collection is by far the finest tourmaline collection in existence—over 100,000 carats of gem material alone. Over 75% of the tourmalines are from California localities, but all well-known localities are represented.

The outstanding examples in the Warner collection are 28 enormous crystals of tourmaline showing the deepest rose color imaginable; these average over 1 pound in weight, some being 6 inches in length and nearly 3 inches in diameter. Five are doubly terminated and many are bicolored; those with rose changing to a fine deep blue are especially attractive. These remarkable and valuable gem crystals were recently recovered from the basement of a lodging house in Los Angeles, where they had remained in storage for over 30 years [since before 1905] and their value unrealized. They had never passed from the hands of the Hiriart family, discoverers of the great tourmaline mines in Pala, San Diego County, California in 1903.

Other noteworthy tourmalines include a beautiful pink crystal nearly 4 inches in diameter, included in a large, terminated quartz crystal. . . . In addition to the California material, other localities are well represented; Brazil by a choice group of flawless crystals of a deep green color. Second only to the tourmalines comes an astounding array of the gem varieties of spodumene from San Diego County, ranging in color from dark violet kunzite, through lilac, straw-yellow, colorless, and blue-green to green hiddenite. Most of the [uncut crystals] exhibit interesting crystal faces, twinning planes and etch figures. [There are] 32 flawless specimens ranging from 1 to 6 ounces in weight, with 15 over 3 ounces each.

The forms of beryl are well shown, [including] a large emerald matrix specimen, and one of the finest aquamarine crystals ever mined at Pala. Two huge, fine-colored morganite crystals from Mesa Grande, California never fail to bring gasps of wonder from the viewers. One of these valuable morganite crystals weighs 3 pounds, and when found was covered with crystals of lepidolite. . . . The other morganite crystal weighs 40 ounces and presents 12 perfectly formed faces. . . . It was one of a pair recently found in an abandoned portion of the Himalaya mine.

Among the miscellaneous specimens of special interest, Amringe noted the following:

(1) A 12-ounce fine blue topaz crystal from the Mount Lily mine at Aguanga, California.

(2) Five fine matrix specimens of benitoite and neptunite with joaquinite.

Figure 5. **Red elbaite crystal, 9 cm, from the Stewart Lithia mine, Mesa Grande district, California. Thomas Warner collection, now in the California Institute of Technology collection (Catalog no. CIT-15038); photo courtesy of George Rossman.**

Figure 6. **Elbaite, 10 cm, from the Tourmaline King mine, Mesa Grande district, California. Thomas Warner collection, now in the California Institute of Technology collection (Catalog no. CIT-15042); photo courtesy of George Rossman.**

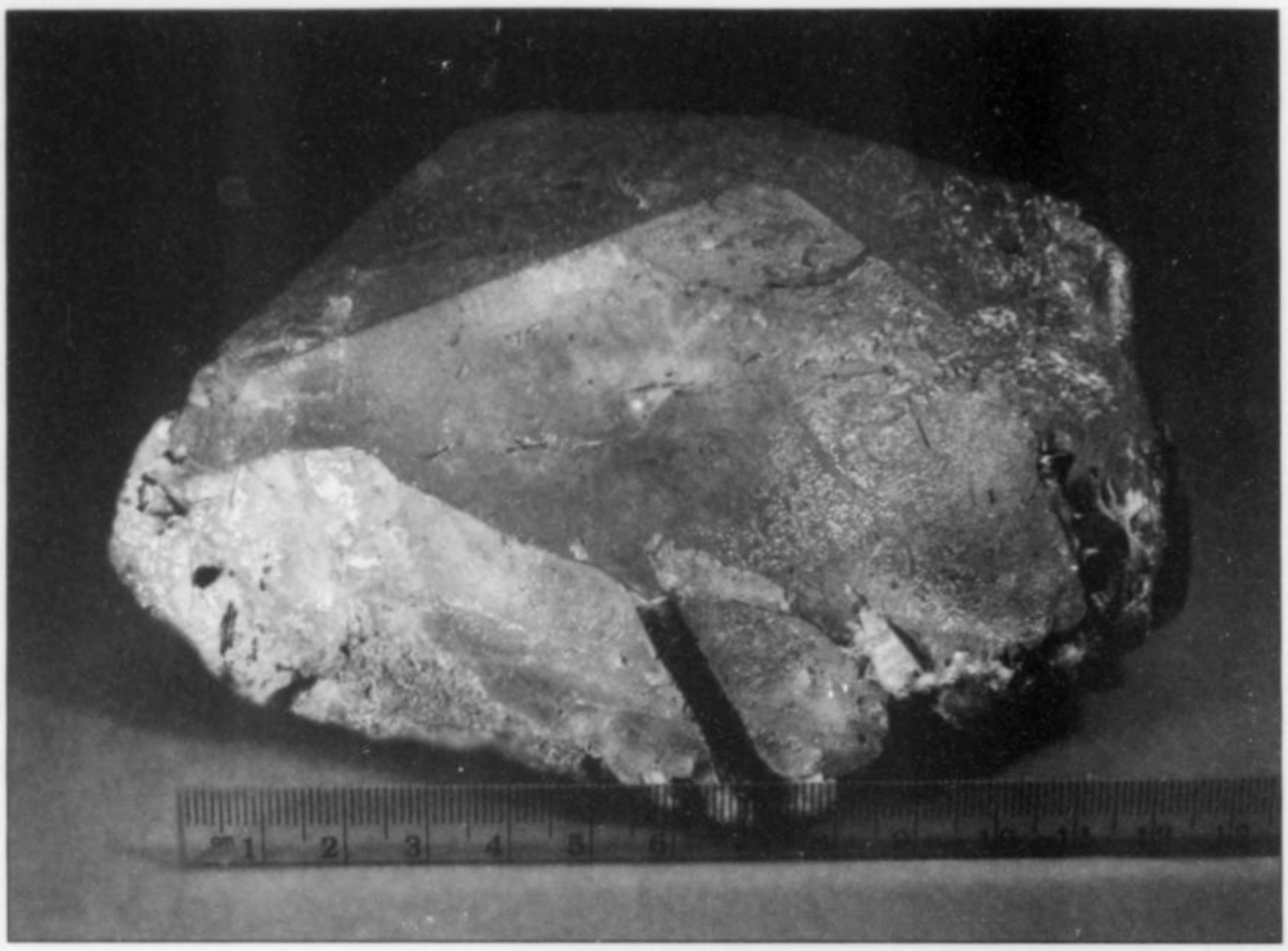


Figure 7. **Morganite beryl crystal, 13 cm, from the Mesa Grande district, California (probably the White Queen mine or Tourmaline Queen mine). Thomas Warner collection, now in the California Institute of Technology collection (Catalog no. CIT-15024); photo courtesy of George Rossman.**

Figure 8. **Kunzite spodumene crystal, 17 cm, from the Pala Chief mine, Mesa Grande district, California. Thomas Warner collection, now in the California Institute of Technology collection (Catalog no. CIT-15049); photo courtesy of George Rossman.**

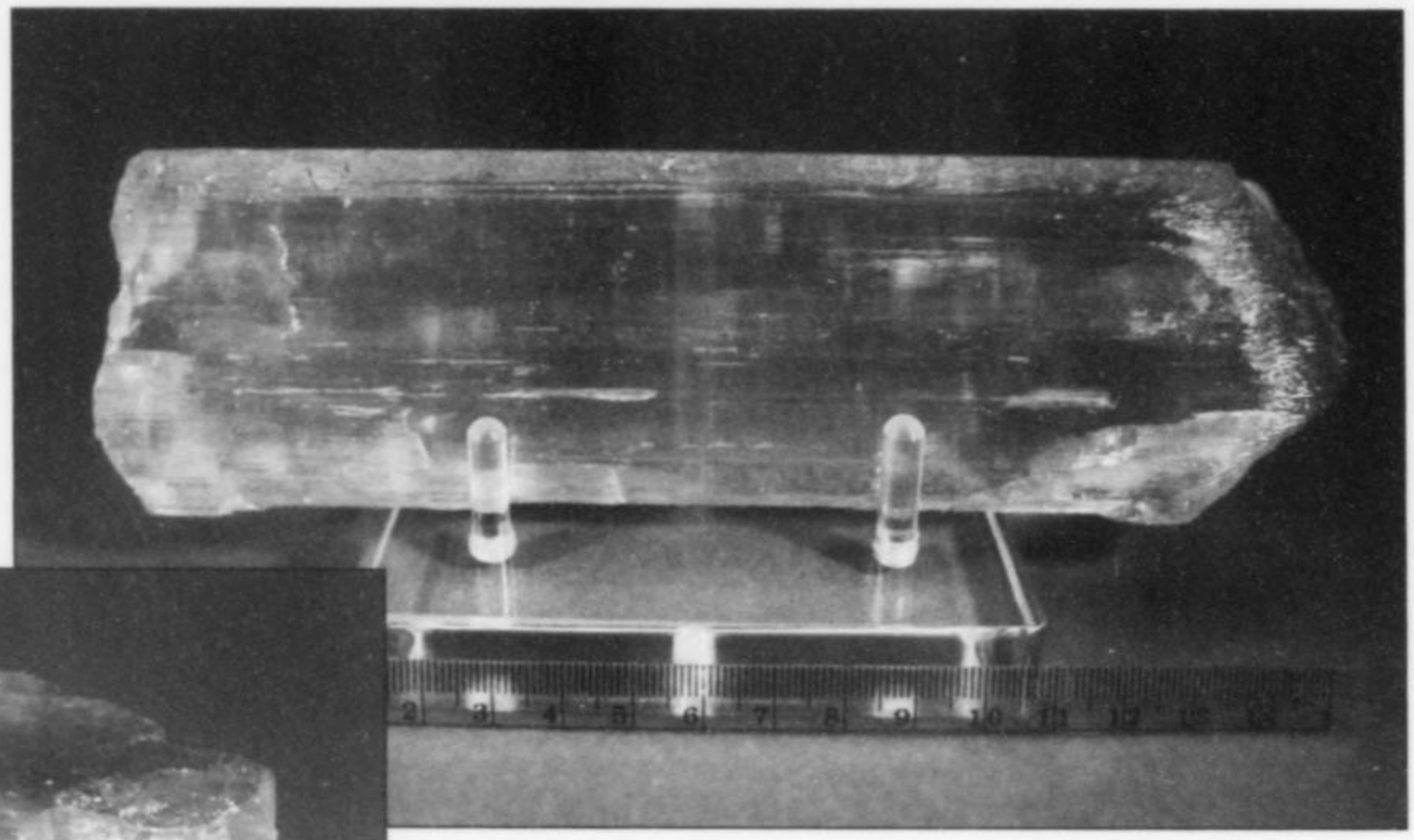
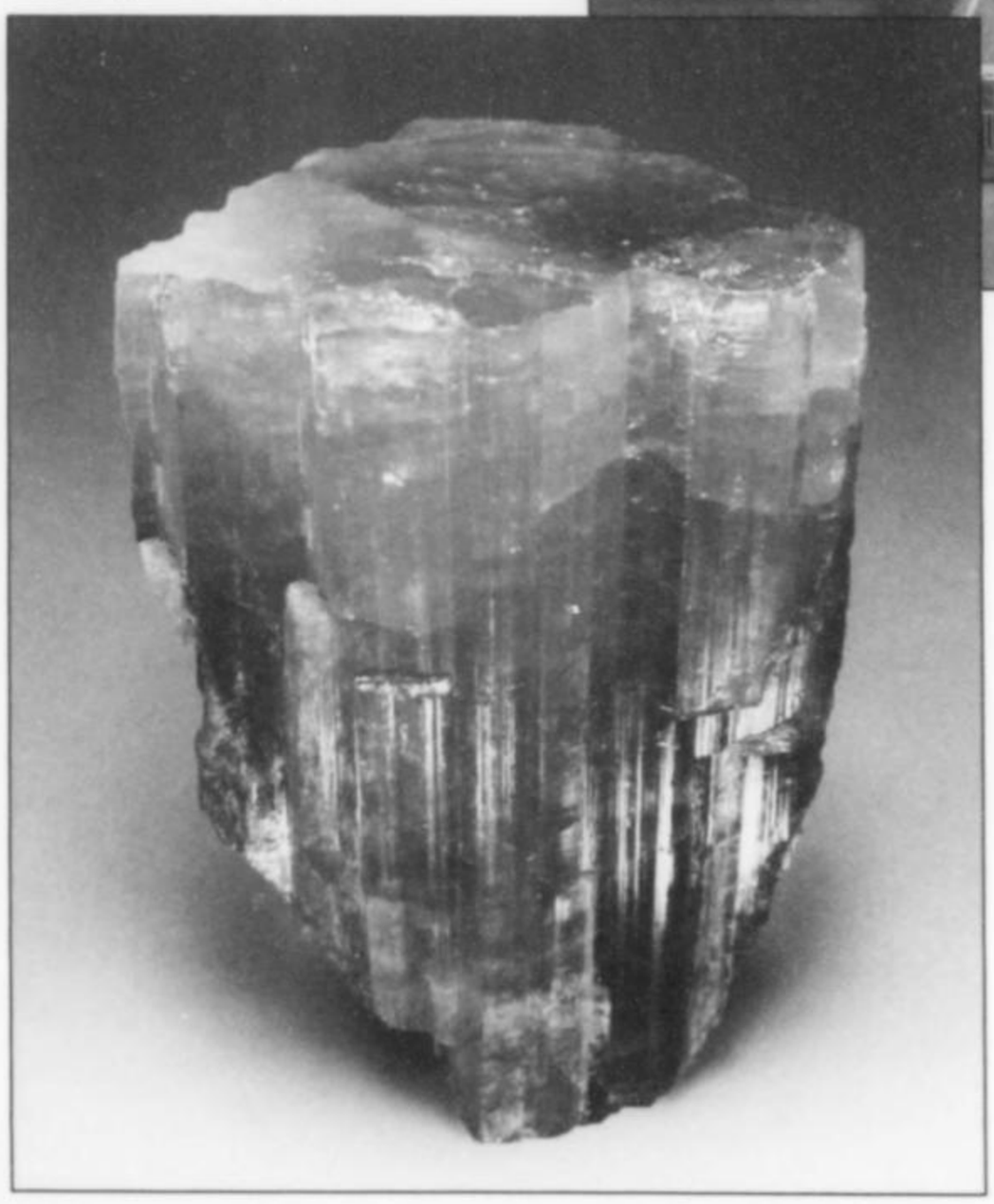


Figure 9. **Elbaite, 7 cm, from the Stewart Lithia mine, Mesa Grande district, California. Thomas Warner collection, now in the California Institute of Technology collection (Catalog no. CIT-15032); photo courtesy of George Rossman.**



(3) One of the largest groups of stibnite crystals ever found in the United States (from the White Caps mine at Manhattan, Nevada).

(4) Large 10-pound masses and crystallizations of malachite and azurite from Bisbee, Arizona.

(5) Lavender-colored groups of fluorite from Illinois, with crystals up to 3 inches.

(6) A large representation of carefully selected calcite, marcasite, sphalerite and dolomites from Missouri and Oklahoma.

(7) A beautifully mounted meteoritic iron of exquisite symmetry weighing 84 pounds, the only representative of a fall in northern Tibet; the specimen had reputedly been an object of religious veneration by the local residents for centuries.

Warner & Grieger

In 1936 Tommie Warner joined the business (founded in 1930) of his friend and field-collecting partner, John Grieger, under the new company name of *Warner & Grieger*. Money was probably scarce in the Grieger family so soon after the Depression, and the wealthy Warner

Figure 10. **The outdoor portion of Warner & Grieger's store in 1941.**

most likely supplied an infusion of operating capital as his contribution to the partnership; thus he was listed first in the company name.

Warner was already fast becoming a well-known playboy (he owned a $20,000 private plane, a $17,000 Duesenberg, a $17,000 yacht and an $8,000 speedboat), and appears to have had no interest in actual work. Aside from helping a friend, his motivation may well have been to put himself in a better position to acquire fine specimens for his personal collection via the business.

With Warner's backing, the new company of *Warner & Grieger* was able to acquire good lots of Bisbee copper minerals, Canyon

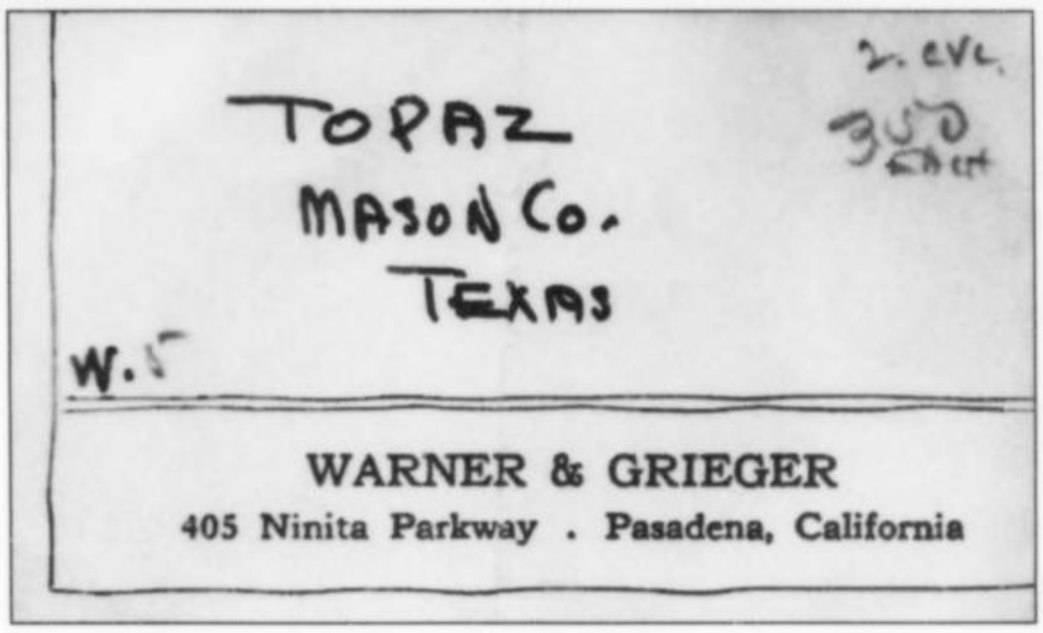


Figure 12. **Early label from Warner & Grieger (ca. 1936–1940).**

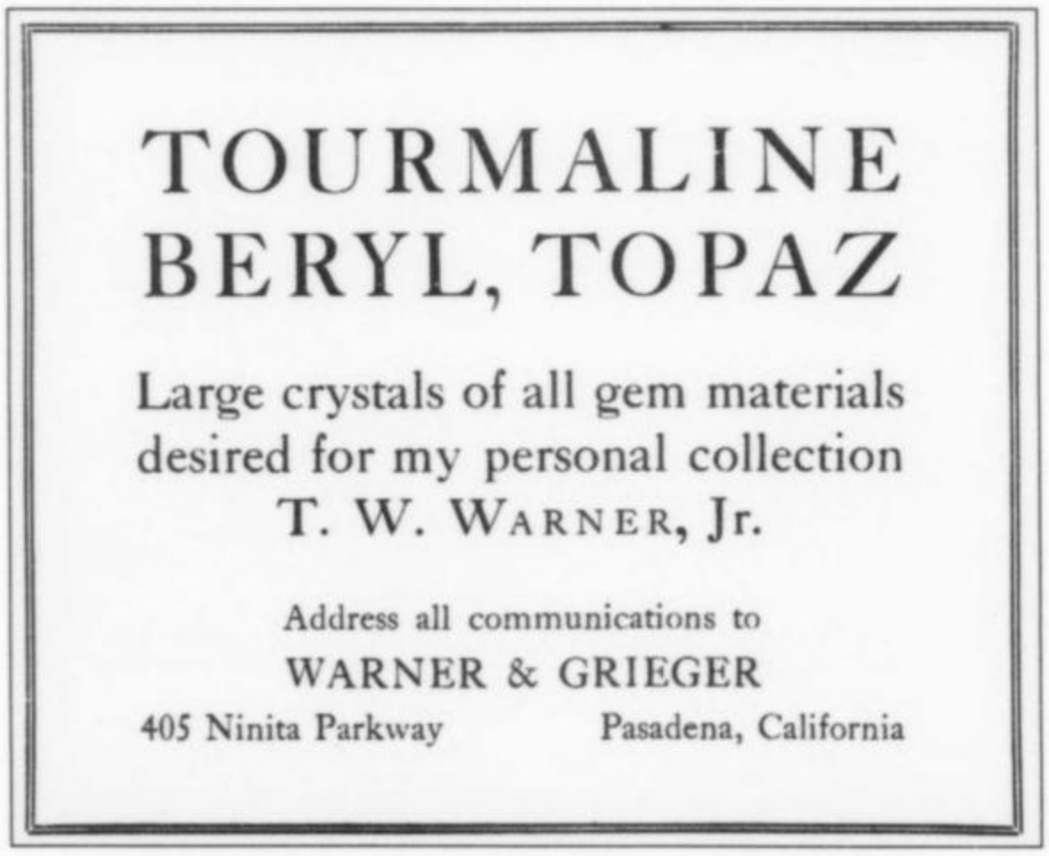


Figure 11. **Thomas Warner's January 1937 ad offering to buy specimens for his personal collection.**

Diablo meteorites, California benitoite, Yugoslavian wulfenite (Helena mine at Miess—a collection assembled by the mine foreman there), Romanian and Central European minerals, Elba pyrite, Virgin Valley opals (collector specimens), native silver from the Rural mine in Mineral Park (Arizona), a comprehensive selection of minerals from Tsumeb and Klein Spitzkoppe in South-West Africa, English minerals including fluorite, barite, witherite, torbernite and cuprite—all in 1936–1937. Catalogs of crystallized mineral specimens for sale were issued regularly. They advertised "new mineral shipments arriving weekly," and that appears not to have been an exaggeration. They also offered a variety of mineral books, including old and rare as well as new titles.

In January 1937 Warner also advertised on behalf of building his own collection:

> Tourmaline, Beryl, Topaz. Large crystals of all gem materials desired for my personal collection. T. W. Warner, Jr. Address all communications to Warner & Grieger, 405 Ninita Parkway, Pasadena, California.

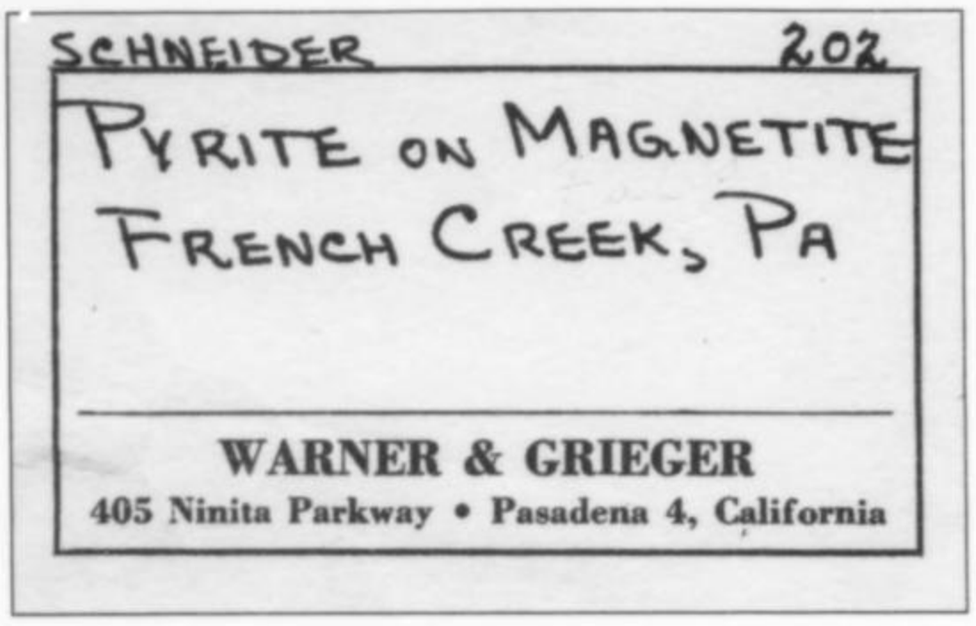


Figure 13. **Later label from Warner & Grieger (ca. 1940–1946).**

In March 1937, *Warner & Grieger* purchased the specimen holdings of the Frank Salmons estate. Salmons was an early farmer and pegmatite miner in the Pala area; he had claimed the Tourmaline Queen and Pala Chief mines in 1903—the Pala Chief being a major source of gem spodumene. The cache consisted of a large number of specimens and gem-quality crystals of white, yellow and lilac-colored spodumene. Flawless crystals to 12 ounces and collector-quality crystals to 40 ounces were included in the lot. Warner no doubt kept a few of the finer pieces for himself.

In July of 1937 Warner traveled to South America in search of specimens for the company—and no doubt for himself as well; the company announced that "on June 1st Mr. Warner shipped 7 large cases filled with choice specimens," including terminated emerald crystals in matrix.

Despite his strong interest in minerals, Warner's tangled love life appears to have occupied much of his attention. In 1937, a Los Angeles private detective, Mrs. Pearl Antibus, sued Thomas Warner, Sr. for $1,260,000. Her story was that police hired by Mr. Warner had broken into her apartment and had beaten her. Mr. Warner's reply was that the police and agents for the District Attorney had gone to rescue his son, whom he thought was being held captive by Mrs. Antibus and Mrs. Jean MacDonald, a beautiful blonde divorcee. Thomas Warner Jr.'s explanation was that he had hired Mrs. Antibus to ascertain whether Mrs. MacDonald's romantic interest in him was sincere or mercenary. Assured (thanks to a dictaphone which Mrs. Antibus had secretly hidden in Mrs. MacDonald's room) that Mrs. MacDonald was sincere, he had gone to visit Mrs. Antibus at her apartment, where Mrs. MacDonald joined them and where police later found her dressed in shorts watching him shave. While Los Angeles newspapers were headlining young Warner as a "love captive," he left on a yachting trip. Asked to clear up the confusion, Mr. Warner Sr. snapped: "I am very much annoyed."

Young Warner announced in October 1937 that he was giving up his night-clubbing ways and was becoming an airplane dealer, selling a fast, sporty model at the Los Angeles Municipal Airport. "I'm in business now and intend to make a success of it," he said, but that business was short-lived. So was a subsequent venture into the manufacturing of three-wheeled roadsters. He divorced his first wife, Virginia, and married Jean MacDonald in Las Vegas the following year (together they had one son, Thomas Warner IV, in 1943; Thomas "Jr." was actually Thomas III). That union did not last either, and following the divorce he married actress Anne Stirling. They divorced as well, and he then married actress Anita Lipton (whose screen name was Nora Perry) in 1946, who by 1950 was filing for separation on account of Warner's infidelity with a dozen other women.

Meanwhile, John Grieger continued to work hard at the *Warner & Grieger* store. Joplin, Missouri and Tri-state minerals were regularly offered in 1936–1937, probably from the famous dealer Fred "Boodle" Lane (1892–1962). A January 1939 ad for *Warner & Grieger* read:

> Boodle Lane says "You don't have to go to Joplin, Missouri to buy good Tri-state minerals. I sold all my best ones to Johnnie Grieger." Yes, that's right. For the past year Boodle Lane has been saving all his choicest specimens and packing them up to take to the annual convention of the Mineralogical Society of America in New York City during December. Our California sunshine looked better to Boodle than ice-covered roads so he headed out this way. He never got farther than our place with his load of minerals. It was such a wonderful group of choice specimens that we couldn't resist buying them all. When Boodle left that same day our shop was stacked with trays of the finest Tri-state minerals we have ever seen, and our bank balance read $18. We hope your bank balance is better than ours, as we would like to swap some of these choice specimens for a few banknotes.

The company offered a group of specimens of Sardinian yellow smithsonite in November 1939, and Prince of Wales Island epidote,

Figure 14. **Warner & Grieger ad from April 1937 announcing their purchase of the specimen collection and stock of the late Frank Salmons, a pioneer miner in the California pegmatite district.**

blue barite from Sterling, Colorado, red tourmaline crystals from San Jose da Safira in Brazil, and red beryl crystals from Utah in 1940. They (probably just Grieger) took a 3,000-mile buying trip through Mexico, obtaining gypsum crystal clusters from Naica.

Warner & Grieger announced in December 1940 their purchase of the "Famous Clawson Collection of Bisbee minerals," mainly "superbly crystallized azurites" considered to be the "finest specimens ever available at Bisbee." This must have been the collection of Spencer W. Clawson (1848–ca.1925), mine foreman at Bisbee, who in 1895 built what is now known as the (purportedly haunted) Clawson House Inn atop Clawson Hill, adjacent to Castle Rock in Bisbee. The announcement is interesting because 27 years earlier, in 1913 (while Clawson was still alive and living in Los Angeles), "the S. W. Clawson Collection of Bisbee Copper Ores" was presented to the Los Angeles Chamber of Mines and Oil (now known as the Western States Petroleum Association) by Thomas Thorkildsen and J. O. Royer, in a cabinet donated by J. Ross Clark and Seeley W. Mudd. That collection was subsequently donated to the Natural History Museum of Los Angeles County a few years later, in 1921, and is preserved there today (A. R. Kampf, personal communication). It would appear that the specimens donated by Thorkildsen and Royer comprised only a portion of the Clawson Collection, acquired from Clawson himself. *Warner & Grieger* did not state how or from whom they had obtained their portion of the collection in 1940, but Clawson had died by 1930 so it was most likely obtained from Clawson's widow, Lois, who died in Los Angeles in 1943.

In April 1941 *Warner & Grieger* received a substantial lot of Tiger, Arizona minerals, and in September they acquired a large lot of iridescent marcasite/pyrite stalactites from Missouri and a superb lot of purple fluorite from Illinois-Kentucky in cubes to 10 cm, some with marcasite and doubly terminated quartz crystals on the fluorite crystal faces. In November they advertised a 35-year-old lot of fine Himalaya mine tourmaline crystals from California that had originally been shipped to London for cutting and had remained there in storage all that time; colors included red, pink, green, and the rare yellow, in singly and doubly terminated crystals.

In April 1942, *Warner & Grieger* announced the acquisition of a large lot of fine wulfenite from the Ahumada mine, Los Lamentos, Mexico, purchased from "three private collectors" (probably California collectors Wendell Stewart, Louis Vance and Earl Calvert). Their 1943 "Jubilee Catalog" listed 30 pages of mineral specimens, 33 pages of lapidary materials and equipment, two pages of fossils, four pages of fluorescent minerals, and eight pages of books and magazines.

It is clear that by October 1942 Warner was no longer actively involved in *Warner & Grieger.* With John Grieger leaving to serve in the Army during the war, his father, William J. Grieger, took over the management of the business—no mention was made of Warner. Grieger's sister and her husband also helped keep the business running. By that time, the space devoted to advertising mineral specimens vs. lapidary material was shrinking markedly, and it appears that their emphasis was shifting predominantly to lapidary rough and fluorescent minerals (the elder Grieger's specialty).

John Grieger returned from the Service in 1944, and in April 1945 *Warner & Grieger* bought out the entire stock of Clarence L. Brock's mineral dealership, *The American Mineral Exchange* in Houston, Texas—10,000 pounds of specimens from Paterson and Franklin, New Jersey, Barringer Hill in Texas, and many other localities.

In 1946 a long-standing problem with zoning restrictions finally forced *Warner & Grieger* to move their shop out of the residential area where Grieger and his parents lived (which was across the street from the Mayor's home). When the shop reopened at its new location, 1633 E. Walnut Street in Pasadena, it was called *Grieger's*

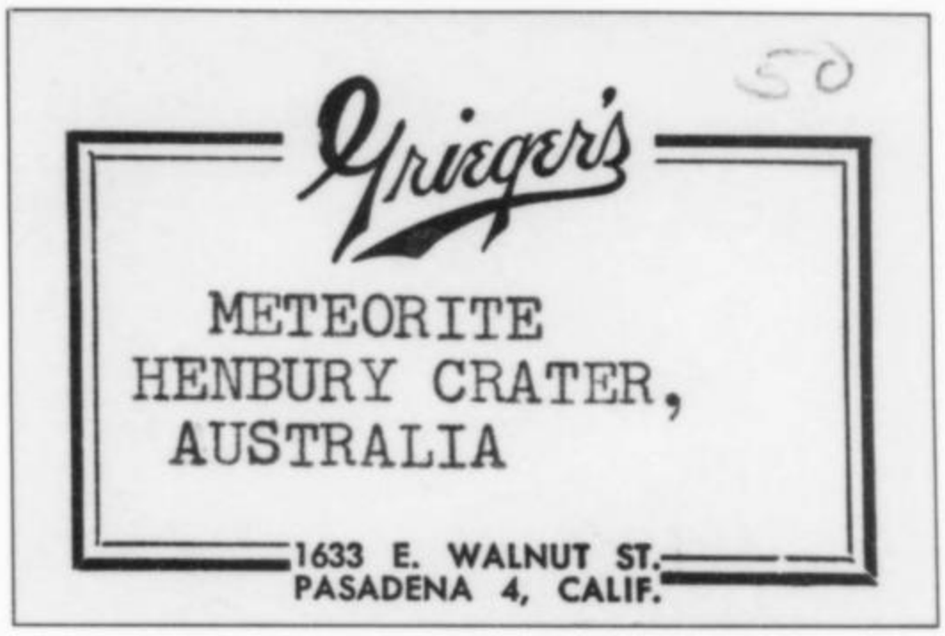


Figure 15. **Early label from the post-war Grieger's (script logo), ca. 1946–1953.**

Gems & Minerals (shortened to just *Grieger's* in 1948). Warner had sold his interest to Grieger and had moved on to other things by then; Warner's father died the following year and he inherited a large fortune.

Grieger's

The new *Grieger's* advertised primarily gem materials, but also carried "superb specimens of Mexican wulfenite," probably from Los Lamentos, and "choice specimens of a new find of crystallized anglesite." In August 1946 he announced his acquisition of the "largest and finest lot of brazilianite crystals ever sent to this country. Superb crystals at $4.00 to $35.00 each. One-inch crystals with clean, lustrous faces; nice gemmy crystals though not flawless gem stock. Excellent value-special at $12.50 each."

In June 1947 it was time to remodel the shop, and Grieger once again chose to emphasize the mineral specimens, claiming that he would have 100,000 mineral specimens in stock . . . "You will see more Rocks than Rockefeller—You will have more fun than Coney Island. Specimens from all over the world will be on display." Eventually he rented another house at 1657 E. Walnut, and then another next door to that one. Even more space was later acquired at 1715–1719 E. Walnut.

In September 1948 *Grieger's* issued a lavish 160-page, 9 × 12-inch *Encyclopedia and Supercatalog* with a sewn binding and laminated cover—an extensive section on mineral specimens was included. The 1950 edition was even larger—192 pages, with new, informative articles by various authors.

In September 1952 Grieger increased the promotion of mineral specimens, establishing a "new mineral department" and issuing a new 12-page mineral catalog listing several hundred modestly priced mineral varieties for the beginner, student or prospector. Specimens for the advanced collector were not included—buyers would need to visit the shop in person to see those.

The 1956 edition of their big *Encyclopedia and Supercatalog* ran to 224 pages and was available in hardcover and softcover. In 1958 the *Grieger's* catalog was enlarged further, to 340 pages. Grieger advertised lapidary materials almost exclusively thereafter, though he himself never lost his personal interest in mineral collecting. A 1972 ad mentions the collection of John M. Grieger, "gleaned from over 40 years involvement in the field." The last big catalog was apparently issued in 1980, the year before his death.

In 1972 Grieger purchased from Martin Ehrmann a huge stock of Brazilian tourmaline specimens, many of them from the Santa Rosa deposit. Over the years he also acquired specimens by trade from many of the world's major museums, and he purchased much European specimen material from the Italian mineral

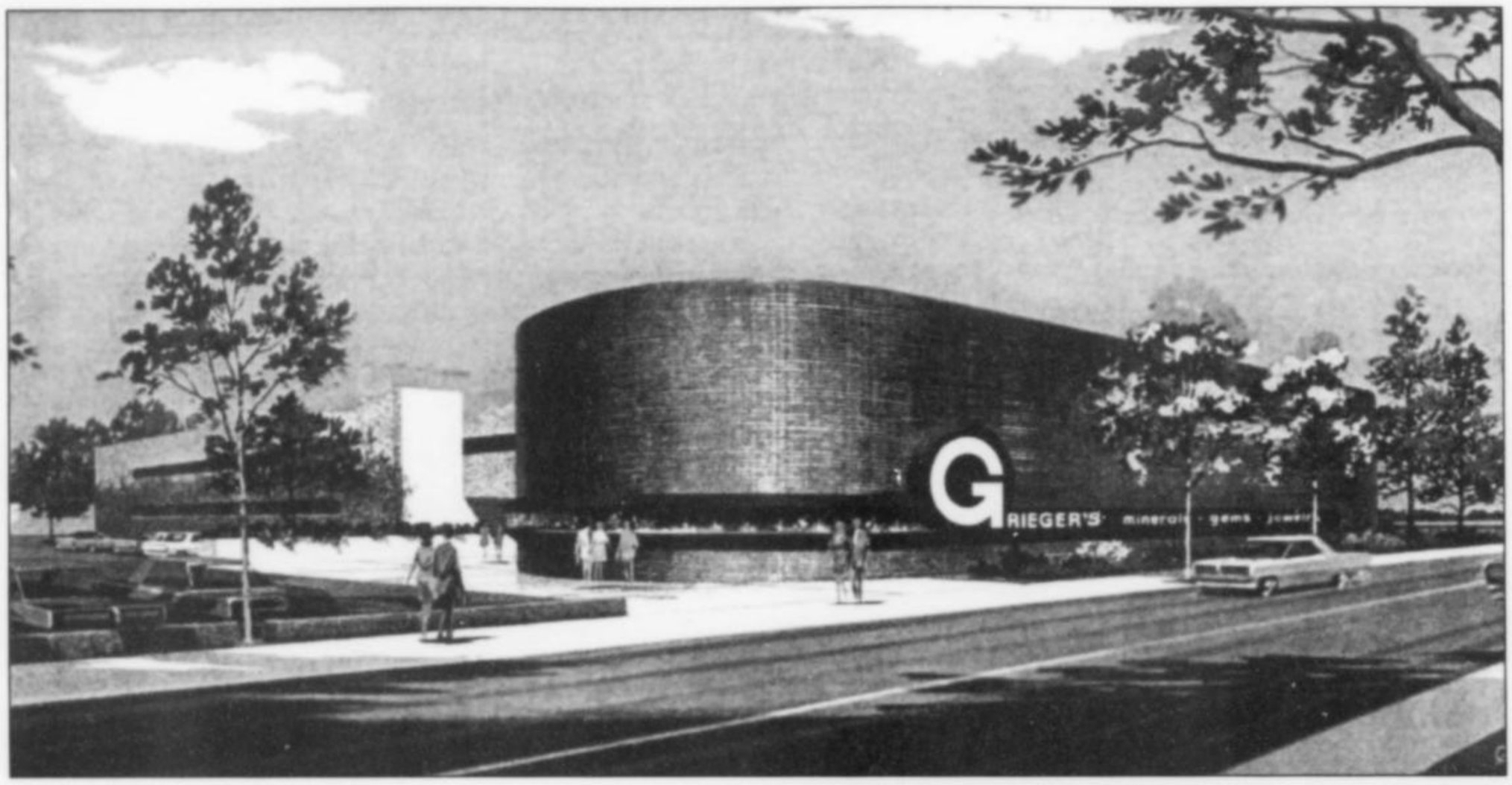


Figure 16. **Architect's rendering of Grieger's lavish new store at 900 S. Arroyo Parkway in Pasadena, opened on October 1, 1972.**

dealer Roberto Palumbo, and the Austrian dealer Anton Berger (Grieger, 1977).

Grieger's continued to expand and become even more successful during the 1960's and early 1970's. In 1972 the opening of a lavish new building at 900 South Arroyo Parkway in Pasadena was announced for October 1. It boasted a total of 25,000 sq. ft., including "3,500 sq. ft. of retail store space plus 1,000 sq. ft of mezzanine which will be devoted to the world's finest display of minerals, fossils and decorative rock specimens"—i.e. John Grieger's personal collection. He employed over 75 people in the store. In 1971 *Grieger's* acquired *B&M Gems* from its owner, Bill Thorpe, and reopened it as a branch of Grieger's in Carlsbad, California, employing another 27 people (including Thorpe as Manager); that operation lasted until 1979.

Grieger continued to promote his extensive showroom facilities, including the mineral specimens, well into the late 1970's. "Stop in and shop," his ads urged, "you'll find the world's largest collections of gems, minerals, jewelry mountings and supplies. Gems and minerals are displayed in museum-like surroundings." In 1976 Grieger sold his stores in Carlsbad and Pasadena to Rachel and Charles L. Parker, and worked as a consultant to the new owners. In a 1977 *Rock & Gem* article Grieger described his collection, which was still on display in the Arroyo Parkway building:

> As you enter the mineral section of Grieger's, your eyes will be attracted to a massive display of Santa Rosa and Cruziero mine tourmalines . . . beautiful clusters and numerous fine quartz crystals bristling with tourmalines implanted upon them. A Japanese stibnite stands out among the sharp crystal clusters of colemanite from Boron and Death Valley, which recently produced huge crystals in the 2 to 3-inch range. Brilliant, sharp hematite and pyrite crystals from the Island of Elba are quite unique. A feature display of rich uranium ores from Grafton, New Hampshire shows uraninite and gummite in strongly contrasting specimens. Water [enhydro] agates are particularly interesting to collectors who pick them up to see the water splash around inside. Other fabulous specimens include Arizona petrified wood, dioptase from Africa, native gold specimens from Idaho Falls, Colorado, long acicular crystals of millerite [with] arsenopyrite from Mexico, and jamesonites from Mexico. [Also] selected specimens from India, including the world-famous zeolites from the Deccan Trap rocks of Poonah. See a huge Pala Chief, dark-purple gem crystal of kunzite that is 13 × 15 × 18 inches. Ask to handle this extraordinary crystal, as big as your fist and as long as your arm. See sticks of gem kunzite from the Reynolds mine . . . 10-inch-long sticks that

Figure 17. **John M. Grieger (photo courtesy of Virginia Bowers).**

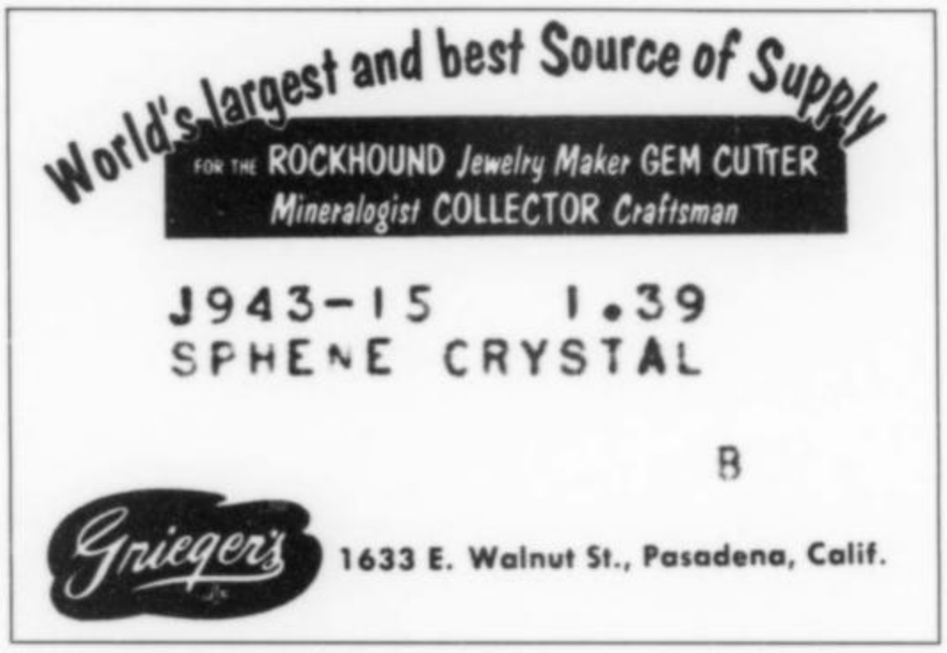


Figure 18. **Grieger's label, Walnut Street address (1956–1972).**

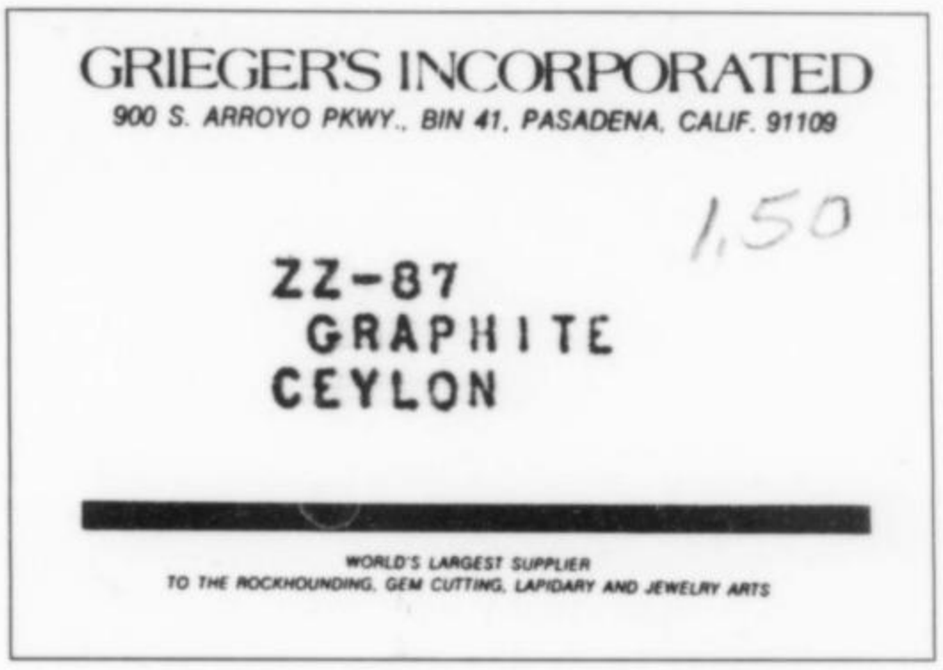


Figure 19. **Grieger's label, Arroyo Parkway address (1972–1997).**

fit together to make a super, big, clean crystal. You can also see kunzite from Brazil and Afghanistan.

The business continued to operate under the Parkers' ownership for some years thereafter, and was still thriving in 1989 when Lee Martin, writing in *Rock & Gem,* glowingly described the spacious Grieger's facilities, including the mail-order operation and the mineral displays, calling it all a "lapidary's utopia." The company moved to a larger facility on Foothills Boulevard, and eventually closed its doors in 1997. Rumor has it that the Parkers simply abandoned the property and were never heard from again. The property owner is said to have auctioned off the contents.

The Grieger and Warner Collections

Thomas Warner died at the age of 40 on May 13, 1955, of a broken neck suffered when he stumbled over a hedge while drunk from a night of partying and fell down a 12-foot embankment at his mother's mansion in Pasadena. The bulk of his estate was willed to his second wife and his only son.

Much of Warner's remarkable mineral collection went to the California Institute of Technology, where many pieces have since lost their provenance after having been merged into the general collection. A few dozen prominent pieces are still identifiable, thanks to the presence of Warner's painted-on catalog numbers with a "TWW" preface. Other specimens were retained by his family or were sold; a few have found their way into the William Larson collection in Fallbrook, California.

John M. Grieger died in Pasadena, California on August 7, 1981. In 1956 he had married Kathleen E. Bowers during a trip to Nevada. He was 45 and she was 43. It was his first marriage, and no children were born to them, so Grieger left no direct descendants when he died.

He had expressed an intention to donate his large personal mineral collection (over 1,000 specimens) to Pomona College, but never completed the legal paperwork to do so. Kathleen (born in 1913) retained his collection until her death on April 17, 2000 in San Marcos, San Diego County, California. The collection then passed to her niece, Virginia Bowers, and as of 2007 it was being sold on her behalf by William Larson (*Pala International* and *The Collector* shop) in Fallbrook, California.

Acknowledgments

My thanks to Virginia Bowers for information and the portrait photo of the older John Grieger; to William Larson for information on the Grieger collection and for specimen photos; and to George Rossman for the photos of specimens from the Warner Collection. Tom Moore and Anthony Kampf kindly reviewed the manuscript.

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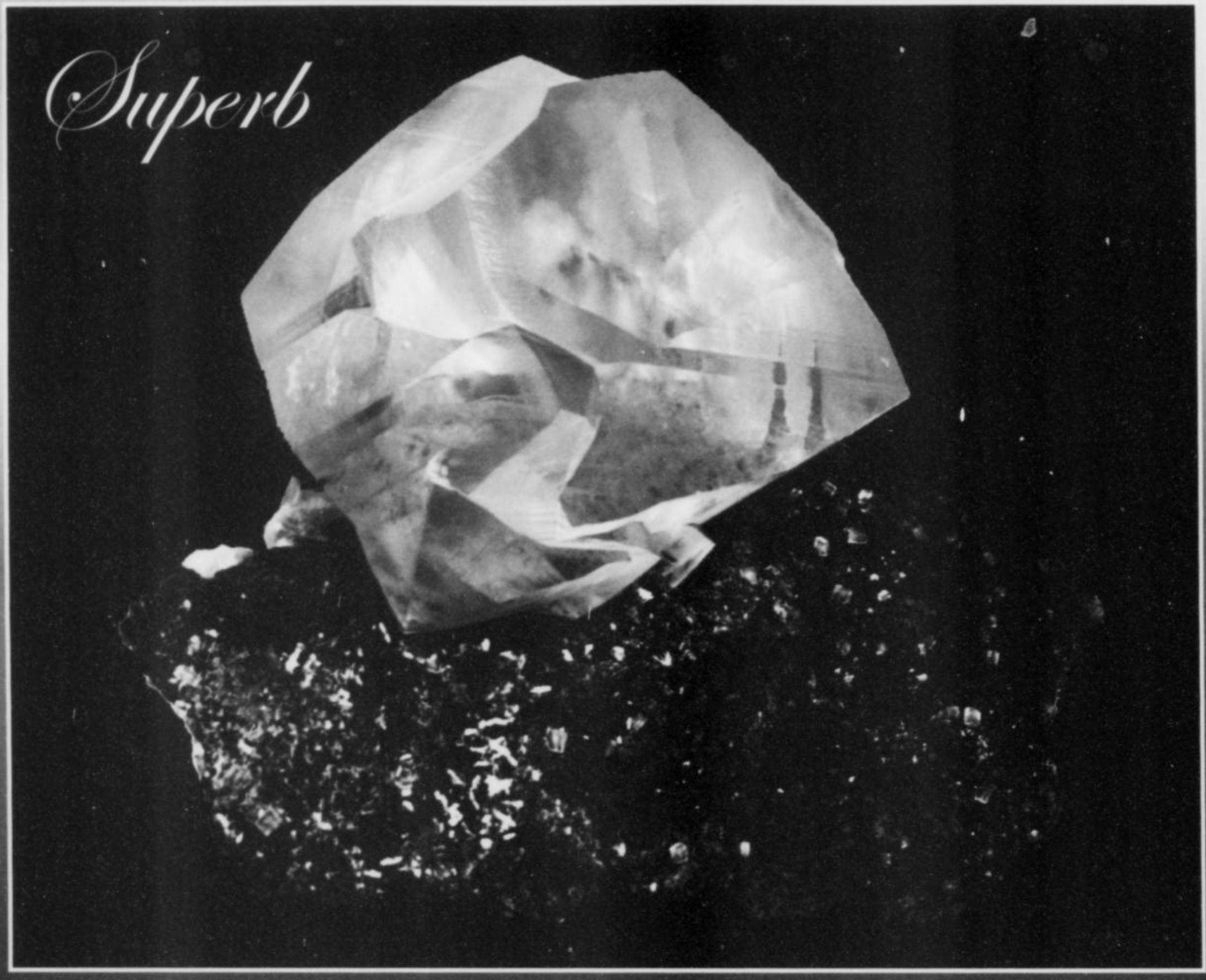

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What's New in Minerals

Northeastern United States, 2007 Spring Shows

by Joe Polityka

Delaware Show *[March 3–4]*

After a long and frosty winter the Delaware Show in early March is "just what the doctor ordered" for those of us (in the East) who were unable to make it to Tucson this year. The show was held at the Delaware Technical and Community College, right off Interstate 95 in Newark, Delaware, not far from the world-class mineral display at the University of Delaware (more about the museum's collection later).

The Delaware Show has all the ingredients necessary to make a smaller show successful: a dedicated and friendly club membership, great dealers, great exhibits, good food and excellent overhead lighting (a rarity these days). An added bonus this weekend was the weather, with the temperature in the 60's Fahrenheit.

Nineteen dealers were set up at the show, six of those specializing in mineral specimens. All of these dealers had been to Tucson, and they all had fresh inventory for sale. *Lambert Minerals* (lambert@mountaincable.net) had a varied inventory, including specimens from China, Africa and the former Soviet Union. The Lamberts had sea-green **fluorite** crystals (cubes with octahedral modifications) up to 2.5 cm on edge. These small cabinet-size specimens had been found at the Riemvasmaak mine, Orange River, Northern Cape Province, South Africa. The Lamberts also had an intense pink **cobalt-rich calcite** (which could be dolomite) with crystals up to 4 mm completely covering the matrix. The "hot pink" color reminded me of the lipstick the ladies wore to the dances I attended in my teenage years (Chuck Berry, anyone?).

Broken Back Minerals (Crispy72@comcast.net) was selling about 40 flats of specimens (many of them antiques) from multiple mines and locations. Eric Meier is an active dealer who has a knack for coming up with local collections that contain a lot of interesting classic specimens. For example, Eric had a miniature of **fluorite** from Wölsendorf, Bavaria, Germany with dark purple crystals to 2 cm, with doubly terminated reddish brown quartz crystals (to 1.2 cm) which sit randomly on the fluorite crystals. This specimen sold on the first day of the show.

Fred Parker of *Parker-Dietz Minerals* (parkermineral@aol.com) had a variety of specimens, mostly **quartz** and **garnet**, from world-wide localities. The quartz crystals are especially intriguing. China was represented by loose, doubly terminated quartz crystals (some with phantoms) to 12 cm long. The lustrous, transparent crystals were found in a coal mine in East Tibet, Leshan, Sichuan Province, China. Fred also had several small cabinet-size specimens of rutilated quartz from the old standby location of Novo Horizonte, Bahia, Brazil. The characteristics that set these specimens apart are the size of the crystals (up to 4 × 9 cm) and their condition (very few dings).

Specimens showing several garnet-group species from both contemporary and classic locations were also available from *Parker-Dietz Minerals*. For example, Fred had a cabinet-size specimen of **almandine** from the classic location at Russell, Massachusetts. The dark, aggregated crystals average 2 cm in size and rest on an 8 × 8-cm matrix. **Grossular** from Phillipsburg, Maine (ex. Ward's and Hauck collection) was available in a single cabinet-size specimen, with crystals to 2.5 cm embedded in a contrasting white calcite matrix. **Andradite** from Cornwall, Pennsylvania was also available, as were one-of-a-kind andradite specimens from California, North Carolina and New England.

Minerals America, Crystal Perfection and *Mike's Minerals* all had a large selection of specimens from world-wide localities.

Earlier I mentioned the world-class mineral exhibit at the University of Delaware. According to the museum's home page: "The mineral collection at the University of Delaware is an outstanding collection which numbers over 5,000 specimens, 600 of which are on display in the Irénée du Pont Mineral Room in Penny Hall. The collection of the late Irénée du Pont forms the core of the University Mineralogical Museum. Irénée DuPont was born in 1876 and served as president of the DuPont Company from 1919 to 1926. In 1919, he purchased a collection of 2,000 minerals from Tiffany's jewelers which had been on display in their Fifth Avenue showroom in New York City. Over the next decade, he continued to add to the collection, purchasing other wonderful specimens from Tiffany's and Ward's Natural Science Company. When DuPont died in 1963, he specified in his will that his mineral collection was to be donated to a college or university and used for education. The collection was offered to the University of Delaware, who accepted it and placed it on display in the Library until 1972 when the Irénée du Pont Mineral Room opened." You can view many specimens from this collection by visiting the college website and doing a search for the University of Delaware Mineral Museum. There are outstanding photographs and descriptions of many of the specimens in the collection. See also Peter B. Leavens' article on the DuPont collection in vol. 14, no. 6 of the *Mineralogical Record*.

Clifton, New Jersey Show *[March 10]*

Two weeks after the Delaware Show, I navigated to Clifton, New Jersey to attend the annual show sponsored by the North Jersey Mineralogical Society. The show is held at the Pope John Paul II Elementary School, right across the street from the former Great Notch quarry, which is now, sadly, a condominium development. This show does not have any exhibits; however, it does have dealers who specialize in minerals from the New Jersey traprocks (zeolite-bearing basalt and diabase formations).

Plenty of zeolites and related minerals were on hand this year, including one surprise: **stellerite** from Sam Braen's quarry in Haledon, New Jersey. The stellerite forms hemispherical aggregates of 2 to 3-mm, pearly white crystals. I did not see any specimens with associated minerals. In color and general appearance, these

specimens are reminiscent of phillipsite specimens from Italy. Other dealers at Clifton were offering world-wide inventories.

Franklin, New Jersey Show *[April 28–29]*

Oh, the psychological pain created by waiting six weeks to attend the Franklin, New Jersey show! This spring show is sponsored by the New Jersey Earth Science Association, The Franklin-Ogdensburg Mineralogical Society and The Sterling Hill Mining Museum (this museum was recently featured in an episode of "Cash and Treasures" broadcast by the Travel Channel). There were approximately 35 dealers set up indoors and about the same number set up in the swap/sell area outdoors. As in past years, there was plenty to see and some surprises from old collections. Carter Rich was having a going-out-of-business sale and had plenty of one-of-a-kind specimens heavily discounted.

John Betts (www.johnbetts-fineminerals.com) had some of the new **botryoidal wavellite** from Lime Ridge, Mt. Pleasant Mills, Perry Township, Snyder County, Pennsylvania. The specimens were discovered while a road was being bulldozed around the perimeter of the quarry. Intrepid Pennsylvania collectors Bryon Brookmeyer, Ed Carvahlo and others soon dug deep trenches and recovered most of the specimens. Those that I saw at Franklin are similar in appearance to the wavellite from Arkansas, and the best of them equal the best Arkansas specimens in quality. Miniature and cabinet-size matrix pieces showing electric-green and yellow wavellite hemispheres to 1 cm were collected. This is an active quarry, so who knows what the future holds?

There was not much new at the Franklin show, but there were plenty of dealers and tailgaters with one-of-a-kind specimens from Franklin, Paterson and world-wide locations. *Mountain Minerals International, Pequa Rare Minerals, Excalibur Mineral Corp., The Mineral Cabinet, Hummingbird Minerals* and many other interesting dealerships were present.

Macungie, Pennsylvania Show

Lastly, I would like to give honorable mention to a semi-annual, one-day mineral show that takes place in my own back yard. This show is sponsored by the Pennsylvania Earth Sciences Association (PESA) and takes place in June and October every year in Macungie, Pennsylvania. When I lived on Staten Island, New York (before I retired to my home state of Pennsylvania) I regularly made the drive to the show so I could soak up the local Pennsylvania Dutch (i.e. Deutsch = German) culture that I remember from my youth. I consumed shoo-fly pie, chicken pot pie, scrapple and funnel cake, and I always made sure to bring home some freshly made kielbasa and pierogi from a nearby Polish deli. Of course, a backseat filled with freshly baked custard, blueberry and apple pies also helped to make the return trip special.

This show attracts a lot of very active Pennsylvania field collectors, so it's not surprising that this year there were specimens of the previously mentioned **wavellite** from Mt. Pleasant Mills. Antique specimens from the Wheatley mines, Phoenixville, Pennsylvania were available, as were contemporary minerals from Pennsylvania quarries such as **calcite**, **strontianite**, **pyrite**, **prehnite** and **quartz**. A lot of senior collectors set up at the show, and you never know what you will find at their tables. This show is worth the trip: watch for the show announcements in *Rocks and Minerals* and *Rock and Gem* magazines. You can also visit the show website at www.mineralfest.com.

In this age of bigger-is-better and the Internet, I have always found specimens for my collection at these smaller shows. A lot of active field collectors, as well as some top-end dealers, attend them, and they are great venues for avoiding the "sensory overload" that occurs at the largest shows. If you attend any of these Northeast shows, come early, as all the good specimens sell very quickly.

Ste.-Marie-aux-Mines Show 2007

by Bill Larson

[June 21–June 24]

My trip to this year's Ste.-Marie-aux-Mines Show was (I hardly need to say) a great experience, especially as it was interspersed with some wonderful side trips to various French museums and collectors' homes, and even a quick look-in at Idar-Oberstein, Germany. Good times, good wines, camaraderie, and fine minerals and gems were enjoyed by all, as the following diary-style account should make clear.

Monday, June 18

My Lufthansa flight 451 was perfect, and arrived at Frankfurt on a perfect afternoon, with hardly a cloud in the sky. I rented a turbo diesel Volvo from Hertz and soon I was on my way south on Autobahn 5 towards Basel, Switzerland. After an hour and 45 minutes I turned off the Autobahn and headed into France, and before long I was in the Alsace wine country, looking for the Rue de Vin (the Wine Road). I found it, but had to leave it again to turn onto the mountain road that cuts across to Ste.-Marie-aux-Mines via Ribeauville. My rendezvous at Ste.-Marie was with Alain Martaud, in the beautiful "Salamander" guest houses in the middle of a fir tree forest. Alain was there with Scott Wershky, a friendly competitor, and when I got there they were looking at flats containing about 200 minerals which Alain had culled from his personal collection; these he was offering to both Scott and me for sale. Scott picked out a few specimens, leaving me to dicker with Alain for the rest.

One of the best parts of the Ste.-Marie experience is the wine and food; consequently we were soon traveling a few kilometers along a ridge to a favorite restaurant, where we began the dinner with escargot, then enjoyed a beautifully prepared free-range chicken. I shared a fine bottle of Riesling with Alain and his wife Caroline, and we talked about all the new things that we knew we'd soon see at the show. The most exciting of these for Alain was a new find of **siderite** from St. Pierre du Mesage, Isère, France. Some young collector friends of his had uncovered there a major pocket of golden brown siderite crystals which make for fine specimens looking like the classic 19th-century siderites from Allevard, Isère. The pocket at St. Pierre du Message, Alain said, has produced about 40 fine, large clusters, with lustrous crystals to 8 cm, coated with a microlayer which gives them a natural iridescence. Until this find this mine was more or less unknown for siderite specimens. Alain said he couldn't wait to see them tomorrow, because he knew that the National Museum of Natural History, in the Royal Medicinal Plant Garden (Jardines des Plantes), had purchased a major, exceptional piece. This may be one of the great new finds of the Ste.-Marie show, and it's French!

Tuesday, June 19

It was my birthday, so I figured that I deserved to sleep in a little while. Meanwhile, Alain had left early in the morning to get his booth set up, and in his absence I searched though the 200 minerals that he had set aside for me. I selected about 50 pieces, many of which would be quite appropriate for research or educational collections; others, with interesting "classic" labels, would be good for Internet sales. There were also a few exceptional pieces, including a **halite** from Sicily with 4-cm, transparent, colorless cubic crystals. The interesting "bridges" of crystallized halite on this specimen make it one of the nicest cabinet-size halite

specimens I've seen in years—certainly competing with the finest halites from Poland.

Show promoter Michel Schwab had kindly sent me a VIP pass so I was able to get into the show early with no hassle. Over the years Michel and I have become friends, and Pala International (my business) has become known as the "French connection" at both the Westward Look show and the TGMS show in Tucson, welcoming all persons French (in addition to welcoming anyone else who loves beautiful minerals and fine wine).

Because the French dealers are so active, Ste.-Marie is a great show at which to learn new things, see great minerals, and have a good time. I arrived late in the morning of this first "set-up day," and of course the show was already bustling with activity. This year, it seemed, everything was more organized than before, and everyone was getting set up earlier. Michel Schwab had increased the size of the show, adding perhaps several hundred dealers, and had split those selling minerals off from those selling gems. But it was still too early to see anything great coming out in the theater (the show's central locale).

Many friends, however, were already there, including a number of Americans: dealers Herb Obodda, Mike Bergmann, Andy Seibel and Ross Lillie, as well as collector Barry Yampol, were all busily searching out goodies. I wandered about, more or less directionless, seeing who might be set up. Mathias Rheinländer's *Mikon* booth was 90% set up, so I went in to see what he had. *Mikon* usually has a great variety of rare species, but this year, Mathias told me, there have been no particularly new finds.

I went down into the "Mineral Expo" enclosure (an addition made just last year), and noted that several Chinese dealers were already set up. In response to my questions they said that there was nothing new from China except the botryoidal blue-purple fluorites which had, however, made their appearance last year. A few scattered rhodochrosites were also on hand, but otherwise it was the same mix of nice Chinese minerals and poor Chinese minerals that we've seen for the last several years: fluorite, stibnite, orpiment, quartz, calcite, broken bournonite, etc. It had been rumored that some of the new, fine, gemmy hexagonal calcites would be appearing here—I had seen photos of two of these specimens which had been on view at the Dallas show. But it was now clear that I'd have to wait until Wednesday, when more of the Chinese would be set up, if I were to come across anything exciting from China.

I did come across our friend Jorge Dascal from Argentina, who said that he has hit another pocket of **hematite**, even finer than before, about 25 km from the first one, in Patagonia, Argentina. He had been prospecting and had recognized a distinctive kind of soil. Sure enough, when they dug down they hit a cavity of hematites that had actually grown downward like stalactites. I selected one of the absolutely finest V-twinned specimens that I've seen to date. He suggested a fairly high price, we negotiated a little, and I went ahead and bought the piece. Next, Jorge showed me a large, perfect cabinet specimen, the likes of which I had never seen, also from this find. It is perhaps 30 cm tall with multiple crystal groups elongated in a fashion that defies description. It's really quite extraordinary, has no visible damage, and would be an exceptional specimen for any museum. Jorge had put a high price on it, since, he said, it's the finest hematite specimen from this locality that he's seen in the ten years they've been coming out.

When the show had started to slow down at about 5 p.m., Alain and his wife Caroline came back to our beautiful flat, overlooking the enormous spread of the forest, to find that I had been to the Super-U market and had purchased a lot of my favorite finger foods, including a truly fine roquefort cheese so aged it would never pass U.S. customs . . . and of course French champagne. We shared a great evening, and readied ourselves for the day to come.

Wednesday, June 20

Another beautiful day, promising to be a little bit warm. I was thankful that Michel Schwab had given me a hat (advertising his very fun show, but good also for keeping off the rays). Parking was still no problem when I arrived at 9 a.m., and the show was much more along towards being fully set up by this time than at corresponding times in the past: more than half of the dealers were up and running, and the scene already was looking quite busy.

I headed for the theater to check out the best mineral dealers. The interior of the theater featured a much more elegant setup this year—fewer dealers, but individual booths and finer showcases. Everything had been upgraded in appearance and quality, especially in comparison to some years past when all dealers just laid out their specimens along their tables; even showcases were considered upscale then!

My mission today is to search out, for my "master" Wendell Wilson, new finds for the *Mineralogical Record* report on this show. The first booth on my left was that of Jordi Fabre's *Fabre Minerals* (www.fabreminerals.com), and Jordi was, as always, full of positive energy and ideas. Yes, he said, he had several new things. He was quite proud of about a dozen specimens showing gem-quality, 1.5-cm **titanite** crystals on matrix from Imilchil, Morocco. While small, these specimens are beautiful, and Jordi had priced the miniatures at around €100. We agreed that if these titanite crystals are ever found in larger pockets, and reach the 3 to 4-cm size range, they will be some of the finest titanites in the world.

Jordi also had some newly mined **stilbite** and **chabazite** from near the same location in Imilchil. These are nice 1.5 to 2-cm crystal clusters, priced modestly at €30–60 for average pieces. I have noticed that, with the exchange rate fluctuating around $1.35 to the Euro, minerals are very much more difficult to purchase at a price that would allow a margin of profit for reselling them in the U.S. Lastly, Jordi had some **epidote** from a new locality: La Gringa mine, Chiuruco, Huallanca, Ancash, Peru. These are nice, bright sprays of acicular crystals priced at €40–80 for miniatures.

Across the way was *Marveilles de la Terre*, and I could see blue **fluorite** from the Burg mine, Alban, Tarn, France. These specimens were mined this year, and the story is that these mines are now closed and there will be no new production (see Tom Moore's report from Ste.-Marie 2006), so informed collectors were scrambling to get a few last pieces. I spotted a few nice miniatures without too much damage (the classic problem with these fine blue fluorites) selling in the €350 range.

Up ahead I saw Alain Martaud, and a large new booth for *Martaud Mineraux* (www.martaudmineraux.com) immediately below the stage. He had two new items, one of which was the (already mentioned) **siderites** from St. Pierre Mésage, and these are truly something special. One super specimen is a miniature consisting of three interlocking 3-cm siderite crystals, with a small cluster of quartz crystals gracing one side: a lovely piece destined for Alain's own collection. He took me over to the "Mineral Expo" area to look at more pieces from the find, and here is the story: About three years ago a group of young geologists who were investigating the galleries of the old iron mine in St. Pierre Mésage discovered some very fine flattened rhombohedrons of greenish brown siderite; the specimen quality was better than ever known from this mine. So last year one of these fellows organized a six-month dig. Only one week before he had planned to quit (having found nothing up to then) he came across two large, naturally collapsed pockets full of siderite crystals so clean they did not even have to be washed! Many fine crystal groups up to 8 cm came out, but between the Paris museum, Alain, and the French company *Multiaxes*, all have now been purchased. So the new siderite is already history for

this Ste.-Marie show, but I'm sure that some will show up at the upcoming Denver show.

Alain and I went back to his booth and found *Crystal Classics* and *Kristalle* setting up in the adjoining booth. Wayne and Dona Leicht (of *Kristalle*) and Ian Bruce (of *Crystal Classics*) said that they had a new find of **botallackite** from the Cligga Head mine, Perranporth, Cornwall, England. These specimens show bright blue microcrystals in druses—especially good for species or locality collectors.

Before returning to Alain's booth I visited both of my friends who are independently mining in Madagascar: Frederic Gauthier of *Little Big Stone* (littlebig.stone@netclub.mg), and Laurent Thomas of *Polychrom France* (polychromfrance@aol.com). The quality of specimens from Madagascar just keeps getting better and better, thanks in part to these two French dealers. But they have no truly "new" finds, just good specimens of amethyst, quartz scepters, some Japan-law quartz twins, nice beryls in green and aquamarine, and a few nice tourmalines. Laurent has one fine **chrysoberyl** that excited me. It is a V-twin measuring about 6 cm, and it shows what might result in the future from more ambitious mining.

When I went back to Alain Martaud's booth to store some purchases, he showed me his other new find: **sulfur** in fine, sharp, well terminated crystals to 2.4 cm, reportedly selenium-bearing, from Cento Caruzzi, Caltonicetta, Sicily. Alain had about 10 pieces, the best of which eventually sold for about €800.

It was now time for lunch, so I headed for the Taverne du Mineur, by the main entrance to the mineral part of the show. All year I look forward to eating there, for one can get a truly fine "leg of ham" while surrounded by the restaurant's collection of miners' lamps, some of them centuries old. I consumed my lunch in the pleasant company of various international and French friends, and then, replenished, resumed the hunt for new things.

In wandering around I saw some amazing set-ups of **lazurite** from Afghanistan, alas not crystallized, but these are polished pieces weighing up to perhaps 50 kg and there were whole tables crammed with them! I shared some lapis-oriented time with Herb Obodda, expert on all things Afghani and Pakistani, and both of us were amazed by how fine a selection of lapis this was compared with what one can expect to see at any other venue.

Later I searched out Jeff Scovil, mineral photographer *par excellence*, whose studio was in the basement under the theater. For photography purposes Jeff gets to see most new mineral finds, as well as fine things that collectors are excited to share with him. Jeff and I compare notes at most shows. This time he had the Spirifer collection for photographing, and the collection's owner granted me permission to see these newly mined Polish minerals. There has been a new find of **fluorite** in the Strzegom (Striegau) granite quarries, Silesia, Poland. Jeff was looking forward to visiting there in the following week, and I was properly jealous when I saw a world-class gem fluorite which had been found in a pegmatite pocket! There were also good **smoky quartz** crystals up to 20 cm, **microperthite** crystals, and some nice **stilbite** specimens. This old locality may be producing more great things soon!

Jeff also showed me the only other new thing he had seen that I had not seen: a new find of **andradite** garnet in superb apple-green crystals collected very recently at the Black Lake mine, Lac D'Amiante, Thetford, Quebec (these also appeared at the Tucson Show: see that show report in the May–June 2007 issue). The specimens I saw at Ste.-Marie are sparkling groups to 5.5 cm, brought in by Marco Amabili. There are not (yet) many such specimens, and none are as yet being sold in the marketplace.

My last major specimen sighting on Wednesday was a group of newly collected **rutile** specimens, reportedly from the Kipushi mine, in the southern Congo, the best of which look similar to the classic cyclic-twinned rutiles from Magnet Cove, Arkansas. There are also lustrous single crystals to about 2 cm and cute "elbow" twins. These specimens had been brought in by a Congolese dealer who spoke no English, so I was unable to ask for more information about the find. Offhand, one wouldn't expect rutile crystals, least of all of the Magnet Cove type, from the Kipushi mine, which is a Tsumeb-like ore pipe rich in secondary zinc and copper species (see the article by J. J. Lhoest in the May–June 1995 issue). Perhaps the rutiles originate "near" the mine.

Thursday, June 21

On Thursday morning it was raining steadily, and the traffic jam bottlenecking into the little town was pretty horrendous. I had to go to the public parking lot—the very back of the lot, at that—and walk about a kilometer to the show. On the other hand, it was exciting to see so many people (all clutching umbrellas) waiting to get into the show.

Upon entering, I came across Alexander Dikov's Bulgarian dealership *Intergeoresource Ltd.* (dikov@mail.techno-line.com), and there I saw Ross Lillie kneeling on the ground, searching through the **galena** specimens and selecting the finest before I'd even arrived (what gall!). Around the corner, covering three open-air tables, were newly mined **malachites** from the Congo, being sold by Congolese. Many of these specimens are botryoidal geode and vug fillings; prices were €60–80.

Around another corner I once again came upon Mathias Rheinländer's *Mikon* booth. Mathias had set out a few "new" finds, and was especially proud of a specimen of **andorite** with associated zinkenite and stannite from the San José mine, Oruro, Bolivia. This is not really a new find, of course, but the specimen measures an immense 15 cm; it was marked €1,500. Mathias also had an interesting 2-cm floater cluster of stannite crystals from the San José mine.

Again I ran into Scott Wershky, and this time he had something special to show me. I am a lover of gem crystals and well crystallized rare minerals, so when he said he had a **galena** to show me my thought was approximately "that's nice, dear." But then my breath was taken away by the finest miniature Bulgarian galena crystal I have ever seen. The crystal measures about 4.5 cm on edge; it is completely hollowed out by dissolution but remains fully crystallized, sharp and brilliant, and it is exquisitely perched on a

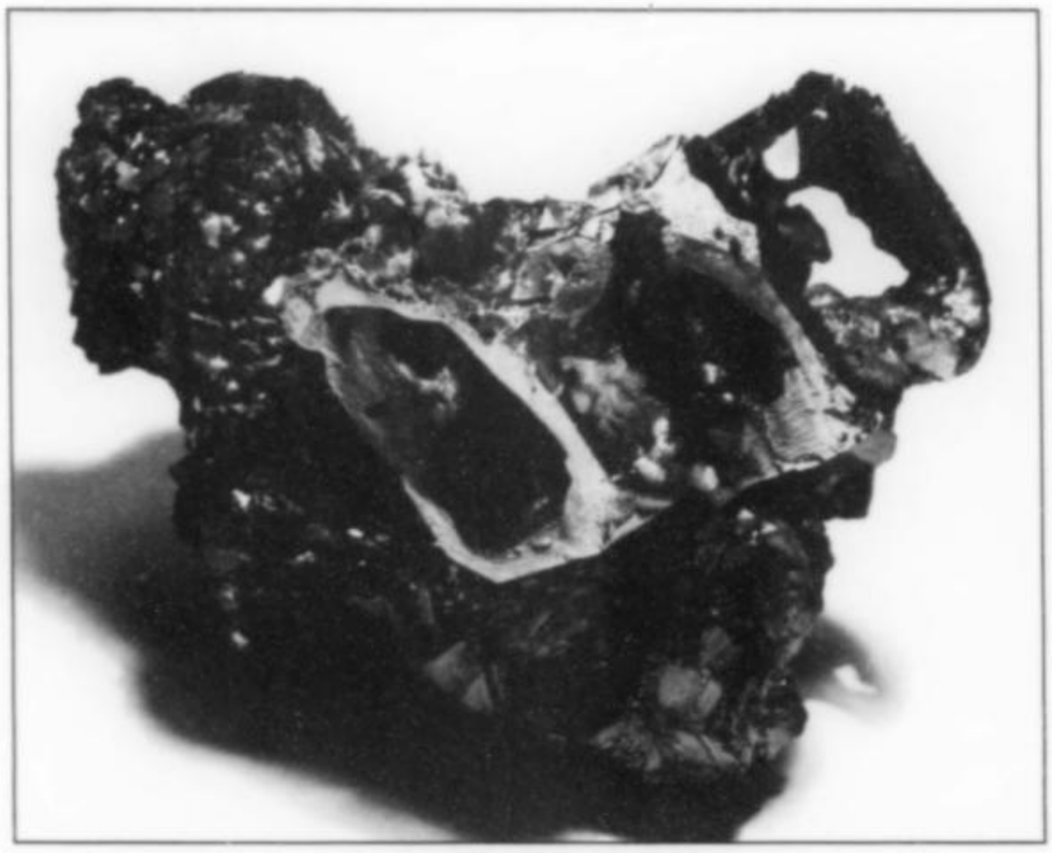


Figure 1. **Skeletal galena crystals on sulfide matrix, 9 cm, from the Djourkovo mine, Madan district, Bulgaria. Rob Lavinsky specimen; John Veevaert photo.**

small matrix. It is one of the best things I saw at this Ste.-Marie show. I tried to purchase it, and gathered that I was one in a line of interested collectors—but I am very pleased to have seen it. Scott told me that it had come from *Bulgaria Minerals and Gems* (www.bggems.com), down one of the lanes, and I headed off in pursuit. Sure enough, Ivan Pojarevski of *BM&G* had a few others, but after Scott's they all paled. A little later it occurred to me that I should purchase some some of the nice large miniatures for resale; however, when I went back, Ivan apologized for having sold them all in the meantime.

Friday, June 22

For me, this was a day to spend with a friend who'd come in from Basel, Switzerland. He is a gemstone collector who also appreciates fine minerals, and this was his first visit to the Ste.-Marie show—or to any major mineral show. He was amazed by what he saw: this was nothing like the giant Basel watch and jewelry fair, which draws thousands of vendors but lacks the small-town-fair atmosphere of Ste.-Marie. I used this occasion to visit the separate "Gem Expo" area of the show. My visiting friend and I rode the tourist train about 1 km to the "Gem Expo" (that train is the favorite *ride du jour* for the kids). Whereas the mineral part of the Ste.-Marie show has approximately 650 dealers from 60 countries, the gem part has about 350 international dealers who occupy many tents and one large building; most of the better-quality dealers are in the building.

There I visited my friend Denis Gravier, who was set up near the entrance. Dennis loves fine minerals and gem crystals but specializes in rare gemstones. I selected several fine things, including a fine brilliant cut aragonite of about 40 carats. Another friend whom I found set up in the building is Nicolas Zylberman of the dealership *Litho Khroma* (lithok@yahoo.fr); Nicolas also has fine gemstones, and he shares my love of antiquarian books on gemology and mineralogy. He had brought a fine selection of books, which I looked through for what I might need. In general there weren't many minerals to be seen at this show, but one Sri Lankan dealer did have a good selection of **sapphire** crystals, including one fine blue crystal measuring 4 cm. I admired it, but it was priced with too many zeros, so I moved on.

When we were finished with the "Gem Expo" my Swiss friend suggested that we leave the show and go down to Basel to see his collection. I enjoyed the drive, and following his directions was much easier than reading the map would have been. His charming home is in an old mill in a tiny village outside Basel. His gem collection is stunning, and as the sun set we spent a few pleasant hours looking at each gem. The collection includes a fine, untreated, 10-carat Sri Lanka ruby, certified by AGTA (by Pala's old webmaster and still good friend Dick Hughes). In the corner was a small glass case with a collection of minerals which are quite well selected. My friend's excellent taste in gems has carried him into an interest in mineralogy, and I hope that some day he will visit the Tucson Experience. I stayed overnight and sampled some lovely local cuisine and a Swiss wine; at about noon the next day I said goodbye and headed back to the show.

On the way, I stopped at about 2 p.m. at my favorite restaurant in Ribeauville, and this turned out to be a lovely mistake. The owner/chef recognized me from the year before, when I'd been here with my son Will and gem dealer Mark Kaufman. At that time, apparently, we ate our way into his memory, for he remembered me now. Soon a fine bottle of Mersault was brought out, and the waiter was saying, "the fois gras is coming, Monseiur." The largest goose in all of Alsace must have given his life for me that day. Needless to say, I finished a bit late—after 4 p.m.—to go back to the show, so I made do with an early evening.

Saturday, June 23

It is always hard to remember how crowded this show is on the weekends. The nearest parking space I could find was over a kilometer away, and the street portions of the show were packed, making walking difficult. I visited friends all day, and I found a few very interesting San Diego County oldies, including a pair of 4-cm **aquamarines** from Temecula with a Dr. F. Kranz label. This is a questionable locality, as there is no known aquamarine-producing mine in Temecula. However, the same locality is specified on a label from the American Museum of Natural History which I got from Larry Conklin many years ago. Others have thought that the AMNH label is wrong, and that the aquamarine it belongs to is actually from the Fano mine in Riverside county—but that crystal and the two that I saw in Ste.-Marie all look very similar, and very different from Fano mine aquamarines, so this is something I'll have to research.

I worked my way through the crowds to look in at Guanghua Liu's booth (www.aaaminerals.com). He said he is planning to organize another Chinese symposium on minerals (no word as yet on the date). Dr. Liu did show me several "new" mineral finds. He had some nice **tourmalines** from Yunnan Province—small pencils to 4 cm—but I have seen similar specimens in the past. He had **kunzite** crystals which he said were from Yuangong, Inner Mongolia, but which look exactly like Afghanistan kunzites. I questioned him, knowing that many "Chinese" topaz specimens sold by Chinese dealers at mineral shows in the U.S. are actually from Burma and were purchased in Burma by other Chinese dealers! He said that to the best of his knowledge the crystals indeed came from Mongolia: if that's true, this would certainly be a new (new to me, anyway) locality for kunzite.

That evening came dinner at Auberg la Meuniere in Thannenkirch, in the mountains about 20 kilometers from Ste.-Marie. As I was arriving, the owner, Francesca, remembered me . . . there was no need for a menu, and the dinner was sublime.

Sunday, June 24

I spent some of this day making a final visit to the very crowded show, then prepared for the trip to Alain Martaud's home in Chambéry, packing my purchases very carefully.

Monday, June 25

We left early on the drive, which I knew would be long but easy—for the most part. On the motorways in Europe these days, it's the Audis and even Audi station wagons, not the Mercedes or Porsches, that one has to worry about. I had first noticed this in Germany and had not thought too much about it, but now in France the Audis went roaring by, and Alain stayed out of their way! We arrived in the evening at Alain's storage unit filled with countless flats of minerals. Tomorrow I would hunt for goodies.

Tuesday, June 26

I was invited to see the portion of Alain's collection which is on display. He has very fine taste and I admired many things. He proclaimed his intention to cull out a few more things, and I hoped to add to my Ste.-Marie haul. He took me to lunch at a small but fine local eaterie where, to my delight, steak tartare was on the menu. I was now a happy camper, well set up for hunting through Alain's flats in the afternoon. He has hundreds of flats, some containing specimens belonging to his collection, but many containing specimens which are "available." Some of them I couldn't purchase, because of the unfavorable dollar-Euro exchange rate, but Alain is a very fair dealer and I did manage to find a nice lot. When we had concluded our business, he and his family took me to a lovely Spanish restaurant famous for tapas and sangria, overlooking a lake with a mountain backdrop.

Wednesday, June 27

We left early for Dijon, where we would be helping Gian Carlo (curator for the Dijon Natural History Museum) in setting up his "Sparkles" exhibition: legendary wines, fine gems and mineral specimens, to be displayed until December at the museum, in Dijon's Jardines des Plantes. The French National Museum of Paris supplied fine larger minerals, some gems and jewelry, and one of their priceless inlaid tables from Florence (insured for €2 million). The National Museum had partnered with Pala International and with Alain and several other collectors. I supplied about 80 gemstones and fine minerals selected by Gian Carlo personally during a trip to California in May. Alain contributed a large number of minerals, including some world-class fluorites from his personal collection. These fine yellow fluorites match the color of some of the famous local white burgundies, e.g. Montrachet and Mersault. YUM ! The exhibition was well along when we got there, but our pieces needed to be set up carefully.

Thursday, June 28

We visited local collectors in Paris: about a three-hour drive, but worth it. I found an incredible Paris gemstone craftsman making gem spheres of fluorite and other transparent gem materials. From him I bought a faceted sphalerite from Spain which weighs 1395 carats. I saw fine French minerals in many of the collections—but I was asked not to discuss them since they are so rare. Excited and energized, we returned to Dijon for the opening of "Sparkles" on the next day.

Friday, June 29

We fine-tuned the exhibit, and by 6 p.m. it was perfect. A crowd of 220 invited guests, including the mayor of Dijon and the head of the Burgundy wine association, attended the opening ceremony. After an introductory speech we were all led through the exhibition, which was situated in two separate buildings and featured many intertwined aspects of geology, gemstones and wine-making. The main exhibit was beautiful and exciting, with hand-made flasks full of rich red or white (actually yellow) wines. The light shone pristinely through each flask, and the white backdrop made it easy to compare the wines' pure colors with those of the neighboring minerals or gemstones: it was a display of nature enhancing nature. The use of the flasks also precluded any commercial overtones which might have come from the use of the vintners' bottles and labels. The wineries would otherwise have been inclined to compete instead of cooperating as the exhibit came about. The vintage and winery were discreetly but clearly labeled in the upper corner of each display case. After the tour there was a wine-tasting, and all the guests could be heard enjoying this unique exhibition.

Saturday, June 30

All parties who had helped Gian Carlo set up the exhibition now revisited it in the light of day, while the general public was having its first chance to enjoy "Sparkles." I said my goodbyes and drove, with two superb gift wines from the Museum to take home with me, to Idar-Oberstein, Germany. This drive took most of the afternoon, and I checked into the Park Hotel at 6 p.m. I drove to the nearby village of Kirschweiler and ate a fine Spiessbraten such as can only can be found in this area of Germany.

Sunday, July 1

I had come to Idar-Oberstein because I'd been invited to see two museum displays there. One is a private collection recently completed by a man who has been a friend of mine for more than 30 years. On the top floor of his firm's building he has constructed a private museum with maybe 20 exhibits, mostly rough-and-cut, with superb gemstones complemented by good gem crystals. One exhibit consists of perhaps 140 cat's-eye tourmaline gems of the highest quality. Then after lunch I headed down to the Deutsches Edelsteinmuseum, which was hosting "Edelstein-Schätze Namibia" ("Gemstone Treasures of Namibia"). On the muesum's bottom level were displays of all the finest locally supplied Namibian gems and minerals, and even photo albums of various localities in what was once known as South-West Africa. There were beautiful rough tourmalines from Usakos, fine dioptases from Tsumeb, and wonderful photos, some from 100 years ago, showing gem pockets being found. This exhibit lasts until December 2, 2007: if you plan to be around Frankfurt at that time, it's only a couple of hours away !

Moday, July 2

Another wonderful Ste.-Marie trip had come to a conclusion and now . . . HOME!

Springfield Show 2007 — by Joe Polityka

[August 10–12, 2007]

Part of the pleasure inherent in the mineral hobby is the anticipation one feels right before attending a show. As the show day approaches you start fantasizing about what you will find for your own collection (any sleepers?), whom you will meet at the show, how long you will stay, what side trips you will make, how much the safari will cost—and *should* I take along my Chihuahua puppy "Butterbean"? You discuss these issues with your spouse, who couldn't care less about the rarity of one mineral relative to another, as she feels that all minerals should be blue, pink, red, yellow or green, and transparent. There is no room in her mineral universe for white, black, brown, or mushroom-colored minerals, or minerals that are opaque or translucent. Rhodochrosite, yes; stilbite, no way! Such attitudes are amplified when the collector's spouse accompanies him (or her!) to a show. Aside from promising the moon (paint the bathroom, clean the garage, etc.), you carefully time your purchases of drab minerals so as to occur when your wife is in the coffee shop. Deep down, though, you respect her opinion and sense of aesthetics because she has a sharp eye and has brought many colorful bargains to your attention.

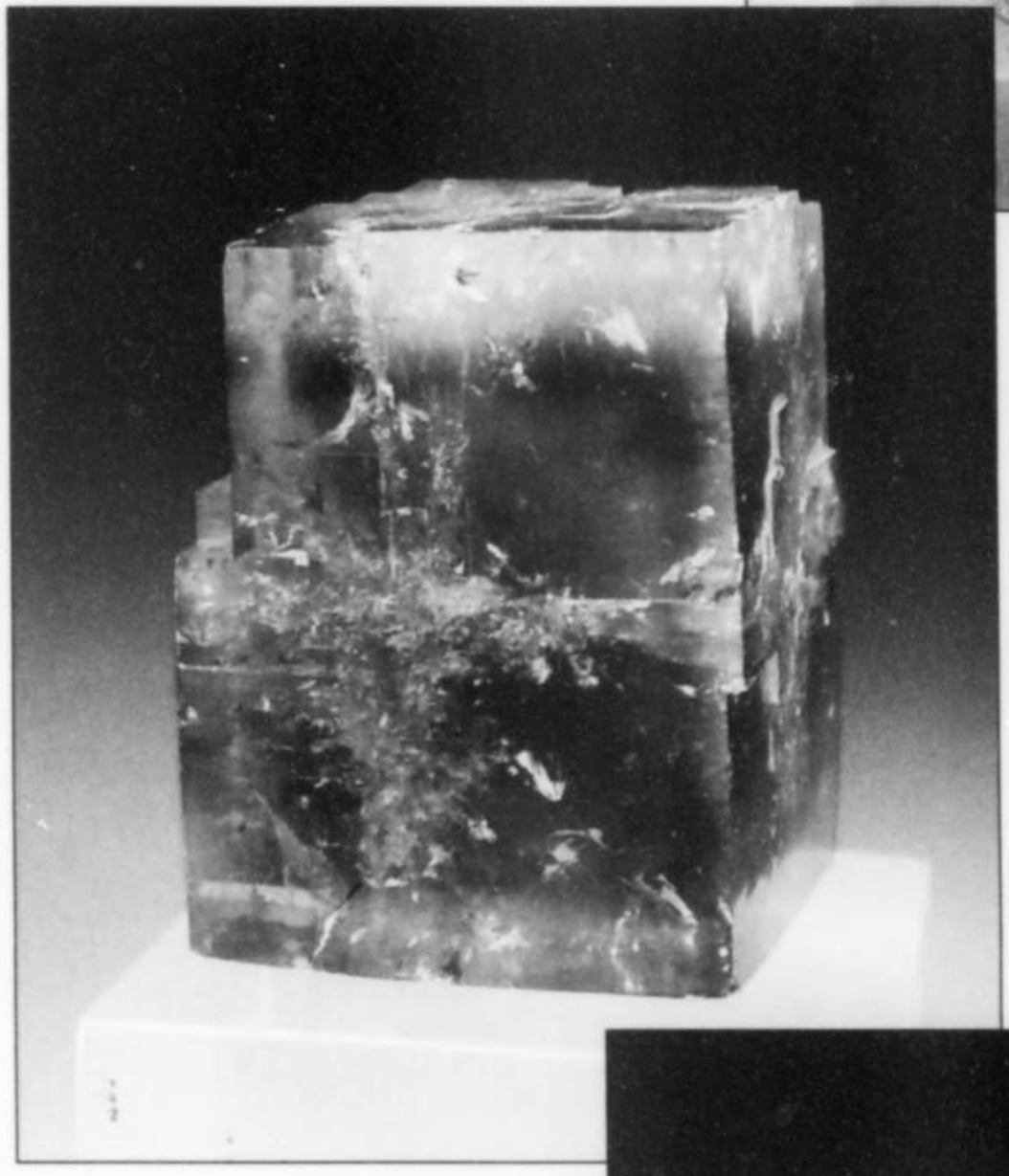
This year my level of anticipation prior to the Springfield Show was higher than usual. Not only were top-shelf minerals going to be for sale; I was going to see those great new **fluorite on celestite** specimens from Clay Center, Ohio. The fluorite was found earlier this year (2007) and, according to Ohio collectors in the know, is the best fluorite found there in the last 50-plus years. (See also the Tucson 2007 show report, in which Dave Bunk tells Tom Moore that this fluorite strike occurred in November 2006.)

Several dealers had specimens from this find, but the best selection was found at the booth of *Donald K. Olson and Associates* (donaldkolson@netscape.net). Don had about 100 specimens in all sizes from small-miniature to large-cabinet. The largest fluorite crystals, maple-syrup-brown in color, are about 4 cm across a cube face. They vary in transparency, the smaller crystals being the more transparent, although there are a few specimens with large crystals still showing good transparency, as well as phantoms. The most attractive specimens are those with large fluorite crystals sitting on snow-white celestine crystals to 5 cm long; some of these specimens show 3 to 4 fluorite crystals perched on delicate celestine crystal clusters to 15 cm wide. Don also had a fine selection of crystallized **copper** from various mines in Michigan.

Another dealership, *TJ's Rocks and Gemcraft* (Tom, Sherry and T. J. Ennis of Glenmore, Pennsylvania: tomennis@earthlink.net), had Clay Center fluorite specimens of a different type: the fluorite crystals sit on druses of pale gray dolomite microcrystals. The fluorite crystals in these specimens are also maple-syrup brown, and

Figure 2. **Fluorite crystal cluster, 6.2 cm, from Clay Center, Ohio. Don Olson specimen; John Veevaert photo.**

Figure 3. **Single fluorite crystal, 2.5 cm, from Clay Center, Ohio. Don Olson specimen; John Veevaert photo.**



average about 2 cm; sparse celestine is associated with the fluorite. I found the Ennis's specimens to be quite attractive, but Rob Lavinsky of *The Arkenstone* (www.iRocks.com) had the the show's best specimen from this discovery: a 15-cm celestine matrix sporting a large, sharp crystal of fluorite approximately 5 cm across.

Scott Werschky of *Miner's Lunchbox* (www.minerslunchbox.com), in partnership with John Veevaert of *Trinity Minerals* (www.trinityminerals.com), had an attractive assortment of specimens from Tsumeb, Namibia, which until recently were in the collection of Dr. Georg Gebhard, famed mineralogist and author of many articles and of two exhaustive books (in German and English) about the mine at Tsumeb. Scott had mostly one-of-a-kind Tsumeb specimens, so I suggest that you contact Scott or *Trinity Minerals* soon to see what they have left of the Gebhard collection. Scott Werschky also had some crystallized **gold** from the Round Mountain mine,

Figure 4. **Fluorite crystals with celestine crystals, 7.7 cm, from Clay Center, Ohio. Don Olson specimen; John Veevaert photo.**

Nye County, Nevada. These extremely lustrous gold crystals are mostly in thumbnail and small miniature-size aggregates, the flattened crystals reaching 1 cm in width. If you like gold, you will want to contact Scott so you can add one of these specimens to your collection.

Kristalle (www.kristalle.com) and *Collector's Edge* (www.collectorsedge.com) were offering a potpourri of classic and contemporary specimens: old classics such as pyromorphite from Phoenixville, Pennsylvania were available in cabinet-size specimens of superb quality. I spoke with Dona Leicht about the acquisition of the Philadelphia Academy Collection and asked why no specimens from it were available at the Springfield Show. Dona told me that it was taking a while to prepare the collection. Also, since multiple partners were involved in the transaction, the specimens have been divided along geographic lines (Europe, United States, etc.) with each partner receiving specimens that fit into their marketing territories. For example, *Kristalle* spends a lot of time in Europe, so Wayne and Dona were the logical choice to receive the European specimens. Dona told me that the Pennsylvania minerals have gone to the Carnegie Museum in Pittsburgh, while the Franklin, New Jersey specimens have gone to the Sterling Hill Mining Museum (more on the New Jersey specimens later). Other special suites from specific countries went to foreign museums in those countries. The balance of the collection will make its debut at this September's Denver Show.

Wendy's Minerals (www.wendysminerals.com) had about 50 fine specimens of chartreuse-green **pyromorphite** from the Daoping mine in China, in thumbnail and small-miniature sizes. The most interesting specimens are the single hoppered crystals to 3 cm. The dealership claimed that these specimens represent a new find; however, the consensus amongst seasoned collectors and dealers is that this is material from an old stash.

Leonard and Linda Himes of *Minerals America* (minamer@aol.com) had cases that were overflowing with large **tourmaline** specimens from Brazil, California and Maine. A matrix specimen from the Jonas mine, Minas Gerais, Brazil which measures about 43 cm stood out especially dramatically. On this piece, elbaite crystals to 5 cm, with the typical Jonas mine color, form an aggregate on the right half of the specimen while the other half is occupied by a 12-cm quartz crystal. Quite an impressive sight! California was well represented by a 15 cm-long (10-cm wide) "blue-cap" elbaite attached to an opaque quartz crystal about twice its size. A 10-cm wide aggregate of upright elbaite crystals in a parallel aggregate, from Mount Mica, Maine completed the triad; each crystal has pink, red and white zones, and a green termination. This specimen reminded me of a small birthday cake.

Terry Szenics (matitos_mike@yahoo.com) had about 10 specimens of his namesake mineral **szenicsite** in miniature to small cabinet sizes. The crystals are very sharp, with excellent color, and the specimens were selling quickly.

IC Minerals (icminerals@earthlink.com) had some fine specimens of **chrysocolla after selenite** from the San Manuel mine in Pinal County, Arizona. Isaias Casanova also had a great selection of one-of-a-kind specimens from varied worldwide locations.

In the "soon to be retired from doing mineral shows" category, Carter Rich was doing his last Springfield Show. His final show will be in Franklin, New Jersey at the end of this September. Carter was offering a 50% discount on most of his specimens. He emphatically

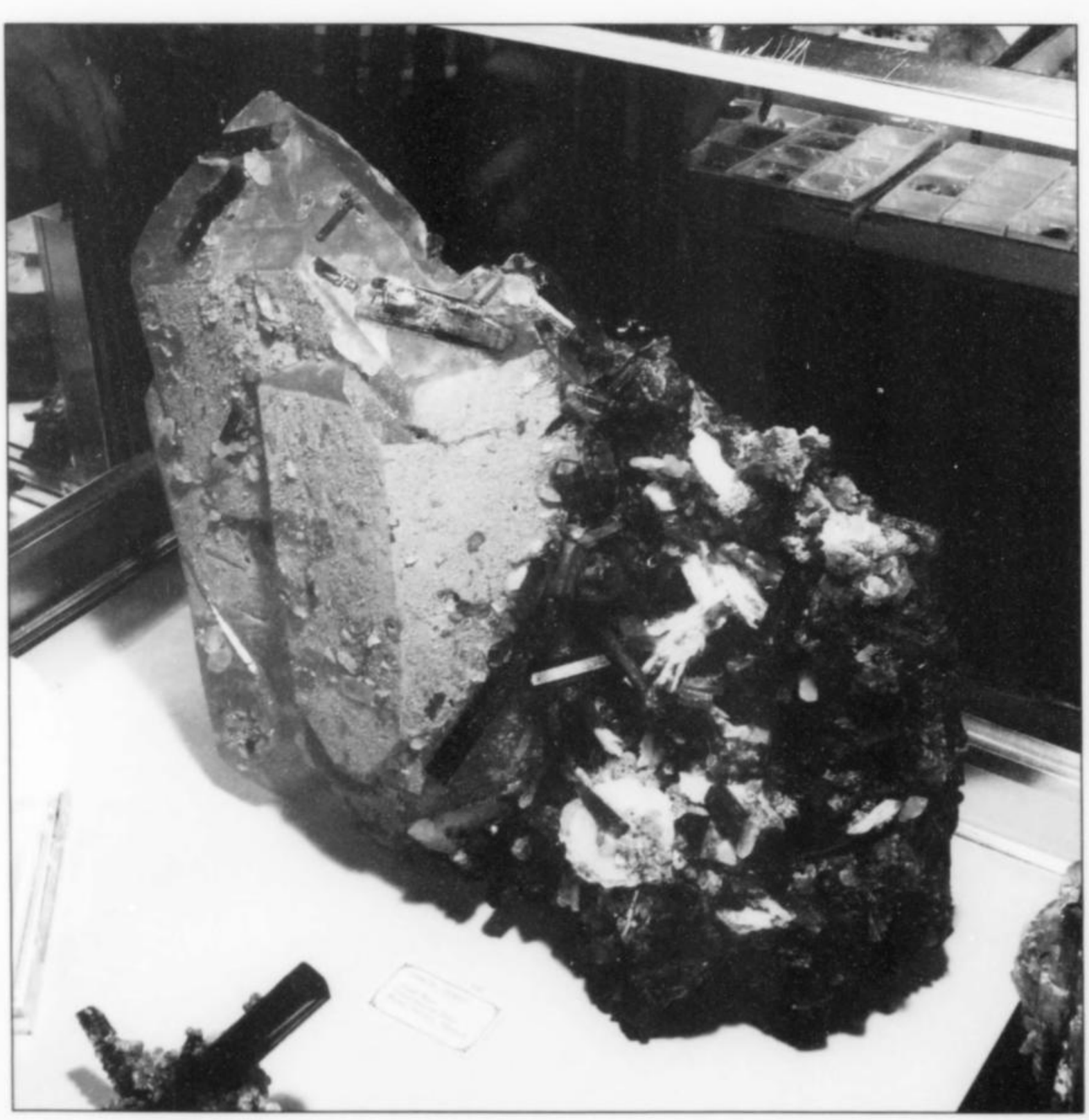


Figure 5. **Elbaite crystals on quartz, 43 cm, from the Jonas mine, Minas Gerais, Brazil. Leonard Himes specimen; John Veevaert photo.**

Figure 6. **Rhodonite crystal cluster, 7.7 cm, from the Sterling Hill mine, Sterling Hill, Franklin, New Jersey. John Veevaert specimen and photo; now in the Steven M. Kuitems collection.**

Figure 7. **Stilbite impregnated with celadonite inclusions, 6 cm, from Sakur, Maharashtra, India. *Mineral Decor* specimen; John Veevaert photo.**

told me that he is not out of the mineral business and will continue to sell minerals from his home (ccarterrich@earthlink.net).

In the "you'll never know what you will find" category, Bob Jones (Senior Editor of *Rock and Gem* magazine and achiever of all things mineralogical) was selling specimens for his son Evan Jones (evjonesusa@netscape.net). It seems the collection of Russell Jones (no relation), after having been tied up in an estate for some years, was recently released for sale. The collection was accumulated many years ago, and contains a lot of specimens from classic East Coast and worldwide locations, many of which are long extinct. Bob's booth was one of the busiest at the show, so you will have to contact Evan Jones to see what is left for sale.

Quartz gwindels were prominent items at the booth of *Green Mountain Minerals* (www.greenmountainminerals.com). Large cabinet-size specimens with gwindels up to 15 cm wide were available from the Dodo deposit, Ural Mountains, Russia; Fedenstock, Uri, Switzerland; and Mount Blanc, France. These specimens, with their transparent smoky crystals, are spectacular.

Doug Wallace of *Mineral Search* had a nice selection of old-time specimens from the Ojuela mine, Durango, Mexico. Doug had **adamite, fluorite** and **calcite** in miniature to small cabinet sizes. He also had some **gold** specimens from various mines in both crystal and nugget forms. Prices on the gold specimens were quite reasonable.

Dudley Blauwet of *Mountain Minerals International* (mtnmin@attglobal.net) had his usual inventory of gems and gem-quality crystals from Asia. On the negative side, Dudley was recovering from several bicycle accidents that left his body scraped and bruised. Fortunately, the injuries are not permanent. Dudley is in top shape from all the marathon running and bike riding he does. How many persons have jogged at an elevation of 5000 meters in the Himalaya Mountains? Dudley has.

Although there were not many new finds at this year's show, there were a lot of recycled collections and specimens of specific minerals, such as gold, silver, calcite and fluorite, that made this show very appealing to the collector. The quality and availability of specimens at this show is the highest it has ever been. I have attended the Springfield Show for almost 20 years and consider it to be the highlight of my East Coast mineral experience. There were unique specimens of many mineral species available in all price ranges—something for everyone! If you were looking for Indian zeolites you visited the booth of *Superb Minerals India*. Looking for minerals from Pakistan? Then visit the booths of *JBF Minerals* and *Hunza Ranger*. Want a nice surprise? Visit Phil Scalisi at *Studio C*, *Lambert Minerals Canada*, *Iouri Poustov* or *Rocko*. Want

to be astonished? Visit the booths of *The Arkenstone*, *Kristalle*, or *Collector's Edge*.

This year's special exhibits were from the collections of the Sterling Hill Mining Museum and the Franklin Mineral Museum, both located in the highlands of Sussex County, New Jersey. First, I must congratulate and commend the Hauck family and the Franklin Mineral Club volunteers who set up the exhibit. The displays in each case were well thought out and each item displayed is in pristine condition. There were cases dedicated to mining memorabilia such as miners' carbide and electric lamps, with antique manufacturers' advertisements accompanying each category of lamp.

There were also display cases of museum-quality minerals from famous mining districts outside of Franklin-Ogdensburg. How about a 15-cm calcite specimen from Cumbria, England covered with 5-cm butterfly calcite twins? Or a case full of crystallized gold specimens up to 15 cm in diameter from famous mines in California, Colorado and elsewhere? One case entitled "Bisbee Classics" contained two huge, museum-quality specimens of azurite and malachite. This case also contained mining certificates, antique miners' candleholders and a poignant miniature statue of an end-of-shift miner bending over to greet an excited little girl (his daughter or granddaughter?). I remember greeting my miner grandfather in the same fashion when I was a young boy.

The Franklin-Ogdensburg cases were done in the same careful fashion. Some of these mineral cases incorporated specimens which were recently deaccessioned from the Philadelphia Academy. The rhodonite specimens in these cases even silenced the nay-sayers who were viewing their first museum-quality New Jersey rhodonite specimens (sharp, blocky rhodonite crystals to 15 cm on matrix!).

Finally, there was the "Fluorescent Tent": a 15 × 25 foot-long tent which contained hundreds of Franklin-Ogdensburg ore specimens of willemite, calcite, esperite and many other rarities carefully selected for their unique combination of patterns and associations. Wispy bands of yellow are interspersed with bands of green and red, separated by bands of black non-fluorescent franklinite. This display was in the "Believe it or Not" category and was very popular with children of all ages.

Well, there you have it: the 2007 Springfield Show. Next year (2008) the special display will feature the collection of Monika and Herb Obodda. If you think you have seen good specimens from Pakistan and Afghanistan, or from classic locations, think again. I hope to see you there!

Denver Show 2007

by Thomas Moore

[September 11–September 16]

I'm pleased to report that 2007 was the first year since 2001—the year of 9/11—when attendance at the Denver Show *increased* over the previous year's. Sure enough, at the hotel and "Main" shows alike the crowds seemed thicker and busier than before, and by Show's end most dealers were saying that they'd had excellent sales. The harvest of what's-new mineral occurrences was merely medium-sized, but strong buzzes about important developments ongoing even now in Brazil, Mexico, China and other *piñata*-lands where those who swing sticks might always cause cascades of mineral riches, kept excitement high.

Meanwhile, autumnal Denver offered its usual gently cool, yet inspiriting, weather. And inside the Main Show, if you knew where to look, there was likewise comfort and ease: anyone, and any conversational gaggle of folks, was free to slouch on either of two soft, deep, brown leather couches facing each other across a coffee table in the booth shared by Rob Lavinsky's *Arkenstone* and Brian and Brett Kosnar's *Mineral Classics*. The civilized idea of such a take-a-load-off lounging station had never before been seen at the Denver Show, and I'd nominate Rob and Brian/Brett for some sort of Peace Prize for their thoughtfulness.

In Denver this time, as in Tucson in February, I found myself sadly missing Rod and Helen Tyson, whose *Tyson's Minerals* stand always had an array of Canadian items very well worth checking in on, including, for most shows, new finds from Rapid Creek and/or Mont Saint-Hilaire. The Tysons have found that doing the big U.S. shows is no longer cost-effective for them, and so we're left only with our memories of these friendly Albertans and their fine (and often surprisingly low-priced) Northern minerals. Likewise Beau Gordon (Jendon Minerals) is no longer offering his thumbnail wares at the show, having retired from mineral dealing to join the clergy, and Carter Rich has retired as well.

A cheerier species of change was manifest by the debut of newly "available" stocks from Philadelphia's Academy of Natural Sciences in the Main Show booths of *Collector's Edge* and *Kristalle*. In the former, a couple of witty placards and two large window posters in 19th-century style enticed visitors to come in and see the intriguingly ancient Academy minerals themselves. (See the last page of the July-August 2007 issue for some historical background, or the July online installment of "What's new in the mineral world.") If you had the means, you could take home from Denver a simply smashing 19th-century Philly specimen of such things as Utah cuprotungstite, Peruvian gratonite, German kermesite, pre-Bolshevik Russian gem crystals and other historical treasures. In general, *Collector's Edge* had the Western Hemisphere specimens, *Kristalle* and Ian Bruce's *Crystal Classics* the Eastern Hemisphere ones. Both booths were crammed all day, every day, with gawkers, a very fair number of whom turned out to be buyers as well.

Let the tour embark, then . . .

Collector's Edge (www.collectorsedge.com) also maintained a presence at Marty Zinn's hotel show, and in this room one could see specimens from a new discovery of **creedite** made earlier this year in the Henderson mine, Clear Creek County, Colorado. Pale purple microcrystals of creedite form dense drusy coverages and flat-lying sunbursts on a matrix of molybdenite-infused breccia—there's a sort of dreamy softness about the lilac druse patches in contrast to the prosaic brownish matrix. Many flats of miniature and small cabinet-size specimens emerged from the find.

At the Main Show, John Seibel of *Seibel Minerals* (johnseibel@hotmail.com) had a nice lot of **grossular** specimens which he and others collected last summer in the Coyote Front Range near Bishop, Inyo County, California. John says that the outcrops of grossular/vesuvianite skarn in this region have been visited off and on since the 1980's by field collectors, but that these newest specimens are, at their best, the finest yet found; about ten flats in all were obtained. The miniature and small cabinet-size pieces offered in Denver (mostly for under $100) show sharp, mirror-faced, red-brown dodecahedral grossular crystals to a remarkable 6 cm forming vug linings in the hard, mottled greenish brown skarn rock. A few of the grossular crystals even have small gemmy areas, and all crystals are highly lustrous. Sure, you can hold out for the famous totally gemmy grossular specimens from the Jeffrey mine in Quebec or from Alpine occurrences in Italy (or even Pakistan—see later), but these California pieces have their own style of beauty.

Commercial mining for metals ceased in 1954 in the Hansonburg district, Bingham, Socorro County, New Mexico, but collectors ever since then have been busy at several small claims in the district, most notably the Blanchard claim, wherefrom come distinctively blue-purple, cubic **fluorite** crystals associated with quartz, linarite-coated galena cubes and other pleasant things. Early in the second day of the Main Show, New Mexico field collector Ray DeMark dropped off in the booth of Rob Lavinsky's *Arkenstone* (www.irocks.com) a hoard of fine, large fluorite specimens representing the best of Ray's

Figure 8. **Brucite crystal clusters on matrix, 16 cm, from Wood's Chrome mine, Texas, Lancaster County, Pennsylvania; originally from the collection of Jesse Cheyney (1837–1909). A Philadelphia Academy of Natural Sciences specimen, sold by *Collector's Edge Minerals*; John Veevaert specimen and photo.**

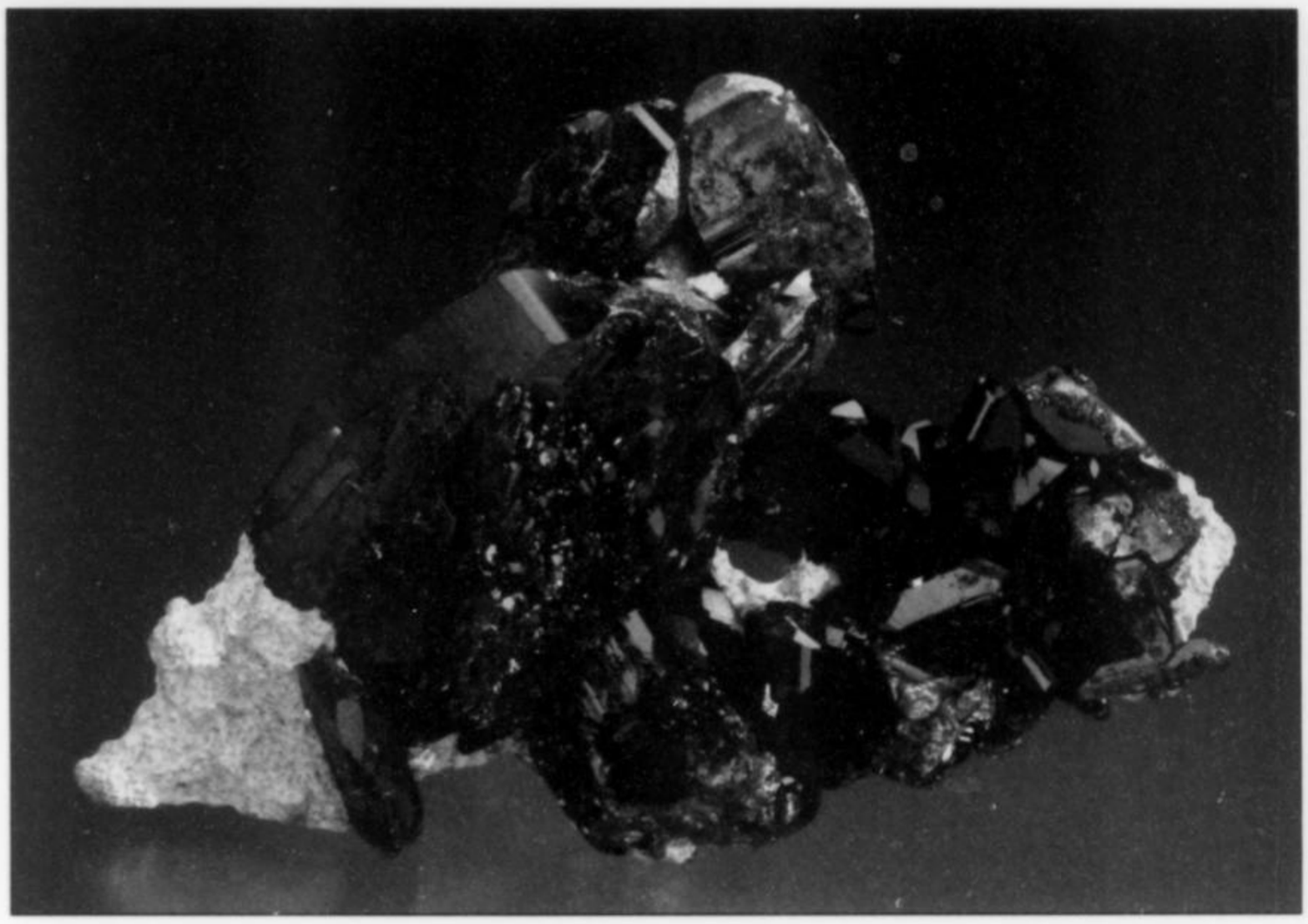


Figure 9. **Azurite crystal cluster with malachite, 13 cm, from the Milpillas copper mine, Milpillas, Sonora, Mexico. Rob Lavinsky specimen; Jef Scovil photo.**

finds during these past four years or so. By "large" I mean the kind of specimens known old-fashionedly as "museum" pieces; I mean boulder-like hunks of limestone up to 60 or 70 cm wide and/or deep, with translucent blue-purple fluorite cubes to 3 cm on edge perching lightly all over rolling, drusy quartz-coated cavity linings. Of about 20 specimens in the lot, five are more than 30 cm across, and priced in four figures; the rest, for mid-three-figure prices, run down to about 8 cm. A few specimens feature sharp, tightly intergrown cubes completely covering matrix, about two-thirds of the cubes being fluorite crystals, the rest being sharp (though somewhat rough-surfaced), lustrous gray galena crystals.

Only a couple of thousand miles east-northeast of the Blanchard claim lies another classic, equally long-standing, **fluorite** locality: the White Rock quarry, Clay Center, Ottawa County, Ohio. As I first reported from the 2007 Tucson Show, an enormous pocket opened last Thanksgiving Day at Clay Center produced many hundreds of specimens showing lustrous yellow-brown, phantomed, intensely fluorescent cubic fluorite crystals, in sizes ranging from miniatures to giant cabinet pieces with crystals to 5 cm resting singly and in groups all over matrix. California dealer Don Olson (P.O. Box 858, Bonsall, CA 92003) has been selling the bulk of the discovery; his room at the Holiday Inn in Denver was dominated by Clay Center pieces ranging in size from petite thumbnails to more of the large-cabinet-size matrix specimens. The thumbnails show perfect, razor-sharp, single fluorite crystals perched lightly on transparent blue-white celestine blades: "fluorite on a stick," Don was calling them, as they look like lollipops promising rootbeer-like flavors to impulsive or playful lickers. Also worthy of a glance are Don Olson's glowing, gemmy orange thumbnails and miniatures of **calcite**, collected 30 years ago in the Irving Materials quarry, Anderson, Madison County, Indiana. The complex, rounded calcite crystals form contact twins, most of them off-matrix, to 7 cm across.

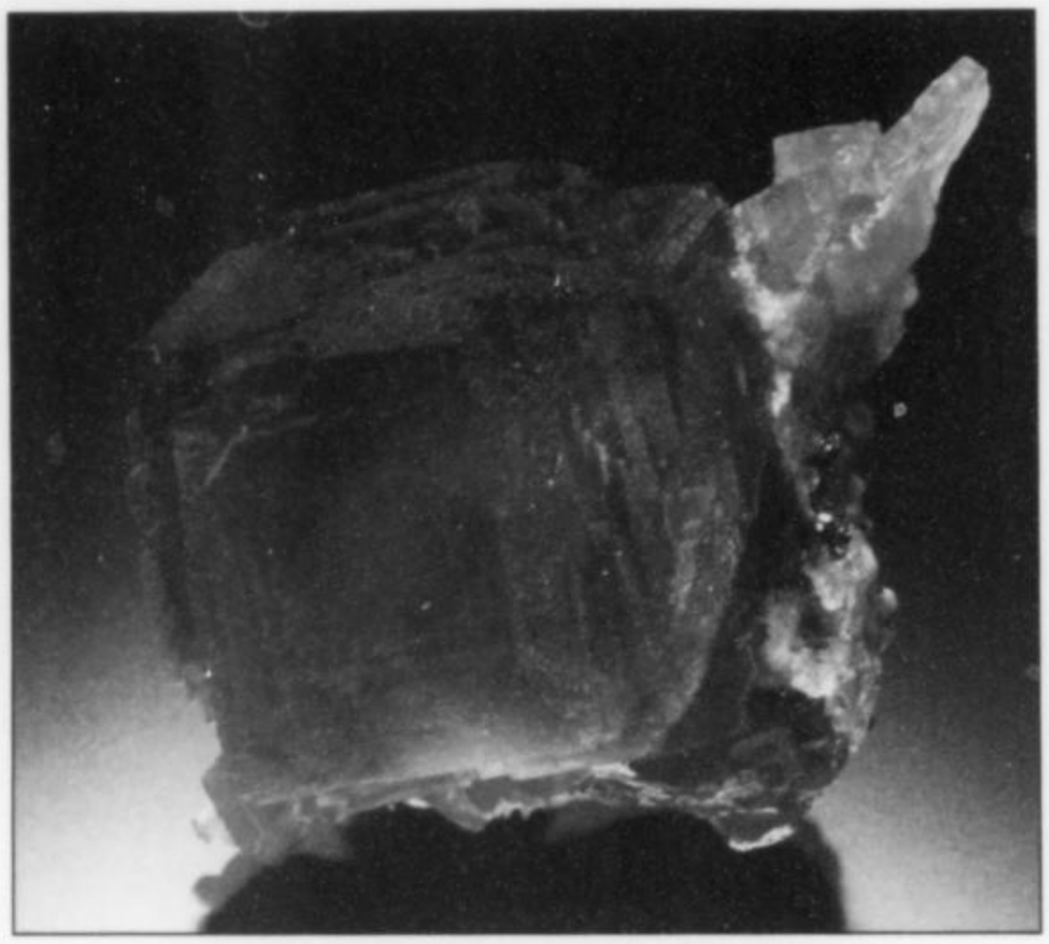


Figure 10. **Fluorite crystal on rhodochrosite, 4 cm, from the Wudong, Guangxi, China. Joe and Susan Kielbaso collection; Jeff Scovil photo.**

Figure 11. **Molybdenite "rose," 7 cm across, from the Wudong mine, Guangxi, China. Rob Lavinsky specimen; John Veevaert photo.**

Figure 12. **Brazilianite crystal cluster, 8 cm, from a new pocket found at the Marcel Telirio mine, Minas Gerais, Brazil. Rob Lavinsky specimen; John Veevaert photo.**

Limestone has been taken for many decades from the Binkley & Ober quarry, East Petersburg, Lancaster County, Pennsylvania, and modest **dolomite** specimens have occasionally emerged—but never before of the quality of those dug last August by Skip Colflesh and marketed in the Holiday Inn ballroom, Denver, by Doug Wallace of *Mineral Search* (P.O. Box 1585, Little Elm, TX 75068). Doug had two flats of platy clusters of dolomite crystals, with or without matrix, from 4 to 12 cm across, with typically saddle-shaped individuals to more than 1 cm. The gleaming dolomite saddles are of the palest peach-pink, and in some of the plates they rise in loosely attached, pretty "towers": these specimens equal the very best of the same style from old Arkansas localities and from the Tri-State district. Doug also had a few **celestine** specimens recently collected in the Meckley quarry, Mandata, Cumberland County, Pennsylvania (see the 1996 Denver report in vol. 28 no. 1). The new specimens are single, blocky, translucent, blue-white crystals to 3 cm, not as lustrous or generally as pretty as those of 1996 but signifying nevertheless that this locality is not yet finished. Skip Colflesh (of Hershey, PA) also collected these celestines—on August 12, 2007.

Leaving the U.S. and heading south brings us to one of the biggest excitements of Denver 2007. A new copper mine at Milpillas, between Nacozari and Cananea, Sonora, Mexico is just beginning to yield spectacular specimens of **azurite** and of **malachite pseudomorphs after azurite**; Rob Lavinsky had the best of the former, Evan Jones the best of the latter, in their respective booths at the Main Show. The azurite specimens are dense, shining, deepest blue cavity-linings of very sharp crystals to 2.5 cm, in miniature and small cabinet-size pieces of massive azurite/malachite matrix with some fringing areas of rust-brown gossan. The malachite pseudomorphs are sharp, tabular to blocky shapes reaching 3 cm, upstanding on miniature-size matrix, the surfaces of the (completely replaced)

Figure 13. **Mining lamp display in the booth of Mike Bergmann. Wendell Wilson photo.**

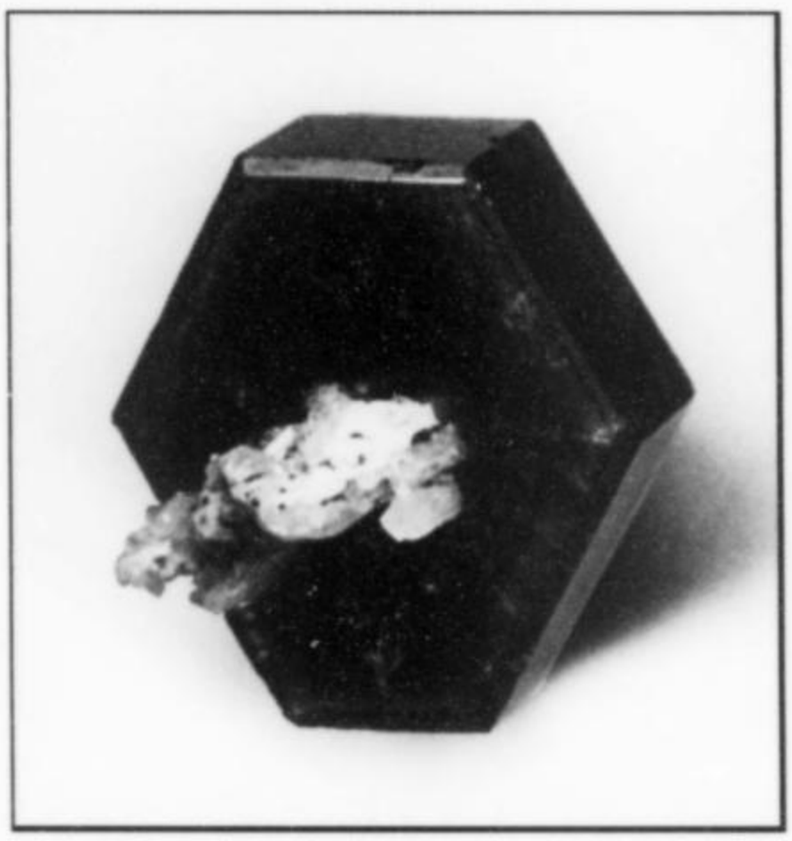


Figure 14. **Fluorapatite crystal with a bit of albite, 2.2 cm, from the Sapo mine, Minas Gerais, Brazil. Luis Menezes specimen now in the Tom Moore collection; scanner photo by Tom Moore.**

pseudocrystals being a lush and beautiful velvety green. Evan had about 20 of the pseudomorph specimens, measuring from 3 to 5 cm, and Rob had just five of the gorgeous azurites. One heard rumors of more azurites from the locality being held "in reserve" by several dealers, and Rob says that many hopeful dealers are now stampeding to the remote site. Could this be a reincarnated Bisbee or Tsumeb? In February, in Tucson, we may find out.

Another major what's-new was brought by master Brazilian dealer Luis Menezes (lmenezesminerals@uol.com.br) out of the Sapo mine, Goiabera, Minas Gerais, to a room in the Holiday Inn where eager crowds seemed always gathered around the swarm of 50 or so small specimens on Luis's glass shelving. Recall that the Sapo mine has recently yielded peculiar-looking specimens of what was at first incorrectly called chlorapatite and later identified as hydroxyl-apatite, as mottled gray-green, discoid crystals to 3 cm or so resting lightly on microcline crystals and cleavage blocks. Well, last July a remarkable pocket was opened which proved to harbor another apatite-group species, **fluorapatite**, in specimens of two entirely different appearances, some showing crystals of both types resting one upon the other. First, transparent, pale grayish yellow, elongated fluorapatite crystals form curving parallel aggregates, familiarly called "scorpions"; these aggregates are not especially attractive but many of the fluorapatite crystals are weirdly hollow, and the groups reach lengths of 25 cm. Second, and radically prettier, fluorapatite appears as highly lustrous, slightly beveled hexagonal-tabular crystals to 2.5 cm wide and tall and 1 cm thick, either as floater singles, floater clusters of two or three, or matrix pieces showing the pristine hexagonal tabs resting on the yellowish "scorpion" aggregates. These swanky crystals are mirror-faced, impeccably sharp, and deep green in their inner zones but nearly colorless in thin outer zones rimming them all around; some have little blossoms of white albite crystals clinging to the pinacoid faces. For the best of these thumbnail and small-miniature specimens, Luis was asking between $150 and $200—hence those eager crowds in his room, once word got around. Luis says he will probably have more Sapo mine fluorapatites of both types in Munich in October/November. Chris Wright of *Wright's Rock Shop* (www.wrightsrockshop.com) had a few more, superb examples in Denver.

Wright's Rock Shop also had a single specimen of a remarkable new style of **calcite** from the amethyst geode-mining area of Rio Grande do Sul, southernmost Brazil; Alvaro Lucio told me that he'd had a few specimens of this calcite as well, but had sold them before I got to his room in the Holiday Inn, and further, on set-up day at the Main Show I found Tony Kampf putting another specimen (even better than Wright's) into the display case of the Natural History Museum of Los Angeles County. All parties were

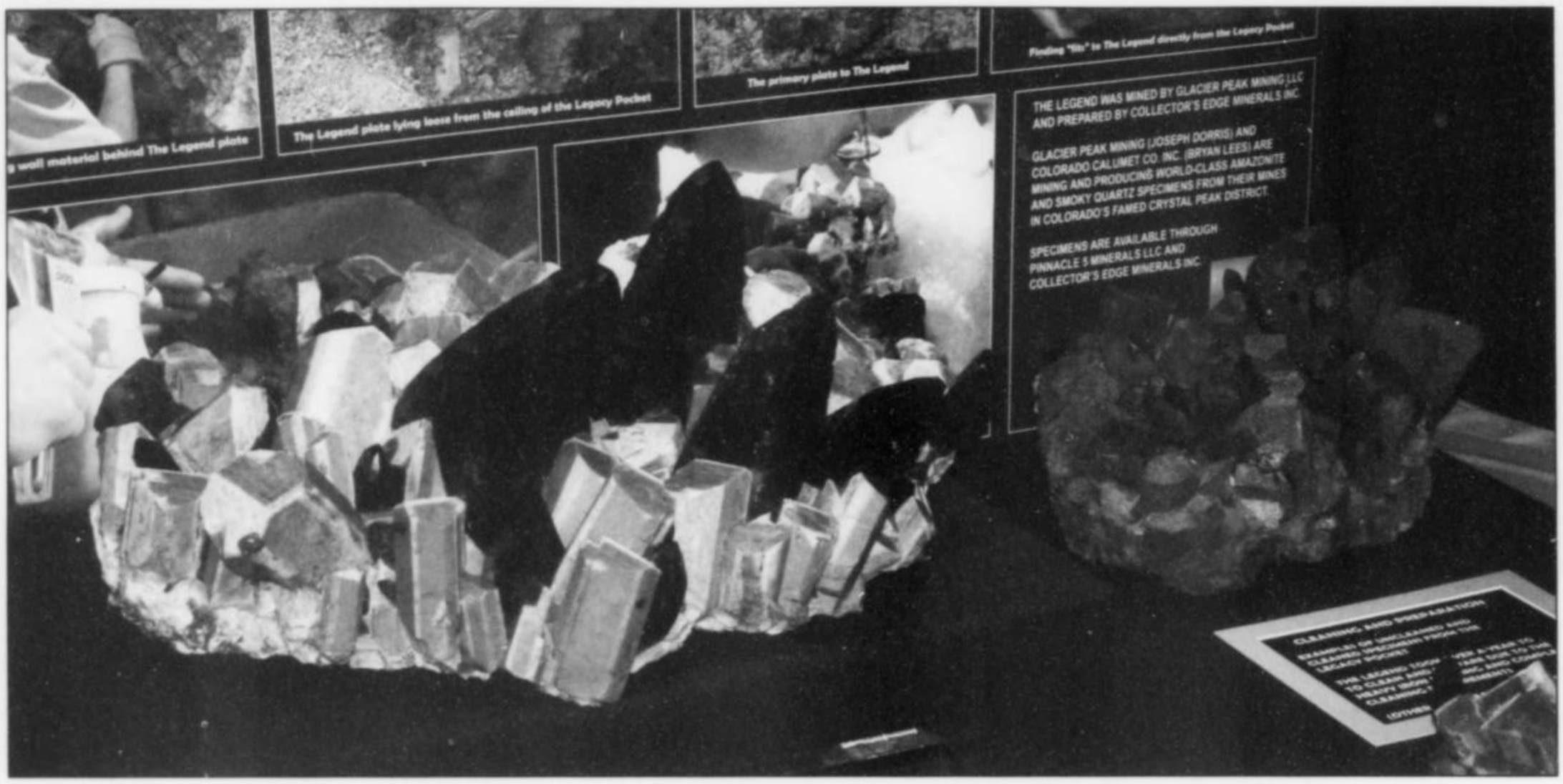


Figure 15. **Exhibit of amazonite and smoky quartz specimens before (right) and after (left) cleaning. The specimens were mined by Joseph Dorris of *Glacier Peak Mining* and were cleaned and prepared by *Collector's Edge Minerals*. Wendell Wilson photo.**

calling it "quartzlike calcite," and justly so, though the crystals are larger and yellower than the "quartz-like" ones emerging of late from the Dachang mine in China. The Brazilian specimens feature thick, lustrous, transparent, pale yellow prismatic crystals to 15 cm long, almost exactly mimicking typical quartz crystals, i.e. they are terminated by three dominant, high-angle rhombohedron faces, and there is a smaller, subordinate rhombohedron, and the prism faces show prominent horizontal striations. Only a closer inspection shows that the luster, internal cleavage cracks and general *Gestalt* is that of calcite, not quartz. The crystals rise from a matrix of celadonite-stained basalt. These large and dramatic specimens hail from the Getulio Vargas district of Rio Grande do Sul.

In the Holiday Inn, Argentinian dealer Jorge Raúl Dascal of *Patagonia Minerals* (patagoniaminerals@hotmail.com) had a freshly collected lot including record-size specimens of **hematite pseudomorphs after magnetite**. We first came to know this material in early 2003, when Jorge came to Tucson with whole tablesfull—thousands of specimens—of the metallic black clusters of octahedral pseudocrystals said to have come from a cinder pit near the Payun Matru volcano, Malargue, Mendoza Province, Argentina. The new specimens differ from the old in that the clusters reach 25 cm; they were collected (early in 2007) from a new site about 50 km from the old one. The lustrous octahedrons reach 5 cm on edge; all are quite sharp, and many are undistorted, others being skeletal and elongated in the familiar style.

Cal Graeber (cgraeber@tfb.com) and his collecting team had a very good summer season at the Rogerley mine, Weardale, England, digging out gorgeous groups of deep sea-green, transparent, highly fluorescent **fluorite**, with cubic crystals to 4 cm on edge. At the Main Show, Cal had several miniature-size clusters with all the beauty one could wish for, and a couple of majestic plates to 20 cm across blanketed with crystals. According to Cal, these specimens came from the "Jewel Box" and "Rat Hole" pockets, the latter having been breached on the season's very last day.

This past year has seen the emergence of generous numbers of superb **galena** specimens from the well-known Kruchev dol mine, Madan district, Bulgaria, showing brilliantly lustrous, flattened spinel-law twins of galena crystals to 10 cm, with quartz, chalcopyrite and sphalerite. Ross Lillie of *North Star Minerals* (northstarminerals@comcast.net) had plenty of these pieces, mostly miniature-size, in his room in the Holiday Inn. So I thought I had seen it all, Bulgarian galena-wise, but then in Rob Lavinsky's *Arkenstone* booth at the Main Show I had to rethink the whole business. According to Rob, and as later confirmed by Ivan Pojarewski of *Bulgarian Minerals & Gems* (www.bggems.com), a pocket discovered in March in the Djourkovo mine, Madan district, was the source of some quite amazingly odd specimens of galena—about 100 in all—whereon *hollow* cubic and cuboctahedral crystals to 3 or 4 cm perch upon massive gray, mixed-sulfide matrix. Picture the superstructural frame of a building under construction: these crystals consist *only* of their outer edges, as thin gray girders, and have no interiors, i.e. you can look straight through the crystal along any face-centered crystallographic axis, and see daylight. Others more wise than I may speculate on the growth (or dissolution) mechanism, but meanwhile all are agreed that these surreal specimens are absolutely unique. Rob had a handful of the very best, all miniature-size, and Dr. Pojarewski had a few more. The latter gentleman also showed me some small but nice **barite** specimens such as are starting to trickle from the Djourkovo mine and from one other mine in the Madan district: thick, simple-tabular barite crystals to 2.5 cm, translucent to transparent and palest yellow, some with phantoms, clustering on dark sulfide matrix.

When the brilliant groups of very thin, distorted **hematite** crystals from Morocco began to appear on the market in the early 1990's, the locality was misreported as "Djebel Nador, Algeria"; later lots, assigned to "Nador, Morocco" or to "Segangan near Nador," made splashes at major shows in the mid-1990's. The locality in question is actually the Ouichane iron deposit near the village of Segangane, 15 km southwest of the town of Nador, which itself lies 25 km south of the former Spanish enclave of Melilla, on the Mediterranean coast of Morocco. The superb hematites of this place have not been marketed in quite awhile, but at Denver this year Alain

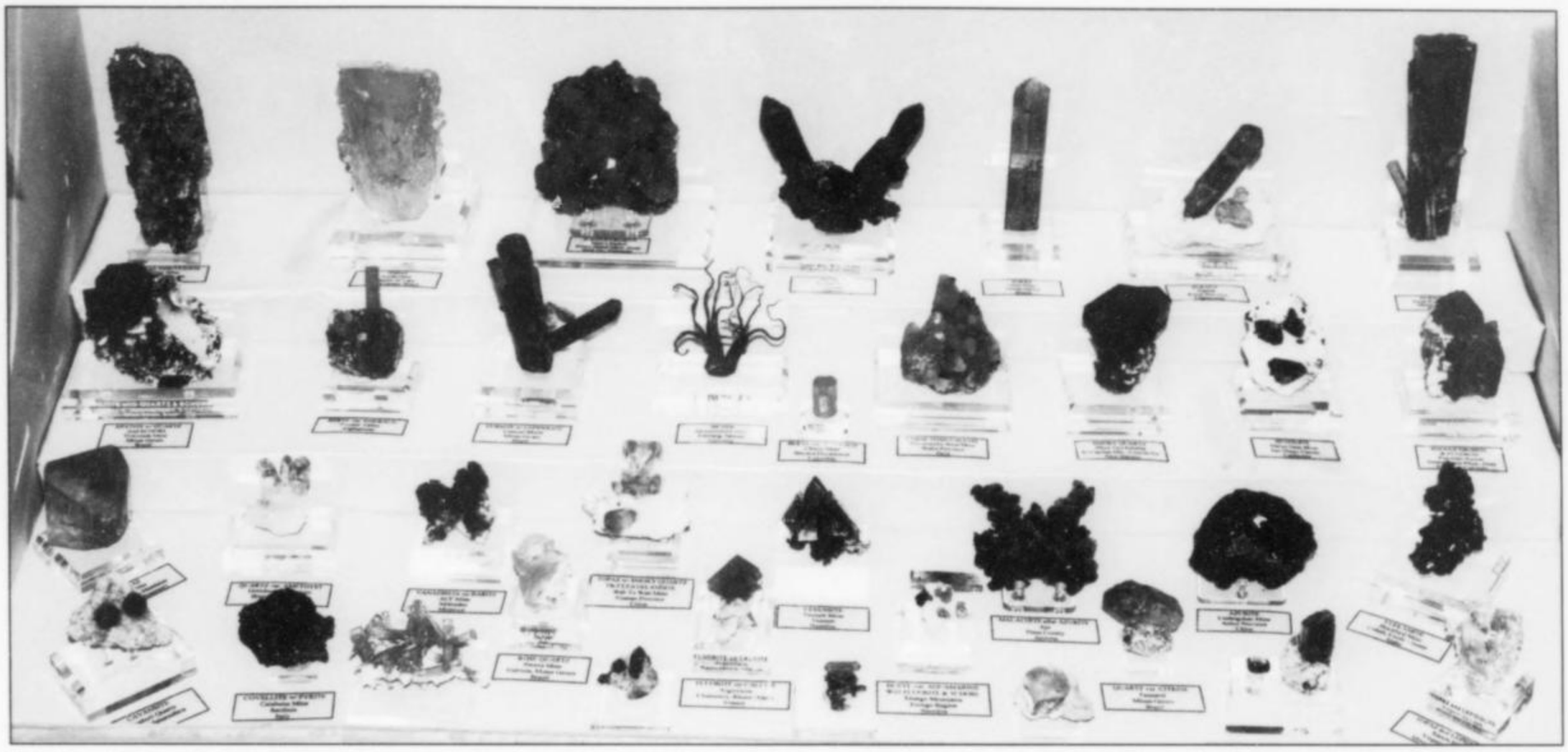


Figure 16. **Exhibit of specimens from the collections of members of the Mineralogical Association of Dallas (MAD). Wendell Wilson photo.**

Martaud of *Alain Martaud Minéraux* (alain.martaud@wanadoo.fr) had representative pieces from a find of six months ago. Distorted, cavernous, brilliant black hematite crystals to 1.5 cm form loose clusters of small-miniature size, and there is one fine 8 × 10-cm piece with the hematite crystals sitting up on a white coating of drusy aragonite on matrix. Watch for more showy hematite specimens from this locality, and try not to confuse the place with Djebel Nador, Algeria (the type locality for nadorite, by the way).

The more temperamentally hopeful among us have been hoping hard for new floods of fine specimens from the complex pegmatites of the Alto Ligonha district, Zambezia Province, Mozambique (see the thorough article in vol. 31 no. 6), where a new round of specimen-seeking has been underway for the past several years. So far there have been no "floods," but interesting small finds occasionally have reached the market. In Denver this year, Ross Lillie of *North Star Minerals* offered thumbnails and miniatures from a lot of about 35 **microlite** crystal clusters, mined in 2005 in the Naqisupa mine, Alto Ligonha. Fairly lustrous, opaque chocolate-brown, somewhat distorted microlite octahedrons to 2 cm form loose, tightly intergrown groups with no associated species; these very nice little specimens were going for around $100 apiece in the North Star room in the Holiday Inn.

Also in the interesting-small-lots-from-major-localities department, Ivo Szegeny of KARP (www.karp.cz) had a few very nice miniature-size **azurite** crystal clusters from the Akche-Spasskiy mine in the great copper mining district of Dzhezkazgan, Kazakhstan. Sharp, medium-blue, wedge-shaped, compound azurite crystals to 1.5 cm are gathered in rosette-shaped groups without matrix to 5 cm.

One of Rob Lavinsky's coups at the 2005 Tucson Show was a 3.1-cm, gemmy red crystal of the extremely rare species **väyrynenite**, reportedly from the Shengus area, Gilgit district, Pakistan; and in the 2007 Tucson Show report I noted seeing the "world's finest gem crystal" of väyrynenite in Herb Obodda's incredible case of Pakistani specimens at the Main Show. I was thus not entirely unprepared (though still duly impressed) when in Denver this year Jeff Fast of *JBF Minerals* (www.jbfminerals.com), having collared

Figure 17. **Japan-law twin of smoky quartz, about 7.5 cm tall, from Mina Tiro Estrella, El Capitan Mountains, Lincoln County, New Mexico; exhibited by Wallace Mann in the MAD case. Wendell Wilson photo.**

me in the hallway of the Holiday Inn and hauled me into his room, showed me about ten loose, sharp, singly and doubly terminated, bladed crystals of väyrenenite from less than 1 cm to 2.5 cm long, found only a month ago (he had not yet finished cleaning, let alone pricing them). He could say only that the crystals had come from somewhere in the Shigar Valley, in the Skardu district of Pakistan's Northern Areas—a different site than the one where Rob's specimen

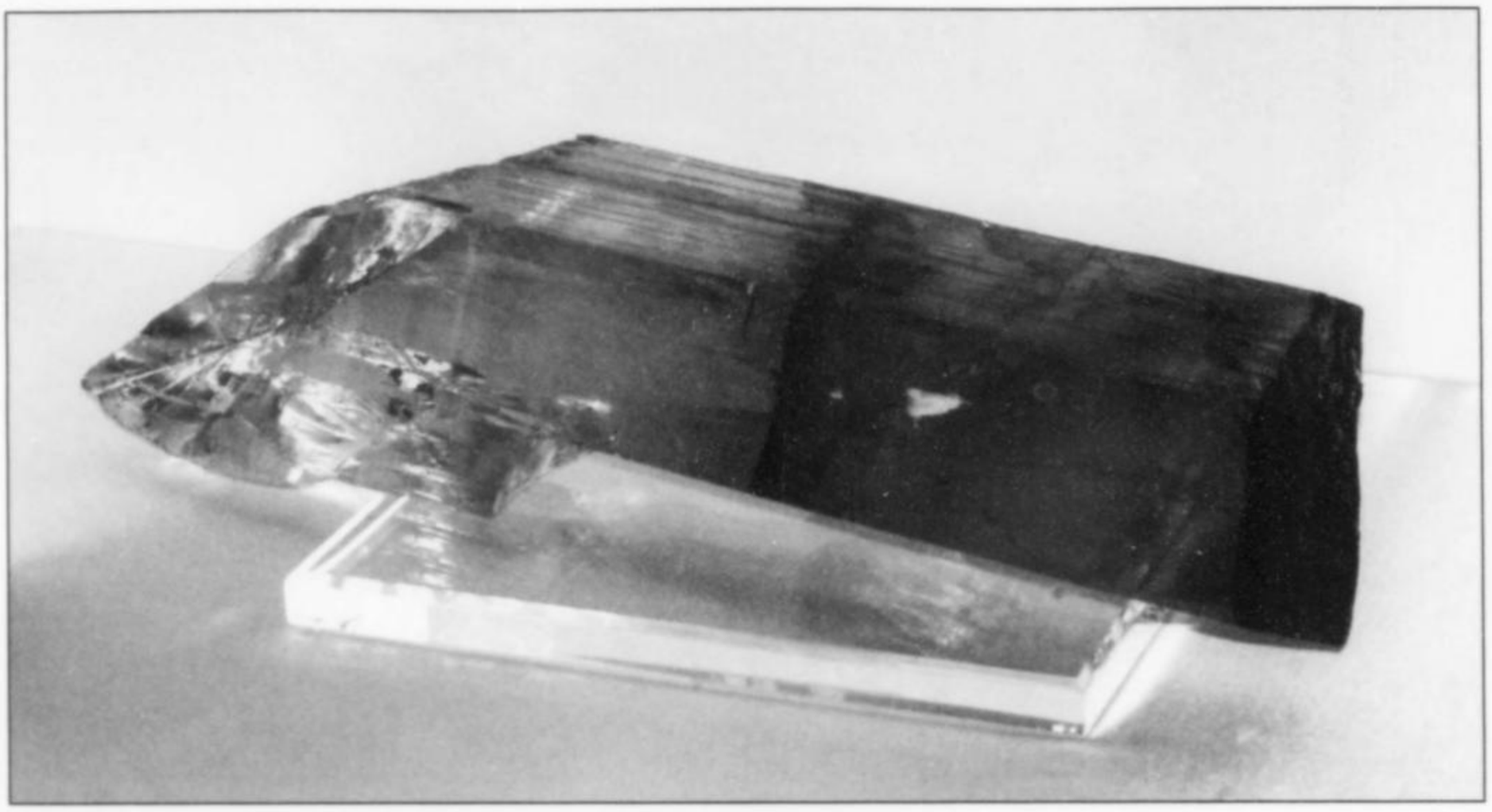


Figure 18. **Spodumene crystal, about 40 cm, from the Resplendor mine, Minas Gerais, Brazil. Irv Brown and Stuart Wilensky specimen; Wendell Wilson photo.**

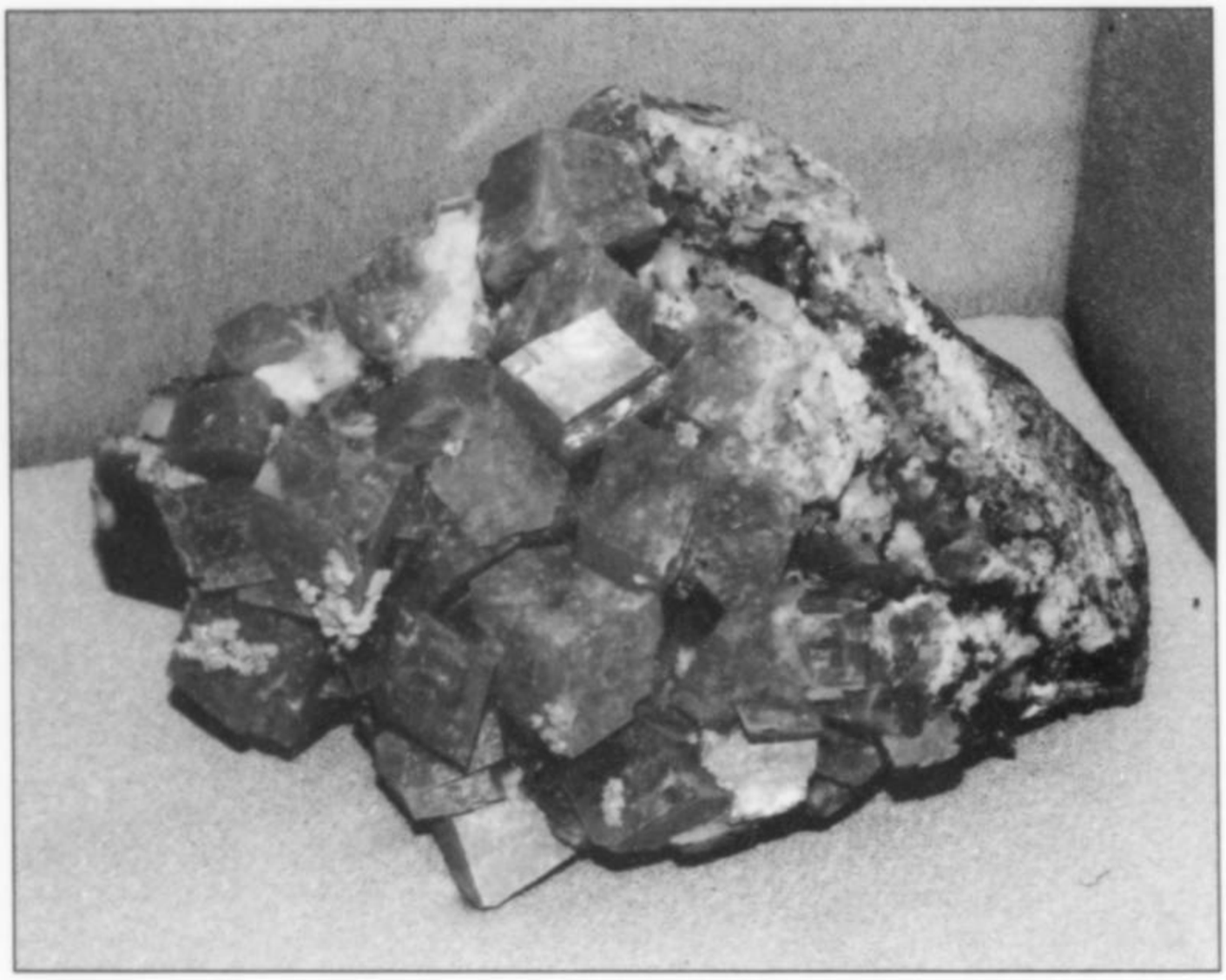


Figure 19. **The "Postage Stamp Rhodochrosite" (it was pictured on a U.S. postage stamp in 1974), about 12 cm, from the American Tunnel, Silverton, Colorado. Smithsonian Institution collection; Wendell Wilson photo.**

was discovered. And the color is different: Jeff's crystals are a soft, translucent medium-pink. And there is the matter of associations: Rob's crystal is "naked," but one of Jeff's has a euhedral, pale orange, terminated crystal of childrenite measuring about 3 mm clinging to one side.

Dense and shape-shifting indeed are the fogs of Pakistani locality attributions. From the 2007 Tucson Show I reported on some beautiful clusters of gemmy orange **grossular** crystals, closely resembling those of the Jeffrey mine, Quebec, which Steve Perry (P.O. Box 136, Davis, CA 95617) had on hand. Steve was pretty sure that these specimens had come from the famous rare-earth pegmatite at Zagi Mountain, and after some waffling I went ahead and repeated this. At the Main Show in Denver this year, though, Dudley Blauwet of *Mountain Minerals International* (mtnmin@attglobal.net) said that, no, the grossular specimens come from near the village of Mana, Bajuar Agency, Northern Areas, Pakistan, and Steve Perry (who knows that nobody Knows these things as Dudley does) graciously acceded, and promised to change his labels. The specimens are very lovely, with highly lustrous, completely gemmy, orange-red dodecahedral grossular crystals to 2 cm in intergrown groups, some with pale green, subhedral diopside crystals. Dudley had about 15 miniatures priced at $250 to $650.

Zeolites from the Deccan Plateau basalts of India seemed to be staying the course, but there *was* a nice selection of newly found **quartz** specimens in the Holiday Inn room of K. C. Pandey of *Superb Minerals* (www.superbminerals.com). These come, not from the Deccan Plateau at all, but from a heavily touristed region near the town of Kullu in the northern state of Himachal Pradesh, which neighbors Indian-claimed Kashmir. The occurrence is giving up Arkansas-like groups of lustrous, transparent, colorless quartz crystals of conventional form but reaching 25 cm long, in groups reaching 45 cm. No major associated species are evident on these specimens, although some of the quartz crystals are included by tiny, bright red hematite platelets and/or microcrystals of pyrite.

Time now for *another* locality correction, this time concerning mysterious Myanmar (Burma). In my late-July online "what's new in the mineral world" column I showed a picture representing a recent find of attractive **elbaite** specimens—small groups of translucent, bright pink crystals, some blue-capped—which had appeared on a Chinese dealer's website. Answering my inquiry, the dealer had said that the specimens came from the "Gaoligangshan mine, Gaoligangshan Mountain," just on the Chinese side of the China/Myanmar border, and dutifully I repeated this in the online report. At Denver, however, Ivo Szegeny of KARP had a showcase shelf full of thumbnails and miniatures of what is clearly the same material, and he is *certain* (as is Dudley Blauwet and a couple of other reliable people) that the true locality lies in Myanmar; specifically, according to Ivo, it is Pyi-Gyi-Taung Mountain, near Let-Pan-Hla village, Mandalay district. Guanghua Liu's recent book *Fine Minerals of China* mentions that Gaoligangshan Mountain in western Yunnan Province, China, is indeed a place where mining of gem-bearing pegmatites is taking place . . . but one recalls that the border region is wild, great numbers of ethnic Chinese live and do business in northern Burma, the Chinese are marketing minerals more aggressively all the time, and, in short, it's easy to see how Burmese crystals could be offered as Chinese ones, sometimes by design, sometimes just by the helpless increase of informational entropy. At any rate, the KARP specimens show prismatic elbaite crystals to 3 cm in loose clusters or resting on massive quartz/feldspar matrix or (better yet) on nice chalk-white crystals of feldspar, sometimes with fat, transparent, colorless crystals of quartz. Some of the elbaites boast a sprightly pink hue while other crystals are color-zoned grayish purple to pink; all are trigonally terminated and highly lustrous.

Uncharacteristically weak this time in *really* new items, China still hangs in there with fresh, or interestingly evolving, offerings from finds of the recent past. *Collector's Edge* had some gorgeous cabinet-size specimens of **fluorite/calcite** recently mined in the Xianghualing mine, Hunan, with the fluorite expressing itself as sharp, frosted, pale green octahedral crystals to 4 cm, the calcite as trigonal discoids to 6 cm, gray-white, translucent and lustrous. Berthold Ottens (ottens-mineralien@t-online.de) had some specimens from the exciting Chinese find of **euclase** of which Tucson showgoers became aware in 2007. In Bert's room in the Holiday Inn one could see very fine thumbnail-size clusters as well as matrix plates to 15 cm across covered generously with the sharp, glassy, colorless euclase crystals up to 2 cm individually. And here now is yet *another* locality correction: Although in Tucson the locality given tentatively for the euclase was "Zhongyi mine, Jiangxi," Bert Ottens now says that the true locality—which he has visited—is the Piaotang mine, Daye district, Hubei. German-reading people who want a somewhat fuller account may refer to Bert's latest "Chinesische Tagebuch" (Chinese diary) entry in the May 2007 issue of *Lapis*.

Rhodochrosite from China is looking more impressive with each new appearance. In the Denver Holiday Inn room run by Wendy Zhou of *Wendy's Minerals* (www.wendysminerals.com) there was a handful of miniatures representing two styles of rhodochrosite found in a small private mine often designated, simply, as "Wuzhou": (1) loose, lucent, medium-pink, Mickey Mouse ear-shaped crystals free of associations, and (2) clusters of rhombohedral crystals with individuals to 3 cm, these recalling Sweet Home mine specimens, especially as some have crude crystals of greenish purple fluorite attached. Bryan Lees and Bert Ottens both say, by the way, that the mine in question is near Wudong (village) and Linbao (town), in Wuzhou Prefecture, Guangxi Province.

Also notable in the *Wendy's Minerals* stock are about 50 loose single crystals and small crystal clusters of **pyromorphite** from the now famous Daoping mine, Guilin, Guangxi Province. I wouldn't consider them as "what's news" except for the fact that the stout, deeply hoppered crystals are all of a quite intense hue of medium-green, have relatively low luster, and generally look *different* from specimens in the earlier runs of Daoping mine pyromorphite. Wendy may be correct in saying that they represent a new find in the mine (suggesting that the locality is *not* finished for specimens, as has been generally believed).

And *Wendy's* also obtained about 100 nice-looking **calcite/pyrite** specimens taken in July 2007 from an unspecified mine near the mineral-dealing center of Chenzhou, Hunan. On these giants, calcite appears as single and compound, translucent gray-white rhombohedral crystals to 12 cm on edge; there are loose single crystals, loose clusters of 2 to 10 crystals, and mounds of crystals on sparse dark gray matrix. The distinctive thing is that starry microcrystals of pyrite form perfectly straight bands, some wide, some narrow, along the outside edges of the calcite rhombohedrons, or following striations across their faces. These "museum"-size pieces with lustrous, whitish calcite crystals embraced manifoldly by glittering galactic arms are extremely attractive.

The last bulletin from China concerns a handful of recently mined **molybdenite** specimens which were to be seen in the Main Show booth of Rob Lavinsky (*Arkenstone*). Fist-sized chunks of nondescript-looking "rusty" quartz matrix are veined by molybdenite, and many surfaces boast bright metallic gray hexagonal crystals overlapping in rosette-shaped aggregates to 7 cm across. Rob has been told that these specimens came from a mine now into its fifteenth year of exploiting molybdenum ore, called "Wuzhou". . . but see three paragraphs earlier for more precise terminology, for very likely this is the same place as that which produces specimens of rhodochrosite, as already recounted: Wudong in Wuzhou Prefecture, Guangxi Province.

Our touring ship comes to anchor at last in Australia. At the Main Show, Mike Bergmann (www.mikebergmannminerals.com) was showing off what was left of a group of about 40 elite **crocoite** specimens he had recently scored; by Main Show time only eight of them remained unsold. The specimens were dug 23 years ago in the Adelaide mine, Tasmania. The largest three are each about 30 cm across, and the other five are not much smaller. They show unspeakably delicate, bright red-orange, splintery, mostly hollow crystals (but many terminated) to 4 or 5 cm long, rising in airy jumbles from pieces of brown gossan matrix. Associated species include siderite microcrystals and earthy yellow mimetite patches. These are among the very best crocoite specimens I have ever seen.

EXHIBITS

As one passed through the turnstiles and entered the big central area of the Denver Merchandise Mart, one first encountered the wide case announcing the show theme, which this year was the minerals of the Leadville mining district, Lake County, Colorado. That first annunciatory case had a very well set-out array of fine, oldtime Leadville specimens from the collections of Dave Bunk, Ed Raines and the Colorado School of Mines. Two other adjacent cases down the aisle from it, put in by the same people, featured good things from the Alicante mining district and the Black Cloud mine. There were further cases aplenty devoted to Leadville minerals, artifacts, maps, history, lore . . . their creators included (in no particular order) the American Museum of Natural History; the Colorado School of Mines; the California State Mining and Mineral Museum; Montana Tech Mineral Museum; Tom Hughes; and the North Jeffco Gem and Mineral Club. The University of Wollongong, Western Australia, compared the mineralogy of Leadville, Colorado to that of Leadville, New South Wales; likewise the New Mexico Bureau of Geology and Mineral Resources compared New

Mexico's Leadville mining district to Colorado's (guess what? the latter has better minerals).

The Smithsonian mounted a case showing miscellaneous Colorado minerals, including the big and wonderful "postage stamp" rhodochrosite from Silverton. Joe, Scott and Tim Dorris of *Glacier Peak Mining* showed superb Pikes Peak microcline and smoky quartz specimens, and, in another exhibit case, "before" and "after" microcline/quartz specimens, demonstrating what specimen cleaning and preparation work (as practiced by the masters at *Collector's Edge*) is all about. Some notable non-Colorado displays included a case of enormous, dramatic sulfide specimens (Rice Northwest Museum); "Minerals from Brazil with stories to tell," with Brazilian growth-oddities (Los Angeles County Museum of Natural History); an awesome Michigan silver, Michigan calcite enclosing copper, and Kongsberg silver (Cranbrook Institute); choice Himalayan and other Asian specimens (Dudley Blauwet); Pakistani miniatures *almost* as fine as those Pakistani thumbnails he had in Tucson (Herb Obodda); calcite (Al and Sue Liebtrau); and the highly encouraging "Grand specimens for under a grand" (Guy Lyman).

Then, of course, there was Keith Proctor's big knockout case—actually two big cases and one smaller one—with miscellaneous beautiful specimens from his collection, including whole long rows of aesthetically harmonious elbaites, aquamarines and golds. In the same mega-category there was Irv Brown's case of 20 top pieces, many of them, I noticed, new, or at least not shown before in his cases here or in Tucson. And finally, the case put in by members of the Mineralogical Association of Dallas was, I think, this group's best yet. You would have to be MAD to deny the dazzlement of such things as the Idaho ludlamite, Pakistani pink fluorite, Himmelsfürst mine wire silver, New Mexico smoky quartz Japan-law twin, etc., as tastefully laid out by these dozen or so Texas folks, quite a few of them fairly new to collecting and ever-electrified with enthusiasm: talking to them is a happy and cheering experience.

So long, podners, from Denver. The next report will be from Munich.

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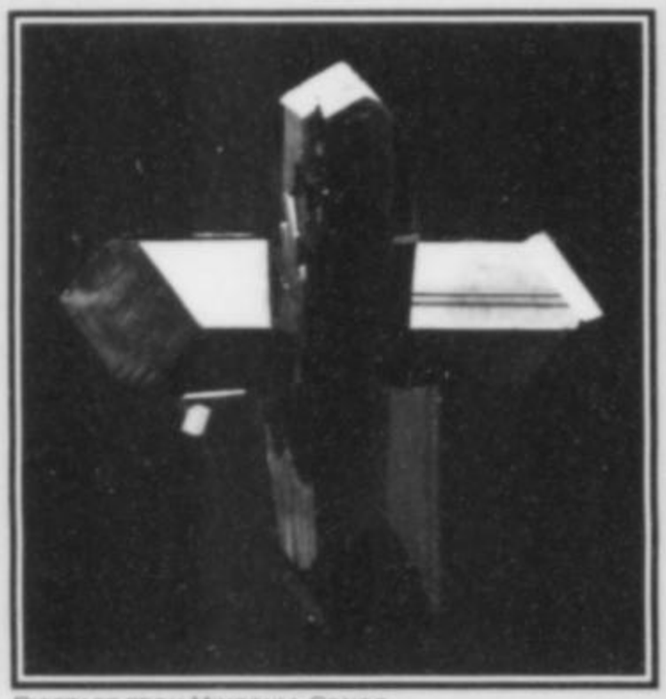

Dioptase from Mindouli, Congo

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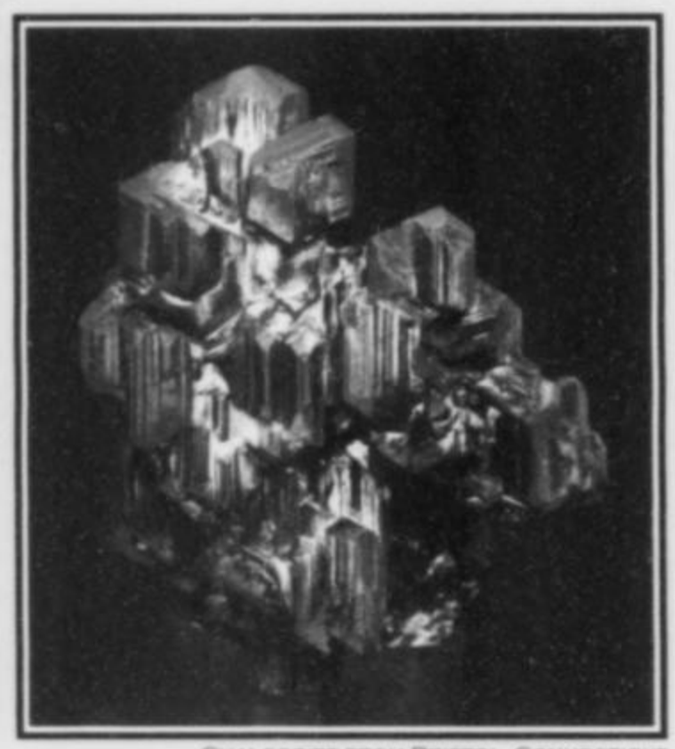

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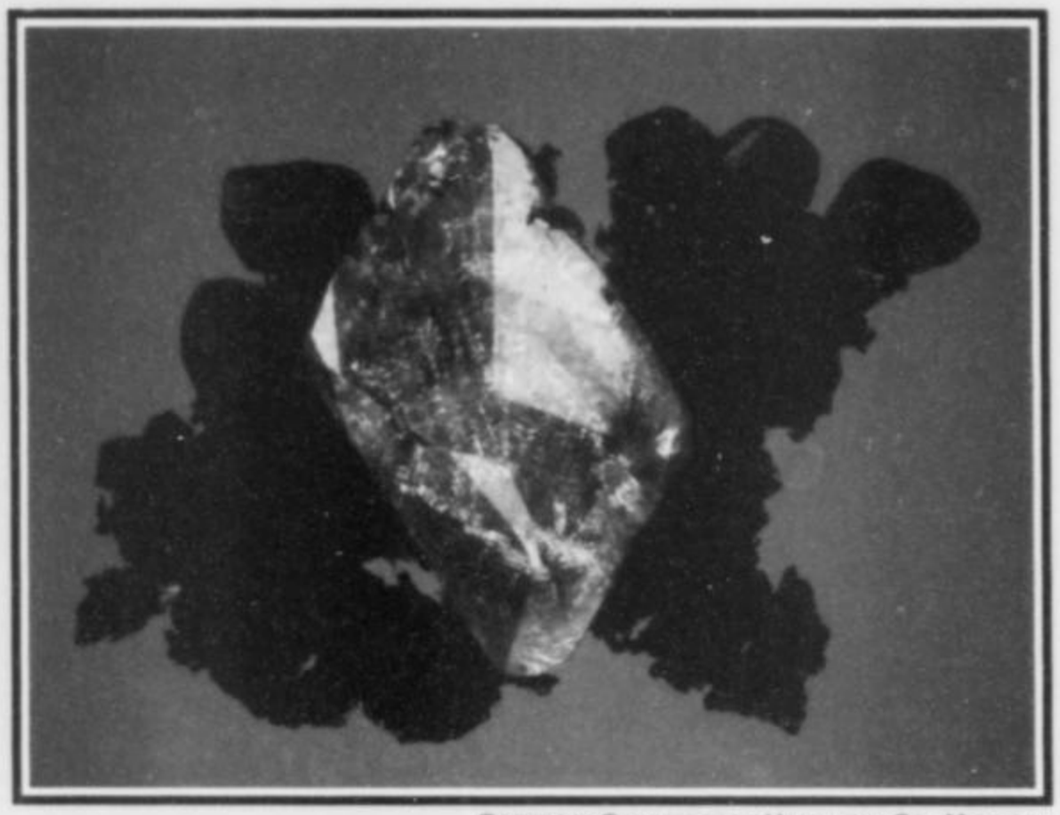

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Letters

Gwindel Formation Theory

I would like to take this opportunity to provide answers and explanations regarding the "mysteries" referred to in the excellent article "Alpine Quartz Gwindels" by Thomas Moore, published in the March-April (2007) issue of the *Mineralogical Record*. At the end of this letter I will also offer some other ideas which, I think, might give your readers a new perspective on this interesting topic.

SYMMETRY OF QUARTZ

To interpret properly the empirical facts about twisted quartz crystals (gwindels) we have in the first place to consider what I call in my book *The Symmetry System* (2002) the "trivial" crystallographic symmetry of quartz. Quartz crystallizes in the trigonal class 32. This class has the quality of *enantiomorphism*, which expresses itself morphologically as left-handed and right-handed crystals. Enantiomorphic "handedness" is revealed by the trapezohedron face ***x*** in its right ***x***'{$\bar{1}$61} or left '***x***{151} position (see Figs. 1a and 1b). Right or left

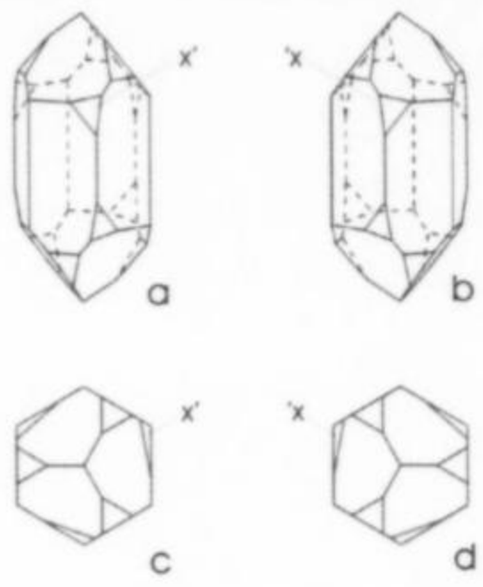

Figure. 1. **Right-handed (a) and left-handed (b) quartz crystals and their (001) projections. Note the 2-fold screw axes (a and b) and 3-fold screw axes (c and d) by following the blue lines.**

trapezohedrons occur in pairs at every other prism edge and actually define a two-fold screw axis (follow the blue line in Figs. 1a and 1b). A quartz crystal has three two-fold screw axes that are perpendicular to its main three-fold screw axis (see Figs. 1c and 1d and follow the blue lines). We can conclude that it is the symmetry of quartz that is the precondition for the formation of twisted crystals.

Now I will address five of the "mysteries" about gwindels and their formation which were mentioned in the Moore article:

(1) The fact that gwindels and normal quartz crystals may coexist in the same pocket

It is the orientation of each particular crystal at the point of its nucleation that dictates its further growth. As a matter of fact, in an Alpine cleft these points of nucleation are already present in the matrix rock. Their orientation can be taken as stochastic (random), but in the case of metamorphic rocks they can also have certain statistically predominant orientations.

It is what we may call the "attachment symmetry" of each particular quartz nucleus that defines the "survival" rate of the growing crystal. There is an infinite number of possible orientations of the quartz nucleus, but its trivial symmetry favors just two of them.

If we want to explain the frequency of some quartz orientations, then we have to take into account attachment symmetries that are thoroughly described in *The Symmetry System*. With the quartz 32 symmetry there are two attachment symmetries possible. The first is obtained whenever the quartz nucleus is attached to the matrix perpendicularly to its crystallographic *c*-axis. The resulting attachment symmetry is a 3-fold symmetry that actually corresponds to a point group 3. It has left and right handedness, too. A crystal in this position is strongly polarized and grows fastest along the direction of its 3-fold axis (the *c*-axis). It will develop a prismatic form and will twist to the left or right along the 3-fold screw axis in accordance with its handedness (see Fig. 2a). Crystals with this orientation are favored in growth over crystals with less perpendicular orientations; they will grow more rapidly than crystals whose c-axes are at acute angles to, or parallel to, the matrix. Twisting along the three-fold axis can be noted on the Alpine quartz crystals with this symmetry. However, their twisting degrees are quite small.

The final orientation of some crystals may not be perpendicular to the matrix as a whole, even if it was so originally on the tiny spot where they began their growth. The matrix may be rough-surfaced or irregular on a fine scale, and as it grows the crystal base will cover a wider portion of the matrix and becomes larger, while maintaining the original orientation. In the end this results in the various different orientations of crystals relative to the overall orientation of the matrix., i.e. the rock wall.

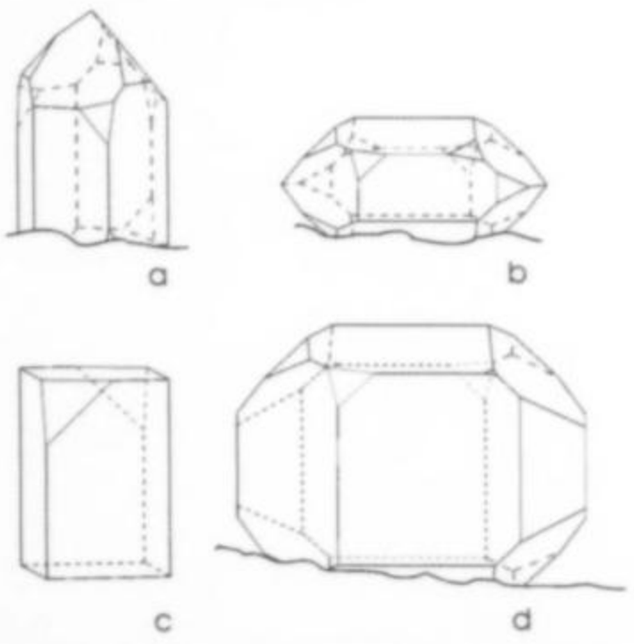

Figure 2. **Quartz crystal attached at its (001) base to the matrix develops a 3-fold attachment symmetry corresponding to a point group *3* (a). If the crystal is attached to the matrix with its [2$\bar{1}$0] edge (b) then it develops a twisted and flattened habit known as gwindel (d). The tripomorph symmetry of a crystal thus attached is represented schematically in (c). Note the blue-lined positions of class-specific trapezohedrons.**

The second possible attachment symmetry results if the quartz nucleus is attached to the matrix with its [2$\bar{1}$0] edge. A very polar 2-fold symmetry results that actually corresponds to a point group 2 (see Fig. 2b). This symmetry is chiral and can therefore be present in either the left or right analogs. It is, at the same time, hemimorphic. Combining these two properties, we can say that the crystal with this symmetry is left-handed or right-handed, and that its "termination" is not the same as its base. Crystals with such symmetry have a twisted form; to denote it, the term *tripomorph* symmetry (from the Greek word *tripanon* for a drill) will be used from here on. Figure 2c shows an example of a crystal with tripomorph symmetry. All quartz gwindels follow this rule. Note the class-specific faces in blue and compare their positions with the corresponding ones for the quartz gwindel in Figure 2d.

The polarity of the crystal with this attachment symmetry is stronger with respect to that of the crystal with 3-fold attachment symmetry, which means that the crystals with 2-fold symmetry will grow faster than those with three-fold symmetry. Indeed, if gwindels are present in a cleft they tend to be larger than crystals with 3-fold symmetry in the same cleft.

However, untwinned quartz crystals with 3-fold symmetry are extremely rare in the environment of Alpine clefts. The reason for that lies in the pressure and temperature (pT) conditions that favor Dauphiné twinning, in which two crystals of the same handedness interpenetrate. Consequently, quartz crystals encountered in Alpine clefts are almost invariably Dauphiné twins. They have a 6-fold enantiomorphic symmetry that corresponds to a *622* point group (see Fig. 3a). This symmetry also has two special attachment symmetries, of which that with the orientation perpendicular to the (001) face has a 6-fold tripomorph symmetry (Fig. 3b). Except for the fact that the symmetry is now 6-fold rather than 3-fold, everything else, including twisting, is the same as described above for untwinned crystals with 32 symmetry.

In the second possible attachment symmetry, the Dauphiné twin is attached with its [2$\bar{1}$0] edge to the matrix. In this case the attachment 2-fold symmetry results again, and all other consequences described above for 32 symmetry follow as well (see Fig. 3c).

The positions of trapezohedrons, bipyramids and twinning patterns in the form of damascence (visible laminations) on gwindels betray the presence of Dauphiné twinning. Quartz crystals from Alpine veins that are not Dauphiné twinned seem to be extremely rare. Out of almost 600 gwindels

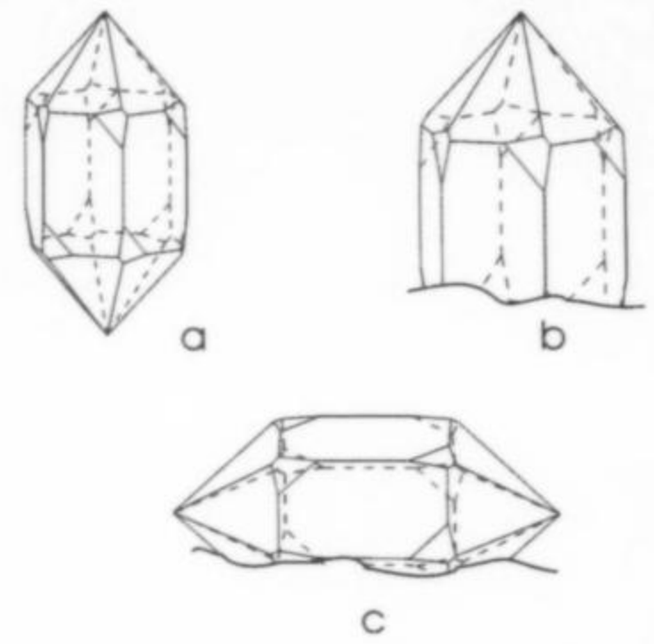

Figure 3. **Right-handed Dauphiné twin (a) develops a 6-fold attachment symmetry corresponding to a point group *6*. If a Dauphiné-twinned crystal is attached to the matrix along its [2$\bar{1}$0] edge, then the gwindel is developed (c). Note the blue-lined positions of class-specific trapezohedrons.**

measured, only three showed no signs of such twinning.

Polarization of quartz crystals in the milieu of Alpine clefts is maintained by slowly diminishing pressure and temperature gradients. Quartz crystallization begins at the pressure of several kilobars and temperatures of around 400 to 500°C. Polarization charges follow the symmetry of quartz in accordance with its attachment to the matrix, and it is the spatial distribution of charges that directs the growth of the quartz crystal. The tripomorph orientation of charges will at the same time favor or diminish the growth on the opposite sides of the crystal, resulting in smooth curving of all crystal faces. The charges control the development of the crystal and are responsible for its typical 2-fold helicoidal shape. All crystal faces are subjugated to this fact and are developed in strict accordance with the attachment symmetry as long as the crystal remains attached to the matrix. A quartz crystal with the 2-fold attachment symmetry will therefore grow fastest in the direction of its 2-fold axis and will hence develop a two-fold helicoidal prismatic flattened habit. Crystal faces in the slowest-growing directions are consequently larger. This is the reason for the development of large trapezohedron faces on the elongated prism faces (see Fig. 2d). The direction along the 2-fold axis grows fastest, which causes the disappearance of trapezohedrons at the terminal edge.

I must stress at this juncture that the *internal* crystal structure remains the same at all times, a fact which has been proven repeatedly by means of all possible struc-

ture-discerning techniques. These studies of quartz twisting have found no sign of any kind of systematic structural defect or distortion of the normal lattice that would cause the twisting of faces. For that reason we cannot and must not say that "stacking" of quartz crystals in progressively rotated orientations is responsible for gwindel formation. *Every gwindel is a single crystal and not the sum of several "stacked" crystals, regardless of its closed or open morphological aspect.*

It is obvious that the 2-fold orientations of nucleii are less common than 3-fold orientations; otherwise gwindels would be more common. These orientations are determined at the time of the crystals' first nucleation on the matrix.

It can be concluded that the presence of both normal quartz crystals and gwindels in the same vein or cleft is a completely normal situation and to be expected. It can also be concluded that the gwindels are typically related to Dauphiné twins, whereas single crystals can be present in gwindel form as well but they are extremely rare, because the environment of Alpine veins and clefts greatly favors Dauphiné twinning.

(2) The preponderance of gwindels generated from more or less flat-lying crystals

The answer to this question is already given above. It only has to be pointed out again that the term "more or less flat-lying crystals" actually describes the situation found after the crystals have finished their growth. In the primary phase they were all nucleated with their [$2\bar{1}0$] edge exactly perpendicular to the tiny nucleation point on matrix. After growing much larger they cover the wider portion of the matrix and their final orientation is only approximately perpendicular to the broad surface of the matrix.

(3) The 4-degree twisting constant

There is one property that all gwindels have in common. This is a deflection ρ of the [110] edge from the crystallographic c-axis—the edge where two prism faces meet to form the termination of every single gwindel. This edge can have a form of a straight line but quite frequently it has a sinusoidal form. This is, actually, the most important feature of gwindels (see Fig. 4a). The reason for this deflection again lies in the tripomorph spatial distribution of charges during the crystal growth on the matrix.

The deflection angle ρ is approximately 4 degrees. The opposite edge, i.e. [$2\bar{1}0$], on the contrary, is not deflected, and the prism faces on this side of the gwindel are not twisted either, as can be seen on the attachment side of every gwindel. It doesn't matter at all how large the nucleus is in its initial phase. The only thing that matters is its attachment symmetry. As soon as it has the 2-fold tripomorph symmetry it begins with its helicoidal growth on its termination and follows it as long as the growth circumstances allow.

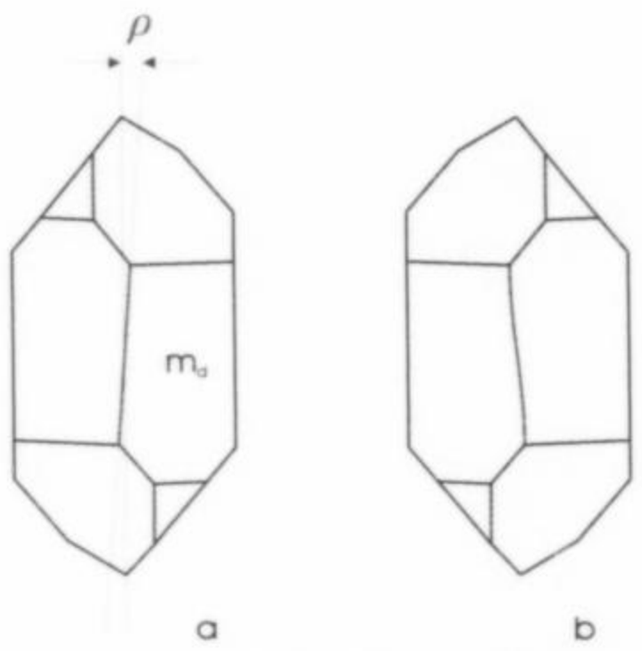

Figure 4. **All gwindels have a deflected terminal prism [110] edge in the form of straight (a) or sinusoidal line (b) that is turned to the right with the right-handed crystals (a) and vice versa for the left-handed crystals (b). The deflection angle ρ measures 3.91° (n = 580).**

Therefore, if we want to measure the degree of twist for a particular gwindel we have to measure it between the lower edge of its elongated prism face and the terminal [110] edge. It is evident then that the crystal that just started with its growth from the matrix has to have only the declined terminal [110] edge, and consequently its twisting angle can be only 4 degrees. The base of the gwindel cannot be twisted.

Morphological measurements on gwindels have given the empirical statistical value of the [110] edge declination as 3.91°, corresponding exactly to the twisting constant in accordance with the following equation:

$$k = \varphi d/h$$

where φ represents the twisting angle, measured as described above, d the diameter of the gwindel's terminal prism face $\mathbf{m}_d$ and h the height of the gwindel's elongated prism $\mathbf{m}_h$ face. Hence, if h is equal to d then the twisting constant k is equal to the declination of the terminal edge which is 3.91° (see also Fig. 4 in the Moore article).

This equation is otherwise a re-arrangement of the equation

$$\varphi = kh/d$$

that is used in the calculation of the gwindel twisting angle from its morphologic parameters. It is evident from this equation that thinner gwindels will have larger twist, provided the height h is equal (see Fig. 5).

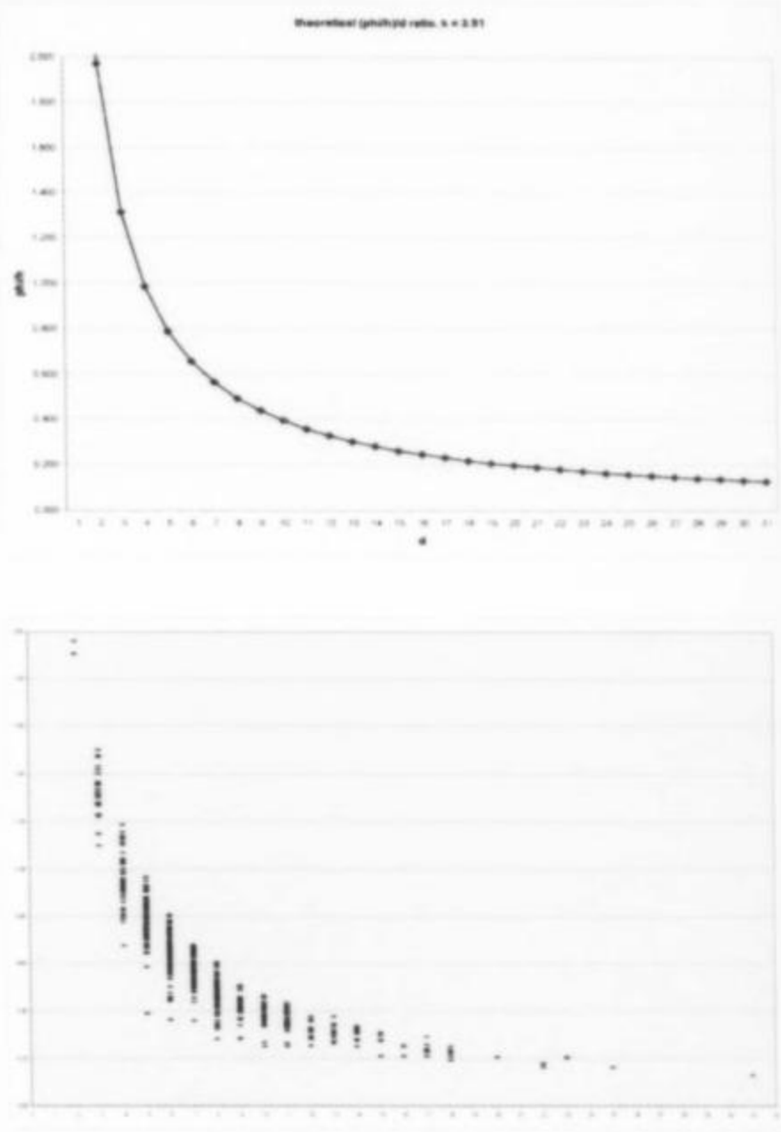

Figure 5. **Theoretical values of twisting degree φ/d ratio in correlation with the diameter d of the terminal prism (left hand-side) and measured values (n = 580).**

(4) The great preponderance of medium-smoky color in gwindels (colorless and very dark "morion" gwindels are very rare, and amethystine gwindels are almost unknown)

Smoky color is developed in the veins that are close to the surface and within the rocks containing larger amounts of potassium-bearing minerals. Temperatures there are low enough to permit the coloration. The best color is therefore connected to the localities where veins are found within syenites. It is ^{40}K, a natural radioactive isotope, which causes the coloration of the quartz. Artificially irradiated Arkansas quartz is a good example of this coloration mechanism. The concentration of color centers in the crystal should also be taken into account.

Colorless gwindels are indeed quite rare. Of those measured so far, slightly more than 5% can be declared as colorless. Amethystine color is closely connected with a completely different quartz type. It is typical of Brazil-twinned and wedge-twinned quartz, which is encountered extremely rarely in

the Alpine veins. When it is encountered, it is the result of changing formation conditions that precipitated a second-generation overgrowth of amethyst on the already-developed gwindel. The amethystine gwindel pictured in the article is evidently full of tectonic cracks. It is not possible to say on the basis of this picture alone if it is really a gwindel. Some quartz crystals can mimic gwindels if they are tectonically twisted faden formations. It would not be surprising if the illustrated crystal had been tectonically twisted.

(5) The prominent restriction of gwindel formation to Alpine-cleft environments

This question has already been dealt with under (1). However, I have to stress once again that the quartz nucleus has to have the trivial *32* symmetry or the *622* Dauphiné twin symmetry. The environment in the Alpine cleft with its high pressure and temperature is a prerequisite for the formation of Dauphiné twins. Quartz twins of this type are not encountered in any other geological environment, and for that reason gwindels are not encountered elsewhere either. What is typical of the environment in the Alpine cleft is a large and uniformly slow lowering of the pT product, which enables the growth of smoothly curved crystal faces.

Several non-Alpine locations have yielded gwindels, but it is typical of them that they consist of Alpine-type veins inlaid within the metamorphic rocks and containing Dauphiné-twinned quartz. Locations in Bosnia and Herzegovina, Macedonia, Greece, Brazil and Russia are of this type. These locations represent heavily eroded remnants of mountain ridges, which makes it difficult to find the clefts on surfaces presently covered with woods or grass. Higher in the mountains it is easier to find the clefts or to follow the veins on the bare rock walls. Fortunately, in the Urals and in Brazil there are several locations where quartz or other minerals have been mined on commercial scales, enabling numerous gwindels to be discovered.

OTHER POINTS TO CONSIDER

Twisting of Brazil twins

It was stated in the article that Brazil-twinned quartz is not capable of twisting since it is a combination of the left and right analogs. It is true that Brazil-twinned quartz has not been observed to form gwindels, however, it cannot be excluded from the theoretical point of view. The symmetry of Brazil-twinned quartz is 3-fold and corresponds to a point group $\bar{3}m$. If we analyze the spatial distribution of the class-specific forms defining this symmetry, we can see that such twins still have a chiral character (see Fig. 6a and follow the blue lines). If a crystal with this symmetry is attached to the matrix with its (001) face, then a polar hemimorphic symmetry corresponding to a point group *3m* results. This symmetry doesn't have chirality, and consequently left and right analogs are not possible (see Fig. 6b and 6c). Nevetheless, the attachment of the Brazil-twinned crystal with its $[2\bar{1}0]$ edge to the matrix still results in the 2-fold tripomorph symmetry, which can clearly be noted in Figure 6d.

The most common mineral with $\bar{3}m$ symmetry is calcite. It is no wonder that twisted calcite crystals with 2-fold tripomorph attachment symmetry have been found—a photograph of such a crystal appears in *The Symmetry System*. Another mineral with $\bar{3}m$ symmetry forming gwindels with tripomorph symmetry is millerite. Its thin crystals can be completely twisted by several full rotations. The Sterling mine in New York, among other places, is a source of twisted millerite crystals. A photograph of such a twisted crystal was published in the *Mineralogical Record* (Robinson and Chamberlain, 1984).

All in all there are 10 symmetries (point groups) that allow for the 2-fold helicoidal twisting of macroscopic crystals. They are: *2, 23, 222, 32, 42, 432, 622*, $\bar{4}2m$m, *2/m* and $\bar{3}m$. There are many minerals having these symmetries that have been found in the form of gwindels; these are described in *The Symmetry System*.

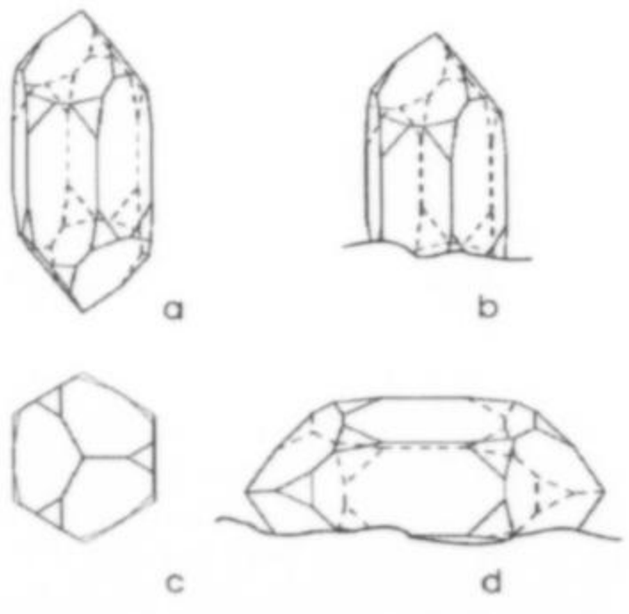

Figure 6. **Brazil-twinned quartz (a) has class-specific forms in the enantiomorphic arrangement in spite of its chiral symmetry. Follow the blue line. Its (001) attachment yields hemimorphic *3m* symmetry (b); however, a crystal attached to the matrix with its $[2\bar{1}0]$ edge acquires the tripomorph symmetry and can form a gwindel (d); (001) projection (c).**

Handedness of gwindels

Determination of the handedness of gwindels (left or right) is a point on which several strongly opposed opinions exist. If we analyze the trivial quartz symmetry then it is obvious that the crystals are left-handed or right-handed in accordance with the definition given in the article. Some authors have shared the opinion that morphologically left-handed crystals make left-handed gwindels, and right-handed crystals yield right-handed gwindels. Some, on the contrary, have claimed that morphologically left-handed crystals would become right-handed gwindels.

Any common observer holding a gwindel in his or her hands sees its handedness best when viewing the gwindel down its 2-fold twisting axis, i.e. perpendicular to its terminal [110] edge. In this orientation the right-handed crystal is indeed twisted to the right and the left-handed one to the left (see Figs. 4a and 4b). But if we take into account the attachment symmetry that actually governs the gwindel's growth, then it is obvious that the right-handed unattached crystal turns into the left-handed attached crystal with 2-fold attachment symmetry (compare Figs. 1a and 2b). Hence we have to conclude that the morphologically right-handed crystals are the left-handed gwindels and vice versa. As collectors we would naturally tend to support the right-right and left-left definition that is, from simple inspection, the most obvious one. Crystallographically, however, it is the right-left and left-right definition that is correct.

The situation with Brazil-twinned quartz is different. A Brazil twin is the result of the interpenetration of the left-handed and right-handed crystals and is for that reason not enantiomorphic. However, if it is attached with its $[2\bar{1}0]$ edge to the matrix then the right-handed gwindel is formed. But if it is attached to the matrix with the opposite edge then the left-handed gwindel results.

Twisting of crystals in connection with symmetry aspects

Everybody is comfortable with the fact that crystals develop their faces in accordance with their trivial symmetries. But as soon as the twisted or curved faces come under consideration the discussion gets cloudy. It has been widely accepted that twisted crystals are the result of deformations, stacking, dislocations, structural defects and the like. However, if we just look at the morphology of macroscopic crystals we can immediately note that crystals with perfectly smooth, even faces are actually very rare; in fact, every mineral can be found in crystals having more or less twisted faces. The vast majority of macroscopic crystals are curved or twisted exactly in accordance with their trivial symmetries, and these are strongly influenced by matrix attachment

modes. My book, *The Symmetry System*, introduces a theory that answers questions related to the twisting of crystals. The same theory addresses twinning, epitaxy and many other physical properties related to the symmetry.

Mirjan Žorž

[*Ed. note:* The writer's highly original, self-published book, *The Symmetry System*, proposes a complete overhaul of crystallography from the ground up, and extends his theories into the fields of biology, astronomy and cosmology. Readers should be aware that it has not yet been accepted by the mainstream scientific community.]

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Chumar Bakhoor Fluorite

In August 1999, at the Seven Brothers House, Askordas, Nagar, Pakistan, I had the opportunity to see and buy pink fluorite specimens from Chumar Bakhoor of similar quality to those in the recent article by Roberto Appiani (vol. 38, no. 2, p. 95–100). One of the brothers showed me two specimens of nicely colored, internally flawless pink fluorite. One is a loose crystal a bit over 2 inches on an edge, the other a matrix specimen with a single sharp fluorite crystal about 2¼ inches across on muscovite crystals. I paid $600 in rupees for it, and still have it.

The first indication I saw that the locality could produce pink fluorite was a specimen that I got from Five Lions Gems at the International Gem and Jewelry Show in Seattle before 1996. It has a dark pink fluorite crystal about ¾ inch. I no longer have that specimen.

Jack Zektzer
Seattle, WA

Rich Kosnar

I knew Richard Kosnar rather well back in 1967–1969 when I lived and worked in New York. I took him up to Canada and introduced him to collecting at Mont St. Hilaire and Asbestos. There were certainly no pegmatite minerals in his collection at that time. Richie had a real fear of heights and I am amazed that he could force himself to get on an airplane to go anywhere. I put him in contact with Jorden Zimmerman of *Missouri Minerals* in Denver and was responsible for his entering the gem and mineral business through that firm, but that is another story.

Rock Currier
Baldwin Park, CA

In your obituary for Rich Kosnar you state that he was in partnership with my father, Walt Lidstrom, from 1972 to 1976. This is not true, and I do not want my father's name associated incorrectly with Rich Kosnar. They did buy some minerals together in 1972, but my father bought out Mr. Kosnar's share within a short time. The association was unsatisfactory and was never as formal as a "partnership."

Kathy Lidstrom Brandis
Green Valley, AZ

Internet Sales

Regarding the Internet dealer discussion: the following quote from Nicholas A. Basbanes, author of *Among the Gently Mad; Perspectives and Strategies for the Book-Hunter in the 21st Century* (2002), sums it up for me: ". . . that for all the wonders of the Internet, there is still no substitute for going out into the field, meeting up with kindred spirits at fairs, open shops, auctions, museums, and learning how to 'handle the goods' from people who have been there."

Dona Leicht
Laguna Beach, CA

Attack on Rob Smith, *African Gems & Minerals*

Many mineral collectors and dealers know Rob Smith, the South African mineral and gem dealer. Rob is a regular at the Tucson Show and he is a staunch supporter of local South African mineral shows and local mineral clubs.

On Friday evening, June 8, 2007, Rob was subjected to a violent robbery at his office. Five individuals, three dressed in police uniforms, and two others in army fatigues, forcibly entered Rob's premises. He was threatened, assaulted and forced to open his safe where he keeps his cut gemstones. These were removed. Then a pistol was placed to his head. He was about to be executed when one of the perpetrators said not to shoot him until after they had finished what they had come to do. They then tied him up and bound him with cables, and a plastic bag was tied over his head and he was left to suffocate while the assailants fled with their loot. He fortunately was able to bite a small hole in the plastic bag and continued breathing. He then managed to free himself and alerted the local security company who came to his aid.

This is not the first time Rob has suffered such an attack. About two years ago, police officers also gained forced entry to his premises and stole items of high value. In this case, they were ultimately apprehended but have yet to be prosecuted.

Our thoughts are with Rob in these trying times.

Bruce Cairncross
Johannesburg, South Africa

Photography and Museums

I enjoyed your May–June editorial on museum photographs (and the lack thereof). I raced through everything you had to say, all the while nodding like a bobble-head in agreement. It mirrored many of my own experiences and frustrations: sluggish response, excessive paperwork, expense, and disinterest. One problem you didn't point out is the sometimes disappointing quality of photos taken by someone at the museum who is unaccustomed to photographing mineral specimens.

Marie Huizing
Cincinnati, Ohio

I agree with the ideas in your editorial on mineral photography and museums. In the future, donors to mineral museums should *stipulate* that reasonable access for photography of the specimens they donate must always be provided. To make this workable rather than onerous, I suggest that the Society of Mineral Museum Professionals formulate and publish a document specifying the wording of stipulations they would find reasonable in this regard.

George Gerhold

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PS Form 3526, September 2006 (Page 1 of 3)

The Friends of Mineralogy, Inc.

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Visit the National Friends of Mineralogy website:
www.friendsofmineralogy.org

FM'S OBJECTIVES

FM's objectives are to promote, support, protect, and expand the collection of mineral specimens and to further the recognition of the scientific, economic, and aesthetic value of minerals and collecting mineral specimens.

The Friends of Mineralogy (FM), formed at Tucson, Arizona on February 13, 1970, operates on a national level and also through regional chapters. It is open to membership by all. Our annual meeting is held in conjunction with the February 2007 Tucson "TGMS Gem and Mineral Show."

For Membership Application: Contact the FM Regional Chapter in your area or visit the National FM website for a printable download.

UPCOMING SYMPOSIA

"MINING IN THE SOUTHEAST"

Southeast Chapter of FM will be held on Saturday, November 3, 2007, at the Holiday Inn Cartersville, Georgia (I-75 exit 293 in front of the Weinman Mineral Museum). It is dedicated to historic and current mining activities and their minerals. For information/registration contact Jose Santamaria, E-mail: joses@weinmanmuseum.org.

"MINERALS OF THE FOUR-CORNERS STATES"

New Mexico Mineral Symposium, November 10 & 11, 2007 at the Macey Center, New Mexico Institute of Mining & Technology, Socorro, New Mexico. For brochure and registration information see website: http://geoinfo.nmt.edu/museum/minisymp/home.html

FM REGIONAL CHAPTERS

Colorado: Contact: Richard Parsons, President, Email: richard.parsons@att.net.

Midwest: Contact: Dave Straw, President, Email: strawdl@aol.com. Website: http://www.indiana.edu/~minerals.

Mississippi Valley: Contact: Bruce Stinemetz, Email: bruce.stinemetz@ssa.gov.

Pacific Northwest: Contact: Wes Gannaway, President, Email: debwes@comcast.net. Website: http://www.pnwfm.org.

Pennsylvania: Contacts: Doug Rambo, President, Email: drambo417@comcast.net. Website: http://www.geocities.com/sajas.geo/FM/index.htm.

Southeast Chapter: Contact: Anita Westlake, President, Email: libawc@emory.edu.

Southern California Chapter: Contacts: Bob Reynolds, President, Email: jreynold@empirenet.com. Website:http://www.mineralsocal.org/scfm.

Notes from the Editors *(continued from page 427)*

warehousing scene at the end of the first Indiana Jones movie.) We recently managed to locate small stores of three beautiful, bonded-leather-bound hardcover issues long thought to be sold out: the *Michigan Copper Country Issue*, the *Yukon Phosphates Issue*, and the *Mineral Books Issue*. We are going to make these available to subscribers at the original prices from years ago, that is, $36 for the *Yukon Phosphates Issue*, $38 for the *Copper Country Issue*, and $49 for the *Mineral Books Issue*, with its added 64 pages of reprints of earlier articles on collectible mineral books as well as the original *Mineral Books Issue*, for a total of 256 pages. These are bargains you will not see again, and quantities are definitely limited, so please contact Mary Lynn, our Circulation Manager, and secure your copies now while you can.

The Mineral Collector Sold Out!

We are pleased to say that all of the remaining hardbound sets of the Jay Lininger reprint of *The Mineral Collector* magazine are now sold out. Our congratulations and thanks to all of those who took advantage of the close-out offer to preserve this valuable part of our mineral collecting heritage.

Mineralogical Record

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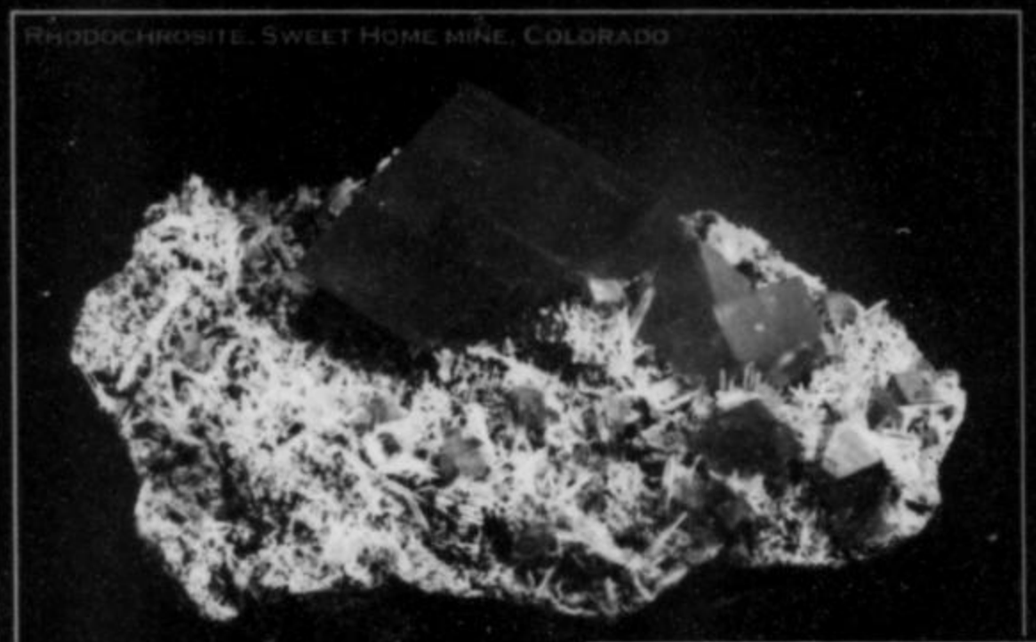
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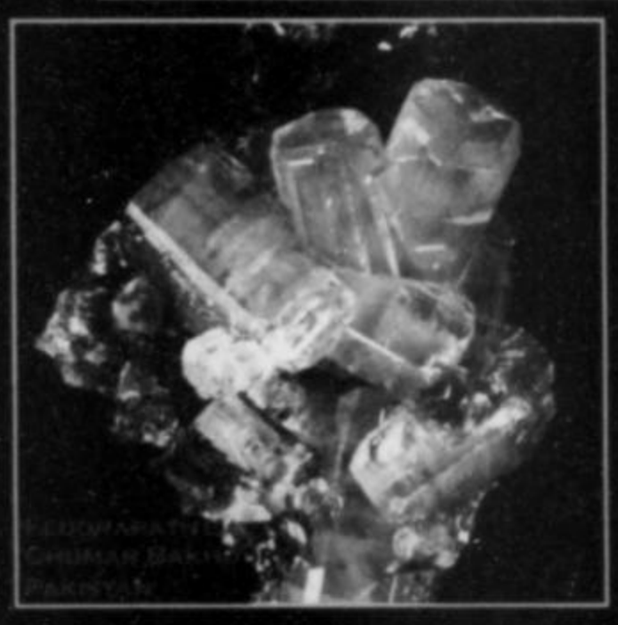


AQUAMARINE WITH CASSITERITE,
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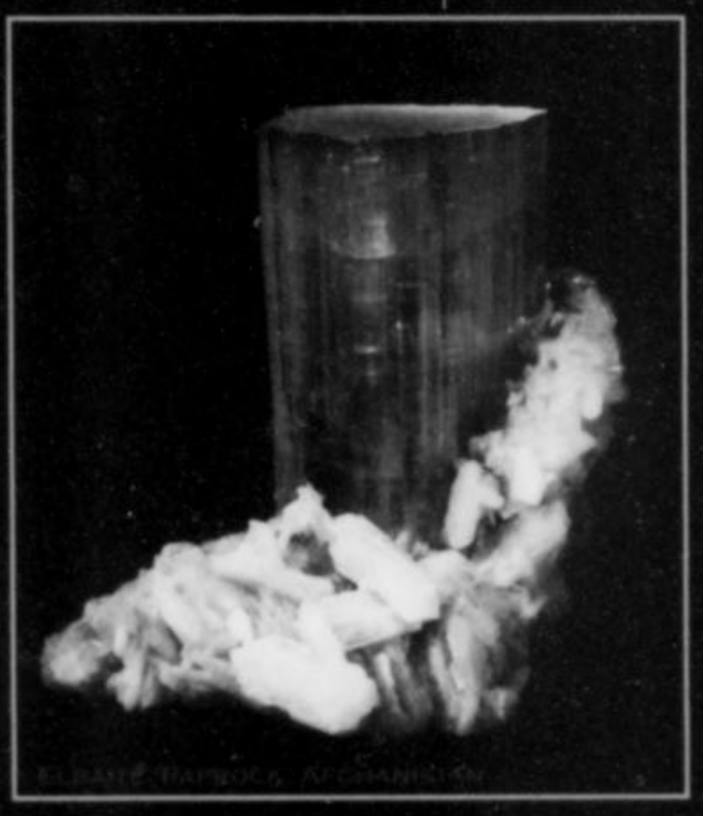

The Collector's Edge

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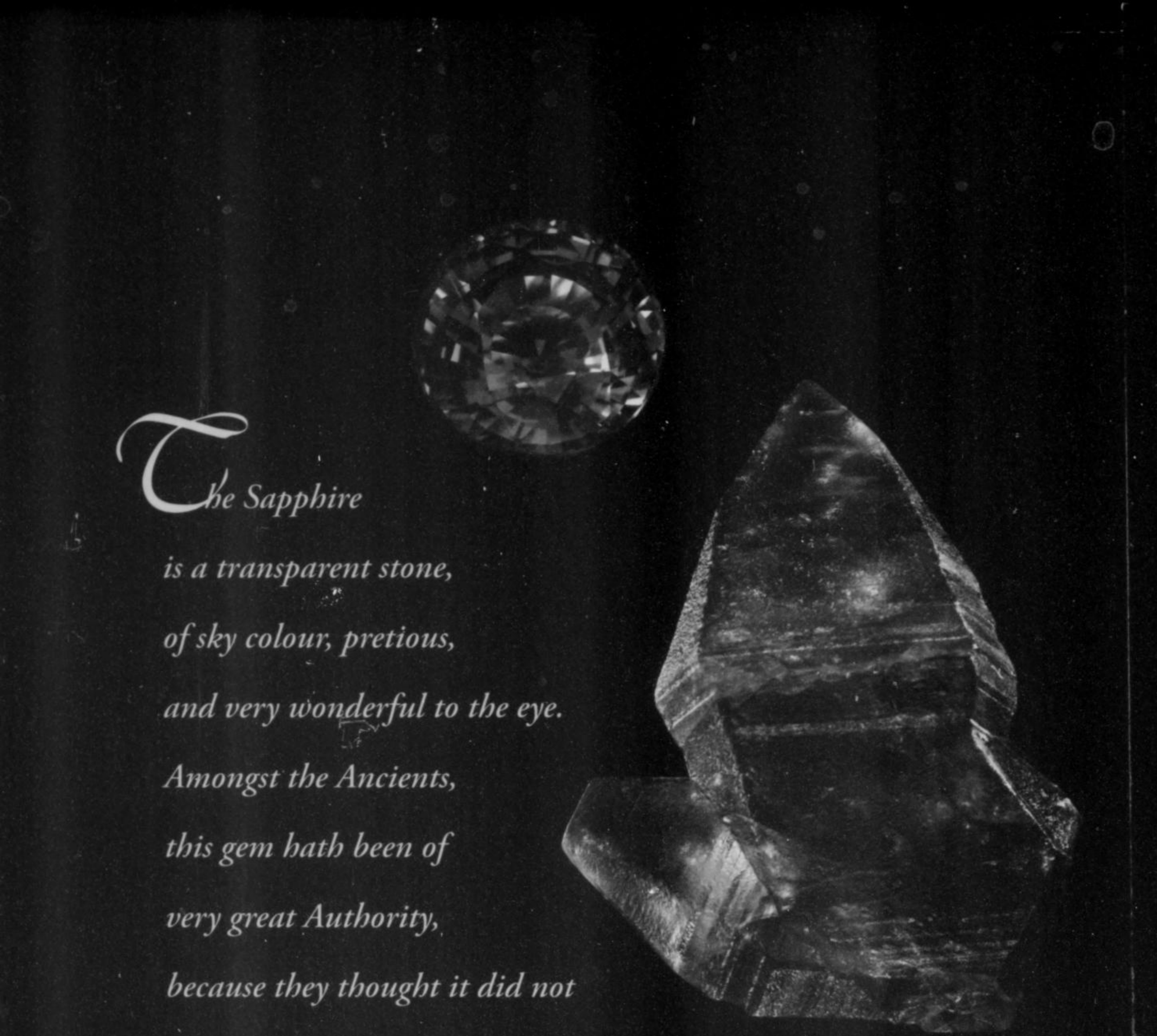

The Sapphire

is a transparent stone,

of sky colour, pretious,

and very wonderful to the eye.

Amongst the Ancients,

this gem hath been of

very great Authority,

because they thought it did not

a little prevail with God.

– Thomas Nicols, 1652
A Lapidary, Or, The History of Pretious Stones

Sapphire – Mogok, Burma

Photo: Harold & Erica Van Pelt